2016-2017 ISO Reliability Assessment - Preliminary Study Results

Study Area: PG&E North Valley

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
1	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	Normal	110	111	118	<100	<100	116	113	111	124	117	Short Term: Limit Load at Anita Substation, Long Term: Anita Substation Project
2	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	Normal	110	111	118	<100	<100	116	113	111	124	117	Load Cap at Anita Substation; Transfer load to near by distribution substation
3	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	Normal	119	123	130	<100	<100	124	126	123	136	130	Load Cap at Anita Substation; Transfer load to near by distribution substation
4	31464 COTWDPGE 115 30104 COTWD_E2 230 1	P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P1	Single Contingency	<100	<100	<100	<100	101	<100	<100	<100	<100	<100	Mitigation under review
5	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	148	154	<100	<100	<100	160	158	154	<100	<100	Short Term: SPS, Long Term: ReconductorProject
6	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P1	Single Contingency	<100	<100	<100	<100	<100	102	102	<100	<100	<100	Sensitivity under review
7	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	105	110	<100	<100	<100	113	113	110	<100	<100	Short Term: SPS, Long Term: ReconductorProject
8	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P1	Single Contingency	<100	<100	<100	<100	<100	102	102	<100	<100	<100	Sensitivity under review
9	30108 BRNY_FST 230 30185 PIT 1 230 1	P2-4:A3:4:_ROUND MT 230kV - Section 1E & 1D	P2	Single Contingency	<100	<100	<100	101	<100	<100	<100	<100	<100	<100	Generation re-dispatch
10	31459 OREGNTRL 115 31469 SPI_AND 115 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	126	<100	<100	<100	<100	<100	Generation re-dispatch
11	31464 COTWDPGE 115 30104 COTWD_E2 230 1	P2-2:A3:35:_COTWDPGE 115kV Section 2F	P2	Single Contingency	<100	<100	<100	<100	101	<100	<100	<100	<100	<100	Generation re-dispatch
12	31464 COTWDPGE 115 31466 JESSUPJ1 115 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	111	<100	<100	<100	<100	<100	Generation re-dispatch
13	31466 JESSUPJ1 115 31469 SPI_AND 115 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	104	<100	<100	<100	<100	<100	Generation re-dispatch
14	31468 CASCADE 115 31459 OREGNTRL 115 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	121	<100	<100	<100	<100	<100	Generation re-dispatch
15	31480 WYANDTTE 115 31516 WYANDJT2 115 1	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	159	119	160	<100	<100	160	163	160	NConv	NConv	Long Term: Cascade - Benton 60 kV Line Project and New Bridgeville - Gaberville 115 kV Line Project

Thermal Overloads

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
16	31497 NDAME J 115 31498 SYCAMORE 115 1	P2-3:A3:50:_BUTTE - MD 115kV & BUTTE-CHICO B-TBLE MTN line	P2	Single Contingency	112	106	<100	<100	<100	118	111	106	<100	<100	Short Term: SPS, Long Term: ReconductorProject
17	31500 BUTTE 115 31504 TBLE MTN 115 2	P2-4:A3:26:_TBLE MTN 115kV - Section 2E & 1E	P2	Single Contingency	<100	<100	<100	<100	<100	<100	<100	<100	107	<100	Sensitivity under review
18	31501 CHICOTP1 115 31504 TBLE MTN 115 1	P2-4:A3:25:_TBLE MTN 115kV - Section 2E & 2D	P2	Single Contingency	<100	<100	<100	<100	<100	<100	<100	<100	109	<100	Sensitivity under review
19	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency	<100	147	133	138	183	<100	148	151	135	136	Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
20	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency	<100	144	129	137	181	<100	145	148	131	133	Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
21	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency	<100	160	143	155	206	<100	160	165	145	147	Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
22	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	126	<100	<100	<100	<100	<100	Generation re-dispatch
23	31572 GIRVAN 60.0 31574 ANDERSON 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	125	<100	<100	<100	<100	<100	Generation re-dispatch
24	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	111	<100	<100	<100	<100	100	Generation re-dispatch
25	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	111	<100	169	257	<100	108	<100	<100	<100	Short Term: SPS, Long Term: ReconductorProject
26	31576 WNTU PMS 60.0 31578 LOMS JCT 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	<100	122	<100	<100	<100	<100	<100	Generation re-dispatch
27	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	232	358	<100	<100	<100	<100	<100	Generation re-dispatch
28	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency	<100	127	112	129	173	<100	127	131	112	115	Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
29	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency	<100	<100	<100	228	354	<100	<100	<100	<100	<100	Generation re-dispatch

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
30	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P2-2:A3:61:_COLEMAN 60kV Section 1D	P2	Single Contingency	144	150	<100	<100	<100	156	153	150	<100	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: Cottonwood - Red Bluff No. 2 60 kV Line Project
31	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P2-2:A3:61:_COLEMAN 60kV Section 1D	P2	Single Contingency	144	150	<100	<100	<100	156	153	150	<100	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: Cottonwood - Red Bluff No. 2 60 kV Line Project
32	31482 PALERMO 115 31516 WYANDJT2 115 2	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	NConv	NConv	NConv	NConv	143	NConv	NConv	NConv	NConv	NConv	Mitigation under review
33	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	NConv	NConv	NConv	NConv	112	NConv	NConv	NConv	NConv	NConv	Mitigation under review
34	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	NConv	NConv	NConv	NConv	134	NConv	NConv	NConv	NConv	NConv	Mitigation under review
35	31516 WYANDJT2 115 31512 BIG BEND 115 2	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	NConv	NConv	NConv	NConv	143	NConv	NConv	NConv	NConv	NConv	Mitigation under review
36	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	144	149	<100	<100	<100	155	153	150	<100	<100	Mitigation under review
37	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	144	149	<100	<100	<100	155	153	150	<100	<100	Mitigation under review
38	30108 BRNY_FST 230 30185 PIT 1 230 1	P1-1:A3:76:_COLUSGT1 18kV & COLUSGT2 18kV & COLUSST1 18kV Gen Units & P1-2:A3:15:_CARBERRY SW STA-ROUND MTN 230kV [5410]	P3	Multiple Contingency	<100	<100	<100	100	<100	<100	<100	<100	<100	<100	Generation re-dispatch
39	30110 GLENN 230 31722 GLENN 60.0 2	P1-1:A3:56:_BLCKBUTT 9kV Gen Unit 1 & P1-3:A3:81:_GLENN 230/60kV TB 1	P3	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	<100	100	<100	Mitigation under review
40	31464 COTWDPGE 115 30104 COTWD_E2 230 1	P1-1:A3:10:_PIT 4 14kV Gen Unit 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P3	Multiple Contingency	<100	<100	<100	100	<100	<100	<100	<100	<100	<100	Generation re-dispatch
41	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-1:A3:37:_CRBU 1 12kV Gen Unit 1 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	NConv	<100	<100	<100	<100	NConv	<100	NConv	<100	<100	Mitigation under review
42	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-1:A3:39:_CRESTA 12kV Gen Unit 2 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	<100	<100	NConv	<100	<100	<100	<100	<100	NConv	NConv	Mitigation under review
43	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-1:A3:39:_CRESTA 12kV Gen Unit 2 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	<100	<100	NConv	<100	<100	<100	<100	<100	<100	NConv	Mitigation under review
44	31488 GRIZ JCT 115 31492 GRIZZLY1 115 1	P1-1:A3:37:_CRBU 1 12kV Gen Unit 1 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	NConv	<100	<100	Mitigation under review

