



2024-2025 ISO Reliability Assessment - Study Results													
Study Area: PG&E Kern													
Thermal Overloads													
Overloaded Facility													
Contingency (All and Worst P6)													
Category	Category Description	Loading % (Baseline Scenarios)							Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions	
		2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast			
Kern PP-Seventh Standard 115 kv Line	Base Case	P0	N0	71	56	106	27	4	26	25	28	56	Continue to Monitor
	P1-1:A15:71:_MT POSO 13.80KV GEN UNIT 1	P1-1	N-1	69	56	106	30	6	15	29	31	56	Continue to Monitor
	P1-2:A15:45:_KERN OIL-WITCO 115KV [1920]	P1-1	N-1	72	58	114	26	7	30	24	27	58	Continue to Monitor
	P1-2:A15:47:_KERN-MAGUNDEN-WITCO 115KV [1970]	P1-1	N-1	73	58	122	27	3	28	24	28	59	Continue to Monitor
	P1-2:A15:49:_KERN-LIVE OAK 115KV [1960]	P1-1	N-1	63	50	102	23	6	27	21	23	50	Continue to Monitor
	P1-3:A15:61:_OGLE TAP 115/13.8KV TB 1	P1-1	N-1	66	54	102	28	4	16	27	29	54	Continue to Monitor
	P2-1:A15:45:_KERN OIL-WITCO 115KV [1920] (KERN OIL-DSCVRYTP)	P2-1	Line Section w/o Fault	72	49	107	26	7	30	25	27	58	Continue to Monitor
	P2-4:A15:9:_KERN PWR 115KV - SECTION 1E & 2E	P2-4	Bus-Tie-Breaker	157	N/A	N/A	77	N/A	N/A	28	79	N/A	Project: Midway-Kern PP Nos. 1,3 and 4 230 kv Lines Capacity Increase (Midway 230kv Bus Section D Upgrade Project)
	KERN OIL-WITCO 115KV [1920]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	<100	<100	109	<100	<100	<100	<100	<100	<100	Continue to Monitor
	MT POSO 13.80KV GEN UNIT 1+KERN OIL-WITCO 115KV [1920]	P6	N-1-1	<100	<100	107	<100	<100	<100	<100	<100	<100	Continue to Monitor
P5-5A(NRDR):A15:16:_WITCO SS 115KV BUS (FAILURE OF NON-REDUNDANT RELAY)	P5	Non-Redundant battery supply/Relay	72	48	107	26	7	30	25	27	58	Continue to Monitor	
Taft-Cuyuma #1 70kv Line	Base Case	P0	N0	18	17	14	15	89	100	115	15	18	Invalid result. Topology error.
Blackwell-Q484TP 70 kv line	Base Case	P0	N0	14	5	22	4	100	100	156	4	7	Sensitivity only
	P1-1:A15:14:_BLACKWELLSPV 0.36KV GEN UNIT 1	P1-1	N-1	12	4	22	3	74	86	102	3	6	Generation Redispatch
	P1-1:A15:54:_LOSTHILL 0.36KV GEN UNIT 1	P1-1	N-1	17	4	19	3	86	86	137	3	6	Generation Redispatch
	P1-2:A15:81:_ARCO-TWISSELMAN 70KV [8470] MOAS OPENED ON TX_LOSHL_JCT_TX_LOSHL	P1-2	N-1	17	4	19	3	86	86	137	3	6	Generation Redispatch
	P4-2:A15:2:_KERN PP 115KV CB 102 112 132 142 152 212 222 232 262 272 OR 312	P4	Stuck Breaker	67	48	125	45	64	67	47	47	65	Continue to Monitor
P5-5C(DC):A15:26:_KERN 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	67	48	123	45	64	67	47	47	64	Continue to Monitor	
Kern-Old River #2 70 kv Line	Base Case	P0	N0	36	35	35	24	264	30	37	25	35	Generation Redispatch
	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	46	45	46	28	281	26	32	28	45	Generation Redispatch
	P5-5C(DC):A15:26:_KERN 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	37	35	44	25	235	26	32	25	36	Install Redundant Battery Supply
