Study Area: PG&E North Valley - Summer Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-1	30110 GLENN 230 31722 GLENN 60.0 2		A	Base Case	99.4	<100	<100	Reconductoring or transfer Anita load
nyvl-SP-T-2	31480 WYANDTTE 115 31518 WYANDJT1 115 1		A	Base Case	95.5	95.3	103.3	Reconductoring or transfer Anita load
nyvl-SP-T-3	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3		A	Base Case	120.8	122.7	132.6	Reconductoring or transfer Anita load
nyvl-SP-T-4	31722 GLENN 60.0 31734 HAMILTON 60.0 2		A	Base Case	95.3	97.2	104.1	Reconductoring or transfer Anita load
nyvl-SP-T-5	31731 CAPAYJCT 60.0 31736 HEADGATE 60.0 3		A	Base Case	97.4	98.7	106.9	Reconductoring or transfer Anita load
nyvl-SP-T-6	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3		A	Base Case	120.8	122.8	132.6	Reconductoring or transfer Anita load
nyvl-SP-T-7	31735 CHICO JT 60.0 31738 ANITA 60.0 3		A	Base Case	122.4	124.3	135.8	Reconductoring or transfer Anita load
nyvl-SP-T-8	30110 GLENN 230 31722 GLENN 60.0 2	B1_58_BLCKBUTT 9.11 Unit ID 1 & B3_65_Glenn 230/60 kV Transformer No. 1	B	L-1/G-1	<100	106.6	117.4	Explore potential mitigation
nyvl-SP-T-9	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus	106.3	104.8	102.1	Caribou Thermal SPS
nyvl-SP-T-10	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus	129.2	127.5	124.8	Caribou Thermal SPS
nyvl-SP-T-11	31516 WYANDJT2 115 31512 BIG BEND 115 2	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus	137.8	136.0	133.1	Caribou Thermal SPS
nyvl-SP-T-12	31482 PALERMO 115 31506 HONC JT1 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-13	31482 PALERMO 115 31516 WYANDJT2 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan

Study Area: PG&E North Valley - Summer Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-14	31486 CARIBOU 115 30255 CARBOU M 230 11	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-15	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-16	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-17	31516 WYANDJT2 115 31512 BIG BEND 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-18	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	C1_34_Cottonwood 115 kV Bus Section 2	C1	Bus	137.5	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-19	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	C1_34_Cottonwood 115 kV Bus Section 2	C1	Bus	125.9	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-20	31504 TBLE MTN 115 31497 NDAME J 115 1	C1_42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	C1	Bus	110.3	112.2	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: New Table Mt - Sycamore 115 kV Project
nyvl-SP-T-21	31514 PARADSE 115 31494 BIGBENTP 115 1	C1_42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	C1	Bus	110.3	111.8	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: New Table Mt - Sycamore 115 kV Project
nyvl-SP-T-22	31501 CHICOTP1 115 31504 TBLE MTN 115 1	C1_42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	C1	Bus	110.1	111.5	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: New Table Mt - Sycamore 115 kV Project
nyvl-SP-T-23	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	155.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-24	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	155.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-25	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	232.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-26	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	218.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-27	31583 Q720TP 60.0 31596 SOUTH 60.0 1	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	116.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-28	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	155.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-29	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	112.9	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-30	31486 CARIBOU 115 30255 CARBOU M 230 11	C1-36_BUS FAULT AT 31482 PALERMO 115.00	C1	Bus	103.6	103.6	103.6	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-31	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	C2_1_COTTONWOOD CB 462 OR 482 STUCK	C2	CB	102.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-32	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-33	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-34	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-35	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-36	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-37	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-38	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-39	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-40	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-41	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-42	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-43	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-44	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-45	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-46	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-47	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	159.9	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-48	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	148.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-49	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	C2_2_COTTONWOOD CB 462 OR 482 STUCK W/SPS	C2	CB	103.1	<100	<100	Cascade SPS
nyvl-SP-T-50	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-51	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-52	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan

Study Area: PG&E North Valley - Summer Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-53	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-54	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	diverge	diverge	diverge	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-55	30105 COTWD_E 230 30245 ROUND MT 230 3	B2_2_Cottonwood - Round Mountain #2 230 kV Line & B3_1_Round Mountain No.1 500/230 kV Transformer	C3	N-1-1	100.8	100.8	100.9	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-56	31482 PALERMO 115 31516 WYANDJT2 115 2	B2_24_Caribou-Table Mountain 230 kV Line & B2_44_Palermo-Wyandotte 115 kV Line	C3	N-1-1	113.4	118.2	129.5	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-57	31110 BRDGVLLE 60.0 31120 FRUTLDJT 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	103.2	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-58	31120 FRUTLDJT 60.0 31122 FTSWRDJT 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	103.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-59	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	101.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-60	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	B2_40_Cascade-Cottonwood 115 kV Line & B2_62_Cascade-Benton-Deschutes 60 kV Line	C3	N-1-1	146.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-61	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	B2_40_Cascade-Cottonwood 115 kV Line & B2_62_Cascade-Benton-Deschutes 60 kV Line	C3	N-1-1	186.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-62	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	B2_40_Cascade-Cottonwood 115 kV Line & B2_62_Cascade-Benton-Deschutes 60 kV Line	C3	N-1-1	180.6	<100	<100	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-63	32290 OLIVH J1 115 32214 RIO OSO 115 1	B2_45_Palermo-Pease 115 kV Line & B3_28_Table Mountain No.2 230/115/60 kV Transformer	C3	N-1-1	119.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-64	31482 PALERMO 115 31506 HONC JT1 115 1	B2_48_Palermo-Nicolaus 115 kV Line & B3_28_Table Mountain No.2 230/115/60 kV Transformer	C3	N-1-1	101.4	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-65	32200 PEASE 115 31506 HONC JT1 115 1	B2_48_Palermo-Nicolaus 115 kV Line & B3_28_Table Mountain No.2 230/115/60 kV Transformer	C3	N-1-1	101.4	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-66	31500 BUTTE 115 31504 TBLE MTN 115 2	B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line & B2_53_Table Mountain-Butte No.1 115 kV Line	C3	N-1-1	149.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-67	31500 BUTTE 115 31501 CHICOTP1 115 1	B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line & B2_53_Table Mountain-Butte No.1 115 kV Line	C3	N-1-1	130.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-68	31501 CHICOTP1 115 31504 TBLE MTN 115 1	B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line & B2_53_Table Mountain-Butte No.1 115 kV Line	C3	N-1-1	149.8	<100	103.6	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-69	31500 BUTTE 115 31504 TBLE MTN 115 2	B2_53_Table Mountain-Butte No.1 115 kV Line & B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line	C3	N-1-1	149.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-70	31503 CHICOTP2 115 31500 BUTTE 115 1	B2_53_Table Mountain-Butte No.1 115 kV Line & B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line	C3	N-1-1	<100	<100	<100	Short Term: Interim NVLY Area Summer Action Plan

