

Study Area: PG&E North Valley

Thermal Overloads



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-T-1	31480 WYANDTTE 115 31518 WYANDJT1 115 1	Normal	P0	N-0	<100.0	102.22	106.47	<100.0	<100.0				Explore potential mitigation
NYVL-T-2	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	<100.0	125.87	127.93	<100.0	<100.0				Long Term: Anita Substation Project
NYVL-T-3	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	<100.0	125.90	127.96	<100.0	<100.0				Long Term: Anita Substation Project
NYVL-T-4	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	<100.0	141.68	144.59	<100.0	<100.0				Long Term: Anita Substation Project
NYVL-T-5	31480 WYANDTTE 115 31518 WYANDJT1 115 1	Normal	P0	N-0	<100.0	<100.0	106.47	<100.0	<100.0				Explore potential mitigation
NYVL-T-6	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100.0	109.69	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-7	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	<100.0	125.87	127.93	<100.0	<100.0				Explore potential mitigation
NYVL-T-8	31731 CAPAYJCT 60.0 31736 HEADGATE 60.0 3	Normal	P0	N-0	<100.0	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-9	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	<100.0	125.90	127.96	<100.0	<100.0				Explore potential mitigation
NYVL-T-10	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	<100.0	141.68	144.59	<100.0	<100.0				Explore potential mitigation
NYVL-T-11	31480 WYANDTTE 115 31518 WYANDJT1 115 1	Normal	P0	N-0	<100.0	102.22	106.47	<100.0	<100.0				Explore potential mitigation
NYVL-T-12	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	<100.0	125.87	127.93	<100.0	<100.0				Explore potential mitigation
NYVL-T-13	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	<100.0	125.90	127.96	<100.0	<100.0				Explore potential mitigation
NYVL-T-14	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	<100.0	141.68	144.59	<100.0	<100.0				Explore potential mitigation
NYVL-T-15	30110 GLENN 230 31722 GLENN 60.0 2	P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P1	N-1	<100.0	<100.0	100.32	<100.0	<100.0				Glenn 230/60 kV Transformer No. 1 Replacement Project
NYVL-T-16	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	<100.0	105.00	105.06	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-17	31610 TYLER 60.0 31603 CANAL TP 60.0 2	P1-2:A3:5:_Newbus - Delevan 230 kV Line	P1	N-1	<100.0	116.51	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-18	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-2:A3:5:_Newbus - Delevan 230 kV Line	P1	N-1	<100.0	124.27	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-19	30110 GLENN 230 31722 GLENN 60.0 2	P2-3:A3:8:_NON-BUS-TIE BREAKER CB245 FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<100.0	<100.0	100.40	<100.1	<100.0				Glenn 230/60 kV Transformer No. 1 Replacement Project
NYVL-T-20	31482 PALERMO 115 31516 WYANDJT2 115 2	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	<100.0	NConv	111.43	<100.0	<100.0				Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-21	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	<100.0	NConv	105.11	<100.0	<100.0				Caribou Thermal SPS

