

APPENDIX C: Reliability Assessment Study Results



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE Blk-T-1	Chico Jct-Anita 60 kV	normal conditions	P0	normal	135.7%	137.0%	113.6%	141.3%	<95%	<95%	<95%	radial line, section of Glenn-Anita line, mitigation in area studies
PGE Blk-T-2	Glenn-Capay Jct - Headgate 60 kV	normal conditions	P0	normal	121.0%	121.7%	100.6%	124.7%	<95%	<95%	<95%	radial line, section of Glenn-Anita line, mitigation in area studies
PGE Blk-T-3	Taft-TX_BV_Hills 70 kV	normal conditions	P0	normal	116.7%	116.7%	110.8%	117.5%	<95%	<95%	<95%	radial line, section of Taft-Elk Hills 70 kV, mitigation in area studies
PGE Blk-T-4	Highlands Jct-Low Lake Jct 115 kV	normal conditions	P0	normal	109.6%	104.1%	<95%	99.6%	<95%	<95%	<95%	section of Eagle Rk-Red Bud 115 kV line, wrong rating
PGE Blk-T-5	Vaca Dix- Winters-Plain Fld 60 kV	normal conditions	P0	normal	107.7%	110.0%	<95%	<95%	<95%	<95%	<95%	radial line, low voltage (0.886), moved to 115 kV in 2025, mitigation in area studies
PGE Blk-T-6	Chowchilla-Chowchilla gen Jct 115 kV	normal conditions	P0	normal	99.1%	101.1%	<95%	102.5%	100.1%	<95%	<95%	reduce output from Chowch co-gen (bus 34301)
PGE Blk-T-7	E. Nicolaus-Plumas 60 kV	normal conditions	P0	normal	<95%	100.5%	108.6%	129.4%	<95%	<95%	<95%	radial line, mitigation in area studies
PGE Blk-T-8	Merced-Mc Farland 70 kV	normal conditions	P0	normal	<95%	100.1%	<95%	<95%	<95%	<95%	<95%	radial line, mitigation in area studies
PGE Blk-T-9	Midway-SM1T013041 (Semitropic) 115 kV	normal conditions	P0	normal	<95%	<95%	122.4%	116.7%	<95%	<95%	<95%	change Midway-Semitropic 115 kV line configuration
PGE Blk-T-10	Wyandette-Wyandette Jct (Palermo) 115 kV	normal conditions	P0	normal	<95%	<95%	<95%	101.2%	<95%	<95%	<95%	radial line, mitigation in area studies
PGE Blk-T-11	Avenal T - Kettleman T 70 kV	normal conditions	P0	normal	<95%	<95%	<95%	<95%	99.9%	<95%	100.4%	reduce output from Sun City
PGE Blk-T-13	Delevan-Cortina 230 kV	Olinda-Tracy 500 kV	P1	L-1	<95%	100.8%	<95%	100.7%	<95%	<95%	<95%	reduce Colusa generation or upgrade/rerate the line
PGE Blk-T-13	Delevan-Cortina 230 kV	Table Mtn-Vaca Dix 500 kV	P1	L-1	<95%	101.0%	<95%	100.5%	<95%	<95%	<95%	reduce Colusa generation or upgrade/rerate the line
PGE Blk-T-14	Eight Mile - Lodi 230 kV	Table Mtn 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	<95%	98.1%	<95%	<95%	not a violation, reduce Lodi generation if overload
PGE Blk-T-14	Eight Mile - Lodi 230 kV	Table Mtn 500/230 kV x-former & Diablo # 1 unit	P3	T-1/G-1	<95%	<95%	<95%	<95%	99.7%	<95%	<95%	not a violation, reduce Lodi generation if overload
PGE Blk-T-15	MOSSLND2 - LASAGUIL 230 kV #2	Moss Landing 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	<95%	<95%	<95%	96.6%	not a violation

Thermal Overloads

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE Blk-T-12	Rnd Mtn –Table Mtn #1 or #2 500 kV	Rnd Mtn –Table Mtn #2 or #1 500 kV	P1	L-1	101.1%	102.1%	<95%	102.8%	<95%	<95%	<95%	bypass ser caps on the remaining Round Mtn-Table Mtn 500 kV line or Tbl Mtn-Vaca Dix or reduce COI flow according to seasonal nomogram
PGE Blk-T-16	Round Mtn 500/230 kV x-former	Capt Jack-Olinda 500 kV	P1	L-1	<95%	<95%	<95%	<95%	<95%	<95%	98.6%	not a violation, turning off shunt cap at Malin will reduce flow
PGE Blk-T-13	Delevan-Cortina 230 kV	Vaca Dix 500 kV stuck brk	P4	BRK	<95%	103.1%	<95%	101.5%	<95%	<95%	<95%	upgrade/erate the line or reduce Colusa generation, Colusa dispatch is lower in 2017
PGE Blk-T-15	MOSSLND2-LASAGUIL 230.0 #2	Los Banos stuck Brk 500 kV	P4	BRK	<95%	<95%	<95%	<95%	<95%	<95%	98.1%	not a violation
PGE Blk-T-15	MOSSLND2 - LASAGUIL 230 kV #2	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	189.0%	112.3%	167.2%	117.8%	<95%	166.0%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE Blk-T-15	MOSSLND2 - LASAGUIL 230 kV #2	Moss Landing-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	103.0%	<95%	96.6%	<95%	<95%	115.6%	Open Mosslanding-Lasaguilass 230 kV line
PGE Blk-T-26	LASAGUILASS - PANOCHE 230 1 & 2	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	108.6%	<95%	99.4%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE Blk-T-27	LONETREE-USWP-JRW 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	100.9%	<95%	<95%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE Blk-T-28	LS ESTEROS - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	<95%	106.0%	<95%	<95%	<95%	<95%	<95%	dispatch Ls Esteros peakers after 1st contingency
PGE Blk-T-28	LS ESTEROS - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	145.4%	<95%	120.1%	100.4%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE BIK-T-29	METCALF 500/230 kV x-former #13	Metcalf 500/230 kV Tranformers #11 and #12	P6	T-1/T-1	<95%	117.0%	<95%	105.8%	<95%	<95%	<95%	dispatch Ls Esteros peakers after 1st contingency, trip load in San Jose if overload persists
PGE BIK-T-30	N.DUBLIN-CAYETANO 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	102.1%	<95%	<95%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE BIK-T-31	NEWARK 230/115 # 11	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	103.4%	<95%	<95%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE BIK-T-32	NEWARK E - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	<95%	109.1%	<95%	<95%	<95%	<95%	<95%	dispatch Ls Esteros peakers after 1st contingency
PGE BIK-T-32	NEWARK E - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	145.7%	96.3%	122.5%	97.9%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE BIK-T-33	NEWARK F - LCKHD J1 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	136.4%	103.5%	125.6%	97.9%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE BIK-T-34	NEWARK F -DIXON LD 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	109.8%	<95%	96.4%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE BIK-T-21	OLINDA 500 / 230 kV transformer	Malin-Round Mountain #1 and Olinda-Tracy 500 kV	P6	L-1/L-1	<95%	<95%	<95%	<95%	<95%	<95%	107.7%	use Colusa SPS for off-peak overload
PGE BIK-T-12	ROUND MT -TABLE MT 500 kV #2 (or #1)	Round Mountain-Table Mountain #1 (or # 2) and Olinda-Tracy 500 kV	P6	L-1/L-1	<95%	<95%	97.5%	106.0%	<95%	<95%	<95%	Reduce flow after first contingency. Bypass series caps on remaining Round Mtn-Table Mtn line if overload
PGE BIK-T-12	ROUND MT -TABLE MT 500 kV #2 (or #1)	Round Mountain-Table Mountain #1 (or # 2) and Capt Jack-Olinda 500 kV	P6	L-1/L-1	<95%	<95%	<95%	101.9%	<95%	<95%	<95%	Reduce flow after first contingency. Bypass series caps on remaining Round Mtn-Table Mtn line if overload

Thermal Overloads

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE Blk-T-35	TRACY 500 /230 kV x-former #1	Tesla-Tracy 500 kV Line and Tracy 500/230 kV x-former # 2	P6	L-1/T-1	<95%	108.1%	<95%	105.3%	<95%	<95%	<95%	open Tracy-Tesla 230 kV lines if overload
PGE Blk-T-36	TRIMBLE-SJB DG 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	129.8%	116.9%	136.4%	103.9%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE Blk-T-37	USWP-JRW-CAYETANO 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	<95%	108.2%	97.0%	99.5%	<95%	<95%	<95%	Dispatch generation in San Jose. Sectionalize San Jose system. Other mitigation measures are being evaluated.
PGE Blk-T-17	Captain Jack-Olinda 500 kV	Malin- Round Mtn #1 and #2 500 kV	P7	L-2	103.2%	104.9%	99.5%	104.5%	<95%	<95%	96.5%	operate within COI nomogram
PGE Blk-T-17	Captain Jack-Olinda 500 kV	Round Mtn-Table Mtn # 1 and # 2 500 kV	P7	L-2	104.1%	106.2%	99.3%	105.6%	<95%	<95%	<95%	operate within COI nomogram
PGE Blk-T-19	Cottonwd E-Round Mtn 230kV #3	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	101.9%	105.0%	<95%	105.6%	<95%	<95%	<95%	upgrade the line, or limit COI import within nomogram
PGE Blk-T-20	Cottonwood-Round Mtn # 2 230 kV	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	<95%	95.7%	<95%	96.4%	<95%	<95%	<95%	upgrade the line, or limit COI import within nomogram
PGE Blk-T-13	Delevan-Cortina 230 kV	Round Mtn-Table Mtn # 1 and # 2 500 kV	P7	L-2	96.5%	110.8%	<95%	109.6%	<95%	<95%	<95%	upgrade/rerate the line, or modify RAS to trip Colusa generation
PGE Blk-T-13	Delevan-Cortina 230 kV	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	98.0%	112.5%	<95%	111.1%	<95%	<95%	<95%	upgrade/rerate the line, or modify RAS to trip Colusa generation
PGE Blk-T-22	Gregg-Ashlan 230 kV	Gregg-Herndon 230 kV # 1 and 2	P7	L-2	152.5%	<95%	<95%	<95%	<95%	<95%	<95%	Ashlan upgrade project, SPS prior to upgrade
PGE Blk-T-23	Midway-Kern #1 230 kV	Midway-Kern 230 kV # 2 and 3	P7	L-2	125.5%	<95%	<95%	<95%	<95%	<95%	<95%	trip Bakersfield and Stockdale load prior to upgrade
PGE Blk-T-9	Midway-SM1T0130 115 kV	Midway-Kern PP 230 kV # 2 and 3	P7	L-2	<95%	<95%	123.1%	118.2%	<95%	<95%	<95%	change Midway-Semitropic 115 kV line configuration in 2025
PGE Blk-T-21	Olinda500/230 kV x-former	Malin-Round Mtn # 1 and # 2 500 kV	P7	L-2	<95%	<95%	<95%	<95%	<95%	<95%	109.5%	use Colusa SPS
PGE Blk-T-24	Rio Oso-Gleaf Tp 115 kV	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	99.2%	<95%	<95%	<95%	<95%	<95%	<95%	South of Palermo Project. Prior to the project: limit COI import within nomogram
PGE Blk-T-16	Round Mtn 500/230 kV x-former	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	<95%	<95%	<95%	<95%	<95%	<95%	97.3%	open Round Mtn bank
PGE Blk-T-16	Round Mtn 500/230 kV x-former	Round Mtn-Table Mtn # 1 and # 2 500 kV	P7	L-2	<95%	<95%	<95%	<95%	<95%	<95%	108.6%	open Round Mtn bank
PGE Blk-T-25	Table Mtn-Rio Oso 230 kV	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	108.1%	113.4%	<95%	114.2%	<95%	<95%	<95%	Upgrade terminal equipment on this line.



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PGE Blk-T-18	Captain Jack-Ponderosa B 500 kV	PDCI bi-pole	P7	DC bipole	102.6%	100.2%	<95%	101.0%	N/A	<95%	N/A	don't insert Fort Rock series caps or operate within COI nomogram, contact BPA to discuss
PGE Blk-T-23	Ponderosa-Summer Lake 500 kV	PDCI bi-pole	P7	DC bipole	111.3%	<95%	<95%	<95%	N/A	<95%	N/A	contact BPA to discuss



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load		2025 Spring Off-Peak
PGE Blk-VD-1	HOLLISTR 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.4%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-2	NTVD SW2 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-3	NTVD SW1 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-4	Green Vly # 1 and 2 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-5	Camp Evers 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-6	Rob Roy 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.3%	<5%	5.4%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-7	Paul Sweet 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-8	PRUNEDLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	5.9%	<5%	5.1%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-9	SOLEDAD 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.6%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-10	SALINAS 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-11	Moss Landing E and D 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	5.7%	<5%	<5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-12	CSTRVLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	5.7%	<5%	<5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-13	Dolan Rd 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	<5%	5.7%	<5%	<5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-14	DEL MNTE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.1%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-15	HOLST D 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.4%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-16	SNBENITO 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-17	WTSNVLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-18	GRANT RK 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-19	BRIGTANO 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-20	LGNTS J1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-21	GABILAN 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-22	SALINAS2 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-23	SALINAS1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-24	BORONDA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-25	FORT ORD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps



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PGE Blk-VD-26	DEL MNTE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-27	MONTEREY 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-28	NAVY SCHL 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-29	VIEJO 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-30	HATTON 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-31	NAVY LAB 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-32	RSVTN RD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-33	LAURELES 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.6%	5.0%	5.7%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-34	OTTER 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.7%	5.1%	5.8%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-35	FRSHXPRS 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.3%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-36	BNA VSTA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.3%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-37	FIRESTNE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-38	SPENCE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.4%	<5%	5.5%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-39	SNBRN JT 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-40	IND.ACRE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.2%	<5%	5.3%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-41	9 ST JCT 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.7%	5.1%	5.8%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-42	CMPHR J2 and J1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.6%	5.0%	5.6%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-43	GONZALES 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.7%	5.1%	5.8%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-44	CAMPORA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.5%	5.0%	5.6%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-45	SOLEDAD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.5%	<5%	5.6%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-46	SLD ENRG 12.5	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.5%	<5%	5.6%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-47	CRZY_HRS 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.0%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-48	NATIVDAD 115.0	Moss Landing 500/230 kV x-former	P1	T-1	<5%	6.1%	<5%	5.2%	<5%	<5%	<5%	adjust svds and transformer taps
PGE Blk-VD-49	buses in NW 115 kV and below	PDCI mono-pole outage	P1	PDCI	<5%	<5%	<5%	up to 5.2%	N/A		N/A	adjust svds and transformer taps