Lerdo-Kern Oil-7th Standard 115 kv Line	P1-1:A15:71:_MT POSO 13.80KV GEN UNIT 1	P1-1	N-1	67	76	105	44	39	21	48	47	77	Continue to Monitor
	P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P1-2	N-1	103	78	86	29	4	30	46	31	78	Project: NE Kern Reconstructor
	P2-2:A15:42:_MIDWAY 115KV SECTION 2E	P2-2		159	169	44	105	49	121	57	124	181	Project: NE Kern Reconstructor
	P2-4:A15:25:_MIDWAY-DDB58 SECTION 1D & MIDWAY-E SECTION 1E 230KV	P2-4	Bus-Tie-Breaker	174	N/A	N/A	43	N/A	N/A	22	122	N/A	Project: Midway-Kern PP Nos. 1,3 and 4 230 kv Lines Capacity Increase (Midway 230kv Bus Section D Upgrade Project)
	7TH STANDARD-KERN 115KV [1981]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	111	100	110	<100	<100	<100	<100	<100	100	Project: NE Kern Reconstructor. Potential rescue for long-term issue.
	SEMITROPIC_D-CHARKA-WSCOPRSN 115KV [0]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	123	129	<100	<100	<100	<100	<100	<100	131	Project: NE Kern Reconstructor
	LERDO-FAMOSO 115KV [2120] MOAS OPENED ON CAWELC_OGLE JCT (2)+7TH STANDARD-KERN 115KV [1981]	P6	N-1-1	157	125	<100	<100	<100	<100	<100	<100	126	Project: NE Kern Reconstructor
	MT POSO 13.80KV GEN UNIT 1+SEMITROPIC_D-CHARKA-WSCOPRSN 115KV [0]	P3	G-1 / N-1	121	127	103	<100	<100	<100	91	<100	129	Project: NE Kern Reconstructor. Potential rescue for long-term issue.
P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	91	155	225	163	90	NConv	Install Redundant Battery Supply	
Kern Oil-Witco 115 kv Line	P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P1-2	N-1	62	51	112	22	10	31	22	23	51	Continue to Monitor
	P2-3:A15:142:_KERN PWR 115KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	N/A	<100	110	N/A	10	31	N/A	N/A	51	Continue to Monitor
	7TH STANDARD-KERN 115KV [1981]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	<100	<100	110	<100	<100	<100	<100	<100	<100	Continue to Monitor
	MT POSO 13.80KV GEN UNIT 1+7TH STANDARD-KERN 115KV [1981]	P6	N-1-1	<100	<100	109	<100	<100	<100	<100	<100	<100	Continue to Monitor
Kern-Magunden-Witco 115 kv Line	P1-2:A15:38:_WESTPARK-COLUMBUS 115KV [0]	P1-2	N-1	73	72	109	47	13	18	19	48	73	Continue to Monitor
	P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P1-2	N-1	76	68	139	37	4	32	18	38	69	Continue to Monitor
	P2-3:A15:142:_KERN PWR 115KV - MIDDLE BREAKER BAY 1	P2-3	Non-Bus-Tie Breaker	N/A	<100	106	N/A	4	32	N/A	N/A	69	Continue to Monitor
Midway-Shafter 115 kv Line	P1-2:A15:56:_MIDWAY-TUPMAN-RIO BRAVO-RENFRO 115KV [2600]	P1-2	N-1	120	126	52	55	31	5	74	55	128	Project: NE Kern Reconstructor
	P2-1:A15:74:_MIDWAY-TUPMAN-RIO BRAVO-RENFRO 115KV [2600] (TPMNTP2-RENFRO)	P2-1	Line Section w/o Fault	145	153	<100	72	23	33	53	72	155	Project: NE Kern Reconstructor
	P2-3:A15:71:_MIDWAY - 1E 115KV & MIDWAY-TUPMAN-RIO BRAVO-RENFRO LINE	P2-3	Non-Bus-Tie Breaker	120	127	<100	56	31	5	74	55	128	Project: NE Kern Reconstructor
	MIDWAY-TUPMAN-RIO BRAVO-RENFRO 115KV [2600]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	<100	127	<100	<100	<100	<100	<100	<100	128	Project: NE Kern Reconstructor