Study Area: PG&E North Valley - Summer Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-71	31504 TBLE MTN 115 31497 NDAME J 115 1	B2_53_Table Mountain-Butte No.1 115 kV Line & B2_54_Table Mountain-Butte No.2 115 kV Line	C3	N-1-1	110.6	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-72	31514 PARADSE 115 31494 BIGBENTP 115 1	B2_53_Table Mountain-Butte No.1 115 kV Line & B2_54_Table Mountain-Butte No.2 115 kV Line	C3	N-1-1	110.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-73	31500 BUTTE 115 31501 CHICOTP1 115 1	B2_54_Table Mountain-Butte No.2 115 kV Line & B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line	C3	N-1-1	130.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-74	31501 CHICOTP1 115 31504 TBLE MTN 115 1	B2_54_Table Mountain-Butte No.2 115 kV Line & B2_51_Sycamore Creek-Notre Dame-Table Mountain 115 kV Line	C3	N-1-1	149.8	98.8	103.6	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-75	31504 TBLE MTN 115 31497 NDAME J 115 1	B2_54_Table Mountain-Butte No.2 115 kV Line & B2_53_Table Mountain-Butte No.1 115 kV Line	C3	N-1-1	110.6	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-76	31514 PARADSE 115 31494 BIGBENTP 115 1	B2_54_Table Mountain-Butte No.2 115 kV Line & B2_53_Table Mountain-Butte No.1 115 kV Line	C3	N-1-1	110.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-77	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	B2_62_Cascade-Benton-Deschutes 60 kV Line & B2_40_Cascade-Cottonwood 115 kV Line	C3	N-1-1	146.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-78	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	B2_62_Cascade-Benton-Deschutes 60 kV Line & B2_40_Cascade-Cottonwood 115 kV Line	C3	N-1-1	150.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-79	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	B2_62_Cascade-Benton-Deschutes 60 kV Line & B2_40_Cascade-Cottonwood 115 kV Line	C3	N-1-1	186.0	<100	<100	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-80	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	B2_62_Cascade-Benton-Deschutes 60 kV Line & B2_40_Cascade-Cottonwood 115 kV Line	C3	N-1-1	180.6	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-81	31604 COTTONWD 60.0 31607 RED B JT 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_62_Cascade-Benton-Deschutes 60 kV Line	C3	N-1-1	119.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-82	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_62_Cascade-Benton-Deschutes 60 kV Line	C3	N-1-1	119.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-83	31583 Q720TP 60.0 31596 SOUTH 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	116.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-84	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	171.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-85	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	124.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-86	31606 CLMN JCT 60.0 31608 RED BLFF 60.0 1	B2_70_Coleman-Cottonwood 60 kV Line & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	124.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-87	30110 GLENN 230 31722 GLENN 60.0 2	B2_93_Glenn No.1 60 kV Line & B3_65_Glenn 230/60 kV Transformer No. 1	C3	N-1-1	<100	<100	104.1	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-88	30105 COTWD_E 230 30245 ROUND MT 230 3	B3_1_Round Mountain No.1 500/230 kV Transformer & B2_2_Cottonwood - Round Mountain #2 230 kV Line	C3	N-1-1	100.8	100.8	100.9	Short Term: Interim NVLY Area Summer Action Plan

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Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-89	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_69_GRIZZLYG 6.90 Unit ID 1	C3	N-1-1	107.4	107.3	107.4	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-90	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_69_GRIZZLYG 6.90 Unit ID 1	C3	N-1-1	114.5	114.4	114.5	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-91	32326 ENCL TAP 60.0 32332 PEASE 60.0 1	B3_28_Table Mountain No.2 230/115/60 kV Transformer & B1_68_DE SABLA 6.90 Unit ID 1	C3	N-1-1	107.7	107.8	114.7	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-92	32326 ENCL TAP 60.0 32334 LIVE OAK 60.0 1	B3_28_Table Mountain No.2 230/115/60 kV Transformer & B1_68_DE SABLA 6.90 Unit ID 1	C3	N-1-1	106.5	106.6	113.6	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-93	31482 PALERMO 115 31506 HONC JT1 115 1	B3_28_Table Mountain No.2 230/115/60 kV Transformer & B1_68_DE SABLA 6.90 Unit ID 1	C3	N-1-1	101.4	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-94	31570 BENTON 60.0 31572 GIRVAN 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	150.3	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-95	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	242.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-96	31576 WNTU PMS 60.0 31578 LOMS JCT 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	118.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-97	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	373.8	<100	<100	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-98	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	358.2	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-99	31110 BRDGVLLE 60.0 31120 FRUTLDJT 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	103.2	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-100	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	101.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-101	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	B3_34_Cascade No.1 115/60/13.8 kV Transformer & B2_61_Cottonwood-Benton No.2 60 kV Line	C3	N-1-1	134.0	137.8	145.2	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-102	31572 GIRVAN 60.0 31574 ANDERSON 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	105.5	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-103	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	242.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-104	31576 WNTU PMS 60.0 31578 LOMS JCT 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	118.1	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-105	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	373.7	<100	<100	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-106	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_62_Grizzly PH No.1 115/6.9 kV Transformer & B3_19_Caribou No.11 230/115/60 kV Transformer	C3	N-1-1	107.4	107.3	107.4	Short Term: Interim NVLY Area Summer Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
nyvl-SP-T-107	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_62_Grizzly PH No.1 115/6.9 kV Transformer & B3_19_Caribou No.11 230/115/60 kV Transformer	C3	N-1-1	114.5	114.4	114.5	Short Term: Interim NVLY Area Summer Action Plan
nyvl-SP-T-108	31640 TRES VIS 60.0 31644 BIGGSJCT 60.0 1	C5_15_Palermo-Pease	C5	DCTL	117.5	126.7	153.0	Rerate or Reconductor
nyvl-SP-T-109	31640 TRES VIS 60.0 31718 TBLE MTN 60.0 1	C5_15_Palermo-Pease	C5	DCTL	120.4	129.3	154.9	Rerate or Reconductor
nyvl-SP-T-110	31642 PEACHTON 60.0 31644 BIGGSJCT 60.0 1	C5_15_Palermo-Pease	C5	DCTL	109.6	118.2	142.6	Rerate or Reconductor
nyvl-SP-T-111	31642 PEACHTON 60.0 38054 GRIDLEY 60.0 1	C5_15_Palermo-Pease	C5	DCTL	<100	<100	119.6	Rerate or Reconductor
nyvl-SP-T-112	31718 TBLE MTN 60.0 30301 TBL MT2M 230 2	C5_15_Palermo-Pease	C5	DCTL	<100	<100	114.9	Rerate or Reconductor
nyvl-SP-T-113	38054 GRIDLEY 60.0 32334 LIVE OAK 60.0 1	C5_15_Palermo-Pease	C5	DCTL	<100	<100	120.1	Rerate or Reconductor
nyvl-SP-T-114	31500 BUTTE 115 31501 CHICOTP1 115 1	C5_4_Sycamore	C5	DCTL	130.8	133.0	<100	Short Term: Interim NVLY Area Summer Action Plan, Long Term: New Table Mt - Sycamore 115 kV Project
nyvl-SP-T-115	31501 CHICOTP1 115 31504 TBLE MTN 115 1	C5_4_Sycamore	C5	DCTL	149.8	152.1	103.6	Short Term: Interim NVLY Area Summer Action Plan, Long Term: New Table Mt - Sycamore 115 kV Project