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE Bk-VD-50	Sylmar 230 kV (SCE and LA)	PDCI mono-pole outage	P1	PDCI	<5%	<5%	<5%	<5%	N/A	up to -5.7% (deviation up)	N/A	turn off shunt caps at Sylmar



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak	
PGE Blk-V-1	500 kV in NW, Round Mt, Table Mt	normal conditions and all contingencies	P0	normal	<550 kV	<550 kV	<550 kV	<550 kV	up to 553 kV	up to 559 kV	up to 554 kV	consider installing additional reactors
PGE Blk-V-2	BIG EDDY 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	<550 kV	551	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-3	HANFORD 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-4	JOHN DAY 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-5	LANE 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	554	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-6	MARION 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	551	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-7	SLATT 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-8	TROUTDAL 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	551	<550 kV	<550 kV	551	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-9	WAUTOMA 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-10	CELILO1 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	<550 kV	551	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-11	CELILO2 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	553	<550 kV	<550 kV	551	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-12	ROCK CK 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-13	KNIGHT 500.0	Malin-Round Mtn 500 kV # 1 and 2	P7	L-2	551	<550 kV	<550 kV	550	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-14	ALVEY 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-15	ALVEY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	557	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-16	ASHE 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	540	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-17	ASHE 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-18	BIG EDDY 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	552	551	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-19	BIG EDDY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	552	552	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-20	BUCKLEY 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	555	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-21	BUCKLEY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	555	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-22	GRIZZLY 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	555	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-23	GRIZZLY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	554	<550 kV	555	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-24	HANFORD 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-25	HANFORD 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	554	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak		
PGE Blk-V-26	JOHN DAY 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	556	<550 kV	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-27	JOHN DAY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	557	<550 kV	553	551	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-28	LANE 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	558	<550 kV	559	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-29	LANE 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	560	<550 kV	559	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-30	MALIN 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	553	<550 kV	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-31	MALIN 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	557	552	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-32	MARION 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	557	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	activate SVD to absorbs VARs
PGE Blk-V-33	MARION 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	557	<550 kV	558	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-34	OSTRNDER 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	557	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-35	OSTRNDER 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	553	<550 kV	557	553	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-36	PEARL 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	<550 kV	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-37	PEARL 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	<550 kV	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-38	PONDROSB 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	554	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-39	PONDROSB 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	558	553	555	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-40	PONDROSA 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	550	557	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-41	PONDROSA 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	555	554	558	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-42	SANTIAM 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	554	<550 kV	557	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-43	SANTIAM 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	557	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-44	SLATT 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	556	<550 kV	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-45	SLATT 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	557	<550 kV	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-46	SUMMER L 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	556	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-47	SUMMER L 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	555	553	556	551	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-48	TROUTDAL 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	554	<550 kV	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-49	TROUTDAL 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	555	<550 kV	554	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-50	VANTAGE 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	550	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak		
PGE Blk-V-51	VANTAGE 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-52	WAUTOMA 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-53	WAUTOMA 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-54	CELILO1 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	551	551	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-55	CELILO1 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	552	553	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-56	CELILO2 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	551	551	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-57	CELILO2 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	552	553	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-580	ROCK CK 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-59	ROCK CK 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	<550 kV	553	550	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-60	KNIGHT 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	554	<550 kV	553	550	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-61	KNIGHT 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	555	<550 kV	553	552	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-62	BOARD F 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-63	BOARD F 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-40	COYOTE 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-65	COYOTE 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-66	LONGHORN 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	551	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-67	LONGHORN 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-68	ROUND BU 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	<550 kV	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-69	ROUND BU 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	552	<550 kV	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-70	CAPTJACK 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	550	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-71	CAPTJACK 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	556	553	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-72	DIXONVLE 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	557	<550 kV	550	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-73	DIXONVLE 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	560	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-40	MERIDINP 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	557	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-75	MERIDINP 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	560	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Spring Off-Peak		
PGE Blk-V-76	KFALLS 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	555	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V70	KFALLS 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	559	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off shunt capacitors at high voltage
PGE Blk-V-78	TABLE MT 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	<550 kV	turn off 227 MVA of shunt capacitors
PGE Blk-V-79	WHEELER 230	Midway-Vincent # 1 and # 2 500kV w/RAS	P7	L-2	206	>207 kV	>207 kV	>207 kV	>207 kV	>207 kV	>207 kV	>207 kV	install shunt capacitors (approved project)
PGE Blk-V-80	500 kV in NW	Diablo # 1 and #2 units	D	G-2	<550 kV	<550 kV	<550 kV	<550 kV	up to 578 kV	up to 571 kV	up to 586 kV		don't turn on FACRI
PGE Blk-V-81	500 kV in NW	Palo Verde # 1 and #2 units	D	G-2	<550 kV	<550 kV	<550 kV	<550 kV	up to 569 kV	up to 565 kV	up to 579 kV		don't turn on FACRI

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Summer Partial Peak	
PGE BIK-TS-1	wind generators at High Winds # 3 (bus 32171)	3 Ph fault Contra Costa-La Positas 230 KV	P1	L-1	tripped for undervoltage (10.5 MW)	tripped for undervoltage (10.5 MW)	tripped for undervoltage (12.5 MW)	tripped for undervoltage (10.5 MW)	tripped for undervoltage (38 MW)	tripped for undervoltage (6.4 MW)	tripped for undervoltage (38 MW)	these are old induction generator units that don't have LVRT, they may trip with faults close to these units
		3 Ph fault Tesla-Newark 230 KV	P1	L-1	none	none	none	none	none	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Newark-Ravenswood 230 kV	P1	L-1	none	none	none	none	none	tripped for undervoltage	none	
		3Ph fault C.-Costa-Brentwood and C.Costa-Delta 230 kV	P7	L-2	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Contra Costa-La Positas and C.Costa-Lone Tree 230 KV	P7	L-2	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	
		Tesla 500 kV stuck breaker	P4	BRK	none	none	none	none	tripped for undervoltage	none	tripped for undervoltage	
PGE BIK-TS-2	wind generators at Shilo # 2 (bus 32177)	3Ph fault Contra-Costa-Brentwood and Contra Costa-Delta 230 kV	P7	L-2	tripped for undervoltage (46 MW)	tripped for undervoltage (46 MW)	tripped for undervoltage (49.5 MW)	tripped for undervoltage (46 MW)	tripped for undervoltage (150 MW)	tripped for undervoltage (42.6 MW)	tripped for undervoltage (150 MW)	
		Tesla 500 kV stuck breaker	P4	BRK	none	none	none	none	none	none	tripped for undervoltage	
		3 Ph fault C. Costa-La Positas 230 KV	P1	L-1	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Tesla-Newark 230 KV	P1	L-1	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Newark 230 KV, Newark-Ravenswood	P1	L-1	none	none	none	none	none	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Contra Costa-La Positas and C.Costa-Lone Tree 230 KV	P7	L-2	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	tripped for undervoltage	
		3 Ph fault Contra Costa-La Positas 230 KV	P1	L-1	none	vlt dip 27%		vlt dip 38%				
		3Ph fault on Gates 230 kV, Gates-Midway 230 kV	P1	L-1	vlt dip 32%	vlt dip 27%		vlt dip 61%, freq oscill.				
		3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for out-of-step	vlt dip 43%		vlt dip 61%, freq oscill.				
		3Ph fault on Gates 500 kV, Gates-Diablo 500 kV	P1	L-1	vlt dip 61%, freq oscill.	vlt dip 37%		vlt dip 62%, freq oscill.				
		3Ph fault on Gates 500 kV, Gates-Midway 500 kV	P1	L-1	vlt dip 61%, freq oscill.	vlt dip 38%		vlt dip 61%, freq oscill.				
		3Ph fault on Midway 500 kV, Gates-Midway 500 kV	P1	L-1	vlt dip 41%, freq oscill.	vlt dip 62%, freq oscill.		vlt dip 63%, freq oscill.				
		3Ph fault on Midway 500 kV, Midway-Diablo 500 kV	P1	L-1	vlt dip 36.5%	vlt dip 62%		none				
		3ph fault on Los Banos, Los Banos-Gates # 1 or # 3 500 kV	P1	L-1	vlt dip 56-60%, freq oscill.	vlt dip 34%		vlt dip 40%				
		3ph fault on Los Banos, Los Banos-Midway 500 kV	P1	L-1	vlt dip 53%, freq oscill.	vlt dip 30%		vlt dip 35%				
		3ph fault on Midway, Los Banos-Midway 500 kV	P1	L-1	vlt dip 34%	vlt dip 62% , freq oscill.		vlt dip <25%, 20% for 22 Cyc				

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load		2025 Summer Partial Peak
PGE Blk-TS-3	STAR GT # 1 and 2 (Calpeak Panoche, buses 34328 and 34329), 56.3 MW output each in Heavy Summer cases, 56.3 + 44.4 MW in Partial peak case, off in off-peak and minimum load cases	3ph fault on Midway, Midway-Vincent # 1 or 2 500 kV	P1	L-1	vlt dip 38%	vlt dip 62% , freq oscill.	none, lower output than in peak cases	none	off in the case	off in the case	off in the case	possible modeling error of exciters, EXAC8B. No issues when Voltage Regulator gains Kvi (Integral Gain) and Kvd (Derivative Gain) were reduced. Need to contact generator's owners and request results of exciter testing.
		3ph fault on Midway, Midway-Vincent # 3 500 kV	P1	L-1	vlt dip 35%	vlt dip 62% , freq oscill.		none				
		3ph fault on Mosslanding, Mosslanding-Los Banos 500 kV	P1	L-1	vlt dip 59%, freq oscill.	vlt dip 35%		vlt dip 41%				
		3ph fault on Round Mtn, Round Mtn-Table Mtn # 1 500 kV	P1	L-1	none	vlt dip 39%		vlt dip 66%, freq oscill				
		3ph fault on Round Mtn, Round Mtn-Table Mtn # 2 500 kV	P1	L-1	none	vlt dip 62% , freq oscill.		none				
		3ph fault on Table Mtn, Table MTn-Tesla 500 kV	P1	L-1	none	vlt dip 40%		tripped for out of step				
		3ph fault on Table Mtn, Table MTn-Vaca Dix 500 kV	P1	L-1	none	vlt dip 41%		vlt dip 67%, freq oscill.				
		3ph fault on Vaca Dix, Vaca Dix-Tesla 500 kV	P1	L-1	none	vlt dip 61% , freq oscill.		tripped for out of step				
		3ph fault on Tesla, Tesla-Metcalf 500 kV (with DEC off)	P1	G-1/L-1	none	vlt dip 36%-(44%)		vlt dip 61% (63%)				
		3ph fault on Tesla, Tesla-Tracy 500 kV	P1	L-1	none	tripped for out-of-step		vlt dip 62%, freq oscill.				
		3ph fault on Tesla 500 kV, Tesla -Los Banos 500 kV	P1	L-1	none	vlt dip 32%		vlt dip 62%				
		3ph fault on Tracy 500 kV, Tracy -Los Banos 500 kV	P1	L-1	none	vlt dip 44% out of step		vlt dip 63%, freq oscill.				
		3ph on Newark 230 kV, Newark-Ravenswood 230 kV	P1	L-1	vlt dip 61%, freq oscill.	vlt dip 27%		vlt dip 30%				
		3ph on Tesla 230 kV, Tesla- Newark 230 kV	P1	L-1	vlt dip 42%	vlt dip 27%		vlt dip 36%				
		3Ph fault on Table Mtn 500 kV, Table Mtn 500/230 kV x-former (tripped)	P1	T-1	none	vlt dip 40%		tripped for out-of-step				
		3Ph fault on Los Banos 500 kV, Los Banos 500/230 kV x-former	P1	T-1	vlt dip 55%, freq oscill.	vlt dip 39%		vlt dip 46%				
		3Ph fault on Metcalf 500 kV, Metcalf 500/230 kV x-former	P1	T-1	none	vlt dip 62% , freq oscill.		vlt dip <25%, >20% 22 cyc				
		3Ph fault on Midway 500 kV, Midway 500/230 kV # 12 x-former	P1	T-1	vlt dip 33%	vlt dip 62%		tripped for out-of step				
		3Ph fault on Tesla 500 kV, Tesla 500/230 kV x-former	P1	T-1	none	vlt dip 31% out of step		vlt dip 62%				
		3Ph fault on Tracy 500 kV, Tracy 500/230 kV x-former	P1	T-1	none	vlt dip 41%		vlt dip 62% , freq oscill.				
3Ph fault on Gates 500 kV, Gates 500/230 kV x-former	P1	T-1	vlt dip 53%	vlt dip 33%	vlt dip 47%							
3Ph fault on Round Mtn 500 kV, Round Mtn 500/230 kV x-former	P1	T-1	none	out of step, tripped	none							
3Ph fault on Vaca Dix 500 kV, Vaca Dix 500/230 kV x-former	P1	T-1	none	out of step, tripped	vlt dip 64%, freq oscill.							
3Ph fault Contra-Costa-Brentwood and Contra Costa-Delta 230 kV	P7	L-2	none	vlt dip 27%	vlt dip 38%							
3Ph fault on Gates 230 kV, Gates-Gregg, Gates-Mc Call 230 kV	P7	L-2	vlt dip 31%	vlt dip 27%	vlt dip 33%							
3 Ph fault Contra Costa-La Positas and C.Costa-Lone Tree 230 KV	P7	L-2	none	vlt dip 28%	vlt dip 40%							