	P5-5C(DC):A15:34:_RENFRO 115KV BATT BAY #2(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	120	126	52	55	31	5	74	55	128	Project: Install Redundant Battery Supply
Midway-Tupman-Rio Bravo-Renfro 115 kv Line	P1-2:A15:62:_MIDWAY-SHAFTER 115KV [2610]	P1-2	N-1	120	127	53	55	30	10	74	55	128	Project: NE Kern Reconstructor
	P2-3:A15:70:_MIDWAY - 2E 115KV & SMYRNA-SEMITROPIC-MIDWAY LINE	P2-3	Non-Bus-Tie Breaker	119	126	53	55	30	10	73	55	128	Project: NE Kern Reconstructor
	P2-4:A15:14:_MIDWAY 115KV - SECTION 2E & 1E	P2-4	Bus-Tie-Breaker	127	137	58	56	31	10	76	56	140	Project: NE Kern Reconstructor
	P1-2:A15:65:_MIDWAY-TAFT 115KV [2620]	P1-2	N-1	85	83	51	38	100	100	127	38	31	Generation Redispatch

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Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)						Loading % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions	
				2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast		
Fellows-Taft 115 kV Line	P2-2:A15:41:_MIDWAY 115KV SECTION 2D	P2-2	<100	<100	<100	38	100	99	127	39	32	32	Generation Redispatch	
	P2-3:A15:69:_MIDWAY - 2D 115KV & MIDWAY-RENFRO-TUPMAN LINE	P2-3	<100	<100	<100	38	100	99	127	39	32	32	Generation Redispatch	
	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	NConv	NConv	NConv	9	56	62	66	9	NConv	NConv	Install Redundant Battery Supply	
Fellows-Midsum 115kV Line	P1-2:A15:65:_MIDWAY-TAFT 115KV [2620]	P1-2	33	33	52	36	100	100	128	36	31	31	Generation Redispatch	
	P2-3:A15:69:_MIDWAY - 2D 115KV & MIDWAY-RENFRO-TUPMAN LINE	P2-3	<100	<100	<100	37	100	99	129	37	33	33	Generation Redispatch	
	P2-4:A15:12:_MIDWAY 115KV - SECTION 2D & 2E	P2-4	<100	<100	<100	33	102	104	132	33	28	28	Generation Redispatch	
Midsun-Midway 115 kV Line	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	NConv	NConv	NConv	17	37	46	45	18	NConv	NConv	Install Redundant Battery Supply	
Wheeler Ridge-Lakeview 70 kV Line	P1-1:A15:16:_Q14995PV 34.50KV GEN UNIT 1	P1-1	34	35	33	52	29	121	128	119	33	33	Generation Redispatch	
	Q14995PV 34.50KV GEN UNIT 1+Q1397BESS 0.52KV GEN UNIT 2	P3	<100	<100	<100	<100	<100	<100	119	<100	<100	<100	Operating Solution	
	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	NConv	NConv	NConv	94	85	148	59	95	NConv	NConv	Install Redundant Battery Supply	
Wheeler Ridge-Tejon 70 kV Line	P1-2:A15:93:_WHEELER RIDGE-SAN BERNARD 70KV [9300]	P1-2	92	147	<100	56	36	9	58	56	148	148	Project:Tejon Area Reinforcement Project	
	P1-2:A15:95:_SAN BERNARD-TEJON 70KV [9080]	P1-2	68	122	<100	38	37	24	62	38	123	123	Project:Tejon Area Reinforcement Project	
	WHEELER RIDGE-SAN BERNARD 70KV [9300]+ORION 0.44KV GEN UNIT 1	P3	93	149	<100	<100	<100	<100	<100	<100	151	151	Project:Tejon Area Reinforcement Project	
Tejon-SN Brnrd 70 kV Line	P1-2:A15:92:_WHEELER RIDGE-TEJON 70KV [9310]	P1-2	68	130	<100	37	35	22	61	36	131	131	Project:Tejon Area Reinforcement Project	
	WHEELER RIDGE-TEJON 70KV [9310]+ORION 0.44KV GEN UNIT 1	P3	<100	131	<100	<100	<100	<100	<100	<100	132	132	Project: Tejon Area Reinforcement Project	