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-1	31482 PALERMO 115 31516 WYANDJT2 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1		diverge		Caribou Thermal SPS
NV-SpP-T-2	31486 CARIBOU 115 31488 GRIZ JCT 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1		diverge		Caribou Thermal SPS
NV-SpP-T-3	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1		diverge		Caribou Thermal SPS
NV-SpP-T-4	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1		diverge		Caribou Thermal SPS
NV-SpP-T-5	32394 PLACER 60.0 32228 PLACER 115 1	B2_31_Table Mountain 230 kV No.1 500/230 KV Transformer & B1_84_RIO OSO 230.00 Unit ID 1	B	L-1/G-1		138.4		Explore potential mitigation
NV-SpP-T-6	31482 PALERMO 115 31516 WYANDJT2 115 2	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus		159.9		Caribou Thermal SPS
NV-SpP-T-7	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus		127.5		Caribou Thermal SPS
NV-SpP-T-8	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus		150.2		Caribou Thermal SPS
NV-SpP-T-9	31516 WYANDJT2 115 31512 BIG BEND 115 2	C1_19_Caribou 230 kV Bus w/o CB112 Trip	C1	Bus		160.3		Caribou Thermal SPS
NV-SpP-T-10	31482 PALERMO 115 31516 WYANDJT2 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus		diverge		Caribou Thermal SPS
NV-SpP-T-11	31486 CARIBOU 115 30255 CARBOU M 230 11	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus		diverge		Caribou Thermal SPS
NV-SpP-T-12	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus		diverge		Caribou Thermal SPS
NV-SpP-T-13	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus		diverge		Caribou Thermal SPS

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-14	31516 WYANDJT2 115 31512 BIG BEND 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus		diverge		Caribou Thermal SPS
NV-SpP-T-15	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-16	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-17	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-18	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-19	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-20	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-21	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-22	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-23	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-24	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-25	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-26	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-27	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-28	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-29	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-30	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-31	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-32	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-33	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-34	31486 CARIBOU 115 30255 CARBOU M 230 11	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-35	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-36	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-37	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-38	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB		diverge		Caribou Thermal SPS
NV-SpP-T-39	30114 DELEVN 230 30450 CORTINA 230 1	B2_13_Delevan-Vaca Dixon No.2 230 kV Line & B2_14_Delevan-Vaca Dixon No.3 230 kV Line	C3	N-1-1		103.1		Rerate or reconductor
NV-SpP-T-40	30114 DELEVN 230 30450 CORTINA 230 1	B2_14_Delevan-Vaca Dixon No.3 230 kV Line & B2_13_Delevan-Vaca Dixon No.2 230 kV Line	C3	N-1-1		103.1		Rerate or reconductor

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-41	30114 DELEVN 230 30450 CORTINA 230 1	B2_14_Delevan-Vaca Dixon No.3 230 kV Line & B2_15_Delevan-Vaca Dixon No.4 230 kV Line	C3	N-1-1		103.1		Rerate or reconductor
NV-SpP-T-42	30114 DELEVN 230 30450 CORTINA 230 1	B2_15_Delevan-Vaca Dixon No.4 230 kV Line & B2_14_Delevan-Vaca Dixon No.3 230 kV Line	C3	N-1-1		103.1		Rerate or reconductor
NV-SpP-T-43	30105 COTWD_E 230 30245 ROUND MT 230 3	B2_2_Cottonwood - Round Mountain #2 230 kV Line & B3_1_Round Mountain No.1 500/230 kV Transformer	C3	N-1-1		106.0		Rerate or reconductor
NV-SpP-T-44	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	B2_31_Table Mountain 230 kV No.1 500/230 KV Transformer & B2_30_Table Mountain(D)-Rio Oso 230 kV Line	C3	N-1-1		104.3		Explore potential mitigation
NV-SpP-T-45	31110 BRDGVLLE 60.0 31120 FRUTLDJT 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1		101.7		Explore potential mitigation
NV-SpP-T-46	31120 FRUTLDJT 60.0 31122 FTSWRDJT 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1		102.4		Explore potential mitigation
NV-SpP-T-47	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1		100.5		Explore potential mitigation
NV-SpP-T-48	31594 VOLTA 60.0 31583 Q720TP 60.0 1	B2_71_Coleman-Red Bluff 60 kV Line & B2_70_Coleman-Cottonwood 60 kV Line	C3	N-1-1		111.1		Explore potential mitigation
NV-SpP-T-49	31482 PALERMO 115 31516 WYANDJT2 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_37_CRBOU2-3 11.50 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-50	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_37_CRBOU2-3 11.50 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-51	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_37_CRBOU2-3 11.50 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-52	31482 PALERMO 115 31516 WYANDJT2 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_38_CRBOU2-3 11.50 Unit ID 2	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-53	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_38_CRBOU2-3 11.50 Unit ID 2	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-54	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_38_CRBOU2-3 11.50 Unit ID 2	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-55	38135 SIERVLTP 69.0 38136 MARBLE 69.0 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_53_HAMIL.BR 2.40 Unit ID 2	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-56	38135 SIERVLTP 69.0 38136 MARBLE 69.0 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_66_COLLINS 13.00 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-57	31482 PALERMO 115 31516 WYANDJT2 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_69_GRIZZLYG 6.90 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-58	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_69_GRIZZLYG 6.90 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS

Study Area: PG&E North Valley - Spring Peak

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-59	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B1_69_GRIZZLYG 6.90 Unit ID 1	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-60	38135 SIERVLTP 69.0 38136 MARBLE 69.0 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B3_48_Hamilton Branch PH No.1 60/9.11 kV Transformer	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-61	31482 PALERMO 115 31516 WYANDJT2 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B3_62_Grizzly PH No.1 115/6.9 kV Transformer	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-62	31488 GRIZ JCT 115 31512 BIG BEND 115 1	B3_19_Caribou No.11 230/115/60 kV Transformer & B3_62_Grizzly PH No.1 115/6.9 kV Transformer	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-63	31516 WYANDJT2 115 31512 BIG BEND 115 2	B3_19_Caribou No.11 230/115/60 kV Transformer & B3_62_Grizzly PH No.1 115/6.9 kV Transformer	C3	N-1-1		diverge		Caribou Thermal SPS
NV-SpP-T-64	31570 BENTON 60.0 31572 GIRVAN 60.0 1	B3_2_Cottonwood #1 230/115 kV Transformer & B3_5_Cottonwood #4 230/115 kV Transformer	C3	N-1-1		121.7		Explore potential mitigation
NV-SpP-T-65	31572 GIRVAN 60.0 31574 ANDERSON 60.0 1	B3_2_Cottonwood #1 230/115 kV Transformer & B3_5_Cottonwood #4 230/115 kV Transformer	C3	N-1-1		109.7		Explore potential mitigation
NV-SpP-T-66	31110 BRDGVLLE 60.0 31120 FRUTLDJT 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1		101.7		Explore potential mitigation
NV-SpP-T-67	31120 FRUTLDJT 60.0 31122 FTSWRDJT 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1		102.4		Explore potential mitigation

Study Area: **PG&E North Valley - Spring Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	
NV-SpP-T-68	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1		100.5		Explore potential mitigation
NV-SpP-T-69	32314 SMRTSVLE 60.0 32349 BEALE2J1 60.0 1	C5_13_Colgate	C5	DCTL		118.2		Explore potential mitigation
NV-SpP-T-70	30114 DELEVN 230 30450 CORTINA 230 1	C5_22_Delevan-Vaca	C5	DCTL		103.1		Rerate or reconductor