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load		2025 Summer Partial Peak
		3Ph Fault on Gates 230 kV Gates-Arco, Gates-Midway 230 kV	P7	L-2	vlt dip 32%	vlt dip 27%		vlt dip 33%				
		3ph fault on Los Banos, 500 kV DLO North of Los Banos	P7	L-2	vlt dip 57%, freq oscill.	vlt dip 31%		vlt dip 37%				
		3ph fault on Los Banos, 500 kV DLO South of Los Banos	P7	L-2	vlt dip 30%	vlt dip 41%		vlt dip 46%				
		3ph fault on Table Mtn, 500 kV DLO South of Table Mtn	P7	L-2	none	vlt dip 62%		none				
		3ph fault on Tracy, 500 kV DLO South of Tracy	P7	L-2	none	vlt dip 46% , freq oscill.		vlt dip 63%				
		3ph fault on Tesla, 500 kV DLO North of Tesla	P7	L-2	none	vlt dip 39%		vlt dip 62%				
		3ph fault on Midway 500 kV, Midway-Diablo # 1 and 2 500 kV	P7	L-2	vlt dip 32%	vlt dip 61% , freq oscill.		vlt dip 63%				
		3ph fault on Midway 500 kV, DLO North of Midway 500 kV	P7	L-2	vlt dip 62%, freq oscill.	vlt dip 63%, freq oscill.		vlt dip 63%				
		3ph fault on Gregg, Gregg-Herndon 230 kV # 1 and 2	P7	L-2	none	none		vlt dip 30%				
		3ph fault on Pittsburg 230 kV, Pittsburg-Tesla 230 kV # 1 and 2	P7	L-2	none	none		tripped for out of step				
		3Ph fault on Midway 230 kV, Midway-Kern # 2 and 3 230 kV	P7	L-2	tripped for out-of-step	vlt dip 45%		vlt dip 62%, freq oscill.				
PGE BIK-TS-4	Solar PV on bus 33102 , 19 MW 2017 and 2025 off-peak, 4.8 MW in all Peak cases, off in 2020 Minimum load and 2025 Part peak	3ph fault on C.Costa 230kV, C.Cos-Ls Positas 230 kV	P1	L-1	none	none	off in the case	none	off in the case	tripped for high voltage	modeled with old solar PV model (wt4g, wt4e), protection trips at 1.1 pu in 1 sec, no issues if shunt capacitor on the collector system is turned off, or generator can absorb reactive power in power flow	
		3ph fault Newark 230 kV, Newark-Ravenswood	P1	L-1	none	none		none				none
		3ph fault Tesla 500 kV, Tesla-Metcalf 500 kV	P1	L-1	none	none		none				none
		3ph fault Tesla 230 kV, Tesla-Newark 230 kV	P1	L-1	none	none		none				none
		3ph fault Tesla 500 kV, Tesla-Tracy 500 kV	P1	L-1	none	none		none				none
		3ph fault Tesla 500 kV, Tesla-Los Banos 500 kV	P1	L-1	none	none		none				none
		3ph fault Tesla 500 kV, Tesla 500/230 kV x-former	P1	T-1	none	none		none				none
		3ph fault Tracy 500 kV, Tracy 500/230 kV x-former	P1	T-1	none	none		none				none
		Vaca Dix 500 kV stuck brk	P4	BRK	none	none		none				none
		3ph fault Pittsburg 230 kV, Pittsb-Tesla # 1 and 2	P7	L-2	none	none		none				none
		3Ph fault C. Costa-Ls Positas and C. Costa-Lonetree 230 kV	P7	L-2	none	none		none				none
3Ph fault C.-Costa-Brentwood and C. Costa-Delta 230 kV	P7	L-2	none	none	none	none						
		Diablo-g1	P1	G-1		none		none				
		3ph fault Gates 500 kV, Gates-Diablo 500 kV	P1	L-1		none		none				
		3ph fault Gates 230 kV, Gates-Midway 230 kV	P1	L-1		none		none				
		3ph fault Los Banos 500 kV LosBanos-Gates#1 or # 2	P1	L-1		none		none				

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Summer Partial Peak	
PGE BIK-TS-5	Solar PV on bus 34461 units # 1 and # 2, off in 2017 Peak, 2017 off-peak, 2025 Partial Peak, 2020 Min load, total 5 MW in 2020 and 2025 Peak, total 20 MW in 2025 off-peak	3ph fault Midway 500 kV, Midway-Vincent# 1, 2 or 3	P1	L-1	off in the case	none	off in the case	none	off in the case	off in the case	tripped for high voltage	modeled as two small solar PV units, no plant control, typical data, unity power factor, tripped when voltage was higher than 1.1 p.u for more than 1 sec. Voltage close to 1.1 in the base case. Need to maintain lower voltages in the base case, can reduce voltage by changing x-former taps
		3ph fault MossIndg 500 kV, MossInd-Los Banos 500 kV	P1	L-1								
		3ph fault Gates 500 kV Gates 500/230 kV x-former	P1	T-1								
		3ph fault Los Banos 500 kV Ls Banos 500/230 kV x-former	P1	T-1								
		3ph fault Midway 500 kV Midway 500/230 kV x-former # 11, 12 or 13	P1	T-1								
		3ph fault Midway 500 kV DLO North of Midway	P7	L-2								
		3ph fault Midway 500 kV Midway-Diablo # 1 and 2 500 kV	P7	L-2								
		3ph fault Los Banos 500 kV DLO North of Los Banos	P7	L-2								
		3ph fault Los Banos 500 kV DLO South of Los Banos	P7	L-2								
		3 ph fault Gregg 230 kV, Gregg - Herndon # 1 and 2	P7	L-2								
		3ph fault Gates 230 kV Gates-Arco and Gates-Midway 230 kV	P7	L-2								
		3 ph Gates 230 kV, Gates-Greg and Gates- MCal	P7	L-2								
		3 ph fault Diablo 500 kV, Diablo-Midway # 1 and 2	P7	L-2								
		Diablo-g2	Extreme	G-2								
PGE BIK-TS-6	Solar PV on bus 35019, 16,9 MW in all peak cases, off in 2025 partial peak, 2017 off-peak and 2020 min load, 65 MW in 2025 off-peak	3ph fault Midway 500 kV, Midway-Gates 500 kV	P1	L-1	none	none	off in the case	none	off in the case	off in the case	tripped for high freq with fault	Old wt4g, wt4e models, possible modeling error. Over-frequency protection is set to trip the plant in 0.02 seconds at frequency 60.5 Hz. Wasn't tripped with RE models with typical data because freq with fault was lower. Need to discuss protection settings and the plant model parameters with the generation owner.
		3ph fault Midway 500 kV, Midway-Los Banos 500 kV	P1	L-1	none	none						
		3ph fault Midway 500 kV, Midway-Vincent 500 kV # 1, 2 or 3	P1	L-1	none	none						
		3 ph fault Midway500 kV, Diablo-Midway # 1 or 2	P1	L-1	none	none						
		3 ph fault Midway500 kV, Midway500/230 kV x-former	P1	T-1	none	none						
		3ph fault Midway 500 kV, Midway-Vincent 500 kV # 1 and 2	P7	L-2	none	none						
		3 ph fault Midway500 kV, Diablo-Midway # 1 and 2	P7	L-2	none	none						
PGE BIK-TS-7	Solar PV on bus 34694, 5 MW in all peak cases, off in 2025 partial peak, 2017 off-peak and 2020 min load, 19 MW in 2025 off-peak	3ph fault Gates 230 kV, Gates-Midway 230 kV	P1	L-1	none	none	off in the case	none	off in the case	off in the case	tripped for low voltage with fault	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Need to discuss protection settings and the plant model parameters with the generation owner.
		3ph fault Gates 230 kV Gates-Arco and Gates-Midway 230 kV	P7	L-2	none	none						
		3 ph Gates 230 kV, Gates-Greg and Gates- MCal	P7	L-2	none	none						
		3Ph fault on Gates 230 kV, Gates-Midway 230 kV	P1	L-1	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	none	none	none	slow frequency recovery. load tripped

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Summer Partial Peak	
PGE BIK-TS-8	Load on Gates 115 kV	3Ph fault on Gates 230 kV, Gates-Gregg, Gates-Mc Call 230 kV	P7	L-2	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	none	none	none	with fault, modeling issue because of low impedance between the fault and load. Low load in off-peak cases
		3Ph Fault Gates-Arco, Gates-Midway 230 kV	P7	L-2	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	UFLS reduced load to 6%	none	none	none	
PGE BIK-TS-9	Load on Gates-distr 12.5 kV	3Ph fault on Gates 230 kV, Gates-Midway 230 kV	P1	L-1	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced to 33%	UFLS reduced to 33%	UFLS reduced to 33%	slow frequency recovery, load tripped with fault, modeling issue because of low impedance between the fault and load
		3Ph fault on Gates 230 kV, Gates-Gregg, Gates-Mc Call 230 kV	P7	L-2	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced to 33%	UFLS reduced to 33%	UFLS reduced to 33%	
		3Ph Fault Gates-Arco, Gates-Midway 230 kV	P7	L-2	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced load to 33%	UFLS reduced to 33%	UFLS reduced to 33%	UFLS reduced to 33%	
PGE BIK-TS-10	Solar PV on bus 35021, 5 MW all peak cases, 18 MW in 2025 Off-peak	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low voltage with fault	tripped for low voltage with fault	off in the case	tripped for low voltage with fault	off in the case	off in the case	tripped for low voltage with fault	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault Midway230 kV, Midway-Kern # 1 and 2 230 kV	P7	L-2	tripped for low voltage with fault	tripped for low voltage with fault	off in the case	tripped for low voltage with fault	off in the case	off in the case	tripped for low voltage with fault	
PGE BIK-TS-11	Solar PV on bus 35082, 5 MW in all peak cases, 19 MW 2025 off-peak	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low voltage with fault	tripped for low voltage with fault	off in the case	tripped for low voltage with fault	off in the case	off in the case	tripped for low voltage with fault	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Over-frequency trips for 60.5 Hz in 0.02 sec. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault on Midway 500 kV, Gates-Midway 500 kV	P1	L-1	none	none		none			tripped for high freq	
		3Ph fault on Midway 500 kV, Los Banos-Midway 500 kV	P1	L-1	none	none		none			tripped for high freq	
		3Ph fault on Midway 500 kV, Diablo-Midway 500 kV	P1	L-1	none	none		none			tripped for high freq	
		3Ph fault on Midway 500 kV, Midway-Vincent # 1, 2 or 3 500 kV	P1	L-1	none	none		none			tripped for high freq	
		3Ph fault on Midway 500 kV, Midway 500/230 kV x-former kV	P1	T-1	none	none		none			tripped for high freq	
		3Ph fault Midway500 kV, DLO North of Midway 500 kV	P7	L-2	none	none		none			tripped for high freq	
		3Ph fault Midway500 kV, Midway-VIncent # 1 and 2 500 kV	P7	L-2	none	none		none			tripped for high freq	
		3Ph fault on Midway 230 kV, Midway-Kern PP# 2 and 3 230 kV	P7	L-2	tripped for low voltage with fault	tripped for low voltage with fault		tripped for low voltage with fault			tripped for low voltage with fault	
		3Ph fault Midway 500 kV, Midway-Diablo # 1 and 2 500 kV	P7	L-2	none	none		none			tripped for high freq	
PGE BIK-TS-12	Solar PV on bus 39184, 5 MW in all peak cases, 20 MW in 2025 off-peak	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	none	none	off in the case	none	off in the case	off in the case	tripped for high freq/ w fault	Frequency protection trips the unit at 60.5 Hz or 59.3 Hz in 0.02 sec. Need to check the models with the generation owner. Inverter control model wasn't provided. Same refers to the Pumpjack plant (bus 39176)
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped for low freq w/ fault	tripped for low freq w/ fault		none			none	

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Partial Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 Summer Partial Peak	
PGE BIK-TS-13	Generator Fritolay (35048)	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for out of step	none	none	none	none	none	none	small unit, 6 MW,lost synchronism with fault. Possible numerical issue because of not clean convergence
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped for out of step	none	none	none	none	none	none	
PGE BIK-TS-14	Generator Borden D (34253)	3Ph fault on Gregg 230 kV, Gregg-Herndon # 1 and 2 230 kV	P7	L-2	none	tripped for out of step (1.4 MW)	none	none	none	none	none	small unit close to the fault
PGE BIK-TS-15	Solar PV on bus 35015, 5 MW in all peak cases, 19.8 MW in the 2025 off-peak case	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low frequency	tripped for low frequency	off in the case	none	off in the case	off in the case	none	Old wt4g and wt4e models. Protection trips for freq 59.5 Hz in 0.16 seconds. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped for low frequency	tripped for low frequency		none			none	
PGE BIK-TS-16	70 kV and 115 kV buses around Midway	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	vlt dips up to 47% if pumps not tripped right away	none	vlt dips up to 29%	none	Vlt dip up to 37%	none	none	This is possible numerical issue because of slow convergence due to large amount of inverter-based generation in the area and composite load models. Large voltage dips observed around 0.1 sec after fault clearing. Also slow frequency recovery after the fault in Midway area
PGE BIK-TS-17	Buena Vista pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped by undervoltage relays	vlt dip up to 26%	vlt dip up to 31%	none	tripped by undervoltage relays	none	none	
PGE BIK-TS-18	Wheeler Ridge pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped by undervoltage relays	vlt dip up to 34%	vlt dip up to 42%	vlt dip up to 33%, may be tripped by under-voltage relays	tripped by undervoltage relays	none	none	
PGE BIK-TS-19	Wind Gap pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped by undervoltage relays	vlt dip up to 33%	tripped by undervoltage relays	vlt dip up to 32%, may be tripped by under-voltage relays	tripped by undervoltage relays	none	vlt dip 31.4%	
PGE BIK-TS-17	Buena Vista pumps	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped by undervoltage relays	vlt dip up to 28%	vlt dip up to 34%	none	tripped by undervoltage relays	none	none	
PGE BIK-TS-18	Wheeler Ridge pumps	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped by undervoltage relays	vlt dip up to 38%	vlt dip up to 37%	tripped by under-voltage relays	tripped by undervoltage relays	none	Vlt dip 33.5% on # 2	
PGE BIK-TS-19	Wind Gap pumps	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped by undervoltage relays	vlt dip up to 36%	tripped by undervoltage relays	tripped by under-voltage relays	tripped by undervoltage relays	none	vlt dip 25%-32.3%	
PGE BIK-TS-16	70 kV and 115 kV around Midway	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	vlt dips up to 49% if pumps not tripped right away	vlt dips <30%	vlt dips up to 33%	none	vlt dip up to 38%	none	none	
PGE BIK-TS-20	SMYRNA 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	UFLS	UFLS	none	none	none	none	none	
PGE BIK-TS-21	FAMOSO 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	UFLS	UFLS	none	none	none	none	none	
PGE BIK-TS-22	CHARKA 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	UFLS	UFLS	none	none	none	none	none	

Study Area: **PG&E Bulk**

Single Contingency Load Drop



ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)						Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	
X-SLD-1	NONE									