Wheeler Ridge-San Bernard 70 kV Line	P1-2:A15:92:_WHEELER RIDGE-TEJON 70KV [9310]	P1-2	98	163	<100	58	36	7	61	58	165	165	Project: Tejon Area Reinforcement Project	
	WHEELER RIDGE-TEJON 70KV [9310]+ORION 0.44KV GEN UNIT 1	P3	<100	168	<100	<100	<100	<100	<100	<100	169	169	Project: Tejon Area Reinforcement Project	
Kern Canyon-Magudens-Weedpatch 70 kV Line	P1-2:A15:110:_BITTERWATRSS-MIDWAY-D 230KV [0]	P1-2	N/A	32	31	N/A	43	71	N/A	N/A	105	105	Operating Solution	
	P1-2:A15:5:_BITTERWATRSS-MIDWAY-DBAAH 230KV [0]	P1-2	N-1	31	N/A	N/A	101	N/A	N/A	96	97	N/A	Summer Setup	
	P2-1:A15:11:_MIDWAY-WHEELER RIDGE #2 230KV [5200] (BUENAVI2-MIDWAY-DBAAH)	P2-1	Line Section w/o Fault	83	N/A	N/A	110	N/A	N/A	104	105	N/A	Summer Setup	
	P2-1:A15:239:_MIDWAY-WHEELER RIDGE #2 230KV [5200] (BUENAVI2-MIDWAY-D)	P2-1	Line Section w/o Fault	N/A	133	55	N/A	51	79	N/A	N/A	115	115	Summer Setup
	BITTERWATRSS-MIDWAY-D 230KV [0]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	<100	119	<100	<100	<100	<100	<100	<100	110	110	Summer Setup
	P4-2:A15:2:_KERN PP 115KV CB 102 112 132 142 152 212 222 232 262 272 OR 312	P4	Shock Breaker	34	15	107	31	105	84	72	31	27	27	Continue to Monitor
	P5-5C(DC):A15:26:_KERN 115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	35	15	105	31	105	84	72	31	25	25	Continue to Monitor
Wheeler Ridge-Weedpatch 70 kV Line	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	NConv	NConv	NConv	27	148	226	166	33	NConv	NConv	Install Redundant Battery Supply	
	P5-5C(DC):A15:7:_MIDWAY 230-115KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	<100	NConv	NConv	<100	NConv	NConv	<100	<100	NConv	Install Redundant Battery Supply	
Midway-Wheeler Ridge #1 230 kV Line	P1-2:A15:110:_BITTERWATRSS-MIDWAY-D 230KV [0]	P1-2	N-1	<100	138	73	<100	21	49	<100	<100	119	119	Project: Wheeler Ridge Junction
	P1-2:A15:5:_BITTERWATRSS-MIDWAY-DBAAH 230KV [0]	P1-2	N-1	90	<100	<100	107	<100	<100	81	100	<100	Operating Solution	
	P1-2:A15:28:_MIDWAY-WHEELER RIDGE #1 230KV [5190]	P1-2	N-1	<100	104	62	<100	17	26	<100	<100	90	90	Project: Wheeler Ridge Junction
	BITTERWATRSS-MIDWAY-D 230KV [0]+KERN CNYN 11.00KV GEN UNIT 1	P3	G-1 / N-1	<100	127	<100	<100	<100	<100	<100	<100	119	119	Project: Wheeler Ridge Junction
	BITTERWATRSS-MIDWAY-D 230KV [0]+WHEELER-CASALOMA #1 230KV [0]	P6	N-1-1	<100	<100	135	<100	<100	<100	<100	<100	<100	<100	Continue to Monitor
Buena Vista - Midway #1 230kV line	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	54	8	9	23	46	NConv	Install Redundant Battery Supply	
	P2-1:A15:239:_MIDWAY-WHEELER RIDGE #2 230KV [5200] (BUENAVI2-MIDWAY-D)	P2-1	Line Section w/o Fault	<100	136	75	<100	29	58	<100	<100	129	129	Project: Wheeler Ridge Junction
Buena Vista - Midway #1 230kV line	P2-1:A15:10:_MIDWAY-WHEELER RIDGE #1 230KV [5190] (BUENAVI1-MIDWAY-DBAAH)	P2-1	Line Section w/o Fault	95	<100	<100	118	<100	<100	92	110	<100	Operating Solution	