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
45	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-1:A3:39:_CRESTA 12kV Gen Unit 2 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	<100	<100	NConv	<100	<100	<100	<100	<100	NConv	NConv	Mitigation under review
46	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:37:_CRBU 1 12kV Gen Unit 1 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	NConv	<100	<100	<100	<100	NConv	<100	NConv	<100	<100	Mitigation under review
47	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:39:_CRESTA 12kV Gen Unit 2 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P3	Multiple Contingency	<100	<100	NConv	<100	<100	<100	<100	<100	NConv	NConv	Mitigation under review
48	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	148	154	<100	<100	<100	160	158	154	<100	<100	Mitigation under review
49	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P3	Multiple Contingency	<100	<100	<100	<100	<100	102	102	<100	<100	<100	Mitigation under review
50	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	105	110	<100	<100	<100	113	113	110	<100	<100	Mitigation under review
51	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P3	Multiple Contingency	<100	<100	<100	<100	<100	102	102	<100	<100	<100	Mitigation under review
52	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-1:A3:76:_COLUSGT1 18kV & COLUSGT2 18kV & COLUSST1 18kV Gen Units & P1-2:A3:100:_COTWD_F-NewBus #1 230kV [0]	P3	Multiple Contingency	<100	<100	101	<100	<100	<100	<100	<100	101	101	Mitigation under review
53	30105 COTWD_E 230 30245 ROUND MT 230 3	P1-2:A3:3:_ROUND MTN-COTTONWOOD #2 230kV [5640] & P1-3:A3:1:_ROUND MT 500/230kV TB 1	P6	Multiple Contingency	100	100	100	100	<100	100	100	100	100	<100	Mitigation under review potential SPS
54	30108 BRNY_FST 230 30185 PIT 1 230 1	P1-2:A3:31:_TBL MT E-THERMLTO 230kV [0] & P1-2:A3:15:_CARBERRY SW STA-ROUND MTN 230kV [5410]	P6	Multiple Contingency	<100	<100	<100	100	<100	<100	<100	<100	<100	<100	Mitigation under review potential SPS
55	30108 BRNY_FST 230 30185 PIT 1 230 1	P1-2:A3:62:_COTTONWOOD-BENTON #1 60kV [6640] & P1-2:A3:15:_CARBERRY SW STA-ROUND MTN 230kV [5410]	P6	Multiple Contingency	<100	<100	<100	<100	100	<100	<100	<100	<100	<100	Mitigation under review potential SPS
57	30110 GLENN 230 31722 GLENN 60.0 2	P1-4:A3:1:_CORNING SVD=v & P1-3:A3:81:_GLENN 230/60kV TB 1	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	<100	100	<100	Mitigation under review potential SPS
58	30300 TBL MT D 230 30325 PALERMO 230 1	P1-2:A3:29:_TBL MT D-TBL MT E 230kV [0] & P1-2:A3:28:_TABLE MTN-RIO OSO 230kV [5700]	P6	Multiple Contingency	<100	<100	104	105	111	<100	<100	<100	<100	104	Mitigation under review potential SPS

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
59	30300 TBL MT D 230 30330 RIO OSO 230 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440]	P6	Multiple Contingency	NConv	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
60	30303 TBL MT E 230 38621 HYATT2 230 2	P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440] & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	NConv	<100	<100	Sensitivity under review
61	30303 TBL MT E 230 38621 HYATT2 230 2	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Sensitivity under review
62	31091 RDGE CBN 60.0 31093 HYMPOMJT 60.0 1	P1-2:A3:35:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	101	<100	102	<100	<100	101	102	<100	<100	Mitigation under review potential SPS
63	31459 OREGNTRL 115 31469 SPI_AND 115 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	127	<100	<100	<100	<100	<100	Mitigation under review potential SPS
64	31459 OREGNTRL 115 31469 SPI_AND 115 1	P1-3:A3:5:_COTWD_E 230/60kV TB 3 & P1-3:A3:4:_COTWD_E2 230/60kV TB 2	P6	Multiple Contingency	120	107	<100	<100	<100	<100	116	108	<100	<100	Mitigation under review potential SPS
65	31464 COTWDPGE 115 30104 COTWD_E2 230 1	P1-2:A3:66:_MTN GATE JCT-CASCADE 60kV [7640] & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	100	105	<100	<100	<100	<100	<100	Mitigation under review potential SPS
66	31464 COTWDPGE 115 31466 JESSUPJ1 115 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	112	<100	<100	<100	<100	<100	Mitigation under review potential SPS
67	31464 COTWDPGE 115 31466 JESSUPJ1 115 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	114	<100	<100	<100	<100	<100	108	<100	<100	<100	Mitigation under review potential SPS
68	31466 JESSUPJ1 115 31469 SPI_AND 115 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	105	<100	<100	<100	<100	<100	Mitigation under review potential SPS
69	31468 CASCADE 115 31459 OREGNTRL 115 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	122	<100	<100	<100	<100	<100	Mitigation under review potential SPS
70	31468 CASCADE 115 31459 OREGNTRL 115 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	108	<100	<100	<100	<100	<100	103	<100	<100	<100	Mitigation under review potential SPS
71	31482 PALERMO 115 31506 HONC JT1 115 1	P1-2:A3:29:_TBL MT D-TBL MT E 230kV [0] & P1-2:A3:28:_TABLE MTN-RIO OSO 230kV [5700]	P6	Multiple Contingency	<100	<100	<100	106	<100	<100	<100	<100	<100	<100	Mitigation under review potential SPS
72	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440] & P1-2:A3:54:_PALERMO-WYANDOTTE 115kV [4315]	P6	Multiple Contingency	125	<100	129	<100	<100	130	<100	<100	139	129	Mitigation under review potential SPS