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-T-22	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P2-4:A3:11_ TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	<100.0	NConv	104.84	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-23	31516 WYANDJT2 115 31512 BIG BEND 115 2	P2-4:A3:11_ TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	<100.0	NConv	111.68	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-24	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	P2-4:A3:15_ COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<100.0	129.44	<100.0	159.34	<100.0				Explore potential mitigation
NYVL-T-25	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	P2-4:A3:15_ COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<100.0	125.32	<100.0	157.84	<100.0				Explore potential mitigation
NYVL-T-26	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	P2-4:A3:15_ COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<100.0	137.96	<100.0	180.27	<100.0				Explore potential mitigation
NYVL-T-27	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	P2-4:A3:15_ COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<100.0	108.20	<100.0	152.32	<100.0				Explore potential mitigation
NYVL-T-28	31610 TYLER 60.0 31603 CANAL TP 60.0 2	P2-4:A3:4_ COTTONWOOD CB 412 STUCK	P2	Bus-tie breaker	<100.0	124.63	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-29	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P2-4:A3:4_ COTTONWOOD CB 412 STUCK	P2	Bus-tie breaker	<100.0	132.54	104.66	<100.0	<100.0				Explore potential mitigation
NYVL-T-30	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	P2-3:A3:10_ NON-BUS-TIE BREAKER CB-NEW FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<100.0	110.04	112.48	<100.0	<100.0				Explore potential mitigation
NYVL-T-31	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	P2-3:A3:10_ NON-BUS-TIE BREAKER CB-NEW FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<100.0	110.08	112.51	<100.0	<100.0				Explore potential mitigation
NYVL-T-32	31735 CHICO JT 60.0 31738 ANITA 60.0 3	P2-3:A3:10_ NON-BUS-TIE BREAKER CB-NEW FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<100.0	124.21	127.36	<100.0	<100.0				Explore potential mitigation
NYVL-T-33	31482 PALERMO 115 31516 WYANDJT2 115 2	P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P2-1	Line section w/o fault	<100.0	NConv	<100.0	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-34	31516 WYANDJT2 115 31512 BIG BEND 115 2	P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P2-1	Line section w/o fault	<100.0	NConv	105.06	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-35	30110 GLENN 230 31722 GLENN 60.0 2	P1-1:A3:66:_BLCKBUTT 9.11 Generator ID 1 and P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P3	G-1/N-1	<100.0	<100.0	104.39	<100.0	<100.0				Explore potential mitigation
NYVL-T-36	30110 GLENN 230 31722 GLENN 60.0 2	P1-2:A3:102:_Glenn No.5 60 kV Line and P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P6	N-1/N-1	<100.0	<100.0	105.18	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-37	31091 RDGE CBN 60.0 31093 HYPOMJT 60.0 1	P1-2:A1:49:_Humboldt-Trinity 115 kV Line and P1-2:A3:50:_Bridgeville-Cottonwood 115 kV Line	P6	N-1/N-1	<100.0	100.21	<100.0	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-38	31480 WYANDTTE 115 31516 WYANDJT2 115 1	P1-2:A3:58:_Palermo-Wyandotte 115 kV Line and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	<100.0	<100.0	159.73	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-39	31482 PALERMO 115 31516 WYANDJT2 115 2	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV and P1-2:A3:58:_Palermo-Wyandotte 115 kV Line	P6	N-1/N-1	<100.0	<100.0	138.14	<100.0	<100.0				Caribou Thermal SPS