Buena Vista - Wheeler Ridge #2 230kV line	P2-1:A15:238:_MIDWAY-WHEELER RIDGE #1 230KV [5190] (BUENAVI1-MIDWAY-D)	P2-1	Line Section w/o Fault	N/A	124	63	N/A	19	26	N/A	N/A	120	120	Project: Wheeler Ridge Junction
Midway-Kern #1 230 kV Line	P2-4:A15:26:_MIDWAY-DBBS8 SECTION 2D & MIDWAY-E SECTION 2E 230KV	P2-4	Bus-Tie-Breaker	148	<100	<100	29	<100	<100	50	125	<100	Project: Midway-Kern PP Nos. 1,3 and 4 230 kV Lines Capacity Increase (Midway 230kV Bus Section D Upgrade Project)	
Midway-Tembler 115 kV Line	P2-3:A15:79:_TEMBLOR - 1D 115KV & TEMBLOR-SAN LUIS OBISPO LINE	P2-3	Non-Bus-Tie Breaker	44	42	5	45	89	104	105	45	42	Generation Redispatch	
Semitropic-Famoso 115 kV Line	P2-4:A15:7:_KERN PWR 115KV - SECTION 2D & 2E	P2-4	Bus-Tie-Breaker	128	N/A	N/A	56	N/A	N/A	43	53	N/A	Project: NE Kern Reconnector	
	P2-2:A15:42:_MIDWAY 115KV SECTION 2E	P2-2		82	105	<100	74	68	106	98	92	102	Project: NE Kern Reconnector	
	LERDO-KERN OIL-7TH STANDARD 115KV [1950]+MT POSO 13.80KV GEN UNIT 1	P3	G-1 / N-1	130	143	<100	<100	<100	<100	<100	<100	146	146	Project: NE Kern Reconnector
Semitropic-Famoso 70kV Line	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	N/A	87	107	174	98	85	NConv	Install Redundant Battery Supply	
Taft-Maricopa 70 kV Line	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	161	152	184	152	226	176	149	153	169	Summer Setup	
	P4-2:A15:2:_KERN PP 115KV CB 102 112 132 142 152 212 222 232 262 272 OR 312	P4	Shock Breaker	89	81	169	81	115	111	84	99	99	Continue to Monitor	
	P5-5C(DC):A15:4:_KERN 230KV BATT(FAILURE OF NON-REDUNDANT BATT)	P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	95	150	227	163	96	NConv	Install Redundant Battery Supply	
	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	195	198	176	184	265	175	137	184	202	Summer Setup	

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				2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast		
Maricopa-Copus 70 kV Line	P5-5C(DC):A15:26_KERN 115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	112	119	159	95	81	64	25	94	121	Install Redundant Battery Supply
	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	109	120	199	111	110	NConv	Install Redundant Battery Supply
Copus-Old River 70 kV Line	P2-4:A15:30_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV		P2-4	Bus-Tie-Breaker	192	194	180	190	274	78	46	190	197	Summer Setup
	P5-5C(DC):A15:26_KERN 115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	99	105	147	88	96	73	33	88	107	Install Redundant Battery Supply
	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	97	137	212	123	98	NConv	Install Redundant Battery Supply
	P5-5C(DC):A15:7_MIDWAY 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	<100	NConv	NConv	<100	NConv	NConv	<100	<100	NConv	Install Redundant Battery Supply
34887 SKERNJCT 70.0 34882 SAN EMDO 70.0 1	P2-4:A15:13_MIDWAY 115KV - SECTION 2D & 1D		P2-4	Bus-Tie-Breaker	51	186	NConv	49	215	223	306	49	45	Summer Setup
	P2-4:A15:30_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV		P2-4	Bus-Tie-Breaker	192	194	180	189	273	78	46	190	196	Summer Setup