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-T-1	38135 SIERVLTP 69.0 38136 MARBLE 69.0 1	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1	<100.0	diverge		Explore potential mitigation
NV-NP-T-2	31482 PALERMO 115 31516 WYANDJT2 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	125.2	<100.0		Short term: Action Plan
NV-NP-T-3	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	105.7	<100.0		Short term: Action Plan
NV-NP-T-4	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	117.7	<100.0		Short term: Action Plan
NV-NP-T-5	31516 WYANDJT2 115 31512 BIG BEND 115 2	C1_25_Table Mountain 230 kV Bus Section 1D	C1	Bus	125.5	<100.0		Short term: Action Plan
NV-NP-T-6	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	125.4	<100.0		Short term: Action Plan
NV-NP-T-7	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	105.7	<100.0		Short term: Action Plan
NV-NP-T-8	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	117.8	<100.0		Short term: Action Plan
NV-NP-T-9	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	125.7	<100.0		Short term: Action Plan
NV-NP-T-10	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	125.6	<100.0		Short term: Action Plan
NV-NP-T-11	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	105.9	<100.0		Short term: Action Plan
NV-NP-T-12	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	118.0	<100.0		Short term: Action Plan
NV-NP-T-13	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	C2	CB	125.9	<100.0		Short term: Action Plan
NV-NP-T-14	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	125.6	<100.0		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-T-15	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	105.9	<100.0		Short term: Action Plan
NV-NP-T-16	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	118.1	<100.0		Short term: Action Plan
NV-NP-T-17	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_14_TABLE MOUNTAIN CB 412 BUS PARALLEL STUCK	C2	CB	125.9	<100.0		Short term: Action Plan
NV-NP-T-18	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	117.4	<100.0		Short term: Action Plan
NV-NP-T-19	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	119.2	<100.0		Short term: Action Plan
NV-NP-T-20	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	142.5	<100.0		Short term: Action Plan
NV-NP-T-21	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	CB	129.7	<100.0		Short term: Action Plan
NV-NP-T-22	31482 PALERMO 115 31516 WYANDJT2 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	125.6	<100.0		Short term: Action Plan
NV-NP-T-23	31486 CARIBOU 115 31488 GRIZ JCT 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	105.9	<100.0		Short term: Action Plan
NV-NP-T-24	31488 GRIZ JCT 115 31512 BIG BEND 115 1	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	118.1	<100.0		Short term: Action Plan
NV-NP-T-25	31516 WYANDJT2 115 31512 BIG BEND 115 2	C2_9_TABLE MOUNTAIN CB 412 STUCK	C2	CB	125.9	<100.0		Short term: Action Plan
NV-NP-T-26	31091 RDGE CBN 60.0 31093 HYMPOMJT 60.0 1	B2_35_Humboldt-Trinity 115 kV Line & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	106.0	<100.0		Short term: Action Plan
NV-NP-T-27	31092 MPLE CRK 60.0 31091 RDGE CBN 60.0 1	B2_35_Humboldt-Trinity 115 kV Line & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	105.7	<100.0		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-T-28	31553 BIG BAR 60.0 31093 HYMPOMJT 60.0 1	B2_35_Humboldt-Trinity 115 kV Line & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	107.0	<100.0		Short term: Action Plan
NV-NP-T-29	31555 TAP 65 60.0 31553 BIG BAR 60.0 1	B2_35_Humboldt-Trinity 115 kV Line & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	107.5	<100.0		Short term: Action Plan
NV-NP-T-30	31556 TRINITY 60.0 31555 TAP 65 60.0 1	B2_35_Humboldt-Trinity 115 kV Line & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	107.5	<100.0		Short term: Action Plan
NV-NP-T-31	31556 TRINITY 60.0 31564 FRNCHGLH 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B2_38_Trinity-Cottonwood 115 kV Line	C3	N-1-1	110.9	<100.0		Short term: Action Plan
NV-NP-T-32	31564 FRNCHGLH 60.0 31566 KESWICK 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B2_38_Trinity-Cottonwood 115 kV Line	C3	N-1-1	112.7	<100.0		Short term: Action Plan
NV-NP-T-33	31566 KESWICK 60.0 31582 STLLWATR 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B2_38_Trinity-Cottonwood 115 kV Line	C3	N-1-1	135.0	<100.0		Short term: Action Plan
NV-NP-T-34	31580 CASCADE 60.0 31582 STLLWATR 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B2_38_Trinity-Cottonwood 115 kV Line	C3	N-1-1	123.1	<100.0		Short term: Action Plan
NV-NP-T-35	31116 GRBRVLLE 60.0 31118 KEKAWAKA 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-36	31120 FRUTLDJT 60.0 31122 FTSWRDJT 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-T-37	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-38	31306 WILLITS 60.0 31308 LYTNVLLE 60.0 1	B2_36_Bridgeville-Cottonwood 115 kV Line & B3_32_Trinity No.1 115/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-39	31576 WNTU PMS 60.0 31570 BENTON 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-40	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-41	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-42	31116 GRBRVLLE 60.0 31118 KEKAWAKA 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-43	31120 FRUTLDJT 60.0 31122 FTSWRDJT 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-44	31122 FTSWRDJT 60.0 31116 GRBRVLLE 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	diverge	<100.0		Short term: Action Plan
NV-NP-T-45	31306 WILLITS 60.0 31308 LYTNVLLE 60.0 1	B3_32_Trinity No.1 115/60 kV Transformer & B2_36_Bridgeville-Cottonwood 115 kV Line	C3	N-1-1	diverge	<100.0		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-T-46	31580 CASCADE 60.0 31581 OREGNTRL 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	144.0	<100.0		Short term: Action Plan
NV-NP-T-47	31581 OREGNTRL 60.0 31578 LOMS JCT 60.0 1	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	139.8	<100.0		Short term: Action Plan