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NYVL-T-40	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-2:A3:58:_Palermo-Wyandotte 115 kV Line and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	<100.0	<100.0	151.53	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-41	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-2:A3:58:_Palermo-Wyandotte 115 kV Line and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	<100.0	<100.0	153.06	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-42	31516 WYANDJT2 115 31512 BIG BEND 115 2	P2-1:A3:70:_WYANDTTE-WYANDJT1 #1 115 kV and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	<100.0	<100.0	162.05	<100.0	<100.0				Caribou Thermal SPS
NYVL-T-43	31553 BIG BAR 60.0 31093 HYPOMJT 60.0 1	P1-2:A1:49:_Humboldt-Trinity 115 kV Line and P1-2:A3:50:_Bridgeville-Cottonwood 115 kV Line	P6	N-1/N-1	<100.0	100.14	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-44	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P1-3:A3:5:_Cottonwood #4 230/115 kV Transformer and P1-3:A3:2:_Cottonwood #1 230/115 kV Transformer	P6	N-1/N-1	<100.0	101.26	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-45	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P2-1:A3:101:_ANDERSON-COTTONWD #1 60 kV and P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P6	N-1/N-1	<100.0	<100.0	100.31	<100.0	<100.0				Explore potential mitigation
NYVL-T-46	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-2:A3:74:_Cottonwood-Benton No.2 60 kV Line and P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P6	N-1/N-1	<100.0	132.07	138.89	<100.0	<100.0				Explore potential mitigation
NYVL-T-47	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	P2-1:A3:61:_JESSUPJ1-SPI_AND #1 115 kV and P1-2:A3:7:_ (New) Cascade - Benton 60 kV Line	P6	N-1/N-1	<100.0	<100.0	101.54	<100.0	<100.0				Explore potential mitigation
NYVL-T-48	31594 VOLTA 60.0 31583 Q720TP 60.0 1	P1-2:A3:82:_Coleman-Cottonwood 60 kV Line and P1-2:A3:83:_Coleman-Red Bluff 60 kV Line	P6	N-1/N-1	<100.0	100.72	100.71	<100.0	<100.0				Explore potential mitigation
NYVL-T-49	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	P1-2:A3:3:_NewBus 60.00 to RED BLFF 60.00 and P2-1:A3:121:_COLEMAN-CLMN JCT #1 60 kV	P6	N-1/N-1	<100.0	<100.0	103.62	<100.0	<100.0				Explore potential mitigation
NYVL-T-50	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P1-2:A3:3:_NewBus 60.00 to RED BLFF 60.00 and P2-1:A3:121:_COLEMAN-CLMN JCT #1 60 kV	P6	N-1/N-1	<100.0	<100.0	103.62	<100.0	<100.0				Explore potential mitigation
NYVL-T-51	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-2:A3:5:_Newbus - Delevan 230 kV Line and P1-2:A3:3:_NewBus 60.00 to RED BLFF 60.00	P6	N-1/N-1	<100.0	101.91	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-52	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-2:A3:84:_Cottonwood-Red Bluff 60 kV Line and P1-3:A3:65:_New NewBus 230/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	100.68	<100.0	<100.0				Explore potential mitigation
NYVL-T-53	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P1-3:A3:65:_New NewBus 230/60 kV Transformer and P1-2:A3:84:_Cottonwood-Red Bluff 60 kV Line	P6	N-1/N-1	<100.0	103.58	100.48	<100.0	<100.0				Explore potential mitigation