Kern-Kern Oil-Famoso 70 kV Line	P2-2:A15:42_MIDWAY 115KV SECTION 2E		P2-2		121	131	30	92	48	110	74	109	138	Project: NE Kern Reconductor
	P2-3:A15:70_MIDWAY - 2E 115KV & SMYRNA-SEMITROPIC-MIDWAY LINE		P2-3	Non-Bus-Tie Breaker	95	100	30	60	23	19	20	60	110	Project: NE Kern Reconductor
	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	18	14	47	29	18	NConv	Install Redundant Battery Supply
Live Oak-Kern Oil 115 kV Line	7TH STANDARD-KERN 115KV [1981]+KERN OIL-WITCO 115KV [1920]		P6	N-1-1	98	<100	155	<100	<100	<100	<100	<100	<100	Continue to Monitor
Temblor-San Luis Obispo 115 kV Line	MIDWAY-TEMBLOR-PUMPJACK 115KV [0]+KERN PW1 70/115KV TB 1		P6	N-1-1	<100	<100	123	<100	<100	<100	<100	<100	<100	Continue to Monitor
	P5-5C(DC):A15:1_MIDWAY 500KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	20	113	106	187	99	111	NConv	Project: Install Redundant Battery Supply
Temblor-Kernridge 115 kV Line	MIDWAY-TEMBLOR-PUMPJACK 115KV [0]+KERN PW1 70/115KV TB 1		P6	N-1-1	<100	<100	110	<100	<100	<100	<100	<100	<100	Continue to Monitor
Gates-Arco 230kV Line	P5-5C(DC):A15:1_MIDWAY 500KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	20	16	56	NConv	196	104	NConv	NConv	14	Install Redundant Battery Supply
Gates-Midway 230kV	P5-5C(DC):A15:1_MIDWAY 500KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	37	43	NConv	228	107	NConv	NConv	38	Project: Install Redundant Battery Supply
Copus-Lakeview 70kV Line	P5-5C(DC):A15:26_KERN 115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	99	105	147	88	96	73	33	88	107	Install Redundant Battery Supply
	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	97	137	212	123	98	NConv	Install Redundant Battery Supply
Magunden-Magunden Jct 70kV Line	P5-5C(DC):A15:26_KERN 115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	80	70	159	71	87	52	57	72	76	Continue to Monitor
	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	58	125	203	142	63	NConv	Install Redundant Battery Supply
	P5-5C(DC):A15:7_MIDWAY 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	<100	NConv	NConv	<100	NConv	NConv	<100	<100	NConv	Install Redundant Battery Supply
Kern-Magunden 70 kV Line	P5-5C(DC):A15:4_KERN 230KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	NConv	NConv	NConv	58	125	203	142	63	NConv	Install Redundant Battery Supply
	P5-5C(DC):A15:7_MIDWAY 230-115KV BATT(FAILURE OF NON-REDUNDENT BATT)		P5	Non-Redundant battery supply/Relay	<100	NConv	NConv	<100	NConv	NConv	<100	<100	NConv	Install Redundant Battery Supply



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)						Voltage PU (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast	
SHAFTER 115kV	P2-4:A15:14:_MIDWAY 115KV - SECTION 2E & 1E	P2-4	Bus-Tie-Breaker	0.93	0.89	0.89	1.04	1.03	1.06	0.98	1.03	0.88	Operating Solution
COPUS_D 70kV	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	0.85	0.86	0.85	0.81	0.83	1.02	1.01	0.83	0.85	Summer Setup
COPUS_E 70kV	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	0.85	0.86	0.85	0.81	0.83	1.02	1.01	0.83	0.85	Summer Setup