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
73	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:37:_CRBU 1 12kV Gen Unit 1	P6	Multiple Contingency	NConv	<100	NConv	<100	<100	NConv	<100	<100	NConv	NConv	Mitigation under review potential SPS
74	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:37:_CRBU 1 12kV Gen Unit 1	P6	Multiple Contingency	NConv	<100	NConv	<100	<100	NConv	<100	NConv	NConv	NConv	Mitigation under review potential SPS
75	31500 BUTTE 115 31504 TBLE MTN 115 2	P1-2:A3:49:_SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115kV [4314] & P1-2:A3:51:_BUTTE-CHICO B-TBLE MTN 115kV [3910]	P6	Multiple Contingency	125	119	<100	<100	<100	132	125	119	<100	<100	Mitigation under review potential SPS
76	31501 CHICOTP1 115 31504 TBLE MTN 115 1	P1-2:A3:49:_SYCAMORE CREEK-NOTRE DAME-TABLE MTN 115kV [4314] & P1-2:A3:52:_TABLE MTN-BUTTE #2 115kV [3920]	P6	Multiple Contingency	126	121	<100	<100	<100	132	125	121	<100	<100	Mitigation under review potential SPS
77	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:37:_CRBU 1 12kV Gen Unit 1 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P6	Multiple Contingency	NConv	<100	<100	<100	<100	NConv	<100	NConv	<100	<100	Mitigation under review potential SPS
78	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:39:_CRESTA 12kV Gen Unit 2 & P1-3:A3:22:_CARIBOU 230/230kV TB 11	P6	Multiple Contingency	100	100	NConv	100	97	100	100	100	NConv	NConv	Mitigation under review potential SPS
79	31553 BIG BAR 60.0 31093 HYMPOMJT 60.0 1	P1-2:A3:35:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	101	<100	101	<100	<100	101	102	<100	<100	Mitigation under review potential SPS
80	31555 TAP 65 60.0 31553 BIG BAR 60.0 1	P1-2:A3:35:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	100	<100	<100	Sensitivity under review
81	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	P1-2:A3:37:_TRINITY-COTTONWOOD 115kV [4040] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	<100	<100	<100	191	<100	<100	<100	<100	<100	Mitigation under review potential SPS
82	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	<100	<100	<100	<100	<100	100	104	<100	<100	<100	Mitigation under review potential SPS
83	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	P1-2:A3:37:_TRINITY-COTTONWOOD 115kV [4040] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	<100	<100	<100	189	<100	<100	<100	<100	<100	Mitigation under review potential SPS

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
84	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	100	<100	<100	<100	Mitigation under review potential SPS
85	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	107	<100	<100	<100	<100	119	<100	<100	<100	<100	Mitigation under review potential SPS
86	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	P1-2:A3:37:_TRINITY-COTTONWOOD 115kV [4040] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency	<100	100	101	101	216	<100	100	101	101	101	Mitigation under review potential SPS
87	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	111	<100	<100	<100	<100	123	<100	<100	<100	<100	Mitigation under review potential SPS
88	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	127	<100	<100	<100	<100	<100	Mitigation under review potential SPS
89	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	106	<100	<100	<100	<100	NConv	100	<100	<100	<100	Mitigation under review potential SPS
90	31572 GIRVAN 60.0 31574 ANDERSON 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	127	<100	<100	<100	<100	<100	Mitigation under review potential SPS
91	31572 GIRVAN 60.0 31574 ANDERSON 60.0 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
92	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:63:_COTTONWOOD-BENTON #2 60kV [6650]	P6	Multiple Contingency	118	101	<100	<100	<100	127	105	101	100	<100	Mitigation under review potential SPS
93	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	<100	<100	<100	112	<100	<100	<100	<100	101	Mitigation under review potential SPS
94	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	112	<100	171	260	<100	109	<100	<100	<100	Mitigation under review potential SPS
95	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	178	155	<100	<100	<100	NConv	169	156	<100	<100	Mitigation under review potential SPS
96	31578 LOMS JCT 60.0 31592 DESCHUTS 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
97	31578 LOMS JCT 60.0 31592 DESCHUTS 60.0 1	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
98	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	173	<100	235	361	<100	169	122	<100	<100	Mitigation under review potential SPS
99	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
100	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency	<100	167	<100	231	357	<100	163	125	<100	<100	Mitigation under review potential SPS
101	31583 Q720TP 60.0 31596 SOUTH 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS
102	31583 Q720TP 60.0 31596 SOUTH 60.0 1	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
103	31592 DESCHUTS 60.0 31594 VOLTA 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS
104	31592 DESCHUTS 60.0 31594 VOLTA 60.0 1	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
105	31594 VOLTA 60.0 31583 Q720TP 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS
106	31594 VOLTA 60.0 31583 Q720TP 60.0 1	P1-2:A3:79:_PEACHTON-PEASE 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Mitigation under review potential SPS
107	31596 SOUTH 60.0 31600 INSKIP 60.0 1	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS
108	31596 SOUTH 60.0 31600 INSKIP 60.0 1	P1-2:A3:77:_PIT #1-HAT CREEK #2-BURNEY 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	NConv	<100	<100	<100	<100	<100	<100	<100	<100	<100	Mitigation under review potential SPS

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
109	31600 INSKIP 60.0 31602 COLEMAN 60.0 1	P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0] & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	NConv	NConv	<100	<100	Mitigation under review potential SPS
110	31600 INSKIP 60.0 31602 COLEMAN 60.0 1	P1-2:A3:77:_PIT #1-HAT CREEK #2-BURNEY 60kV [0] & P1-2:A3:71:_COTTONWD-COLEMAN 60kV [0]	P6	Multiple Contingency	NConv	<100	<100	<100	<100	<100	<100	<100	<100	<100	Mitigation under review potential SPS
111	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	148	154	<100	<100	<100	160	158	154	<100	<100	Mitigation under review potential SPS
112	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P6	Multiple Contingency	96	99	<100	<100	<100	102	102	99	<100	<100	Mitigation under review potential SPS
113	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	105	110	<100	<100	<100	113	113	110	<100	<100	Mitigation under review potential SPS
114	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P1-1:A3:1:_SPIAND2 13kV Gen Unit 1 & P1-2:A3:72:_COLEMAN-RED BLUFF 60kV [0]	P6	Multiple Contingency	96	99	<100	<100	<100	102	102	99	<100	<100	Mitigation under review potential SPS
115	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-1:A3:76:_COLUSGT1 18kV & COLUSGT2 18kV & COLUSST1 18kV Gen Units & P1-2:A3:100:_COTWD_F-NewBus #1 230kV [0]	P6	Multiple Contingency	<100	<100	101	<100	<100	<100	<100	<100	101	101	Mitigation under review potential SPS
116	31677 GRS F JT 60.0 31689 ELIZ TWN 60.0 1	P1-2:A3:45:_CARIBOU-PALERMO 115kV [0] & P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440]	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	NConv	<100	<100	Sensitivity under review
117	31677 GRS F JT 60.0 31689 ELIZ TWN 60.0 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:37:_CRBU 1 12kV Gen Unit 1	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	NConv	<100	Sensitivity under review
118	31683 EST Q1 60.0 31689 ELIZ TWN 60.0 1	P1-2:A3:45:_CARIBOU-PALERMO 115kV [0] & P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440]	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	NConv	<100	<100	Sensitivity under review
119	31683 EST Q1 60.0 31689 ELIZ TWN 60.0 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:37:_CRBU 1 12kV Gen Unit 1	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	NConv	<100	Sensitivity under review
120	31688 SPI 60.0 38056 PLMS-SRA 60.0 1	P1-2:A3:45:_CARIBOU-PALERMO 115kV [0] & P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440]	P6	Multiple Contingency	NConv	<100	NConv	<100	<100	NConv	<100	NConv	NConv	NConv	Sensitivity under review
121	31690 CARIBOU 60.0 31677 GRS F JT 60.0 1	P1-2:A3:45:_CARIBOU-PALERMO 115kV [0] & P1-2:A3:22:_CARIBOU-TABLE MTN 230kV [4440]	P6	Multiple Contingency	<100	<100	<100	<100	<100	<100	<100	NConv	<100	<100	Sensitivity under review