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-T-54	31688 SPI 60.0 38056 PLMS-SRA 60.0 1	P1-2:A3:61:_Caribou-Palermo 115 kV Line and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P6	N-1/N-1	<100.0	<100.0	100.21	<100.0	<100.0				Explore potential mitigation
NYVL-T-55	31610 TYLER 60.0 31603 CANAL TP 60.0 2	P7-1:A3:21_Glenn-Delevan 230 kV Line & Cottonwood(F)-NewBus 230 kV Line	P7	DCTL	<100.0	118.42	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-56	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	P7-1:A3:21_Glenn-Delevan 230 kV Line & Cottonwood(F)-NewBus 230 kV Line	P7	DCTL	<100.0	126.15	<100.0	<100.0	<100.0				Explore potential mitigation
NYVL-T-57	31640 TRES VIS 60.0 31718 TBLE MTN 60.0 1	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	<100.0	<100.0	100.13	<100.0	<100.0				Explore potential mitigation

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Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-VD-1	ANTLER 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	<5.0	5.02	<5.0	<5.0				Explore potential mitigation
NYVL-VD-2	CARBOU M 230 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	5.904	<5.0	<5.0				Explore potential mitigation
NYVL-VD-3	CARIBOU 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.142	<5.0	<5.0				Explore potential mitigation
NYVL-VD-4	CARIBOU 115 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P1	N-1	<5.0	<5.0	5.605	<5.0	<5.0				Explore potential mitigation
NYVL-VD-5	CHESTER 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	7.141	10.305	<5.0	7.141				Explore potential mitigation
NYVL-VD-6	ELIZ JT1 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.239	<5.0	<5.0				Explore potential mitigation
NYVL-VD-7	ELIZ JT2 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.243	<5.0	<5.0				Explore potential mitigation
NYVL-VD-8	ELKCREEK 60 kV	P1-1:A3:68:_CSC HYDR 9.11 Generator ID 2	P1	N-1	<5.0	5.829	5.82	<5.0	5.829				Explore potential mitigation
NYVL-VD-9	GANSNER 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P1	N-1	<5.0	<5.0	6.205	<5.0	<5.0				Explore potential mitigation
NYVL-VD-10	GRYS FLT 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.22	<5.0	<5.0				Explore potential mitigation
NYVL-VD-11	HMLTN BR 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.966	<5.0	<5.0				Explore potential mitigation
NYVL-VD-12	HOWELLS 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.219	<5.0	<5.0				Explore potential mitigation
NYVL-VD-13	KESWICK 60 kV	P2-1:A3:105:_CASCADE-STLLWATR #1 60 kV	P1	N-1	<5.0	<5.0	6.696	<5.0	<5.0				Explore potential mitigation
NYVL-VD-14	PPL 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	<5.0	5.02	<5.0	<5.0				Explore potential mitigation
NYVL-VD-15	SPANSHCK 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.243	<5.0	<5.0				Explore potential mitigation
NYVL-VD-16	STLLWATR 60 kV	P2-1:A3:105:_CASCADE-STLLWATR #1 60 kV	P1	N-1	<5.0	<5.0	7.87	<5.0	<5.0				Explore potential mitigation
NYVL-VD-17	ULTR WSD 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.498	<5.0	<5.0				Explore potential mitigation
NYVL-VD-18	WESTWOOD 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P1	N-1	<5.0	<5.0	6.407	<5.0	<5.0				Explore potential mitigation
NYVL-VD-19	ANDERSON 60 kV	P2-2:A3:53_BUS FAULT AT 31604 COTTONWD 60.00	P2	Bus	<5.0	7.527	7.492	<5.0	<5.0				Explore potential mitigation
NYVL-VD-20	ANTLER 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	6.506	<5.0				Explore potential mitigation
NYVL-VD-21	BIG BAR 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	5.091	<5.0				Explore potential mitigation
NYVL-VD-22	BIG BEND 115 kV	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus	<5.0	344.2	<5.0	<5.0	<5.0				Explore potential mitigation
NYVL-VD-23	CASCADE 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	6.411	<5.0				Explore potential mitigation
NYVL-VD-24	CASCADE 115 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	5.216	<5.0				Explore potential mitigation
NYVL-VD-25	CHICO B 115 kV	P2-2:A3:42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	P2	Bus	<5.0	5.52	5.886	<5.0	<5.0				Explore potential mitigation