OLD RIVR 70kV	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	0.59	0.61	0.61	0.61	0.52	1.06	1.02	0.52	0.60	Summer Setup
PANAMA 70kV	P2-4:A15:30:_KERN PW2 SECTION 2D & KERN PW1 SECTION 1D 70KV	P2-4	Bus-Tie-Breaker	0.52	0.54	0.55	0.48	0.47	1.05	0.99	0.47	0.53	Summer Setup
7STNDRD 115kV	P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]+P1-2:A15:45:_KERN OIL-WITCO 115KV [1920]	P6	N-1-1	>0.9	>0.9	0.83	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to Monitor
7STNDRD 115kV	P1-2:A15:45:_KERN OIL-WITCO 115KV [1920]+P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P6	N-1-1	>0.9	>0.9	0.83	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to Monitor
COPUS_D 70kV	P1-3:A15:53:_KERN PW1 70/115KV TB 1+P1-3:A15:54:_KERN PW2 70/115KV TB 1	P6	N-1-1	>0.9	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Summer Setup
COPUS_E 70kV	P1-3:A15:53:_KERN PW1 70/115KV TB 1+P1-3:A15:54:_KERN PW2 70/115KV TB 1	P6	N-1-1	>0.9	0.90	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Summer Setup
KERN OIL 115kV	P1-2:A15:45:_KERN OIL-WITCO 115KV [1920]+P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P6	N-1-1	>0.9	>0.9	0.87	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to Monitor
LERDO 115kV	P1-2:A15:43:_LERDO-KERN OIL-7TH STANDARD 115KV [1950]+P1-1:A15:71:_MT POSO 13.80KV GEN UNIT 1	P6	N-1-1	>0.9	0.89	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Project: NE Kern Reconductor
LERDO 115kV	P1-2:A15:45:_KERN OIL-WITCO 115KV [1920]+P1-2:A15:39:_7TH STANDARD-KERN 115KV [1981]	P6	N-1-1	>0.9	>0.9	0.83	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to Monitor
OLD RIVR 70kV	P1-3:A15:54:_KERN PW2 70/115KV TB 1+P1-3:A15:53:_KERN PW1 70/115KV TB 1	P6	N-1-1	0.72	0.72	0.73	0.85	>0.9	0.86	>0.9	>0.9	>0.9	Summer Setup
PANAMA 70kV	P1-3:A15:54:_KERN PW2 70/115KV TB 1+P1-3:A15:53:_KERN PW1 70/115KV TB 1	P6	N-1-1	0.69	0.69	0.70	0.85	>0.9	0.85	>0.9	>0.9	>0.9	Summer Setup
TEMBLOR 115kV	P1-3:A15:54:_KERN PW2 70/115KV TB 1+P1-2:A15:32:_MIDWAY-TEMBLOR-PUMPJACK 115KV [0]	P6	N-1-1	>0.9	>0.9	0.63	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	Continue to Monitor

Substation	Contingency	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)						Post Cont. Voltage Deviation % (Sensitivity Scenarios)			Project & Potential Mitigation Solutions
				2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast	
None													

Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2026 Spring Off-Peak	2029 Summer Peak	2034 Summer Peak	2026 OP Sensitivity	2029 SP High CEC Forecast	
5430 "P4-3 - Stuck Breaker 552 protecting Tran MIDWAY 500/230 kV bk 12" 1.00 "P4" "" "" 0	P4	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Current result is based on 3-phase fault. Working with PTO for SLG fault information
5450 "P4-5 - Stuck non-Bus-tie Breaker 242 protecting Substation Bus MIDWAY 230 kV Section F" 1.00 "P4" "" "" 0	P4	Stuck Breaker	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	Potential WECC/NERC criteria violation	No Issue	Potential WECC/NERC criteria violation	Current result is based on 3-phase fault. Working with PTO for SLG fault information