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
122	31690 CARIBOU 60.0 31677 GRS F JT 60.0 1	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:37:_CRBU 1 12kV Gen Unit 1	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Sensitivity under review
123	32200 PEASE 115 31506 HONC JT1 115 1	P1-2:A3:29:_TBL MT D-TBL MT E 230kV [0] & P1-2:A3:28:_TABLE MTN-RIO OSO 230kV [5700]	P6	Multiple Contingency	<100	<100	<100	106	<100	<100	<100	<100	<100	<100	Mitigation under review potential SPS
124	45087 DELTA 115 31468 CASCADE 115 1	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	<100	<100	<100	<100	<100	NConv	<100	<100	<100	<100	Sensitivity under review
125	31500 BUTTE 115 31501 CHICOTP1 115 1	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain and Table Mountain-Butte No.2 115 kV Lines	P7	Multiple Contingency	110	107	<100	<100	<100	116	110	107	<100	<100	Mitigation under review
126	31501 CHICOTP1 115 31504 TBLE MTN 115 1	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain and Table Mountain-Butte No.2 115 kV Lines	P7	Multiple Contingency	126	121	<100	<100	<100	132	125	121	<100	<100	Mitigation under review
127	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	147	153	<100	<100	<100	159	157	153	<100	<100	Mitigation under review
128	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	105	110	<100	<100	<100	113	113	110	<100	<100	Mitigation under review

Study Area: PG&E North Valley

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
1	CANAL TP 60 kV	P1-1:A3:8:_NEO REDB 14kV Gen Unit 1	P1	Single Contingency	10.1	8.9				10.3	9.2	8.9			Explore potential mitigation
2	CR CANAL 60 kV	P1-1:A3:8:_NEO REDB 14kV Gen Unit 1	P1	Single Contingency	10.1	8.9		5.0		10.4	9.2	8.9			North Valley Action Plan
3	NEO REDT 60 kV	P1-1:A3:8:_NEO REDB 14kV Gen Unit 1	P1	Single Contingency	10.1	8.9		5.0		10.4	9.3	9.0			Explore potential mitigation
4	RASN JNT 60 kV	P1-1:A3:8:_NEO REDB 14kV Gen Unit 1	P1	Single Contingency	10.1	8.9				10.3	9.2	8.9			Explore potential mitigation
5	RED BLFF 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	11.1	11.8				12.1	12.3	11.8			Explore potential mitigation
6	TYLER 60 kV	P1-1:A3:8:_NEO REDB 14kV Gen Unit 1	P1	Single Contingency	10.1	8.9				10.3	9.2	8.9			Explore potential mitigation
7	ANDERSON 60 kV	P2-3:A3:72:_COTTONWD - MA 60kV & COTTONWD-RED BLFF line	P2	Single Contingency	24.4					25.8		21.4			Explore potential mitigation
8	ANDERSON 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency		21.2					24.8				Explore potential mitigation
9	BIG BEND 115 kV	P2-2:A3:24:_TBL MT D 230kV Section 1D	P2	Single Contingency								Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
10	BIG BEND 115 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	11.2	Voltage Collapse	Voltage Collapse				Explore potential mitigation
11	BIG MDWS 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.2		13.3			13.3	11.0	13.4	13.5	13.2	Explore potential mitigation
12	BUTTVLLY 115 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	12.3		12.3			12.4	11.3	12.5	12.6	12.3	Expand scope of Caribou Thermal SPS
13	CARIBOU 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.6		13.7			13.8	12.2	13.8	14.0	13.7	Caribou Thermal SPS
14	CARIBOU 115 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	12.4		12.4			12.5	11.4	12.6	12.7	12.4	Caribou Thermal SPS
15	CASCADE 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		9.6			15.1		9.7	14.6		8.6	Expand scope of NVLY Action Plan
16	CASCADE 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.2			15.9		10.3	15.4		9.2	Expand scope of NVLY Action Plan
17	CHESTER 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.1		13.1			13.2	9.2	13.2	13.4	13.1	Caribou Thermal SPS
18	CLMN FSH 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency	Voltage Collapse	Voltage Collapse			5.2	Voltage Collapse	Voltage Collapse	Voltage Collapse			Explore potential mitigation
19	COTTONWD 60 kV	P2-3:A3:72:_COTTONWD - MA 60kV & COTTONWD-RED BLFF line	P2	Single Contingency	25.2					26.6		22.3			Explore potential mitigation
20	COTTONWD 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency		22.1	6.4				25.7				Explore potential mitigation
21	COTWD_E2 230 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		13.3	9.3	5.1	19.1		13.5	20.7	9.7	18.0	Explore potential mitigation

Study Area: PG&E North Valley

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
22	COTWDPGE 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		11.3	7.1		16.4		11.5	18.9	7.5	16.2	Explore potential mitigation
23	DIRYVLLE 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					7.7	Voltage Collapse	Voltage Collapse				Explore potential mitigation
24	DIRYVLLE 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						81.6			Explore potential mitigation
25	ELIZ TWN 60 kV	P2-2:A3:24:_TBL MT D 230kV Section 1D	P2	Single Contingency		Voltage Collapse			5.7		Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Expand scope of Caribou Thermal SPS
26	ELIZ TWN 60 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse		Voltage Collapse	Voltage Collapse		Voltage Collapse					Expand scope of Caribou Thermal SPS
27	EST QNCY 60 kV	P2-2:A3:24:_TBL MT D 230kV Section 1D	P2	Single Contingency		Voltage Collapse			6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
28	EST QNCY 60 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse		Voltage Collapse	Voltage Collapse							Explore potential mitigation
29	FRNCHGLH 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		8.6					8.7	13.3		9.2	North Valley Action Plan
30	FRNCHGLH 60 kV	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency				7.6	15.6						North Valley Action Plan
31	FRSTGLEN 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		6.4			11.3		6.5	10.4		7.5	Explore potential mitigation
32	GANSNER 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.9		14.0			14.0	12.4	14.1	14.2	13.9	North Valley Action Plan
33	GERBER 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					10.6	Voltage Collapse	Voltage Collapse				Explore potential mitigation
34	GERBER 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
35	GIRVAN 60 kV	P2-2:A3:62:_COTTONWD 60kV Section 1D	P2	Single Contingency	9.6	9.7				10.3	10.1	9.8		5.0	Explore potential mitigation
36	GRBR JCT 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					10.5	Voltage Collapse	Voltage Collapse				Explore potential mitigation
37	GRBR JCT 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						91.9			Explore potential mitigation
38	GRIZZLY1 115 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	5.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Expand Scope of Caribou Thermal SPS
39	GRYS FLT 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.8		13.9			13.9	12.4	14.0	14.1	13.9	Caribou Thermal SPS
40	HMLTN BR 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	12.7		12.8			12.9	9.9	12.9	13.0	12.7	North Valley Action Plan
41	HOWELLS 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.8		13.9			13.9	12.4	14.0	14.1	13.9	Caribou Thermal SPS