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-VD-26	FRNCHGLH 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	5.044	<5.0	10.628	5.333				Explore potential mitigation
NYVL-VD-27	GERBER 60 kV	P2-2:A3:54_BUS FAULT AT 31608 RED BLFF 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	6.202				Explore potential mitigation
NYVL-VD-28	GIRVAN 60 kV	P2-2:A3:53_BUS FAULT AT 31604 COTTONWD 60.00	P2	Bus	<5.0	5.004	<5.0	<5.0	<5.0				Explore potential mitigation
NYVL-VD-29	JESSTAP 115 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	8.1	5.306				Explore potential mitigation
NYVL-VD-30	KESWICK 60 kV	P2-2:A3:46_BUS FAULT AT 31580 CASCADE 60.00	P2	Bus	<5.0	7.148	6.756	<5.0	<5.0				Explore potential mitigation
NYVL-VD-31	LP FB SP 60 kV	P2-2:A3:54_BUS FAULT AT 31608 RED BLFF 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	6.213				Explore potential mitigation
NYVL-VD-32	MTN GATE 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	6.494	<5.0				Explore potential mitigation
NYVL-VD-33	OREGNTRL 115 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	5.17	<5.0				Explore potential mitigation
NYVL-VD-34	PPL 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	6.506	<5.0				Explore potential mitigation
NYVL-VD-35	Q643G 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<5.0	<5.0	<5.0	<5.0	5.694				Explore potential mitigation
NYVL-VD-36	RWSN J2 60 kV	P2-2:A3:54_BUS FAULT AT 31608 RED BLFF 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	6.183				Explore potential mitigation
NYVL-VD-37	SPI_AND 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<5.0	<5.0	<5.0	<5.0	5.694				Explore potential mitigation
NYVL-VD-38	STLLWATR 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	7.35	<5.0				Explore potential mitigation
NYVL-VD-39	TAP 65 60 kV	P2-4:A3:15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	P2	Bus-tie breaker	<5.0	<5.0	<5.0	6.329	<5.0				Explore potential mitigation
NYVL-VD-40	BIG BEND 115 kV	P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P2-1	Line section w/o fault	<0.5	Nconv	5.094	<0.5	<0.5				Explore potential mitigation
NYVL-VD-41	CANAL TP 60 kV	P2-1:A3:130:_TYLER-CANAL TP #2 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	5.935				Explore potential mitigation
NYVL-VD-42	CARBOU M 230 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	5.848	<0.5	<0.5				Explore potential mitigation
NYVL-VD-43	CARIBOU 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.088	<0.5	<0.5				Explore potential mitigation
NYVL-VD-44	CARIBOU 115 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	5.605	<0.5	<0.5				Explore potential mitigation
NYVL-VD-45	CHESTER 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	7.125	10.246	<0.5	<0.5				Explore potential mitigation
NYVL-VD-46	CR CANAL 60 kV	P2-1:A3:130:_TYLER-CANAL TP #2 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	5.94				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
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-VD-47	ELIZ JT1 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.184	<0.5	<0.5				Explore potential mitigation
NYVL-VD-48	ELIZ JT2 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.188	<0.5	<0.5				Explore potential mitigation
NYVL-VD-49	FRSTGLEN 115 kV	P2-1:A3:47:_FRSTGLEN-LOW GAP1 #1 115 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	<0.5				Explore potential mitigation
NYVL-VD-50	GANSNER 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.205	<0.5	<0.5				Explore potential mitigation
NYVL-VD-51	GERBER 60 kV	P2-1:A3:1:_RED BLFF-RWSN J2 #1 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	6.447				Explore potential mitigation
NYVL-VD-52	GRYS FLT 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.165	<0.5	<0.5				Explore potential mitigation
NYVL-VD-53	HMLTN BR 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.908	<0.5	<0.5				Explore potential mitigation
NYVL-VD-54	HOWELLS 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.165	<0.5	<0.5				Explore potential mitigation
NYVL-VD-55	KESWICK 60 kV	P2-1:A3:105:_CASCADE-STLLWATR #1 60 kV	P2-1	Line section w/o fault	<0.5	7.147	6.696	<0.5	<0.5				Explore potential mitigation
NYVL-VD-56	LP FB SP 60 kV	P2-1:A3:1:_RED BLFF-RWSN J2 #1 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	6.459				Explore potential mitigation
NYVL-VD-57	NEO REDT 60 kV	P2-1:A3:130:_TYLER-CANAL TP #2 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	5.8				Explore potential mitigation
NYVL-VD-58	RASN JNT 60 kV	P2-1:A3:130:_TYLER-CANAL TP #2 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	5.8				Explore potential mitigation
NYVL-VD-59	RWSN J2 60 kV	P2-1:A3:1:_RED BLFF-RWSN J2 #1 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	6.428				Explore potential mitigation
NYVL-VD-60	SPANSHCK 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.188	<0.5	<0.5				Explore potential mitigation
NYVL-VD-61	SPI_AND 115 kV	P2-1:A3:59:_COTWDPGE-JESSUPJ1 #1 115 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	5.812				Explore potential mitigation
NYVL-VD-62	STLLWATR 60 kV	P2-1:A3:105:_CASCADE-STLLWATR #1 60 kV	P2-1	Line section w/o fault	<0.5	8.397	7.87	<0.5	<0.5				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
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
NYVL-VD-63	TYLERJT 60 kV	P2-1:A3:1:_RED BLFF-RWSN J2 #1 60 kV	P2-1	Line section w/o fault	<0.5	<0.5	<0.5	<0.5	6.447				Explore potential mitigation
NYVL-VD-64	ULTR WSD 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.439	<0.5	<0.5				Explore potential mitigation
NYVL-VD-65	WESTWOOD 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<0.5	<0.5	6.348	<0.5	<0.5				Explore potential mitigation