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

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	NONE									

No single source substation with more than 100 MW Load

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-T-1	CHICO JCT-ANITA 60 kV	normal conditions	P0	normal	139.2%									radial line, section of Glenn-Anita line, mitigation in area studies
PGE BIK-T-2	GLENN-CAPAY JCT - HEADGATE 60 kV	normal conditions	P0	normal	123.6%									radial line, section of Glenn-Anita line, mitigation in area studies
PGE BIK-T-3	TAFT-TX_BV_HILLS 70 kV	normal conditions	P0	normal	118.4%									radial line, section of Taft-Elk Hills 70 kV, mitigation in area studies
PGE BIK-T-4	HIGHLANDS JCT-LOW LAKE JCT 115 kV	normal conditions	P0	normal	108.0%									section of Eagle Rk-Red Bud 115 kV line, wrong rating
PGE BIK-T-5	VACA DIX- WINTERS-PLAIN FLD 60 kV	normal conditions	P0	normal	111.7%									radial line, low voltage (0.886), moved to 115 kV in 2025, mitigation in area studies
PGE BIK-T-7	E. NICOLAUS-PLUMAS 60 kV	normal conditions	P0	normal	102.4%									radial line, mitigation in area studies
PGE BIK-T-10	WYANDETTE-WYANDETTE JCT (Palermo)115 kV	normal conditions	P0	normal	99.2%									radial line, mitigation in area studies
PGE BIK-T-11	AVENAL T - KETTLEMAN T 70 kV	normal conditions	P0	normal	103.0%									reduce output from Sun City
PGE BIK-T-12	DISCOV TAP-GOLD BEAR 115 kV	normal conditions	P0	normal	108.3%									dispatch Discovery and SERK generation
PGE BIK-T-13	CAL SEDA-ROB-LRNR 60 kV	normal conditions	P0	normal	103.9%									dispatch COG.NTNL generation
PGE BIK-T-14	CAYETANO -USWP-JRW 230 kV	normal conditions	P0	normal	101.7%									reduce output from GRNRDG generator or/and generation at Bird Landng
PGE BIK-T-15	DELEVAN-CORTINA 230 kV	Olinda-Tracy 500 kV	P1	L-1	101.1%									reduce Colusa generation or upgrade/rerate the line
		Table Mtn-Vaca Dix 500 kV	P1	L-1	101.4%									
PGE BIK-T-17	MOSSLND2 - LASAGUIL 230.0 #2	Moss Landing -Los Banos 500 kV	P1	L-1	105.5%									use short-term rating, or trip renewable generation connected to this line
		Moss Landing 500/230 kV x-former	P1	T-1	104.0%									
PGE BIK-T-18	ROUND MTN –TABLE MTN #1 or #2 500 kV	Rnd Mtn –Table Mtn #2 or #1 500 kV	P1	L-1	101.1%									bypass ser caps on the remaining Round Mtn-Table Mtn 500 kV line or Tbl Mtn-Vaca Dix or reduce COI flow according to seasonal nomogram
PGE BIK-T-14	CAYETANO -USWP-JRW 230 kV	C.Costa-Las Positas 230 kV	P1	L-1	104.8%									reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions
		Tesla-Metcalf 500 kV	P1	L-1	99.5%									
		Tesla-Newark 230 kV	P1	L-1	97.9%									
PGE BIK-T-20	CAYETANO-NDUBLIN 230.0	C.Costa-Las Positas 230 kV	P1	L-1	98.9%									reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
PGE Blk-T-21	TBL MT D -RIO OSO 230 kV	Table Mtn-Vaca Dixon 500 kV	P1	L-1	99.7%									replace limiting terminal equipment by 2020
PGE Blk-T-15	DELEVAN-CORTINA 230 kV	Vaca Dix 500 kV stuck brk	P4	BRK	103.2%									upgrade/rerate the line or reduce Colusa generation, Colusa dispatch was modeled lower in 2017
		Table Mtn 500 kV stuck brk	P4	BRK	97.9%									
PGE Blk-T-17	MOSSLND2-LASAGUIL 230.0 #2	Mosslanding stuck Brk 500 kV	P4	BRK	105.5%									use short-term rating
PGE Blk-T-17	MOSSLND2 - LASAGUIL 230 kV #2	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	204.3%									Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	186.7%									
		Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	98.1%									use short-term rating if overload
		Moss Landing-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	121.1%									Open Mosslanding-Lasaguilass 230 kV line if overload or use short-term rating
		Moss Landing-Tesla 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	120.9%									trip renewable generation connected to this line, use short-term rating. Other mitigation measures are being evaluated
		Metcalf-Tesla 500 kV & NEWARK-NEWARK DSTR 230 kV	P6	L-1/L-1	101.9%									use short-term rating if overload
		MossIng-Coburn 230 kV and Mosslanding 500/230 kV x-former	P6	L-1/T-1	125.1%									use short-term rating and trip generation connected to this line
		MossIng-Coburn 230 kV and Mosslanding-Los Banos 500 kV	P6	L-1/L-1	122.5%									use short-term rating and/or trip generation connected to this line
		Tesla-Metcalf 500 kV and Mosslanding 500/230 kV x-former	P6	L-1/T-1	125.0%									use short-term rating and trip generation connected to this line
		Mosslanding-Metcalf 500 kV and Mosslanding 500/230 kV x-former	P6	L-1/T-1	118.5%									use short-term rating if overload
		Mosslanding-Los Banos 500 kV and Mosslanding 500/230 kV x-former	P6	L-1/T-1	117.9%									use short-term rating if overload
Mosslanding-Los Banos 500 kV and Los Banos 500/230 kV x-former	P6	L-1/T-1	99.4%									use short-term rating if overload		
PGE Blk-T-22	LASAGUILASS - PANOCHE 230 1 & 2	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	102.9%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.	
PGE Blk-T-27	LONETREE-USWP-JRW 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	99.5%								use short-term rating if overload	

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-T-28	LS ESTEROS - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	114.8%									dispatch Ls Esteros peakers after 1st contingency
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	147.8%									Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	121.5%									
PGE BIK-T-29	METCALF 500/230 kV x-former #13	Metcalf 500/230 kV Transformers #11 and #12	P6	T-1/T-1	118.1%									dispatch Ls Esteros peakers after 1st contingency, trip load in San Jose if overload persists
PGE BIK-T-30	N.DUBLIN-CAYETANO 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	114.0%									Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	106.1%									
		Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	103.9%									reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions
		Tesla-Table Mtn and Tesla-Metcalf 500 kV	P6	L-1/L-1	95.4%									
		Tesla-Metcalf 500 kV and C.Cos-Moraga # 1 or 2 230 kV	P6	L-1/L-1	101.0%									
		Tesla-Metcalf 500 kV and C.Cos-Ls Positas 230 kV	P6	L-1/L-1	110.7%									
PGE BIK-T-31	N.DUBLIN-VINEYARD 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	97.0%									reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	99.7%									
		Tesla-Metcalf 500 kV and C.Cos-Ls Positas 230 kV	P6	L-1/L-1	103.8%									
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	107.1%									Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
PGE BIK-T-32	NEWARK 230/115 # 11	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	105.4%									dispatching generation in San Jose mitigated this overload
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	98.6%									

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
32		Tesla-Metcalf 500 kV and NEWARK-NEWARK DSTR 230 kV	P6	L-1/L-1	113.3%								dispatch all generation in San Jose after first contingency
		Tesla-Metcalf 500 kV and LS ESTEROS-NEWARK DSTR 230 kV	P6	L-1/L-1	107.7%								
PGE BIK-T-33	NEWARK E - NWK DIST 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	117.3%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	147.0%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	123.0%								
PGE BIK-T-34	NEWARK F - LCKHD J1 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Metcalf 500 kV	P6	L-1/L-1	102.2%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	129.4%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	124.9%								
PGE BIK-T-35	NEWARK F -DIXON LD 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	109.0%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	100.9%								
PGE BIK-T-37	TRACY 500 /230 kV x-former #1 or # 2	Tesla-Tracy 500 kV Line and Tracy 500/230 kV x-former # 2 or # 1	P6	L-1/T-1	112.5%								open Tracy-Tesla 230 kV lines if overload, trip Tracy pumps if it persists
PGE BIK-T-38	TRIMBLE-SJB DG 115 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	129.2%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	145.3%								
		Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV	P6	L-1/L-1	119.9%								Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Other mitigation measures are being evaluated.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions		
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
PGE BIK-T-14	CAYETANO -USWP-JRW 230 kV	Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV w/San Jose gen dispatched	P6	L-1/L-1	112.0%									reduce output from GRNRDG generator or/and generation at Bird Landng	
		Tesla-Metcalf 500 kV & Metcalf-Moss Landing 500 kV	P6	L-1/L-1	108.9%									Dispatch generation in San Jose. Sectionalize San Jose system. Turn on all available capacitors. Reduce generation from Bird Landing	
		Table Mtn-Tesla and Tesla-Metcalf 500kV	P6	L-1/L-1	101.3%										
		Tesla-Metcalf 500 kV and C.Cos-Moraga # 1 or 2 230 kV	P6	L-1/L-1	106.8%										reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions
		Tesla-Metcalf 500 kV and C.Cos-Ls Positas 230 kV	P6	L-1/L-1	116.6%										
PGE BIK-T-41	COTTONWD E-ROUND MTN 230kV #3	COTTONWD E-RND MTN 230kV #1 or 2 & Round Mtn 500/230 kV x-former	P6	L-1/T-1	106.9%									upgrade the line, or limit COI import within nomogram	
PGE BIK-T-21	TABLE MTN-RIO OSO 230 kV	Table Mtn 500/230 kV x-former and TABLE MTN-PALERMO 230 kV	P6	L-1/T-1	107.0%									Upgrade terminal equipment on this line.	
PGE BIK-T-39	CAPTAIN JACK-OLINDA 500 kV	Malin- Round Mtn #1 and #2 500 kV	P7	L-2	104.8%									operate within COI nomogram	
		Round Mtn-Table Mtn # 1 & # 2 500 kV	P7	L-2	106.6%										
PGE BIK-T-40	DELTA-CASCADE 115 kV	Malin- Round Mtn #1 and #2 500 kV	P7	L-2	104.7%									adjust Weed phase shifter	
		Round Mtn-Table Mtn # 1 & # 2 500 kV	P7	L-2	95.5%										
PGE BIK-T-41	COTTONWD E-ROUND MTN 230kV #3	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	108.9%									upgrade the line, or limit COI import within nomogram	
PGE BIK-T-42	COTTONWD E-ROUND MTN 230kV #2	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	100.1%									upgrade the line, or limit COI import within nomogram	
PGE BIK-T-15	DELEVAN-CORTINA 230 kV	Round Mtn-Table Mtn # 1 & # 2 500 kV	P7	L-2	111.8%									upgrade/rerate the line, or modify RAS to trip Colusa generation	
		Tbl Mtn-Tesla & Tbl Mtn-Vaca Dix 500 kV	P7	L-2	112.3%										
PGE BIK-T-43	DRUM- BRNSWCKP 115 kV #2	Round Mtn-Table Mtn # 1 and # 2 500 kV	P7	L-2	103.0%									reduce DRUM # 5 generation	
PGE BIK-T-21	TABLE MTN-RIO OSO 230 kV	Tbl Mtn-Tesla and Tbl Mtn-Vaca Dix 500 kV	P7	L-2	117.3%									Upgrade terminal equipment on this line.	
PGE BIK-T-14	CAYETANO -USWP-JRW 230 kV	C.Costa-Brentwood and C.Costa-Delta 230 kV	P7	L-2	99.2%									reduce output from GRNRDG generator or/and generation at Bird Landng under normal conditions	
		Table Mtn-Tesla and Vaca Dix-Tesla 500 kV	P7	L-2	100.2%										
PGE BIK-T-47	CAPTAIN JACK-PONDEROSA B 500 kV	PDCI bi-pole	P7	DC bipole	99.8%									don't insert Fort Rock series caps or operate within COI nomogram, contact BPA to discuss	



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE Blk-VD-1	HOLLISTR 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.8%								adjust svds and transformer taps
PGE Blk-VD-2	NTVD SW2 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-3	NTVD SW1 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-4	Green Vly # 1 and 2 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-5	Camp Evers 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	7.0%								adjust svds and transformer taps
PGE Blk-VD-6	Rob Roy 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	6.8%								adjust svds and transformer taps
PGE Blk-VD-7	Paul Sweet 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	7.0%								adjust svds and transformer taps
PGE Blk-VD-8	PRUNEDLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.4%								adjust svds and transformer taps
PGE Blk-VD-9	SOLEDAD 115.0	Moss Landing 500/230 kV x-former	P1	T-1	7.0%								adjust svds and transformer taps
PGE Blk-VD-10	SALINAS 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-11	Moss Landing E and D 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	6.1%								adjust svds and transformer taps
PGE Blk-VD-12	CSTRVLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.2%								adjust svds and transformer taps
PGE Blk-VD-13	Dolan Rd 115 kV	Moss Landing 500/230 kV x-former	P1	T-1	6.2%								adjust svds and transformer taps
PGE Blk-VD-14	DEL MNTE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.5%								adjust svds and transformer taps
PGE Blk-VD-15	HOLST D 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.8%								adjust svds and transformer taps
PGE Blk-VD-16	SNBENITO 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-17	WTSNVLE 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-18	GRANT RK 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-19	BRIGTANO 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-20	LGNTS J1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-21	GABILAN 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-22	SALINAS2 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-23	SALINAS1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-24	BORONDA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE Blk-VD-25	FORT ORD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-26	DEL MNTE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.5%								adjust svds and transformer taps
PGE Blk-VD-27	MONTEREY 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-28	NAVY SCHL 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.5%								adjust svds and transformer taps
PGE Blk-VD-29	VIEJO 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-30	HATTON 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps
PGE Blk-VD-31	NAVY LAB 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.5%								adjust svds and transformer taps
PGE Blk-VD-32	RSVTN RD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-33	LAURELES 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.2%								adjust svds and transformer taps
PGE Blk-VD-34	OTTER 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.3%								adjust svds and transformer taps
PGE Blk-VD-35	FRSHXPRS 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-36	BNA VSTA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-37	FIRESTNE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-38	SPENCE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.9%								adjust svds and transformer taps
PGE Blk-VD-39	SNBRN JT 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-40	IND.ACRE 60.0	Moss Landing 500/230 kV x-former	P1	T-1	6.7%								adjust svds and transformer taps
PGE Blk-VD-41	9 ST JCT 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.2%								adjust svds and transformer taps
PGE Blk-VD-42	CMPHR J2 and J1 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.1%								adjust svds and transformer taps
PGE Blk-VD-43	GONZALES 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.3%								adjust svds and transformer taps
PGE Blk-VD-44	CAMPORA 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.1%								adjust svds and transformer taps
PGE Blk-VD-45	SOLEDAD 60.0	Moss Landing 500/230 kV x-former	P1	T-1	7.0%								adjust svds and transformer taps
PGE Blk-VD-46	SLD ENRG 12.5	Moss Landing 500/230 kV x-former	P1	T-1	7.0%								adjust svds and transformer taps
PGE Blk-VD-47	CRZY_HRS 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.5%								adjust svds and transformer taps
PGE Blk-VD-48	NATIVIDAD 115.0	Moss Landing 500/230 kV x-former	P1	T-1	6.6%								adjust svds and transformer taps