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-1	VINA 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	9.127	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-2	GERBER 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.226	Explore potential mitigation
NV-SP-VD-3	CARIBOU 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.024	6.388	Explore potential mitigation
NV-SP-VD-4	CARIBOU 115kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	6.019	Explore potential mitigation
NV-SP-VD-5	CARIBOU 230kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	5.199	Explore potential mitigation
NV-SP-VD-6	CHESTER 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	6.941	8.812	10.722	Explore potential mitigation
NV-SP-VD-7	GANSNER 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.112	6.498	Explore potential mitigation
NV-SP-VD-8	HOWELLS 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.083	6.462	Explore potential mitigation
NV-SP-VD-9	RWSN J2 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.104	Explore potential mitigation
NV-SP-VD-10	TYLERJT 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.122	Explore potential mitigation
NV-SP-VD-11	BIG BEND 115kV	B3_19_Caribou No.11 230/115/60 kV Transformer	B	T-1	<5.0	<5.0	5.061	Explore potential mitigation
NV-SP-VD-12	BIG MDWS 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.328	6.957	Explore potential mitigation
NV-SP-VD-13	CARBOU M 230kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	5.982	Explore potential mitigation
NV-SP-VD-14	CLMN JCT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	8.761	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-15	DIRYVLLE 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	8.981	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-16	ELIZ JT1 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.097	6.48	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-17	ELIZ JT2 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.102	6.485	Explore potential mitigation
NV-SP-VD-18	GRS F JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	5.237	Explore potential mitigation
NV-SP-VD-19	HMLTN BR 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.539	7.39	Explore potential mitigation
NV-SP-VD-20	LP FB SP 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.132	Explore potential mitigation
NV-SP-VD-21	LS ML JT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	9.086	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-22	LS MLNSJ 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	9.099	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-23	RED B JT 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.076	Explore potential mitigation
NV-SP-VD-24	RED BLFF 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	12.608	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-25	SPANSHCK 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	5.101	6.485	Explore potential mitigation
NV-SP-VD-26	ULTR WSD 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	6.988	Explore potential mitigation
NV-SP-VD-27	WESTWOOD 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	<5.0	6.909	Explore potential mitigation
NV-SP-VD-28	SPI 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	7.906	9.542	Explore potential mitigation
NV-SP-VD-29	VINA 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	10.179	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-30	VOLTA 60kV	B2_101_Volta-South 60 kV Line (between Q720 New Lassen Lodge an	B	L-1/G-1	5.151	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-31	EST Q1 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	7.923	9.562	Explore potential mitigation
NV-SP-VD-32	GERBER 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.441	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-33	KILARC 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.306	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-34	CARIBOU 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.054	13.911	Explore potential mitigation
NV-SP-VD-35	CHESTER 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	8.651	16.848	19.398	Explore potential mitigation
NV-SP-VD-36	GANSNER 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.28	14.175	Explore potential mitigation
NV-SP-VD-37	HOWELLS 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.204	14.086	Explore potential mitigation
NV-SP-VD-38	RWSN J2 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.313	Explore potential mitigation
NV-SP-VD-39	TKO TAP 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.339	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-40	TYLERJT 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.331	Explore potential mitigation
NV-SP-VD-41	AMERESCO 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	L-1	7.232	5.423	7.305	Explore potential mitigation
NV-SP-VD-42	BIG BEND 115kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	6.888	8.247	Explore potential mitigation
NV-SP-VD-43	BIG MDWS 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	5.138	12.768	14.953	Explore potential mitigation
NV-SP-VD-44	BIGGSJCT 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	5.528	<5.0	5.28	Explore potential mitigation
NV-SP-VD-45	BTTE CRK 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.378	5.555	7.47	Explore potential mitigation
NV-SP-VD-46	CARBOU M 230kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	11.923	13.695	Explore potential mitigation
NV-SP-VD-47	CEDR CRK 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.331	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-48	CLARK RD 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.412	5.596	7.469	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-49	CLMN JCT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	9.757	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-50	CLOV TAP 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.312	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-51	CNTRVLLE 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.333	5.519	7.413	Explore potential mitigation
NV-SP-VD-52	COWCK TP 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.339	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-53	DE SABLA 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	L-1	7.378	5.555	7.47	Explore potential mitigation
NV-SP-VD-54	DESCHUTS 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.407	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-55	DIRYVLLE 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	10.01	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-56	DRHM JCA 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	L-1	7.291	5.484	7.355	Explore potential mitigation
NV-SP-VD-57	DRHMSW45 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	L-1	7.296	5.489	7.359	Explore potential mitigation
NV-SP-VD-58	ELIZ JT1 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.241	14.129	Explore potential mitigation
NV-SP-VD-59	ELIZ JT2 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.253	14.143	Explore potential mitigation
NV-SP-VD-60	ELIZ TWN 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	8.515	10.193	Explore potential mitigation
NV-SP-VD-61	EST Q JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	7.923	9.562	Explore potential mitigation
NV-SP-VD-62	EST QNCY 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	7.923	9.563	Explore potential mitigation
NV-SP-VD-63	GRBR JCT 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.335	Explore potential mitigation
NV-SP-VD-64	GRIZ JCT 115kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	10.49	12.182	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-65	GRIZZLY1 115kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	10.49	12.183	Explore potential mitigation
NV-SP-VD-66	GRS F JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	10.32	12.096	Explore potential mitigation
NV-SP-VD-67	GRYS FLT 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.205	14.087	Explore potential mitigation
NV-SP-VD-68	HMLTN BR 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	5.367	13.304	15.751	Explore potential mitigation
NV-SP-VD-69	LP FB SP 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.342	Explore potential mitigation
NV-SP-VD-70	LS ML JT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	10.131	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-71	LS MLNSJ 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	10.146	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-72	MCNE JCT 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.486	5.693	7.502	Explore potential mitigation
NV-SP-VD-73	OLSEN JT 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.323	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-74	PEACHTON 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	L-1	5.151	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-75	PLMS JCT 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	7.923	9.562	Explore potential mitigation
NV-SP-VD-76	RED B JT 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00	B	L-1	<5.0	<5.0	5.284	Explore potential mitigation
NV-SP-VD-77	RED BLFF 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	13.827	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-78	SPANSHCK 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.252	14.142	Explore potential mitigation
NV-SP-VD-79	TBLE MTN 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.491	5.703	7.499	Explore potential mitigation
NV-SP-VD-80	TRES VIS 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	6.256	<5.0	6.165	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-81	ULTR WSD 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.948	15.565	Explore potential mitigation
NV-SP-VD-82	WESTWOOD 60kV	B2_24_Caribou-Table Mountain 230 kV Line	B	L-1	<5.0	12.878	15.525	Explore potential mitigation
NV-SP-VD-83	WHITMORE 60kV	B2_62_Cascade-Benton-Deschutes 60 kV Line	B	L-1	5.331	<5.0	<5.0	Short term: Action Plan
NV-SP-VD-84	AMERESCOTAP 60kV	B3_28_Table Mountain No.2 230/115/60 kV Transformer	B	T-1	7.239	5.43	7.311	Explore potential mitigation
NV-SP-VD-85	Q720 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	32.924	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-86	VINA 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	58.878	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-87	SOUTH 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	36.564	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-88	VOLTA 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	32.179	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-89	BENTON 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	17.049	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-90	GIRVAN 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	18.385	<10.0	5.333	Explore potential mitigation
NV-SP-VD-91	INSKIP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	40.054	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-92	KILARC 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.557	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-93	Q720TP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	34.019	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-94	CHICO B 115kV	C1_42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	C1	Bus	11.054	6.309	7.069	Explore potential mitigation
NV-SP-VD-95	COLEMAN 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	46.503	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-96	TKO TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.678	<10.0	<10.0	Short term: Action Plan

Study Area: PG&E North Valley - Summer Peak

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-97	ANDERSON 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	21.045	6.922	8.231	Explore potential mitigation
NV-SP-VD-98	CEDR CRK 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.646	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-99	CHICOTP1 115kV	C1_42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	C1	Bus	11.016	6.288	7.045	Explore potential mitigation
NV-SP-VD-100	CLMN FSH 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	46.649	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-101	CLMN JCT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	57.355	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-102	CLMN TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	46.605	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-103	CLOV TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.576	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-104	COWCK TP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.679	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-105	DESCHUTS 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.924	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-106	DIRYVLLE 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	58.333	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-107	LOMS JCT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	13.993	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-108	LS ML JT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	58.733	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-109	LS MLNSJ 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	58.779	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-110	OLSEN JT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.617	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-111	OREGNTRL 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	11.267	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-112	RED B JT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	62.456	<10.0	<10.0	Short term: Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-VD-113	RED BLFF 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	62.328	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-114	WHITMORE 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	16.648	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-115	WNTU PMS 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	15.177	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-199	CHESTER 60kV	C5_6_Table	C5	DCTL	6.95	8.822	10.749	Explore potential mitigation
NV-SP-VD-200	BIGGSJCT 60kV	C5_15_Palermo-Pease	C5	DCTL	12.22	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-201	PEACHTON 60kV	C5_15_Palermo-Pease	C5	DCTL	13.433	<10.0	<10.0	Short term: Action Plan
NV-SP-VD-202	TRES VIS 60kV	C5_15_Palermo-Pease	C5	DCTL	9.419	<10.0	<10.0	Short term: Action Plan

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	

No voltage deviation concerns were identified.