Study Area: **PG&E North Valley**

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A		N/A
NYVL-V-1	BURNEY 60 kV	P1-3:A3:7:_Pit 1 PH No.1 230/11 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	1.1104	1.1256				Explore potential mitigation
NYVL-V-2	BURNYJCT 60 kV	P1-3:A3:7:_Pit 1 PH No.1 230/11 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	1.1108	1.1258				Explore potential mitigation
NYVL-V-3	BUTTVLLY 115 kV	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	1.0701	1.1014				Explore potential mitigation
NYVL-V-4	HAT CRK1 60 kV	P1-3:A3:7:_Pit 1 PH No.1 230/11 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	1.1118	1.1239				Explore potential mitigation
NYVL-V-5	HAT CRK2 60 kV	P1-3:A3:7:_Pit 1 PH No.1 230/11 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	1.1115	1.126				Explore potential mitigation
NYVL-V-6	HMLTN JT 60 kV	P1-3:A3:55:_Glenn No.2 230/60 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1042				Explore potential mitigation
NYVL-V-7	JACINTO 60 kV	P1-3:A3:55:_Glenn No.2 230/60 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1039				Explore potential mitigation
NYVL-V-8	JESSUP 115 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1017				Explore potential mitigation
NYVL-V-9	OREGNTRL 115 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1013				Explore potential mitigation
NYVL-V-10	PANRAMA 115 kV	P1-4:A3:6:_RD MT 1T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.106				Explore potential mitigation
NYVL-V-11	PIT 1 60 kV	P1-3:A3:7:_Pit 1 PH No.1 230/11 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1262				Explore potential mitigation
NYVL-V-12	SMPSN-AN 115 kV	P1-4:A3:6:_RD MT 1T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.106				Explore potential mitigation
NYVL-V-13	SPI_AND 115 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1015				Explore potential mitigation
NYVL-V-14	WHEELBR 115 kV	P1-4:A3:6:_RD MT 1T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.106				Explore potential mitigation
NYVL-V-15	BURNEY 60 kV	P2-2:A3:56_BUS FAULT AT 31630 HAT CRK1 60.00	P2	Bus	<1.1	<1.1	<1.1	1.1104	1.103				Explore potential mitigation
NYVL-V-16	COTWDPGE 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<1.1	<1.1	<1.1	<1.1	1.1038				Explore potential mitigation
NYVL-V-17	HAMILTON 60 kV	P2-3:A3:10:_NON-BUS-TIE BREAKER CB-NEW FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<1.1	<1.1	<1.1	<1.1	1.1012				Explore potential mitigation
NYVL-V-18	HAT CRK2 60 kV	P2-2:A3:56_BUS FAULT AT 31630 HAT CRK1 60.00	P2	Bus	<1.1	<1.1	<1.1	1.1116	1.1035				Explore potential mitigation
NYVL-V-19	JACINTO 60 kV	P2-3:A3:10:_NON-BUS-TIE BREAKER CB-NEW FAILURE AT GLENN 230 kV	P2	Non Bus-tie breaker	<1.1	<1.1	<1.1	<1.1	1.1009				Explore potential mitigation
NYVL-V-20	JESSUP 115 kV	P2-2:A3:46_BUS FAULT AT 31580 CASCADE 60.00	P2	Bus	<1.1	<1.1	<1.1	1.0683	1.1012				Explore potential mitigation
NYVL-V-21	OREGNTRL 115 kV	P2-2:A3:35_BUS FAULT AT 31468 CASCADE 115.00	P2	Bus	<1.1	<1.1	<1.1	1.0624	1.1013				Explore potential mitigation
NYVL-V-22	PANRAMA 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<1.1	<1.1	<1.1	1.0519	1.1035				Explore potential mitigation
NYVL-V-23	Q643G 115 kV	P2-2:A3:35_BUS FAULT AT 31468 CASCADE 115.00	P2	Bus	<1.1	<1.1	<1.1	1.0631	1.1014				Explore potential mitigation
NYVL-V-24	SMPSN-AN 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<1.1	<1.1	<1.1	1.0519	1.1035				Explore potential mitigation
NYVL-V-25	SPI_AND 115 kV	P2-2:A3:35_BUS FAULT AT 31468 CASCADE 115.00	P2	Bus	<1.1	<1.1	<1.1	1.0632	1.1015				Explore potential mitigation
NYVL-V-26	WHEELBR 115 kV	P2-2:A3:34_Cottonwood 115 kV Bus Section 2	P2	Bus	<1.1	<1.1	<1.1	1.0519	1.1035				Explore potential mitigation