ID	Substation	Worst Contingency	Category	Category Description	Voltage (kV)								Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
PGE Blk-V-7	CAPTJACK 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	552									turn off shunt capacitors at CAPT JACK at high voltage
PGE Blk-V-12	GRIZZLY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	552									turn off shunt capacitors at high voltage
PGE Blk-V-14	JOHN DAY 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	550									turn off shunt capacitors at high voltage
PGE Blk-V-19	MALIN 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	552									turn off shunt capacitors at high voltage
PGE Blk-V-24	PONDROSA 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	552									turn off shunt capacitors at high voltage
PGE Blk-V-24	PONDROSA 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	555									turn off shunt capacitors at high voltage
PGE Blk-V-25	PONDROSB 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	553									turn off shunt capacitors at high voltage
PGE Blk-V-30	SUMMER L 500.0	Table Mtn-Tesla and Table Mtn-Vaca Dix 500 kV	P7	L-2	551									turn off shunt capacitors at high voltage
PGE Blk-V-30	SUMMER L 500.0	Table Mtn-Tesla and Tesla-Vaca Dix 500 kV	P7	L-2	554									turn off shunt capacitors at high voltage

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-1	wind generators at High Winds # 3 (bus 32171)	3 Ph fault Contra Costa-La Positas 230 KV	P1	L-1	tripped for undervoltage (38 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	these are old induction generator units that don't have LVRT, they may trip with faults close to these units
		3Ph fault C.-Costa-Brentwood and C.Costa-Delta 230 kV	P7	L-2	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		3 Ph fault Contra Costa-La Positas and C.Costa-Lone Tree 230 KV	P7	L-2	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Vaca Dix 500 kV stuck breaker	P4	BRK	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-2	wind generators at Shilo # 2 (bus 32177)	3Ph fault Contra-Costa-Brentwood and Contra Costa-Delta 230 kV	P7	L-2	tripped for undervoltage (150 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	these are old induction generator units that don't have LVRT, they may trip with faults close to these units
		3 Ph fault C. Costa-La Positas 230 KV	P1	L-1	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Vaca Dix 500 kV stuck breaker	P4	BRK	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		3 Ph fault Contra Costa-La Positas and C.Costa-Lone Tree 230 KV	P7	L-2	tripped for undervoltage	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-3	STAR GT # 1 and 2 (Calpeak Panoche, buses 34328 and 34329)	all contingencies	P1	L-1	none, exciters modeled with typical data	N/A	N/A	N/A	N/A	N/A	N/A	possible modeling error of exciters, EXAC8B. Need to contact generator's owners and request results of exciter testing.	
PGE BIK-TS-6	Solar PV bus 34694 RPS	3ph fault Gates 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low voltage with fault (20 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Need to discuss protection settings and the plant model parameters with the generation owner.
		3ph fault Gates 230 kV Gates-Arco and Gates-Midway 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
		3 ph Gates 230 kV, Gates-Greg and Gates- MCal	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-7	Load on Gates 115 kV	3Ph fault on Gates 230 kV, Gates-Midway 230 kV	P1	L-1	UFLS reduced load to 6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	slow frequency recovery, load tripped with fault, modeling issue because of low impedance between the fault and load. Low load in off-peak cases
		3Ph fault on Gates 230 kV, Gates-Gregg, Gates-Mc Call 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
		3Ph Fault Gates-Arco, Gates-Midway 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-8	Load on Gates-distr 12.5 kV	3Ph fault on Gates 230 kV, Gates-Midway 230 kV	P1	L-1	UFLS reduced to 33%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	slow frequency recovery, load tripped with fault, modeling issue because of low impedance between the fault and load
		3Ph fault on Gates 230 kV, Gates-Gregg, Gates-Mc Call 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
		3Ph Fault Gates-Arco, Gates-Midway 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-9	Solar PV bus 35021 RPS	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low voltage with fault (20 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault Midway230 kV, Midway-Kern # 1 and 2 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A	N/A	

ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-10	Solar PV bus 35082 RPS	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low voltage with fault (20 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Old wt4g, wt4e models. Under-voltage protection trips in 0.02 sec with vlt 0.5 p.u. Over-frequency trips for 60.5 Hz in 0.02 sec. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2	tripped for low voltage with fault (20 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-11	Solar PV bus 39184 RPS	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low freq w/fault (20 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Frequency protection trips the unit at 60.5 Hz or 59.3 Hz in 0.02 sec. Need to check the models with the generation owner. Inverter control model wasn't provided. Same refers to the Pumpjack plant (bus 39176)
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 and 3 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-12	Generator Fritolay (35048)	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for out of step	N/A	N/A	N/A	N/A	N/A	N/A	N/A	small unit, 6 MW, lost synchronism with fault. Possible numerical issue because of not clean convergence
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-14	Solar PV bus 35015 RPS	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	tripped for low freq. (19.8 MW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Old wt4g and wt4e models. Protection trips for freq 59.5 Hz in 0.16 seconds. Need to discuss protection settings and the plant model parameters with the generation owner.
		3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-16	Buena Vista pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	vlt dip up to 29%	N/A	N/A	N/A	N/A	N/A	N/A	no issues if pumps at Midway tripped. Will be tripped by under-voltage relays with three-phase faults. Modeling issue.	
PGE BIK-TS-17	Wheeler Ridge pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	vlt dip up to 41%, may be tripped by under-voltage relays	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-18	Wind Gap pumps	3Ph fault on Midway 230 kV, Gates-Midway 230 kV	P1	L-1	vlt dip up to 34%, may be tripped by under-voltage relays	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-17	Wheeler Ridge pumps	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	Vlt dip 32.9-40.9%	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-18	Wind Gap pumps	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	tripped by undervoltage relays	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-19	SMYRNA 115 kV	3Ph fault on Midway 230 kV, Midway - Gates 230 kV	P1	L-1	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-19	SMYRNA 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-20	FAMOSO 115 kV	3Ph fault on Midway 230 kV, Midway - Gates 230 kV	P1	L-1	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-20	FAMOSO 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-21	CHARKA 115 kV	3Ph fault on Midway 230 kV, Midway - Gates 230 kV	P1	L-1	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		
PGE BIK-TS-21	CHARKA 115 kV	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	UFLS	N/A	N/A	N/A	N/A	N/A	N/A		



ID	Generator/Load	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PGE BIK-TS-22	SN BERNARD	3Ph fault on Midway 230 kV, Midway - Kern PP# 2 & 3 230 kV	P7	L-2	UFLS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-T-1	Humboldt Bay - Rio Dell 60kV (Between NEWBURG - RIODLLTP)	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	96.22	112.78	80.99	74.60	66.24	107.83	102.88	99.54	Adjust Humboldt Bay generation
HUMB-T-2	Humboldt Bay - Rio Dell 60kV (Between NEWBURG - RIODLLTP)	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	96.22	112.78	80.99	74.60	66.24	107.83	102.88	99.54	Adjust Humboldt Bay generation
HUMB-T-3	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - RIODLLTP)	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	54.69	82.21	102.44	95.54	86.96	136.88	131.12	127.87	Adjust Humboldt Bay generation
HUMB-T-4	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - RIODLLTP)	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	54.69	82.21	102.44	95.54	86.96	136.88	131.12	127.87	Adjust Humboldt Bay generation
HUMB-T-5	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	<100	<100	<100	<100	<100	134.85	129.13	126.01	Adjust Humboldt Bay generation
HUMB-T-6	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	<100	<100	<100	<100	<100	134.85	129.13	126.01	Adjust Humboldt Bay generation
HUMB-T-7	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVLLE)	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	<100	<100	<100	<100	<100	134.52	128.81	125.68	Adjust Humboldt Bay generation
HUMB-T-8	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVLLE)	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	<100	<100	<100	<100	<100	134.52	128.81	125.68	Adjust Humboldt Bay generation
HUMB-T-9	Humboldt Bay - Humboldt #1 60kV (Between HUMBOLDT - HMBLT JT)	Humboldt Bay - Eureka 60 kV Line and Humboldt Bay - Humboldt No.2 60 kV Line	P6	L-1-1	<100	101.05	100.98	100.70	101.06	18.87	100.71	<100	Adjust Humboldt Bay generation
HUMB-T-10	Humboldt Bay - Humboldt #1 60kV (Between HUMBOLDT - HMBLT JT)	Humboldt - Eureka 60 kV Line (HUMBOLDT-HARRIS) and Humboldt Bay - Humboldt No.2 60 kV Line	P6	L-1-1	<100	<100	<100	99.01	<100	<100	100.20	<100	Adjust Humboldt Bay generation
HUMB-T-11	Humboldt Bay - Eureka 60kV (EUREKA - HMBLT BY)	Humboldt Bay - Humboldt No.1 60 kV Line (HUMBOLDT-HMBLT JT) and Humboldt Bay - Humboldt No.2 60 kV Line	P6	L-1-1	<100	100.95	100.79	100.62	101.30	15.36	100.89	<100	Adjust Humboldt Bay generation
HUMB-T-12	Humboldt Bay - Rio Dell 60kV (Between NEWBURG - RIODLLTP)	Humboldt 115/60 No.1 Transformer and Humboldt 115/60 No.2 Transformer	P6	T-1-1	98.51	<100	<100	<100	<100	110.55	<100	<100	Adjust Humboldt Bay generation
HUMB-T-13	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - RIODLLTP)	Humboldt 115/60 No.1 Transformer and Humboldt - Bridgeville 115 kV Line	P6	T-1/L-1	<100	<100	<100	<100	99.93	16.67	<100	<100	Adjust Humboldt Bay generation
HUMB-T-14	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - RIODLLTP)	GRBRVLE 60.00 SVD ID v and Humboldt - Bridgeville 115 kV Line	P6	SD-1 / L-1	<100	<100	<100	<100	100.10	99.66	<100	<100	Adjust Humboldt Bay generation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-T-15	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - RIODLLTP)	Humboldt - Bridgeville 115 kV Line and Humboldt - Trinity 115 kV Line	P6	L-1-1	<100	<100	<100	<100	100.10	58.07	<100	<100	Adjust Humboldt Bay generation
HUMB-T-16	Garberville - Laytonville 60kV (Between GRBRVLE - KEKAWAKA)	GRBRVLE 60.00 SVD ID v and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	SD-1 / L-1	<100	<100	113.81	<100	<100	<100	<100	<100	New Bridgeville - garberville 115kV line
HUMB-T-17	Garberville - Laytonville 60kV (Between GRBRVLE - KEKAWAKA)	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	L-1-1	<100	<100	<100	117.24	<100	<100	<100	<100	New Bridgeville - garberville 115kV line
HUMB-T-18	Garberville - Laytonville 60kV (Between GRBRVLE - KEKAWAKA)	Bridgeville - Cottonwood 115 kV Line (LOW GAP1-BRDGVLE) and Humboldt - Trinity 115 kV Line	P6	L-1-1	<100	<100	<100	<100	<100	<100	101.27	<100	New Bridgeville - garberville 115kV line
HUMB-T-19	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Humboldt Bay - Rio Dell Jct 60 kV Line (NEWBURG - RIO DELL JCT) and Bridgeville - Cottonwood 115 kV Line (LOW GAP1-BRDGVLE)	P6	L-1-1	<100	<100	<100	<100	100.43	2.90	<100	<100	Backdown humboldt bay generation
HUMB-T-20	Laytonville - Willits 60kV	GRBRVLE 60.00 SVD ID v and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	SD-1 / L-1	<100	<100	126.29	<100	<100	<100	<100	<100	New Bridgeville - garberville 115kV line
HUMB-T-21	Laytonville - Willits 60kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	L-1-1	<100	<100	<100	136.02	<100	<100	<100	<100	New Bridgeville - garberville 115kV line

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
HUMB-VD-1	COVELO6 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	0.154	4.367	3.474	9.484	Cont not found	-0.861	1.795	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-2	FRT SWRD 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	-0.89	8.3	2.548	16.265	Cont not found	-2.386	2.872	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-3	FRUITLND 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	-0.599	8.617	2.951	17.058	Cont not found	-1.962	2.87	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-4	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	-1.319	7.848	2.321	15.478	Cont not found	-2.542	3.274	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-5	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	-0.832	7.26	3.084	14.815	Cont not found	-2.16	3.075	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-6	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	0.155	4.345	3.446	9.402	Cont not found	-0.859	1.792	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-7	GRBRVLE 60 kV	Garberville - Laytonville 60 kV Line (GRBRVLE-KEKAWAKA)	P1-2	Line	2.485	2.54	-1.836	-5.151	Cont not found	-2.55	-2.939	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-8	BRDGVLE 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	-4.771	-6.746	-0.48	-0.773	-0.847	0.943	0.623	1.263	Turn on humboldt bay generation during light load conditions for voltage support
HUMB-VD-9	HMBLDT B 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	-5.769	-9.5	-0.498	-0.86	-0.962	0.996	0.633	0.858	Turn on humboldt bay generation during light load conditions for voltage support
HUMB-VD-10	HUMBOLDT 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	-6.211	-9.517	-0.637	-1.099	-1.23	1.276	0.811	1.098	Turn on humboldt bay generation during light load conditions for voltage support
HUMB-VD-11	BRDGVLE 60 kV	Bridgeville 60/12 kV Transformer	P1-3	Transformer	2.375	2.493	5.485	5.654	1.147	4.101	4.05	0.215	New Bridgeville-Garberville 115kV line
HUMB-VD-12	FRT SWRD 60 kV	GRBRVLE 60.00 SVD ID v	P1-4	Shunt Device	4.142	4.186	8.051	7.965	4.014	5.948	7.899	3.821	New Bridgeville-Garberville 115kV line
HUMB-VD-13	FRUITLND 60 kV	GRBRVLE 60.00 SVD ID v	P1-4	Shunt Device	3.39	3.446	6.491	6.421	3.546	4.744	6.301	3.332	New Bridgeville-Garberville 115kV line
HUMB-VD-14	GRBRVLE 60 kV	GRBRVLE 60.00 SVD ID v	P1-4	Shunt Device	5.254	5.303	10.461	10.353	4.705	7.756	10.299	4.504	New Bridgeville-Garberville 115kV line
HUMB-VD-15	KEKAWAKA 60 kV	GRBRVLE 60.00 SVD ID v	P1-4	Shunt Device	4.543	4.594	9.18	9.055	4.175	6.889	9.041	3.966	New Bridgeville-Garberville 115kV line
HUMB-VD-16	GRBRVLE 60 kV	GRBRVLE-KEKAWAKA #1 60 kV	P2-1	Line Section Open	2.485	2.539	-1.836	-5.151	Cont not found	-2.55	-2.939	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-17	GRBRVLE 60 kV	KEKAWAKA-LYTNVLE #1 60 kV	P2-1	Line Section Open	2.285	2.336	-2.065	-5.393	Cont not found	-2.764	-3.165	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-18	KEKAWAKA 60 kV	KEKAWAKA-LYTNVLE #1 60 kV	P2-1	Line Section Open	1.731	1.759	-2.729	-5.873	Cont not found	-3.219	-3.802	Cont not found	New Bridgeville-Garberville 115kV line
HUMB-VD-19	BRDGVLE 60 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	2.639	2.871	4.53	5.955	7.649	6.105	5.607	5.999	Turn on Kekawaka unit
HUMB-VD-20	FRT SWRD 60 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	2.414	2.545	0.869	1.802	9.293	1.998	3.202	6.728	Turn on Kekawaka unit
HUMB-VD-21	FRUITLND 60 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	2.48	2.625	1.689	2.717	9.215	3.13	3.877	6.961	Turn on Kekawaka unit
HUMB-VD-22	GRBRVLE 60 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	2.315	2.447	-0.253	0.579	9.099	0.155	2.07	5.821	Turn on Kekawaka unit
HUMB-VD-23	GRBRVLE 115 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus					8.801			5.477	Turn on Kekawaka unit
HUMB-VD-24	KEKAWAKA 60 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	2.17	2.313	-0.321	0.388	7.436	0.06	1.732	4.269	Turn on Kekawaka unit