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-VD-1	TAP 65 60kV	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	Bus	11	<10.0		Short term: Action Plan
NV-NP-VD-2	JESSTAP 115kV	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	Bus	10	<10.0		Short term: Action Plan
NV-NP-VD-3	TRINITY 60kV	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	Bus	11	<10.0		Short term: Action Plan
NV-NP-VD-4	FRNCHGLH 60kV	C2_15_COTTONWOOD BUS PARALLEL BKR STUCK 115KV	C2	Bus	12	<10.0		Short term: Action Plan
NV-NP-VD-10	BIGGSJCT 60kV	C5_15_Palermo-Pease	C5	DCTL	11.818	<10.0		Short term: Action Plan
NV-NP-VD-11	PEACHTON 60kV	C5_15_Palermo-Pease	C5	DCTL	13.35	<10.0		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Peak**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-1	VINA 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	T-1	0.8641	>0.9	>0.9	Short term: Action Plan
NV-SP-V-2	TYLER 60kV	B3_3_Cottonwood #2 230/60 kV Transformer	B	T-1	0.8994	>0.9	>0.9	Short term: Action Plan
NV-SP-V-3	CANAL TP 60kV	B3_3_Cottonwood #2 230/60 kV Transformer	B	T-1	0.8996	>0.9	>0.9	Short term: Action Plan
NV-SP-V-4	CR CANAL 60kV	B3_3_Cottonwood #2 230/60 kV Transformer	B	T-1	0.8986	>0.9	>0.9	Short term: Action Plan
NV-SP-V-5	DIRYVLLE 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	0.8788	>0.9	>0.9	Short term: Action Plan
NV-SP-V-6	LS ML JT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	0.8683	>0.9	>0.9	Short term: Action Plan
NV-SP-V-7	LS MLNSJ 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	0.8669	>0.9	>0.9	Short term: Action Plan
NV-SP-V-8	RED BLFF 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line	B	L-1	0.8495	>0.9	>0.9	Short term: Action Plan
NV-SP-V-9	SPI 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8749	0.8643	Explore potential mitigation
NV-SP-V-10	VINA 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line & B1_47_VOLTA1-2 9.11 Unit ID 1	B	L-1/G-1	0.8603	>0.9	>0.9	Short term: Action Plan
NV-SP-V-11	TYLER 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B1_10_MALCHA 13.80 Unit ID 1	B	L-1/G-1	0.8987	>0.9	>0.9	Short term: Action Plan
NV-SP-V-12	EST Q1 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8749	0.8642	Explore potential mitigation
NV-SP-V-13	CARIBOU 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8925	0.8749	Explore potential mitigation

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-14	CARIBOU 115kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	>0.9	0.8945	Explore potential mitigation
NV-SP-V-15	CARIBOU 230kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	>0.9	0.8944	Explore potential mitigation
NV-SP-V-16	CHESTER 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8481	0.8212	Explore potential mitigation
NV-SP-V-17	GANSNER 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8795	0.8618	Explore potential mitigation
NV-SP-V-18	HOWELLS 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8853	0.8676	Explore potential mitigation
NV-SP-V-19	BIG MDWS 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	0.9601	0.8826	0.8603	Explore potential mitigation
NV-SP-V-20	CANAL TP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B1_10_MALCHA 13.80 Unit ID 1	B	L-1/G-1	0.8989	>0.9	>0.9	Short term: Action Plan
NV-SP-V-21	CARBOU M 230kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	>0.9	0.8956	Explore potential mitigation
NV-SP-V-22	CLMN JCT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line & B1_73_INSKIP 4.16 Unit ID 1	B	L-1/G-1	0.8979	>0.9	>0.9	Short term: Action Plan
NV-SP-V-23	CR CANAL 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B1_10_MALCHA 13.80 Unit ID 1	B	L-1/G-1	0.898	>0.9	>0.9	Short term: Action Plan
NV-SP-V-24	DIRYVLLE 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line & B1_73_INSKIP 4.16 Unit ID 1	B	L-1/G-1	0.8766	>0.9	>0.9	Short term: Action Plan

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-25	ELIZ JT1 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8827	0.865	Explore potential mitigation
NV-SP-V-26	ELIZ JT2 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8821	0.8644	Explore potential mitigation
NV-SP-V-27	EST Q JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8749	0.8641	Explore potential mitigation
NV-SP-V-28	GRS F JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8857	0.8709	Explore potential mitigation
NV-SP-V-29	GRYS FLT 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8853	0.8676	Explore potential mitigation
NV-SP-V-30	HMLTN BR 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	0.958	0.877	0.8509	Explore potential mitigation
NV-SP-V-31	LS ML JT 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line & B1_73_INSKIP 4.16 Unit ID 1	B	L-1/G-1	0.8661	>0.9	>0.9	Short term: Action Plan
NV-SP-V-32	PLMS JCT 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8749	0.8641	Explore potential mitigation
NV-SP-V-33	RED BLFF 60kV	B2_73_Cottonwood-Red Bluff 60 kV Line & B1_73_INSKIP 4.16 Unit ID 1	B	L-1/G-1	0.8472	>0.9	>0.9	Short term: Action Plan
NV-SP-V-34	SPANSHCK 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.882	0.8643	Explore potential mitigation
NV-SP-V-35	ULTR WSD 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8757	0.8472	Explore potential mitigation