5530 "P5-3d - Failure of Kern 115 kV CB 142 non-redundant DC CB control circuit (with no Breaker Fail relay) for Tran KERN PWR 115 / KERN PP 230 kV bk #4 (ALL 115 kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
5550 "P5-5a - Failure of non-redundant relay protecting Substation Bus Westpark 115 kV (ALL 115kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
5552 "P5-5c - Failure of non-redundant DC battery supplying Kern Oil Sub 115kV Buses for SLG fault at Kern Oil Sub 115kV Bus Sec D (All 115 kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
5710 "P7-1 - Fault on Line Midway*-Wheeler Ridge #1 230 kV ckt 1 and Line Midway*-Wheeler Ridge 230 kV ckt 2" 1.00 "P7" "" "" 0	P7	DCTL	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3110 "P1-1 - Gen SUNRISEPR 18 kV (3 units)" 1.00 "P1" "" "" 0	P4	Stuck Breaker	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3240 "P2-4 - Internal fault at Bus-tie Breaker 392 at MIDWAY 115 kV Bus E" 1.00 "P2" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3430 "P4-3 - Stuck Breaker 552 protecting Tran MIDWAY 500/230 kV bk 12" 1.00 "P4" "" "" 0	P4	Stuck Breaker	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3450 "P4-5 - Stuck non-Bus-tie Breaker 242 protecting Substation Bus MIDWAY 230 kV Section F" 1.00 "P4" "" "" 0	P4	Stuck Breaker	No Issue	No Issue	Potential WECC/NERC criteria violation	No Issue	No Issue	Continue to Monitor
3530 "P5-3d - Failure of Kern 115 kV CB 142 non-redundant DC CB control circuit (with no Breaker Fail relay) for Tran KERN PWR 115 / KERN PP 230 kV bk #4 (ALL 115 kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3550 "P5-5a - Failure of non-redundant relay protecting Substation Bus Westpark 115 kV (ALL 115kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	Potential WECC/NERC criteria violation	No Issue	No Issue	Continue to Monitor
3552 "P5-5c - Failure of non-redundant DC battery supplying Kern Oil Sub 115kV Buses for SLG fault at Kern Oil Sub 115kV Bus Sec D (All 115 kV elements clear remotely)" 1.00 "P5" "" "" 0	P5	Non-Redundant battery supply/Relay	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue
3710 "P7-1 - Fault on Line Midway*-Wheeler Ridge #1 230 kV ckt 1 and Line Midway*-Wheeler Ridge 230 kV ckt 2" 1.00 "P7" "" "" 0	P7	DCTL	No Issue	No Issue	No Issue	No Issue	No Issue	No Issue

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)									Potential Mitigation Solutions
			2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast	

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

Substation										Potential Mitigation Solutions
	2026 Summer Peak	2029 Summer Peak	2034 Summer Peak	2026 Spring Off-Peak	2029 Spring Off-Peak	2029 Summer-Off Peak	2026 SP Heavy Renewable & Min Gas Gen	2026 OP Sensitivity	2029 SP High CEC Forecast	

No single source substation with more than 100 MW