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HUMB-VD-25	SWNS FLT 60 kV	BUS FAULT AT 31015 BRDGVILLE 115.00	P2-2	Bus	2.187	2.422	4.004	5.203	6.638	5.42	4.982	5.317	Turn on Kekawaka unit
HUMB-VD-26	CARLOTTA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	6.602	8.236	1.661	1.296	1.182	3.278	3.143	3.068	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-27	EEL RIVR 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	10.965	12.758	1.05	0.866	0.822	2.184	2.122	2.102	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-28	EUREKA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	16.361	17.752	1.85	1.881	1.992	1.857	1.931	1.969	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-29	EUREKA A 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	16.368	17.757	1.851	1.882	1.993	1.858	1.932	1.971	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-30	HARRIS 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	17.414	18.73	2.81	2.878	3.038	2.676	2.785	2.827	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-31	HMBLT BY 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	14.743	16.33	0.435	0.415	0.452	0.611	0.634	0.661	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-32	HOOPA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	2.964	-2.645	8.671	-0.251	-0.093	-1.158	7.406	-1.596	New Bridgeville-Garberville 115kV line
HUMB-VD-33	HRCSCOTIA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	4.995	6.653	1.037	0.809	0.738	2.069	1.985	1.936	New Bridgeville-Garberville 115kV line
HUMB-VD-34	MPLER CRK 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	2.858	-2.596	8.218	-0.238	-0.042	-1.082	7.038	-1.501	New Bridgeville-Garberville 115kV line
HUMB-VD-35	NEWBURG 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	9.313	11.172	1.034	0.796	0.732	2.239	2.158	2.1	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-36	PCLUMBER 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	6.602	8.236	1.661	1.296	1.182	3.278	3.143	3.068	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-37	RDGE CBN 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	2.168	-2.239	6.72	0.279	0.408	-0.556	5.631	-0.775	New Bridgeville-Garberville 115kV line
HUMB-VD-38	RIO DELL 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	5.135	6.791	1.07	0.835	0.761	2.137	2.05	1.999	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-39	RUSS RCH 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	2.878	-2.605	8.304	-0.241	-0.05	-1.096	7.109	-1.519	New Bridgeville-Garberville 115kV line
HUMB-VD-40	WILLWCRK 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	2.935	-2.632	8.556	-0.247	-0.076	-1.138	7.318	-1.571	New Bridgeville-Garberville 115kV line
HUMB-VD-41	COVELO6 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	0.154	4.367	3.477	9.438	-0.62	-0.862	1.794	-0.272	New Bridgeville-Garberville 115kV line
HUMB-VD-42	FRT SWRD 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	-0.891	8.299	2.553	16.186	-1.269	-2.387	2.871	-0.785	New Bridgeville-Garberville 115kV line
HUMB-VD-43	FRUITLND 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	-0.599	8.617	2.957	16.979	-1.339	-1.964	2.87	-1.138	New Bridgeville-Garberville 115kV line
HUMB-VD-44	GRBRVLE 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	-1.32	7.847	2.326	15.401	-1.153	-2.544	3.273	-0.232	New Bridgeville-Garberville 115kV line
HUMB-VD-45	KEKAWAKA 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	-0.832	7.259	3.088	14.745	-1.061	-2.161	3.074	-0.279	New Bridgeville-Garberville 115kV line
HUMB-VD-46	LYTNVLE 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	0.155	4.345	3.449	9.357	-0.616	-0.86	1.791	-0.272	New Bridgeville-Garberville 115kV line
HUMB-VD-47	BRDGVILLE 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	-4.496	-6.602	-0.541	-0.938	-0.896	0.853	0.525	1.178	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-48	HMBLDT B 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	-5.524	-9.344	-0.565	-0.964	-1.019	0.901	0.529	0.766	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-49	HUMBOLDT 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	-5.967	-9.361	-0.722	-1.232	-1.303	1.155	0.677	0.98	Turn on some humboldt bay generation during light load for voltage support



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HUMB-VD-50	HOOPA 60 kV	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	3.642	-1.68	-0.202	-0.163	0.07	-0.964	7.665	-1.579	New Bridgeville-Garberville 115kV line
HUMB-VD-51	MPLE CRK 60 kV	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	3.559	-1.649	-0.192	-0.155	0.113	-0.897	7.284	-1.485	New Bridgeville-Garberville 115kV line
HUMB-VD-52	RDGE CBN 60 kV	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	2.793	-1.306	0.327	0.357	0.552	-0.383	5.863	-0.759	New Bridgeville-Garberville 115kV line
HUMB-VD-53	RUSS RCH 60 kV	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	3.575	-1.655	-0.194	-0.157	0.106	-0.909	7.357	-1.502	New Bridgeville-Garberville 115kV line
HUMB-VD-54	WILLWCRK 60 kV	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	3.624	-1.672	-0.199	-0.161	0.085	-0.946	7.573	-1.554	New Bridgeville-Garberville 115kV line
HUMB-VD-55	BRDGVILLE 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.639	2.871	4.53	5.955	7.649	6.105	5.607	5.999	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-56	FRT SWRD 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.414	2.545	0.869	1.802	9.293	1.998	3.202	6.728	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-57	FRUITLND 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.48	2.625	1.689	2.717	9.215	3.13	3.877	6.961	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-58	GRBRVILLE 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.315	2.447	-0.253	0.579	9.099	0.155	2.07	5.821	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-59	KEKAWAKA 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.17	2.313	-0.321	0.388	7.436	0.06	1.732	4.269	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-60	SWNS FLT 60 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	2.187	2.422	4.004	5.203	6.638	5.42	4.982	5.317	Mendocino area may need additional reactive support in the 5-10 year timeframe
HUMB-VD-61	CARLOTTA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	6.602	8.236	1.661	1.296	1.182	3.278	3.143	3.068	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-62	EEL RIVR 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	10.965	12.758	1.05	0.866	0.822	2.184	2.122	2.102	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-63	EUREKA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	16.361	17.752	1.85	1.881	1.992	1.857	1.931	1.969	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-64	EUREKA A 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	16.368	17.757	1.851	1.882	1.993	1.858	1.932	1.971	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-65	HARRIS 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	17.414	18.73	2.81	2.878	3.038	2.676	2.785	2.827	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-66	HMBLT BY 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	14.743	16.33	0.435	0.415	0.452	0.611	0.634	0.661	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-67	HOOPA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	2.964	-2.645	8.671	-0.251	-0.093	-1.158	7.406	-1.596	Maple Creek reactive support project
HUMB-VD-68	HRCSCOTIA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	4.995	6.653	1.037	0.809	0.738	2.069	1.985	1.936	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-69	MPLE CRK 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	2.858	-2.596	8.218	-0.238	-0.042	-1.082	7.038	-1.501	New Bridgeville-Garberville 115kV line
HUMB-VD-70	NEWBURG 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	9.313	11.172	1.034	0.796	0.732	2.239	2.158	2.1	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-71	PCLUMBER 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	6.602	8.236	1.661	1.296	1.182	3.278	3.143	3.068	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-72	RDGE CBN 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	2.168	-2.239	6.72	0.279	0.408	-0.556	5.631	-0.775	Maple Creek reactive support project
HUMB-VD-73	RIO DELL 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	5.135	6.791	1.07	0.835	0.761	2.137	2.05	1.999	Turn on some humboldt bay generation during light load for voltage support
HUMB-VD-74	RUSS RCH 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	2.878	-2.605	8.304	-0.241	-0.05	-1.096	7.109	-1.519	Maple Creek reactive support project



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HUMB-VD-75	WILLWCRK 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Bus Tie Breaker	2.935	-2.632	8.556	-0.247	-0.076	-1.138	7.318	-1.571	Maple Creek reactive support project
HUMB-VD-76	COVELO6 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	0.154	4.367	3.477	9.438	-0.62	-0.862	1.794	-0.272	New Bridgeville-Garberville 115kV line
HUMB-VD-77	FRT SWRD 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	-0.891	8.299	2.553	16.186	-1.269	-2.387	2.871	-0.785	New Bridgeville-Garberville 115kV line
HUMB-VD-78	FRUITLND 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	-0.599	8.617	2.957	16.979	-1.339	-1.964	2.87	-1.138	New Bridgeville-Garberville 115kV line
HUMB-VD-79	GRBRVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	-1.32	7.847	2.326	15.401	-1.153	-2.544	3.273	-0.232	New Bridgeville-Garberville 115kV line
HUMB-VD-80	KEKAWAKA 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	-0.832	7.259	3.088	14.745	-1.061	-2.161	3.074	-0.279	New Bridgeville-Garberville 115kV line
HUMB-VD-81	LYTNVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVILLE 60.00	P2-4	Bus Tie Breaker	0.155	4.345	3.449	9.357	-0.616	-0.86	1.791	-0.272	New Bridgeville-Garberville 115kV line
HUMB-VD-82	ARCATA 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	0.964	0.986	3.813	5.081	5.298	3.001	3.549	4.055	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-83	BCHIPMIL 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	1.011	1.026	3.939	5.336	5.527	3.102	3.659	4.145	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-84	BIG_LAGN 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	1.048	1.063	4.009	5.401	5.601	3.169	3.729	4.221	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-85	BLUE LKE 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	0.922	0.936	3.862	5.325	5.508	3.007	3.576	4.071	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-86	BLUELKPP 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	0.897	0.911	3.838	5.317	5.497	2.979	3.551	4.047	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-87	JANS CRK 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	0.965	1.192	4.394	5.895	6.024	3.391	4.025	4.564	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-88	ORICK 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	1.049	1.064	4.014	5.41	5.611	3.173	3.735	4.228	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-89	SIMPSON 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	0.911	0.925	3.854	5.325	5.507	2.995	3.567	4.062	Arcata pocket may need additional reactive support in the 5-10 year time frame
HUMB-VD-90	TRINIDAD 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	DCTL	1.047	1.062	4.003	5.394	5.592	3.165	3.724	4.214	Arcata pocket may need additional reactive support in the 5-10 year time frame

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-V-1	BRDGVLE 115 kV	Humboldt - Bridgeville 115 kV Line	P1-2	Line	1.0902	1.1057	1.0214	1.0152	Cont not found	0.9785	0.9999	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-2	LOW GAP1 115 kV	Humboldt - Bridgeville 115 kV Line	P1-2	Line	1.0915	1.1069	1.0256	1.0209	Cont not found	0.992	1.0103	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-3	COVELO6 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0076	0.9659	0.9587	0.8903	Cont not found	1.0109	0.995	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-4	FRT SWRD 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0449	0.9574	0.9958	0.8459	Cont not found	1.031	0.9951	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-5	FRUITLND 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0413	0.9516	0.9897	0.8387	Cont not found	1.0313	0.9956	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-6	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0501	0.9625	1.0052	0.8573	Cont not found	1.0407	1.0051	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-7	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0398	0.9628	0.9911	0.8593	Cont not found	1.0325	1.0009	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-8	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	Line	1.0111	0.9713	0.9653	0.8975	Cont not found	1.0115	0.9954	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-9	BRDGVLE 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1044	1.1339	1.0451	1.045	1.0539	1.024	1.0331	1.037	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-10	HMBLDT B 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1039	1.1469	1.0535	1.0562	1.0578	1.0406	1.045	1.043	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-11	HUMBOLDT 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1078	1.1468	1.0522	1.0556	1.0577	1.0338	1.0395	1.0379	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-12	LOW GAP1 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1028	1.1297	1.0449	1.0451	1.0518	1.0265	1.0351	1.0382	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-13	LOW GAP1 115 kV	LOW GAP1-BRDGVLE #1 115 kV	P2-1	Line section open	1.0954	1.1108	1.0409	1.0428	Cont not found	1.0441	1.0495	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-14	LOW GAP1 115 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	1.0954	1.1107	1.0402	1.0423	1.0408	1.0432	1.0487	1.0399	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-15	EUREKA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.865	0.8582	1.013	1.0121	1.0104	1.0133	1.0123	1.0118	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-16	EUREKA A 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8646	0.8578	1.0124	1.0115	1.0098	1.0126	1.0116	1.0111	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-17	HARRIS 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8595	0.8525	1.0056	1.0045	1.0025	1.0063	1.0052	1.0047	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-18	HMBLDT BY 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8832	0.8729	1.0375	1.0373	1.0363	1.0372	1.0367	1.0361	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-19	COVELO6 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0077	0.9659	0.9587	0.8907	1.0032	1.011	0.995	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-20	FRT SWRD 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0449	0.9574	0.9957	0.8467	1.063	1.031	0.9951	1.062	New Bridgeville-Garberville 60kV line