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-36	WESTWOOD 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	B	L-1/G-1	>0.9	0.8756	0.8466	Explore potential mitigation
NV-SP-V-37	Q720 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.7084	>0.9	>0.9	Explore potential mitigation
NV-SP-V-38	VINA 60kV	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	0.8469	>0.9	>0.9	Explore potential mitigation
NV-SP-V-39	SOUTH 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.6694	>0.9	>0.9	Explore potential mitigation
NV-SP-V-40	TYLER 60kV	C1_16_Round Mountain 230 kV Bus Section 2E w/ Hatchet Ridge SPS	C1	Bus	0.8989	>0.9	>0.9	Explore potential mitigation
NV-SP-V-41	VOLTA 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.7123	>0.9	>0.9	Explore potential mitigation
NV-SP-V-42	BENTON 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8479	>0.9	>0.9	Explore potential mitigation
NV-SP-V-43	GIRVAN 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8316	>0.9	>0.9	Explore potential mitigation
NV-SP-V-44	INSKIP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.6338	>0.9	>0.9	Explore potential mitigation
NV-SP-V-45	KILARC 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8707	>0.9	>0.9	Explore potential mitigation
NV-SP-V-46	Q720TP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.6951	>0.9	>0.9	Explore potential mitigation
NV-SP-V-47	COLEMAN 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.5655	>0.9	>0.9	Explore potential mitigation
NV-SP-V-48	TKO TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8614	>0.9	>0.9	Explore potential mitigation
NV-SP-V-49	ANDERSON 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8098	>0.9	>0.9	Explore potential mitigation
NV-SP-V-50	CANAL TP 60kV	C1_16_Round Mountain 230 kV Bus Section 2E w/ Hatchet Ridge SPS	C1	Bus	0.8991	>0.9	>0.9	Explore potential mitigation
NV-SP-V-51	CEDR CRK 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8659	>0.9	>0.9	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-52	CLMN FSH 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.5638	>0.9	>0.9	Explore potential mitigation
NV-SP-V-53	CLMN JCT 60kV	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	0.8838	>0.9	>0.9	Explore potential mitigation
NV-SP-V-54	CLMN TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.5647	>0.9	>0.9	Explore potential mitigation
NV-SP-V-55	CLOV TAP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.87	>0.9	>0.9	Explore potential mitigation
NV-SP-V-56	COWCK TP 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8614	>0.9	>0.9	Explore potential mitigation
NV-SP-V-57	CR CANAL 60kV	C1_16_Round Mountain 230 kV Bus Section 2E w/ Hatchet Ridge SPS	C1	Bus	0.8982	>0.9	>0.9	Explore potential mitigation
NV-SP-V-58	DESCHUTS 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8432	>0.9	>0.9	Explore potential mitigation
NV-SP-V-59	DIRYVLLE 60kV	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	0.862	>0.9	>0.9	Explore potential mitigation
NV-SP-V-60	LOMS JCT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.876	>0.9	>0.9	Explore potential mitigation
NV-SP-V-61	LS ML JT 60kV	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	0.8512	>0.9	>0.9	Explore potential mitigation
NV-SP-V-62	LS MLNSJ 60kV	C1_52_BUS FAULT AT 31602 COLEMAN 60.00	C1	Bus	0.8498	>0.9	>0.9	Explore potential mitigation
NV-SP-V-63	OLSEN JT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8666	>0.9	>0.9	Explore potential mitigation
NV-SP-V-64	RED B JT 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.3523	>0.9	>0.9	Explore potential mitigation
NV-SP-V-65	RED BLFF 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.3523	>0.9	>0.9	Explore potential mitigation
NV-SP-V-66	WHITMORE 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8645	>0.9	>0.9	Explore potential mitigation
NV-SP-V-67	WNTU PMS 60kV	C1_53_BUS FAULT AT 31604 COTTONWD 60.00	C1	Bus	0.8655	>0.9	>0.9	Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-68	TYLER 60kV	C2_5_COTTONWOOD CB 412 STUCK W SPS	C2	CB	0.8989	>0.9	>0.9	Explore potential mitigation
NV-SP-V-69	CANAL TP 60kV	C2_5_COTTONWOOD CB 412 STUCK W SPS	C2	CB	0.8991	>0.9	>0.9	Explore potential mitigation
NV-SP-V-70	CR CANAL 60kV	C2_5_COTTONWOOD CB 412 STUCK W SPS	C2	CB	0.8981	>0.9	>0.9	Explore potential mitigation
NV-SP-V-71	PPL 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.7609	>0.9	>0.9	Explore potential mitigation
NV-SP-V-72	SPI 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8749	0.8643	Explore potential mitigation
NV-SP-V-73	Q720 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.534	>0.9	>0.9	Explore potential mitigation
NV-SP-V-74	VINA 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8603	>0.9	>0.9	Explore potential mitigation
NV-SP-V-75	SOUTH 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.4969	>0.9	>0.9	Explore potential mitigation
NV-SP-V-76	TYLER 60kV	B1_10_MALCHA 13.80 Unit ID 1 & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8987	>0.9	>0.9	Explore potential mitigation
NV-SP-V-77	VOLTA 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.5306	>0.9	>0.9	Explore potential mitigation
NV-SP-V-78	ANTLER 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.7609	>0.9	>0.9	Explore potential mitigation
NV-SP-V-79	BENTON 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.5196	>0.9	>0.9	Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-80	EST Q1 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	>0.9	>0.9	Explore potential mitigation
NV-SP-V-81	GERBER 60kV	B2_109_NewBus 60.00 to RED BLFF 60.00 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	>0.9	>0.9	>0.9	Explore potential mitigation
NV-SP-V-82	GIRVAN 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.4754	>0.9	>0.9	Explore potential mitigation
NV-SP-V-83	INSKIP 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.4637	>0.9	>0.9	Explore potential mitigation
NV-SP-V-84	KILARC 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.6544	>0.9	>0.9	Explore potential mitigation
NV-SP-V-85	Q720TP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.5201	>0.9	>0.9	Explore potential mitigation
NV-SP-V-86	CARIBOU 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	>0.9	>0.9	Explore potential mitigation
NV-SP-V-87	CASCADE 115kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.8959	>0.9	>0.9	Explore potential mitigation
NV-SP-V-88	CHESTER 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	>0.9	>0.9	Explore potential mitigation
NV-SP-V-89	COLEMAN 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.4034	>0.9	>0.9	Explore potential mitigation
NV-SP-V-90	GANSNER 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8973	0.88	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-91	HOWELLS 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8853	0.8676	Explore potential mitigation
NV-SP-V-92	KESWICK 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.8309	>0.9	>0.9	Explore potential mitigation
NV-SP-V-93	PALERMO 230kV	B2_29_Table Mountain(D)-Palermo 230 kV Line & B2_34_Palermo-Colgate 230 kV Line	C3	N-1-1	0.8877	>0.9	>0.9	Explore potential mitigation
NV-SP-V-94	RWSN J2 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.3303	>0.9	>0.9	Explore potential mitigation
NV-SP-V-95	TKO TAP 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.6428	>0.9	>0.9	Explore potential mitigation
NV-SP-V-96	TYLERJT 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.3259	>0.9	>0.9	Explore potential mitigation
NV-SP-V-97	ANDERSON 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.4121	>0.9	>0.9	Explore potential mitigation
NV-SP-V-98	BIG MDWS 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8826	0.8603	Explore potential mitigation
NV-SP-V-99	CANAL TP 60kV	B1_10_MALCHA 13.80 Unit ID 1 & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8989	>0.9	>0.9	Explore potential mitigation
NV-SP-V-100	CARBOU M 230kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.9125	0.8956	Explore potential mitigation
NV-SP-V-101	CEDR CRK 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6494	>0.9	>0.9	Explore potential mitigation