Study Area: PG&E North Valley

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
42	JESSUP 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.9	6.1		15.9		11.1	17.8	6.4	14.3	Explore potential mitigation
43	KESWICK 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		9.3			14.7		9.4	14.2		8.9	NVLY Action Plan
44	LP FB SP 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					10.5	Voltage Collapse	Voltage Collapse				Explore potential mitigation
45	LP FB SP 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
46	LS MLNSJ 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					7.7	Voltage Collapse	Voltage Collapse				Explore potential mitigation
47	LS MLNSJ 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
48	MTN GATE 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		9.7			15.3		9.9	14.8		8.7	Explore potential mitigation
49	OREGNTRL 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		7.3			11.5		7.4	12.0		7.9	Expand Scope of NVLY Action Plan
50	OREGNTRL 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.3			15.9		10.5	15.8		10.1	Expand Scope of NVLY Action Plan
51	PANRAMA 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		11.0	6.7		16.1		11.1	18.9	7.1	16.2	Explore potential mitigation
52	PLMS JCT 60 kV	P2-2:A3:24:_TBL MT D 230kV Section 1D	P2	Single Contingency		Voltage Collapse			6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
53	PLMS JCT 60 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse		Voltage Collapse	Voltage Collapse							Explore potential mitigation
54	PPL 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		9.8			15.3		9.9	14.9		8.7	North Valley Action Plan
55	RED BLFF 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					9.2		Voltage Collapse				Explore potential mitigation
56	RED BLFF 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
57	RED BLFF 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency						Voltage Collapse					Explore potential mitigation
58	SMPSN-AN 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.9	6.7		16.1		11.1	18.9	7.1	16.2	Explore potential mitigation
59	SPANSHCK 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	13.9		13.9			14.0	12.4	14.1	14.2	13.9	Caribou Thermal SPS
60	SPI 60 kV	P2-2:A3:24:_TBL MT D 230kV Section 1D	P2	Single Contingency		Voltage Collapse			6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
61	SPI 60 kV	P2-4:A3:22:_TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	Voltage Collapse		Voltage Collapse	Voltage Collapse							Explore potential mitigation

Study Area: PG&E North Valley

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
62	SPIAND2 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.8			15.7		11.0	17.5		13.7	Explore potential mitigation
63	STLLWATR 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					15.1			14.6			NVLY Action Plan
64	TAP 65 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					11.3			11.9			Explore potential mitigation
65	TRINITY 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					11.3			12.0			Explore potential mitigation
66	TRINITY 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					11.7			12.3			Explore potential mitigation
67	TYLERJT 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					10.5	Voltage Collapse	Voltage Collapse				Explore potential mitigation
68	TYLERJT 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse			Voltage Collapse			91.8			Explore potential mitigation
69	ULTR WSD 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	12.3		12.4			12.5		12.4	12.6	12.3	North Valley Action Plan
70	VINA 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency					7.7	Voltage Collapse	Voltage Collapse				Explore potential mitigation
71	VINA 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						82.5			Explore potential mitigation
72	WESTWOOD 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	12.3		12.3			12.4		12.4	12.6	12.3	North Valley Action Plan
73	WHEELBR 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		10.9			16.1		11.1	18.9		16.2	Explore potential mitigation
74	WILDWOOD 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					12.7			12.8		10.0	Explore potential mitigation
75	WYANDTTE 115 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse			Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
76	BIG BEND 115 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	10.6	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
77	CANAL TP 60 kV	P2-1:A3:95:_NEO REDT-RASN JNT 60kV [0] No Fault	P2-1	Single Contingency	9.9	8.7				10.2	9.0	8.8			Explore potential mitigation
78	CR CANAL 60 kV	P2-1:A3:95:_NEO REDT-RASN JNT 60kV [0] No Fault	P2-1	Single Contingency	9.9	8.7				10.2	9.1	8.8			North Valley Action Plan
79	DIRYVLLE 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	10.1	10.6				11.0	10.9	10.7			Explore potential mitigation
80	ELIZ TWN 60 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	5.7	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Expand Scope of Caribou Thermal SPS
81	EST Q1 60 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation

Study Area: PG&E North Valley

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
82	EST QNCY 60 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
83	GRIZ JCT 115 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	5.1	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Expand Scope of Caribou Thermal SPS
84	LS ML JT 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	10.2	10.8				11.1	11.1	10.8			Explore potential mitigation
85	PLMS JCT 60 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
86	RASN JNT 60 kV	P2-1:A3:95:_NEO REDT-RASN JNT 60kV [0] No Fault	P2-1	Single Contingency	9.9	8.7				10.2	9.0	8.8			Explore potential mitigation
87	SPI 60 kV	P2-1:A3:14:_CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2-1	Single Contingency	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	6.2	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Explore potential mitigation
88	TYLER 60 kV	P2-1:A3:95:_NEO REDT-RASN JNT 60kV [0] No Fault	P2-1	Single Contingency	9.9	8.7				10.2	9.0	8.8			Explore potential mitigation
89	VINA 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	10.3	10.8				11.2	11.1	10.9			Explore potential mitigation
90	RED BLFF 60 kV	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	10.9	11.6				11.9	12.0	11.6			Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
1	DIRYVLLE 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	0.89	0.89				0.88	0.88	0.89			Explore potential mitigation
2	LS ML JT 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	0.88	0.87				0.87	0.87	0.87			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
3	LS MLNSJ 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	0.88	0.87				0.87	0.87	0.87			Explore potential mitigation
4	RED BLFF 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	0.87	0.86				0.86	0.85	0.86			Explore potential mitigation
5	VINA 60 kV	P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency	0.88	0.87				0.87	0.86	0.87			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
6	HAT CRK1 60kV	P1-3:A3:59:_HAT CRK1 6.6/60kV TB 1		Single Contingency				1.10							Install reactive device
7	HAT CRK2 60 kV	P1-3:A3:59:_HAT CRK1 6.6/60kV TB 1		Single Contingency				1.10							Install reactive device
8	PIT 1 60 kV	P1-3:A3:59:_HAT CRK1 6.6/60kV TB 1		Single Contingency				1.10							Install reactive device
9	ANDERSON 60 kV	P2-3:A3:72:_COTTONWD - MA 60kV & COTTONWD-RED BLFF line	P2	Single Contingency	0.78					0.76		0.81			North Valley Action Plan
10	ANDERSON 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency		0.81					0.77				North Valley Action Plan
11	ANTLER 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.84			North Valley Action Plan
12	BIG MDWS 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.88		0.88	0.88	0.88	Expand Scope of Caribou Thermal SPS
13	CARIBOU 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.88		0.88	0.88	0.88	Expand Scope of Caribou Thermal SPS
14	CASCADE 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.86			0.86			Expand Scope of NVLY Action Plan
15	CASCADE 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.85		0.90	0.85			Expand Scope of NVLY Action Plan
16	CHESTER 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.85		0.85			0.85		0.85	0.85	0.85	Expand Scope of Caribou Thermal SPS
17	CLMN FSH 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency	Voltage Collapse	Voltage Collapse				Voltage Collapse	Voltage Collapse	Voltage Collapse			Explore potential mitigation
18	CLMN TAP 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency	Voltage Collapse	Voltage Collapse				Voltage Collapse	Voltage Collapse	Voltage Collapse			Explore potential mitigation
19	COTTONWD 60 kV	P2-3:A3:72:_COTTONWD - MA 60kV & COTTONWD-RED BLFF line	P2	Single Contingency	0.78					0.77		0.81			Explore potential mitigation
20	COTTONWD 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency		0.82					0.78				Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
21	COTWD_E2 230 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.85	0.90		0.81		0.84	0.77	0.89	0.81	Explore potential mitigation
22	COTWDPGE 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.88			0.84		0.88	0.81		0.84	Explore potential mitigation
23	DIRYVLLE 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Explore potential mitigation
24	DIRYVLLE 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
25	FRNCHGLH 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency								0.87			Expand Scope of North Valley Action Plan
26	FRNCHGLH 60 kV	P2-4:A3:8:_COTWDPGE 115kV - Section 2D & 1D	P2	Single Contingency					0.85						Expand Scope of North Valley Action Plan
27	FRSTGLEN 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.88						Explore potential mitigation
28	GANSNER 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.87		0.87			0.87	0.89	0.87	0.87	0.87	Expand Scope of North Valley Action Plan
29	GERBER 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Explore potential mitigation
30	GERBER 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
31	GERBER 60 kV	P2-3:A3:73:_COTTONWD - MA 60kV & COTTONWOOD #2 line	P2	Single Contingency											Explore potential mitigation
32	GRYS FLT 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.87	0.90	0.88	0.87	0.88	Expand Scope of Caribou Thermal SPS
33	HMLTN BR 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.88		0.88	0.88	0.88	Expand Scope of North Valley Action Plan
34	HOWELLS 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.87	0.90	0.88	0.87	0.88	Expand Scope of Caribou Thermal SPS
35	JESSUP 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.82		0.86	Explore potential mitigation
36	KESWICK 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.86			0.86			Expand Scope of North Valley Action Plan
37	LP FB SP 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Explore potential mitigation
38	LP FB SP 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
39	LS ML JT 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
40	LS ML JT 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
41	LS MLNSJ 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Explore potential mitigation
42	LS MLNSJ 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
43	MTN GATE 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.84			North Valley Action Plan
44	OREGNTRL 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency								0.89			Expand Scope of North Valley Action Plan
45	OREGNTRL 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.90			0.85		0.90	0.84			Explore potential mitigation
46	PANRAMA 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
47	PPL 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.84			North Valley Action Plan
48	RED BLFF 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency							Voltage Collapse				Explore potential mitigation
49	RED BLFF 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
50	RED BLFF 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency						Voltage Collapse					Explore potential mitigation
51	RWSN J2 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency							Voltage Collapse				Explore potential mitigation
52	RWSN J2 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
53	RWSN J2 60 kV	P2-3:A3:73:_COTTONWD - MA 60kV & COTTONWOOD #2 line	P2	Single Contingency											Explore potential mitigation
54	RWSN J2 60 kV	P2-3:A3:74:_COTTONWD - MA 60kV & COTTONWOOD #1 line	P2	Single Contingency						Voltage Collapse					Explore potential mitigation
55	SMPSN-AN 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
56	SPANSHCK 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.87		0.87			0.87	0.90	0.87	0.87	0.87	Expand Scope of Caribou Thermal SPS
57	SPI_AND 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.82		0.87	Expand Scope of North Valley Action Plan
58	SPIAND2 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.83		0.87	Expand Scope of North Valley Action Plan
59	STLLWATR 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.86			0.85			Expand Scope of North Valley Action Plan
60	TAP 65 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.88			0.89			Explore potential mitigation
61	TRINITY 60 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.88			0.89			Explore potential mitigation

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
62	TYLERJT 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Explore potential mitigation
63	TYLERJT 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Explore potential mitigation
64	ULTR WSD 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.88		0.88	0.88	0.88	Explore potential mitigation
65	VINA 60 kV	P2-2:A3:63:_COTTONWD 60kV Section MA	P2	Single Contingency						Voltage Collapse	Voltage Collapse				Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
66	VINA 60 kV	P2-3:A3:71:_COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	Voltage Collapse	Voltage Collapse						Voltage Collapse			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
67	WESTWOOD 60 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	0.88		0.88			0.88		0.88	0.88	0.88	Explore potential mitigation
68	WHEELBR 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
69	WILDWOOD 115 kV	P2-4:A3:18:_COTWD_F2 Section 2F & COTWD_E2 Section 2E 230kV	P2	Single Contingency					0.87			0.88			Explore potential mitigation
70	WYANDTTE 115 kV	P2-3:A3:44:_PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	Voltage Collapse	0.64	Voltage Collapse			Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	Voltage Collapse	North Valley Action Plan
71	CLMN JCT 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	0.89	0.89				0.88	0.88	0.89			Explore potential mitigation
72	DIRYVLLE 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	0.87	0.86				0.86	0.86	0.86			Explore potential mitigation
73	LS MLNSJ 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	0.86	0.85				0.85	0.85	0.85			Explore potential mitigation
74	VINA 60 kV	P2-1:A3:91:_COLEMAN-RED BLUFF 60kV [6440] (COLEMAN-CLMN JCT)	P2-1	Single Contingency	0.86	0.85				0.84	0.84	0.84			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
75	HAT CRK2 60 kV	P2-1:A3:105:_HAT CREEK #1-PIT #1 60kV [7020] (PIT 1-HAT CRK1)	P2-1	Single Contingency				1.1006							Install reactive device
76	PIT 1 60 kV	P2-1:A3:105:_HAT CREEK #1-PIT #1 60kV [7020] (PIT 1-HAT CRK1)	P2-1	Single Contingency				1.1013							Install reactive device
77	AMERESCO 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.88					0.87					Explore potential mitigation
78	AMERESCOTAP 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.88					0.87					Explore potential mitigation
79	BTTE CRK 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.87					0.85					Explore potential mitigation