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HUMB-V-21	FRUITLND 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	1.0413	0.9516	0.9896	0.8395	1.057	1.0314	0.9956	1.0627	New Bridgeville-Garberville 60kV line
HUMB-V-22	GRBRVLE 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	1.0501	0.9625	1.0051	0.8581	1.0719	1.0407	1.0051	1.0713	New Bridgeville-Garberville 60kV line
HUMB-V-23	KEKAWAKA 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	1.0398	0.9628	0.991	0.86	1.0557	1.0325	1.0009	1.055	New Bridgeville-Garberville 60kV line
HUMB-V-24	LYTNVLE 60 kV	BUS FAULT AT 31110 BRDGVILLE 60.00	P2-2	Bus	1.0111	0.9713	0.9653	0.898	1.0094	1.0115	0.9955	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-25	BRDGVLE 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1017	1.1325	1.0457	1.0466	1.0544	1.0249	1.0341	1.0379	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-26	HMBLDT B 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1017	1.1453	1.0542	1.0572	1.0584	1.0416	1.0461	1.044	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-27	HUMBOLDT 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1017	1.1453	1.0531	1.0569	1.0585	1.035	1.0408	1.0391	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-28	LOW GAP1 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1017	1.1285	1.0454	1.0465	1.0522	1.0272	1.0359	1.0389	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-29	LOW GAP1 115 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVLE 115.00	P2-4	Tie-Breaker	1.0954	1.1107	1.0402	1.0423	1.0408	1.0432	1.0487	1.0399	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-30	EUREKA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.865	0.8582	1.013	1.0121	1.0104	1.0133	1.0123	1.0118	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-31	EUREKA A 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8646	0.8578	1.0124	1.0115	1.0098	1.0126	1.0116	1.0111	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-32	HARRIS 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8595	0.8525	1.0056	1.0045	1.0025	1.0063	1.0052	1.0047	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-33	HMBLT BY 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8832	0.8729	1.0375	1.0373	1.0363	1.0372	1.0367	1.0361	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-34	COVELO6 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0077	0.9659	0.9587	0.8907	1.0032	1.011	0.995	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-35	FRT SWRD 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0449	0.9574	0.9957	0.8467	1.063	1.031	0.9951	1.062	New Bridgeville-Garberville 60kV line
HUMB-V-36	FRUITLND 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0413	0.9516	0.9896	0.8395	1.057	1.0314	0.9956	1.0627	New Bridgeville-Garberville 60kV line
HUMB-V-37	GRBRVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0501	0.9625	1.0051	0.8581	1.0719	1.0407	1.0051	1.0713	New Bridgeville-Garberville 60kV line
HUMB-V-38	KEKAWAKA 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0398	0.9628	0.991	0.86	1.0557	1.0325	1.0009	1.055	New Bridgeville-Garberville 60kV line
HUMB-V-39	LYTNVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0111	0.9713	0.9653	0.898	1.0094	1.0115	0.9955	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-40	BRDGVLE 115 kV	Humboldt - Bridgeville 115 kV Line	P1-2	Line	1.0902	1.1057	1.0214	1.0152	Cont not found	0.9785	0.9999	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-V-41	LOW GAP1 115 kV	Humboldt - Bridgeville 115 kV Line	P1-2	Line	1.0915	1.1069	1.0256	1.0209	Cont not found	0.992	1.0103	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-42	COVELO6 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0076	0.9659	0.9587	0.8903	Cont not found	1.0109	0.995	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-43	FRT SWRD 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0449	0.9574	0.9958	0.8459	Cont not found	1.031	0.9951	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-44	FRUITLND 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0413	0.9516	0.9897	0.8387	Cont not found	1.0313	0.9956	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-45	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0501	0.9625	1.0052	0.8573	Cont not found	1.0407	1.0051	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-46	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0398	0.9628	0.9911	0.8593	Cont not found	1.0325	1.0009	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-47	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVILLE-FRUTLDJT)	P1-2	Line	1.0111	0.9713	0.9653	0.8975	Cont not found	1.0115	0.9954	Cont not found	New Bridgeville-Garberville 60kV line
HUMB-V-48	BRDGVLE 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1044	1.1339	1.0451	1.045	1.0539	1.024	1.0331	1.037	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-49	HMBLDT B 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1039	1.1469	1.0535	1.0562	1.0578	1.0406	1.045	1.043	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-50	HUMBOLDT 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1078	1.1468	1.0522	1.0556	1.0577	1.0338	1.0395	1.0379	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-51	LOW GAP1 115 kV	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	1.1028	1.1297	1.0449	1.0451	1.0518	1.0265	1.0351	1.0382	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-52	LOW GAP1 115 kV	LOW GAP1-BRDGVLE #1 115 kV	P2-1	Line section open	1.0954	1.1108	1.0409	1.0428	Cont not found	1.0441	1.0495	Cont not found	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-53	LOW GAP1 115 kV	BUS FAULT AT 31015 BRDGVLE 115.00	P2-2	Bus	1.0954	1.1107	1.0402	1.0423	1.0408	1.0432	1.0487	1.0399	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-54	EUREKA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.865	0.8582	1.013	1.0121	1.0104	1.0133	1.0123	1.0118	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-55	EUREKA A 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8646	0.8578	1.0124	1.0115	1.0098	1.0126	1.0116	1.0111	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-56	HARRIS 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8595	0.8525	1.0056	1.0045	1.0025	1.0063	1.0052	1.0047	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-57	HMBLDT BY 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus	0.8832	0.8729	1.0375	1.0373	1.0363	1.0372	1.0367	1.0361	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-58	COVELO6 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0077	0.9659	0.9587	0.8907	1.0032	1.011	0.995	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-59	FRT SWRD 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0449	0.9574	0.9957	0.8467	1.063	1.031	0.9951	1.062	New Bridgeville-Garberville 60kV line
HUMB-V-60	FRUITLND 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0413	0.9516	0.9896	0.8395	1.057	1.0314	0.9956	1.0627	New Bridgeville-Garberville 60kV line

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-V-61	GRBRVLE 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0501	0.9625	1.0051	0.8581	1.0719	1.0407	1.0051	1.0713	New Bridgeville-Garberville 60kV line
HUMB-V-62	KEKAWAKA 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0398	0.9628	0.991	0.86	1.0557	1.0325	1.0009	1.055	New Bridgeville-Garberville 60kV line
HUMB-V-63	LYTNVLE 60 kV	BUS FAULT AT 31110 BRDGVLE 60.00	P2-2	Bus	1.0111	0.9713	0.9653	0.898	1.0094	1.0115	0.9955	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-64	BRDGVLE 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1017	1.1325	1.0457	1.0466	1.0544	1.0249	1.0341	1.0379	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-65	HMBLDT B 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1014	1.1453	1.0542	1.0572	1.0584	1.0416	1.0461	1.044	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-66	HUMBOLDT 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1054	1.1453	1.0531	1.0569	1.0585	1.035	1.0408	1.0391	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-67	LOW GAP1 115 kV	NON-BUS-TIE BREAKER CB6422 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker	1.1005	1.1285	1.0454	1.0465	1.0522	1.0272	1.0359	1.0389	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-68	LOW GAP1 115 kV	BUS-TIE BREAKER FAULT AT 31015 BRDGVLE 115.00	P2-4	Tie-Breaker	1.0954	1.1107	1.0402	1.0423	1.0408	1.0432	1.0487	1.0399	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-69	EUREKA 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.865	0.8582	1.013	1.0121	1.0104	1.0133	1.0123	1.0118	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-70	EUREKA A 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8646	0.8578	1.0124	1.0115	1.0098	1.0126	1.0116	1.0111	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-71	HARRIS 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8595	0.8525	1.0056	1.0045	1.0025	1.0063	1.0052	1.0047	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-72	HMBLT BY 60 kV	BUS-TIE BREAKER FAULT AT 31080 HUMBOLDT 60.00	P2-4	Tie-Breaker	0.8832	0.8729	1.0375	1.0373	1.0363	1.0372	1.0367	1.0361	Turn on some Humboldt bay generation during light load conditions for reactive support.
HUMB-V-73	COVELO6 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0077	0.9659	0.9587	0.8907	1.0032	1.011	0.995	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-74	FRT SWRD 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0449	0.9574	0.9957	0.8467	1.063	1.031	0.9951	1.062	New Bridgeville-Garberville 60kV line
HUMB-V-75	FRUITLND 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0413	0.9516	0.9896	0.8395	1.057	1.0314	0.9956	1.0627	New Bridgeville-Garberville 60kV line
HUMB-V-76	GRBRVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0501	0.9625	1.0051	0.8581	1.0719	1.0407	1.0051	1.0713	New Bridgeville-Garberville 60kV line
HUMB-V-77	KEKAWAKA 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0398	0.9628	0.991	0.86	1.0557	1.0325	1.0009	1.055	New Bridgeville-Garberville 60kV line
HUMB-V-78	LYTNVLE 60 kV	BUS-TIE BREAKER FAULT AT 31110 BRDGVLE 60.00	P2-4	Tie-Breaker	1.0111	0.9713	0.9653	0.898	1.0094	1.0115	0.9955	1.0155	New Bridgeville-Garberville 60kV line
HUMB-V-79	COVELO6 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.9156	>0.9	New Bridgeville - Garberville 115kV line

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-V-80	FRT SWRD 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.7836	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-81	FRUITLND 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.7842	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-82	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.7969	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-83	GRBRVLE 60 kV	Garberville - Laytonville 60 kV Line (FRUITLND - FTSWD)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.8839	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-84	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.8228	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-85	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.9162	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-86	COVELO6 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.9156	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-87	FRT SWRD 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.7836	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-89	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.7969	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-90	GRBRVLE 60 kV	Garberville - Laytonville 60 kV Line (FRUITLND - FTSWD)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.8839	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-91	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.8228	>0.9	New Bridgeville - Garberville 115kV line
HUMB-V-92	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV Line (BRDGVLLE-FRUTLDJT)	P6	Overlapping contingencies	>0.9	>0.9	Nconv	Nconv	>0.9	>0.9	0.9162	>0.9	New Bridgeville - Garberville 115kV line

ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
HUMB-TS-1	Humboldt 115/60 No.2 Transformer	P1-3	Transformer			voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
HUMB-TS-2	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt Device			voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
HUMB-TS-3	BUS FAULT AT 31000 HUMBOLDT 115.00	P2-2	Bus			voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
HUMB-TS-4	NON-BUS-TIE BREAKER CB6522 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Breaker			Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles.	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles.	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
HUMB-TS-5	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Tie-Breaker			voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.	voltage dip >30%. frequency dip below 59.6 for 6 cycles.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
HUMB-TS-6	Humb - Humb Bay No.1 and Humb-Bridg 115 kV Lines	P6-1-1	L-1-1			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.



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.



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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
HUMB-T-SEN-1	Humboldt Bay - Rio Dell Jct 60kV (Humboldt Bay - Eel River)	BUS FAULT AT 31015 BRDGVILLE 115.00	P2-2	Bus Fault	74.37	107.90							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-2	Humboldt Bay - Rio Dell Jct 60kV (Humboldt Bay - Eel River)	BUS-TIE BREAKER FAULT AT 31015 BRDGVILLE 115.00	P2-4	Bus Tie Breaker	74.37	107.90							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-3	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	31.80	105.28							May need to reconductor the line section if QFs retire
HUMB-T-SEN-4	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	32.45	104.84							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-5	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	31.81	104.88							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-6	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	32.45	104.84							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-7	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVILLE)	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Bus Fault	31.75	105.06							May need to reconductor the line section if QFs retire
HUMB-T-SEN-8	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVILLE)	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Breaker Fault	32.47	104.62							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-9	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVILLE)	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	31.78	104.67							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-10	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVILLE)	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Breaker Fault	32.47	104.62							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-11	Garberville - Laytonville 60kV (Between GRBRVILLE - KEKAWAKA)	Bridgeville- Garberville 115 kV Line (New)	P6	Multiple Contingency	121.89	120.90							Open breaker at Laytonville. Drop load as needed
HUMB-T-SEN-12	Laytonville - Willits 60kV	Bridgeville- Garberville 115 kV Line (New)	P6	Multiple Contingency	137.18	134.97							Open breaker at Laytonville. Drop load as needed
HUMB-T-SEN-13	Rio Dell Jct - Bridgeville 60kV (Between CARLOTTA - SWNS FLT)	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P6	Multiple Contingency		Nconv							Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-14	Rio Dell Jct - Bridgeville 60kV (Between SWNS FLT - BRDGVILLE)	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P6	Multiple Contingency		Nconv							Drop Load in Bridgeville-Eel River corridor

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions		
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A	
HUMB-T-SEN-15	Bridgeville - Garberville 60kV (Bridgeville - Fruitland Jct)	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P6	Multiple Contingency		Nconv								Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-16	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P6	Multiple Contingency		Nconv								Drop Load in Bridgeville-Eel River corridor
HUMB-T-SEN-17	Bridgeville - Garberville 60kV (FortSeward Jct - Garberville)	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P6	Multiple Contingency		Nconv								Drop Load in Bridgeville-Eel River corridor



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-VD-SEN-1	CARLOTTA 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	1.171	11.65							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-2	HRCSCOTIA 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	0.87	12.387							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-3	HRCSCOTIATP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	0.869	12.367							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-4	NEWBURG 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	1.807	13.661							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-5	PCLUMBER 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	1.171	11.65							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-6	RIO DELL 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	0.898	12.354							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-7	RIODLLTP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	1.246	12.093							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-8	SCOTIATP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	0.898	12.354							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire
HUMB-VD-SEN-9	SCTIATP2 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR)	P2-1	Line Section Open	0.864	12.368							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-10	HOOPA 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	1.856	8.712							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-11	MPLER CRK 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	1.756	8.239							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-12	RDGE CBN 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	1.827	6.652							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-13	RUSS RCH 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	1.775	8.328							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-14	WILLWCRK 60 kV	BUS FAULT AT 31080 HUMBOLDT 60.00	P2-2	Bus Fault	1.83	8.589							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-15	BRDGVILLE 115 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.339	6.441							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-16	CARLOTTA 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	3.267	14.535							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AREE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-VD-SEN-17	EEL RIVR 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	4.876	18.282							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-18	HRCSCOTIA 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.335	15.498							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-19	HRCSCOTIATP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.332	15.473							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-20	LOW GAP1 115 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.371	5.857							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-21	NEWBURG 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	4.334	17.165							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-22	PCLUMBER 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	3.267	14.536							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-23	RIO DELL 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.409	15.456							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-24	RIODLLTP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	3.34	15.117							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-25	SCOTIATP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.409	15.455							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-26	SCTIATP2 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	2.319	15.474							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-27	CARLOTTA 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	2.376	14.575							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-28	EEL RIVR 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	4.013	18.322							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-29	HRCSCOTIA 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.742	15.539							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-30	HRCSCOTIATP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.74	15.513							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-31	NEWBURG 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	3.473	17.205							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.
HUMB-VD-SEN-32	PCLUMBER 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	2.376	14.575							Voltage deviation violations due to overloaded lines. Reconductor the overloaded lines if QFs retire.