Study Area: **PG&E North Valley - Summer Peak**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-102	CLMN FSH 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.4001	>0.9	>0.9	Explore potential mitigation
NV-SP-V-103	CLMN JCT 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8965	>0.9	>0.9	Explore potential mitigation
NV-SP-V-104	CLMN TAP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.4009	>0.9	>0.9	Explore potential mitigation
NV-SP-V-105	CLOV TAP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6549	>0.9	>0.9	Explore potential mitigation
NV-SP-V-106	COTTONWD 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.3902	>0.9	>0.9	Explore potential mitigation
NV-SP-V-107	COWCK TP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6443	>0.9	>0.9	Explore potential mitigation
NV-SP-V-108	CR CANAL 60kV	B1_10_MALCHA 13.80 Unit ID 1 & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.898	>0.9	>0.9	Explore potential mitigation
NV-SP-V-109	DESCHUTS 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6213	>0.9	>0.9	Explore potential mitigation
NV-SP-V-110	DIRYVLLE 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8751	>0.9	>0.9	Explore potential mitigation
NV-SP-V-111	ELIZ JT1 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8827	0.865	Explore potential mitigation
NV-SP-V-112	ELIZ JT2 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8821	0.8644	Explore potential mitigation

Study Area: PG&E North Valley - Summer Peak

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-113	ELIZ TWN 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8777	0.8659	Explore potential mitigation
NV-SP-V-114	EST Q JT 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8961	0.8849	Explore potential mitigation
NV-SP-V-115	EST QNCY 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8961	0.8848	Explore potential mitigation
NV-SP-V-116	GRBR JCT 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.3264	>0.9	>0.9	Explore potential mitigation
NV-SP-V-117	GRS F JT 60kV	B2_24_Caribou-Table Mountain 230 kV Line & B1_67_SPI-QUCY 13.80 Unit ID 1	C3	N-1-1	>0.9	0.8868	0.8735	Explore potential mitigation
NV-SP-V-118	GRYS FLT 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8853	0.8676	Explore potential mitigation
NV-SP-V-119	HMLTN BR 60kV	B3_49_SPI Quincy PH No.1 60/9.11 kV Transformer & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8956	0.8705	Explore potential mitigation
NV-SP-V-120	LOMS JCT 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6508	>0.9	>0.9	Short term: Action Plan
NV-SP-V-121	LP FB SP 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.3232	>0.9	>0.9	Short term: Action Plan
NV-SP-V-122	LS ML JT 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8645	>0.9	>0.9	Short term: Action Plan
NV-SP-V-123	LS MLNSJ 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8631	>0.9	>0.9	Short term: Action Plan

Study Area: PG&E North Valley - Summer Peak

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-124	MTN GATE 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.7685	>0.9	>0.9	Short term: Action Plan
NV-SP-V-125	NEO REDT 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.2527	>0.9	>0.9	Short term: Action Plan
NV-SP-V-126	OLSEN JT 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.6507	>0.9	>0.9	Short term: Action Plan
NV-SP-V-127	OREGNTRL 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.7154	>0.9	>0.9	Short term: Action Plan
NV-SP-V-128	PALRMO M 230kV	B2_29_Table Mountain(D)-Palermo 230 kV Line & B2_34_Palermo-Colgate 230 kV Line	C3	N-1-1	0.8894	>0.9	>0.9	Short term: Action Plan
NV-SP-V-129	PLMS JCT 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8749	0.8641	Explore potential mitigation
NV-SP-V-130	RASN JNT 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.2503	>0.9	>0.9	Short term: Action Plan
NV-SP-V-131	RED B JT 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.317	>0.9	>0.9	Short term: Action Plan
NV-SP-V-132	RED BLFF 60kV	B1_47_VOLTA1-2 9.11 Unit ID 1 & B2_73_Cottonwood-Red Bluff 60 kV Line	C3	N-1-1	0.8456	>0.9	>0.9	Short term: Action Plan
NV-SP-V-133	SPANSHCK 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.882	0.8643	Explore potential mitigation
NV-SP-V-134	STLLWATR 60kV	B3_4_Cottonwood No.3 230/60 kV Transformer & B3_3_Cottonwood #2 230/60 kV Transformer	C3	N-1-1	0.8009	>0.9	>0.9	Short term: Action Plan

Study Area: **PG&E North Valley - Summer Peak**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NV-SP-V-135	ULTR WSD 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8757	0.8472	Explore potential mitigation
NV-SP-V-136	WESTWOOD 60kV	B1_67_SPI-QUCY 13.80 Unit ID 1 & B2_24_Caribou-Table Mountain 230 kV Line	C3	N-1-1	>0.9	0.8756	0.8466	Explore potential mitigation
NV-SP-V-137	WHITMORE 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.6464	>0.9	>0.9	Short term: Action Plan
NV-SP-V-138	WNTU PMS 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.5924	>0.9	>0.9	Short term: Action Plan
NV-SP-V-139	TYLER 60kV	C5_11_Pit	C5	DCTL	0.8996	>0.9	>0.9	Short term: Action Plan
NV-SP-V-140	BIGGSJCT 60kV	C5_15_Palermo-Pease	C5	DCTL	0.8568	>0.9	>0.9	Short term: Action Plan
NV-SP-V-141	CANAL TP 60kV	C5_11_Pit	C5	DCTL	0.8998	>0.9	>0.9	Short term: Action Plan
NV-SP-V-142	CR CANAL 60kV	C5_24_Cottonwood(E)-Delevan	C5	DCTL	0.8989	>0.9	>0.9	Short term: Action Plan
NV-SP-V-143	PEACHTON 60kV	C5_15_Palermo-Pease	C5	DCTL	0.8457	>0.9	>0.9	Short term: Action Plan
NV-SP-V-144	TRES VIS 60kV	C5_15_Palermo-Pease	C5	DCTL	0.8897	>0.9	>0.9	Short term: Action Plan

Study Area: **PG&E North Valley - Spring Peak**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					N/A	2019 Spring Peak	N/A	

No high/low voltage concerns identified.

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NV-NP-V-1	TYLER 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8969	>0.9		Short term: Action Plan
NV-NP-V-2	CANAL TP 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8969	>0.9		Short term: Action Plan
NV-NP-V-3	CR CANAL 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8962	>0.9		Short term: Action Plan
NV-NP-V-4	NEO REDT 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8974	>0.9		Short term: Action Plan
NV-NP-V-5	RASN JNT 60kV	B3_3_Cottonwood #2 230/60 kV Transformer & B3_4_Cottonwood No.3 230/60 kV Transformer	C3	N-1-1	0.8975	>0.9		Short term: Action Plan
NV-NP-V-6	PEACHTON 60kV	C5_15_Palermo-Pease	C5	DCTL	0.888	>0.9		Short term: Action Plan

Study Area: **PG&E North Valley - Summer Peak**

Transient Stability

ID	Contingency	Category	Category Description	Transient Stability Performance			Potential Mitigation Solutions
				2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	

No transient stability concerns identified.

Study Area: **PG&E North Valley - Summer Peak**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	

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

Study Area: **PG&E North Valley - Spring Peak**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				N/A	2019 Spring Peak	N/A	

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

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				2016 Summer Off-Peak	2019 Summer Light Load	N/A	

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

Study Area: **PG&E North Valley - Summer Peak**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	

No single source substation with more than 100 MW Load

Study Area: **PG&E North Valley - Spring Peak**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		N/A	2019 Spring Peak	N/A	

No single source substation with more than 100 MW Load

Study Area: **PG&E North Valley - Summer Off-Peak & Summer Light Load**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		2016 Summer Off-Peak	2019 Summer Light Load	N/A	

No single source substation with more than 100 MW Load