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
80	CLARK RD 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.88					0.86					Explore potential mitigation
81	CLMN JCT 60 kV	P1-1:A3:69:_COLEMAN 7kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	0.90	0.89				0.89	0.89	0.89			Explore potential mitigation
82	CNTRVLLE 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.87					0.86					Explore potential mitigation
83	DE SABLA 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.87					0.85					Explore potential mitigation
84	DIRYVLLE 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	0.89	0.88				0.88	0.88	0.88			Explore potential mitigation
85	DRHM JCA 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.88					0.87					Explore potential mitigation
86	DRHMSW45 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.88					0.87					Explore potential mitigation
87	LS MLNSJ 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	0.88	0.87				0.87	0.86	0.87			Explore potential mitigation
88	MCNE JCT 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.89					0.88					Explore potential mitigation
89	RED BLFF 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	0.87	0.86				0.85	0.85	0.86			Explore potential mitigation
90	TBLE MTN 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.90					0.88					Explore potential mitigation
91	TRES VIS 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P3	Multiple Contingency	0.90					0.89					Explore potential mitigation
92	VINA 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P3	Multiple Contingency	0.88	0.86				0.86	0.86	0.86			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
93	AMERESCO 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.88					0.87					Explore potential mitigation

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
94	ANDERSON 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.85	0.87					0.85	0.87			North Valley Action Plan
95	ANTLER 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.79	0.76			0.85	0.76	0.69	0.75			North Valley Action Plan
96	ANTLER 60 kV	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	0.65			0.88		0.60					North Valley Action Plan
97	APT ORVC 60 kV	P1-2:A3:80:_PALERMO-OROVILLE #2 60kV [7740] & P1-3:A3:33:_PALERMO 230/230kV TB 1	P6	Multiple Contingency	0.87	0.89	0.89			0.86	0.88	0.90	0.88	0.89	Explore potential mitigation
98	BENTON 60 kV	P1-3:A3:5:_COTWD_E 230/60kV TB 3 & P1-3:A3:4:_COTWD_E2 230/60kV TB 2	P6	Multiple Contingency	0.87	0.89					0.87	0.88			Explore potential mitigation
99	BIG MDWS 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.89		Expand Scope of Caribou Thermal SPS
100	BTTE CRK 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.87					0.85					Explore potential mitigation
101	CARIBOU 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.90		Expand Scope of Caribou Thermal SPS
102	CASCADE 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.81	0.78			0.86	0.78	0.71	0.77			Expand Scope of NVLY Action Plan
103	CASCADE 60 kV	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	0.68			0.89		0.63					Expand Scope of NVLY Action Plan
104	CHESTER 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.87		Expand Scope of Caribou Thermal SPS
105	CLARK RD 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.88					0.86					Explore potential mitigation
106	CLMN FSH 60 kV	P1-3:A3:5:_COTWD_E 230/60kV TB 3 & P1-3:A3:4:_COTWD_E2 230/60kV TB 2	P6	Multiple Contingency	0.86	0.88					0.86	0.88			Explore potential mitigation

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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
107	CNTRVLLE 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.87					0.86					Explore potential mitigation
108	COLEMAN 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.86	0.88					0.86	0.88			Explore potential mitigation
109	COTTONWD 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.86	0.88					0.86	0.87			Explore potential mitigation
110	COWCK TP 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.90										Explore potential mitigation
111	DE SABLA 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.87					0.85					Explore potential mitigation
112	DESCHUTS 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.89						0.89				Expand Scope of NVLY Action Plan
113	DIRYVLLE 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	0.89	0.88				0.88	0.88	0.88			Explore potential mitigation
114	DRHM JCA 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.88					0.87					Explore potential mitigation
115	DRHMSW45 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.88					0.87					Explore potential mitigation
116	ELIZ TWN 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:51:_HAMIL.BR 2kV Gen Unit 2	P6	Multiple Contingency									0.88		Expand Scope of Caribou Thermal SPS
117	EST QNCY 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.87		Explore potential mitigation
118	FRNCHGLH 60 kV	P1-2:A3:37:_TRINITY-COTTONWOOD 115kV [4040] & P1-2:A3:36:_WILDWOOD-COTWDPGE #1 115kV [1110]	P6	Multiple Contingency					0.86						Expand Scope of NVLY Action Plan
119	FRNCHGLH 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency		0.87				0.89	0.83	0.87			Expand Scope of NVLY Action Plan

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
120	FRSTGLEN 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency					0.89						Explore potential mitigation
121	GANSNER 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.88		Expand Scope of NVLY Action Plan
122	GERBER 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.81	0.83					0.81	0.83			Explore potential mitigation
123	GRYS FLT 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:51:_HAMIL.BR 2kV Gen Unit 2	P6	Multiple Contingency									0.89		Expand Scope of Caribou Thermal SPS
124	HMLTN BR 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.89		Expand Scope of NVLY Action Plan
125	HOWELLS 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.89		Expand Scope of Caribou Thermal SPS
126	INSKIP 60 kV	P1-3:A3:5:_COTWD_E 230/60kV TB 3 & P1-3:A3:4:_COTWD_E2 230/60kV TB 2	P6	Multiple Contingency	0.88						0.88				Explore potential mitigation
127	JESSUP 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.82		0.86	Explore potential mitigation
128	KESWICK 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.84	0.81			0.88	0.82	0.75	0.80			Expand Scope of NVLY Action Plan
129	LS MLNSJ 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	0.88	0.87				0.87	0.86	0.87			Explore potential mitigation
130	LSNA PCC 60 kV	P1-2:A3:80:_PALERMO-OROVILLE #2 60kV [7740] & P1-3:A3:33:_PALERMO 230/230kV TB 1	P6	Multiple Contingency	0.87	0.89	0.89			0.86	0.88	0.90	0.88	0.89	Explore potential mitigation
131	MCNE JCT 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.89					0.88					Explore potential mitigation
132	MTN GATE 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.80	0.76			0.85	0.77	0.70	0.75			North Valley Action Plan

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
133	OREGNTRL 60 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency								0.89			Expand Scope of NVLY Action Plan
134	OREGNTRL 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.90			0.85		0.90	0.84			Expand Scope of NVLY Action Plan
135	OROVILLE 60 kV	P1-2:A3:80:_PALERMO-OROVILLE #2 60kV [7740] & P1-3:A3:33:_PALERMO 230/230kV TB 1	P6	Multiple Contingency	0.86	0.89	0.89			0.85	0.87	0.89	0.87	0.89	Explore potential mitigation
136	PALERMO 60 kV	P1-2:A3:80:_PALERMO-OROVILLE #2 60kV [7740] & P1-3:A3:33:_PALERMO 230/230kV TB 1	P6	Multiple Contingency	0.89					0.88	0.90		0.90		Explore potential mitigation
137	PANRAMA 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
138	PPL 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.79	0.76			0.85	0.76	0.69	0.75			North Valley Action Plan
139	PPL 60 kV	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	0.65			0.88		0.60					North Valley Action Plan
140	Q720TP 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.90						0.90				Expand Scope of NVLY Action Plan
141	RED B JT 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.79	0.81					0.79	0.81			Explore potential mitigation
142	RED BLFF 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	0.87	0.86				0.85	0.85	0.86			Explore potential mitigation
143	SMPSN-AN 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
144	SOUTH 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.89						0.89				Explore potential mitigation
145	SPANSHCK 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.89		Expand Scope of Caribou Thermal SPS