Study Area: **PG&E North Valley**

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A		N/A
NYVL-V-27	BURNEY 60 kV	P2-1:A3:14: _PIT 1-SPI-BRNY #1 230 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	1.1158	1.1016				Explore potential mitigation
NYVL-V-28	HAT CRK1 60 kV	P2-1:A3:14: _PIT 1-SPI-BRNY #1 230 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	1.1172	1.1015				Explore potential mitigation
NYVL-V-29	HAT CRK2 60 kV	P2-1:A3:14: _PIT 1-SPI-BRNY #1 230 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	1.117	1.1016				Explore potential mitigation
NYVL-V-30	JESSUP 115 kV	P2-1:A3:55: _OREGNTRL-SPI_AND #1 115 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	<1.1	1.1018				Explore potential mitigation
NYVL-V-31	OREGNTRL 115 kV	P2-1:A3:62: _CASCADE-OREGNTRL #1 115 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	<1.1	1.1017				Explore potential mitigation
NYVL-V-32	PIT 1 60 kV	P2-1:A3:14: _PIT 1-SPI-BRNY #1 230 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	1.1176	1.1016				Explore potential mitigation
NYVL-V-33	Q643G 115 kV	P2-1:A3:55: _OREGNTRL-SPI_AND #1 115 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	<1.1	1.1016				Explore potential mitigation
NYVL-V-34	SPI_AND 115 kV	P2-1:A3:55: _OREGNTRL-SPI_AND #1 115 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	<1.1	1.1016				Explore potential mitigation
NYVL-V-35	WILDWOOD 115 kV	P2-1:A3:47: _FRSTGLEN-LOW GAP1 #1 115 kV	P2-1	Line section w/o fault	<1.1	<1.1	<1.1	<1.1	1.1078				Explore potential mitigation
NYVL-V-36	ANDERSON 60 kV	P1-3:A3:34B: _Cascade No.1 115/60/13.8 kV Transformer and P2-1:A3:101: _ANDERSON-COTTONWD #1 60 kV	P6	N-1/N-1	>0.9	>0.9	0.8857	>0.9	>0.9				Explore potential mitigation
NYVL-V-37	ANTLER 60 kV	P1-2:A3:7: _ (New) Cascade - Benton 60 kV Line and P1-3:A3:34B: _Cascade No.1 115/60/13.8 kV Transformer	P6	N-1/N-1	>0.9	0.8962	0.8964	>0.9	>0.9				Explore potential mitigation
NYVL-V-38	BIG BEND 115 kV	P1-2:A3:58: _Palermo-Wyandotte 115 kV Line and P2-1:A3:73: _PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.9	>0.9	0.6721	>0.9	>0.9				Explore potential mitigation
NYVL-V-39	GRIZ JCT 115 kV	P1-2:A3:58: _Palermo-Wyandotte 115 kV Line and P2-1:A3:73: _PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.9	>0.9	0.8579	>0.9	>0.9				Explore potential mitigation
NYVL-V-40	LS ML JT 60 kV	P1-2:A3:3: _NewBus 60.00 to RED BLFF 60.00 and P2-1:A3:121: _COLEMAN-CLMN JCT #1 60 kV	P6	N-1/N-1	>0.9	>0.9	0.8964	>0.9	>0.9				Explore potential mitigation
NYVL-V-41	MTN GATE 60 kV	P1-3:A3:34B: _Cascade No.1 115/60/13.8 kV Transformer and P1-2:A3:7: _ (New) Cascade - Benton 60 kV Line	P6	N-1/N-1	>0.9	0.8996	0.8988	>0.9	>0.9				Explore potential mitigation
NYVL-V-42	PPL 60 kV	P1-2:A3:7: _ (New) Cascade - Benton 60 kV Line and P1-3:A3:34B: _Cascade No.1 115/60/13.8 kV Transformer	P6	N-1/N-1	>0.9	0.8962	0.8964	>0.9	>0.9				Explore potential mitigation

Study Area: **PG&E North Valley**

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A		N/A
NYVL-V-43	VINA 60 kV	P1-2:A3:3: _NewBus 60.00 to RED BLFF 60.00 and P2-1:A3:121: _COLEMAN-CLMN JCT #1 60 kV	P6	N-1/N-1	>0.9	>0.9	0.8911	>0.9	>0.9				Explore potential mitigation
NYVL-V-44	WYANDJT2 115 kV	P1-2:A3:58: _Palermo-Wyandotte 115 kV Line and P2-1:A3:73: _PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.9	>0.9	Nconv	>0.9	>0.9				Explore potential mitigation
NYVL-V-45	WYANDTTE 115 kV	P1-2:A3:58: _Palermo-Wyandotte 115 kV Line and P2-1:A3:73: _PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.9	>0.9	Nconv	>0.9	>0.9				Explore potential mitigation

Study Area: **PG&E North Valley**

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	Select..	Select..	N/A	N/A		N/A
NYVL-TS-1	NON-BUS-TIE BREAKER CB2022 FAILURE AT PALERMO 230kV	P2-3	Breaker	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles						Investigate/ Explore potential mitigation
NYVL-TS-2	Table Mountain No.3 230/115 kV Transformer & No2	P6-2-2	Transformer/ Transformer	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles						Investigate/ Explore potential mitigation
NYVL-TS-3	Table Mountain No.3 230/115 kV Transformer & RD MT 1T 13.80 SVD ID v	P6-2-3	Transformer/ SVD	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles						Investigate/ Explore potential mitigation
NYVL-TS-4	Cottonwood-Benton No.1 and Cottonwood No.2 60 kV Lines	P7-2	DCTL	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles						Investigate/ Explore potential mitigation



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..	
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..	
X-SS-1										

No single source substation with more than 100 MW Load