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
146	SPI 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:50:_HAMIL.BR 2kV Gen Unit 1	P6	Multiple Contingency									0.87		Expand Scope of NVLY Action Plan
147	SPI_AND 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.83		0.86	Expand Scope of NVLY Action Plan
148	SPIAND2 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.83		0.86	Expand Scope of NVLY Action Plan
149	STLLWATR 60 kV	P1-2:A3:39:_CASCADE-COTTONWOOD 115kV [1240] & P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310]	P6	Multiple Contingency	0.82	0.78			0.86	0.79	0.72	0.77			Expand Scope of NVLY Action Plan
150	STLLWATR 60 kV	P1-2:A3:64:_BENTON-DESCHUTS-CASCADE 60kV [6310] & P1-3:A3:41:_CASCADE 115/60kV TB 1	P6	Multiple Contingency	0.68			0.90		0.63					Expand Scope of NVLY Action Plan
151	TAP 65 60 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency					0.89			0.89			Explore potential mitigation
152	TBLE MTN 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency	0.90					0.88					Explore potential mitigation
153	TKO TAP 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.90										Explore potential mitigation
154	TRES VIS 60 kV	P1-1:A3:66:_DE SABLA 7kV Gen Unit 1 & P1-3:A3:31:_TBL MT2M 230/230kV TB 1	P6	Multiple Contingency						0.89					Explore potential mitigation
155	TRINITY 60 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency					0.89			0.89			Explore potential mitigation
156	TYLERJT 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.83	0.85					0.83	0.85			Explore potential mitigation
157	ULTR WSD 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:51:_HAMIL.BR 2kV Gen Unit 2	P6	Multiple Contingency									0.89		Explore potential mitigation
158	VINA 60 kV	P1-1:A3:45:_VOLTA1-2 9kV Gen Unit 1 & P1-2:A3:73:_COTTONWD-RED BLFF 60kV [6440]	P6	Multiple Contingency	0.88	0.86				0.86	0.86	0.86			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2021 SP Heavy Renewable & Min Gas Gen	2018 SP No BTM-PV	2026 Retirement of QF Generations	
159	WESTWOOD 60 kV	P1-3:A3:22:_CARIBOU 230/230kV TB 11 & P1-1:A3:51:_HAMIL.BR 2kV Gen Unit 2	P6	Multiple Contingency									0.89		Explore potential mitigation
160	WHEELBR 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency		0.89			0.85		0.89	0.80		0.84	Explore potential mitigation
161	WHITMORE 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.90										Explore potential mitigation
162	WILDWOOD 115 kV	P1-3:A3:3:_COTWD_E2 230/115kV TB 1 & P1-3:A3:6:_COTWD_F2 230/115kV TB 4	P6	Multiple Contingency					0.87			0.88			Explore potential mitigation
163	WNTU PMS 60 kV	P1-3:A3:4:_COTWD_E2 230/60kV TB 2 & P1-3:A3:5:_COTWD_E 230/60kV TB 3	P6	Multiple Contingency	0.89						0.89				Expand Scope of NVLY Action Plan
164	PIT 1 60 kV	P1-2:A3:59:_PIT #1-MCARTHUR 60kV [7790] & P1-2:A3:76:_HAT CREEK #1-PIT #1 60kV [7020]	P6	Multiple Contingency			1.1003						1.1001	1.1	Install reactive device
165	DIRYVLLE 60 kV	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	0.90	0.89				0.88	0.88	0.89			Explore potential mitigation
166	LS MLNSJ 60 kV	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	0.88	0.88				0.87	0.87	0.88			Explore potential mitigation
167	RED BLFF 60 kV	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	0.87	0.86				0.86	0.86	0.86			Explore potential mitigation
168	VINA 60 kV	P7-1:A3:1_Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	0.88	0.87				0.87	0.87	0.87			Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
169	PIT 1 60 kV	P7-1:A3:30_HAT CREEK1-PIT1 and PIT1-HAT CREEK No2-BURNEY	P7	Multiple Contingency				1.1013							Install reactive device

Study Area: PG&E North Valley

Transient Stability

California ISO

ID	Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	Select..	Select..	Select..	Select..	Select..	
1	COTTONWD-RED BLFF 60kV [6440]	P1	Single Contingency			1								Under review with PTO .
2	PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency			22								Under review with PTO .
3	COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency				23							Under review with PTO .
4	TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency				2							Under review with PTO .
5	CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2	Single Contingency					15						Under review with PTO .
6	COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency	59										Under review with PTO .
7	COLEMAN 60kV Section 1D	P2	Single Contingency					3						Under review with PTO .
8	COLEMAN 60kV Section 1D	P2	Single Contingency	3										Under review with PTO .
9	COLEMAN 60kV Section 1D	P2	Single Contingency			1								Under review with PTO .
10	COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency		57									Under review with PTO .
11	COLEMAN 60kV Section 1D	P2	Single Contingency				3							Under review with PTO .
12	TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency		24									Under review with PTO .
13	COLEMAN 60kV Section 1D	P2	Single Contingency		1									Under review with PTO .
14	PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency				14							Under review with PTO .
15	CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2	Single Contingency			43								Under review with PTO .
16	CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2	Single Contingency	7										Under review with PTO .
17	COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency			5								Under review with PTO .
18	TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency					34						Under review with PTO .
19	CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2	Single Contingency		7									Under review with PTO .
20	COTTONWD - MA 60kV & COTTONWD-COLEMAN line	P2	Single Contingency					21						Under review with PTO .
21	PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency					14						Under review with PTO .
22	PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency	25										Under review with PTO .

Study Area: PG&E North Valley

Transient Stability

ID	Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	Select..	Select..	Select..	Select..	Select..	
23	CARIBOU-TABLE MTN 230kV [4440] (BELDENTP-TBL MT D)	P2	Single Contingency				5							Under review with PTO .
24	PALERMO - 1D 115kV & PALERMO-WYANDOTTE line	P2	Single Contingency		23									Under review with PTO .
25	TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency	24										Under review with PTO .
26	TBL MT D Section 1D & TBL MT E Section 1E 230kV	P2	Single Contingency			57								Under review with PTO .
27	Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency			9								Under review with PTO .
28	Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency		8									Under review with PTO .
29	Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency				10							Under review with PTO .
30	Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency					6						Under review with PTO .
31	Cottonwood-Benton No.1 and Cottonwood-Red Bluff 60 kV Lines	P7	Multiple Contingency	10										Under review with PTO .

Study Area: PG&E North Valley

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SLD-1														

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

Study Area: PG&E North Valley

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)										Potential Mitigation Solutions
		Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SS-1												

No single source substation with more than 100 MW Load