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-VD-SEN-33	RIO DELL 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLTY BY 60.00	P2-3	Breaker Fault	1.797	15.496							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-34	RIO DLLTP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLTY BY 60.00	P2-3	Breaker Fault	2.491	15.156							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-35	SCOTIATP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLTY BY 60.00	P2-3	Breaker Fault	1.797	15.496							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-36	SCTIATP2 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLTY BY 60.00	P2-3	Breaker Fault	1.73	15.515							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-37	BRDGVILLE 115 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.339	6.441							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-38	CARLOTTA 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	3.267	14.535							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-39	EEL RIVR 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	4.876	18.282							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-40	HRCSCOTIA 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.335	15.498							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-41	HRCSCOTIATP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.332	15.473							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-42	LOW GAP1 115 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.371	5.857							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-43	NEWBURG 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	4.334	17.165							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-44	PCLUMBER 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	3.267	14.536							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-45	RIO DELL 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.409	15.456							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-46	RIO DLLTP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	3.34	15.117							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-47	SCOTIATP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.409	15.455							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.
HUMB-VD-SEN-48	SCTIATP2 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLTY BY 60.00	P2-4	Bus Tie Breaker	2.319	15.474							Voltage deviation violations due to overloaded lines. Reconnector the overloaded lines if QFs retire.



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-VD-SEN-49	ARCATA 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.053	5.284							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-50	ARCTAJT2 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	5.793	5.043							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-51	BCHIP_TP 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.365	5.511							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-52	BCHIPMIL 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.365	5.511							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-53	BIG_LAGN 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.451	5.585							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-54	BLUE LKE 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.359	5.491							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-55	BLUELKPP 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.35	5.48							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-56	ESSX JCT 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.367	5.517							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-57	JANCK TP 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.362	5.52							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-58	JANS CRK 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.927	6.012							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-59	ORICK 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.464	5.595							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-60	SIMPSON 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.359	5.49							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-61	SMPSTAP 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.356	5.487							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-62	TRINIDAD 60 kV	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7	DCTL	6.441	5.576							Ensure Generation units in Arcata pocket are turned ON
HUMB-VD-SEN-63	COVELO6 60 kV	Bridgeville - Garberville 60 kV and Bridgeville - Garberville 115 kVS Lines	P7	DCTL	9.489	7.433							Open breaker at Laytonville
HUMB-VD-SEN-64	GRBRVLE 60 kV	Bridgeville - Garberville 60 kV and Bridgeville - Garberville 115 kVS Lines	P7	DCTL	16.528	11.723							Open breaker at Laytonville
HUMB-VD-SEN-65	GRBRVLE 115 kV	Bridgeville - Garberville 60 kV and Bridgeville - Garberville 115 kVS Lines	P7	DCTL	16.235	11.422							Open breaker at Laytonville
HUMB-VD-SEN-66	KEKAWAKA 60 kV	Bridgeville - Garberville 60 kV and Bridgeville - Garberville 115 kVS Lines	P7	DCTL	15.369	11.157							Open breaker at Laytonville
HUMB-VD-SEN-67	LYTNVLE 60 kV	Bridgeville - Garberville 60 kV and Bridgeville - Garberville 115 kVS Lines	P7	DCTL	9.414	7.372							Open breaker at Laytonville

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions		
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-V-SEN-1	CARLOTTA 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.005	0.8492							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-2	EEL RIVR 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	0.9876	0.824							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-3	HRCSCOTIA 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0143	0.8182							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-4	HRCSCOTIATP 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0156	0.8198							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-5	NEWBURG 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	0.9901	0.8268							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-6	PCLUMBER 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.005	0.8492							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-7	RIO DELL 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0145	0.8208							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-8	RIODLLTP 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0035	0.8418							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-9	SCOTIATP 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0145	0.8209							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-10	SCTIATP2 60 kV	HMBLT BY-EEL RIVR #1 60 kV	P2-1	Line Section Open	1.0159	0.8197							Low voltages due to overloaded lines. Reconnector the overloaded lines
HUMB-V-SEN-11	CARLOTTA 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	0.9952	0.8526							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-12	EEL RIVR 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	0.9781	0.8275							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-13	HRCSCOTIA 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	1.0078	0.8217							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-14	HRCSCOTIATP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	1.0091	0.8233							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-15	NEWBURG 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	0.9806	0.8302							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-16	PCLUMBER 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	0.9952	0.8526							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-17	RIO DELL 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	1.0078	0.8243							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-18	RIODLLTP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	0.9941	0.8452							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-19	SCOTIATP 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	1.0078	0.8244							Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-20	SCTIATP2 60 kV	BUS FAULT AT 31090 HMBLT BY 60.00	P2-2	Bus Fault	1.0094	0.8232							Low voltages due to line overloads. Drop Load.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions	
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A
HUMB-V-SEN-21	CARLOTTA 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0041	0.8522						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-22	EEL RIVR 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	0.9868	0.8271						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-23	HRCSCOTIA 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0137	0.8213						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-24	HRCSCOTIATP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.015	0.8229						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-25	NEWBURG 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	0.9892	0.8298						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-26	PCLUMBER 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0041	0.8522						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-27	RIO DELL 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0139	0.8239						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-28	RIODLLTP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0026	0.8448						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-29	SCOTIATP 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0139	0.824						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-30	SCTIATP2 60 kV	NON-BUS-TIE BREAKER CB6322 FAULT AT 31090 HMBLT BY 60.00	P2-3	Breaker Fault	1.0153	0.8228						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-31	CARLOTTA 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	0.9952	0.8526						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-32	EEL RIVR 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	0.9781	0.8275						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-33	HRCSCOTIA 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	1.0078	0.8217						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-34	HRCSCOTIATP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	1.0091	0.8233						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-35	NEWBURG 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	0.9806	0.8302						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-36	PCLUMBER 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	0.9952	0.8526						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-37	RIO DELL 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	1.0078	0.8243						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-38	RIODLLTP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	0.9941	0.8452						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-39	SCOTIATP 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	1.0078	0.8244						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-40	SCTIATP2 60 kV	BUS-TIE BREAKER FAULT AT 31090 HMBLT BY 60.00	P2-4	Bus Tie Breaker	1.0094	0.8232						Low voltages due to line overloads. Drop Load.
HUMB-V-SEN-41	COVELO6 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv						Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-42	FRT SWRD 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv						Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-43	FRUITLND 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv						Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-V-SEN-44	FRUTLDJT 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv							Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-45	FTSWRDJT 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv							Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-46	GRBRVLE 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv							Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-47	KEKAWAKA 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv							Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-48	LYTNVLE 60 kV	Bridgeville- Garberville 115 kV Line (New) and Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P6	Multiple Contingency	Nconv	Nconv							Open breaker at Laytonville. Drop load as needed in the Humboldt - Bridgeville 60kV corridor
HUMB-V-SEN-49	BRDGVLE 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-50	CARLOTTA 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-51	FRT SWRD 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-52	FRUITLND 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-53	FRUTLDJT 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-54	FTSWRDJT 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-55	HRCSCOTIA 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-56	HRCSCOTIATP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions		
					2025 SP No AEEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
HUMB-V-SEN-57	NEWBURG 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-58	PCLUMBER 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-59	RIO DELL 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-60	RIODLLTP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-61	SCOTIATP 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-62	SCTIATP2 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.
HUMB-V-SEN-63	SWNS FLT 60 kV	Humboldt - Rio Dell Jct 60 kV Line (HMBLT BY - EEL RIVR) and Bridgeville 60/12 kV Transformer	P6	Multiple Contingency		Nconv							Open breaker at Laytonville after 1st contingency. Load gets dropped between Newburg - Bridgeville corridor after second contingency.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-T-1	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Konocti - Eagle Rock 60kV	P1-2	Line	127.42	38.72	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-2	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Konocti - Eagle Rock 60kV	P1-2	Line	112.03	<100	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-3	Clear Lake-Hopland 60kV line (Granite-Hopland)	Konocti - Eagle Rock 60kV	P1-2	Line	133.09	44.35	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-4	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	115.56	116.70	114.12	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-5	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	101.12	102.12	99.86	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-6	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	101.17	102.16	99.91	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-7	Tulucay - Napa 60kV line #1 (TULCAY1 - TULCY JT)	TULUCAY-BSLT TAP #1 60 kV	P2-1	Line Section Open	116.62	<100	<100	<100	<100	<100	<100	<100	Napa - Tulucay 60kV line upgrade
NCNB-T-8	Tulucay - Napa 60kV line #1 (Napa - Tulucay Jct)	TULUCAY-BSLT TAP #1 60 kV	P2-1	Line Section Open	139.13	115.26	117.28	<100	<100	<100	<100	<100	Napa - Tulucay 60kV line upgrade
NCNB-T-9	Ignacio - Bolinas #1 60kV line (Ignacio - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-10	Ignacio - Bolinas #2 60kV line (Stafford Jct - Tocaloma Jct)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-11	Ignacio - Bolinas #1 60kV line Bolinas - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-12	Ignacio - Bolinas #2 60kV line (Olema - Bolinas)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	130.10	126.33	120.19	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-T-13	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	104.52	101.19	95.73	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-14	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	106.23	105.47	101.74	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-15	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.62	69.36	69.56	<100	<100	<100	<100	<100	Reduce Indian Valley generation
NCNB-T-16	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	130.27	36.88	39.41	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-17	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	116.83	20.17	18.06	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-18	Clear Lake-Hopland 60kV line (Granite-Hopland)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	135.85	42.25	45.11	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-19	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	122.80	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-20	Bridgeville - Garberville 60kV (Between BRDGVILLE - FRUTLDJT)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.45	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-21	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	106.59	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-22	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.53	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-23	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	109.83	111.57	111.50	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-24	Santa Rosa - Corona 115kV line (Penngrove - Corona)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	114.64	116.73	116.82	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-25	Corona - Lakeville 115kV line	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	108.49	110.57	110.90	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-26	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie Breaker	90.06	109.75	99.16	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-27	Hopland Sub 115kV / 60kV transformer	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.04	94.91	83.64	81.29	68.82	59.94	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-28	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	114.25	116.12	112.49	<100	<100	Add a redundant tie breaker at Fulton 60kV
NCNB-T-29	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	99.97	101.61	98.44	<100	<100	Add a redundant tie breaker at Fulton 60kV
NCNB-T-30	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	100.02	101.65	98.48	<100	<100	Add a redundant tie breaker at Fulton 60kV

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-T-31	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie Breaker	110.52	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-32	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.86	119.75	28.37	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-33	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	112.55	121.08	23.82	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-34	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.26	118.44	21.98	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-35	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1) and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	<100	<100	<100	99.04	<100	<100	100.14	<100	Adjust Humboldt bay generation
NCNB-T-36	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	Eagle Rock - Redbud 115 kV Line (Eagle rock - Highland J1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	105.45	99.06	96.08	<100	<100	<100	<100	Adjust Indian valley unit
NCNB-T-37	Eagle Rock - Redbud 115kV line (Redbud - Redbud J2)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	107.11	93.18	85.64	<100	<100	<100	<100	Adjust Generation
NCNB-T-38	Fulton - Santa Rosa #1 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	<100	119.81	121.60	120.74	90.80	90.29	<100	<100	Drop load at Santa Rosa
NCNB-T-39	Fulton - Santa Rosa #2 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	<100	119.19	120.98	120.17	90.37	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-40	Fulton - Santa Rosa #1 115kV line (Monroe - Santa Rosa)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	<100	109.94	111.70	111.00	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-41	Fulton - Santa Rosa #2 115kV line (Monroe - Santa Rosa)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	<100	100.36	102.31	102.02	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-42	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	<100	NConv	NConv	<100	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-43	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	<100	110.47	111.58	111.48	<100	<100	<100	<100	Drop load at Santa Rosa

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-T-44	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	<100	115.31	116.74	116.91	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-45	Corona - Lakeville 115kV line	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	<100	109.10	110.58	110.86	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-46	Sonoma - Pueblo 115kV line	FULTON 230/115 kV Bank # 9 and FULTON 230/115 kV Bank # 4	P6	Multiple Contingency	<100	NConv	NConv	<100	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-47	Eagle Rock - Redbud 115kV line Cache J2 - Redbud J2)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	<100	101.08	<100	<100	<100	<100	<100	<100	Adjust Generation
NCNB-T-48	Mendocino - Philo Jct - Hopland 60kV line (Mendocino - Ukiah Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	Nconv	NConv	NConv	NConv	NConv	NConv	NConv	<100	Mitigation Under Review
NCNB-T-49	Mendocino - Hartley 60 kV Line #1 (Mendocino - Upper Lake)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-50	Mendocino - Hartley 60 kV Line #1 (Mendocino - Upper Lake)	Eagle Rock 115/60 KV Bank #1 and Clear Lake- Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	<100	NConv	<100	<100	NConv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-51	Mendocino - Philo Jct - Hopland 60kV line (Philo Jct - Hopland Jct)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	<100	104.61	<100	92.69	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-52	Mendocino - Philo Jct - Hopland 60kV line (Philo Jct - Hopland Jct)	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	105.51	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-53	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	<100	111.21	98.30	102.19	98.21	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-54	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Konocti - Eagle Rock 60kV and Ukiah-Hopland- Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	<100	99.93	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-55	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	113.33	98.38	99.44	99.21	<100	90.25	<100	Clear Lake 60kV reinforcement project
NCNB-T-56	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	102.22	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-57	Mendocino - Hartley 60 kV Line #1 (Upper Lake - Hartley)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project

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NCNB-T-58	Hartley - Clear Lake 60kV line	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-59	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-60	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Konocti - Eagle Rock 60kV and Mendocino - Clearlake 60 kV Line (Mendocino - Upper Lake)	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-61	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	109.99	<100	<100	128.53	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-62	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	108.83	117.21	108.13	<100	99.63	78.10	<100	Adjust Generation
NCNB-T-63	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear lake 60kV reinforcement project
NCNB-T-64	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear lake 60kV reinforcement project
NCNB-T-65	Clear Lake-Hopland 60kV line (Granite-Hopland)	Hartley - Clear Lake 60kV and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	Nconv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-66	Hopland Sub 115kV / 60kV transformer	Eagle Rock 115/60 KV Bank #1 and Mendocino -Clearlake 60 kV Line (Mendocino - Upper Lake)	P6	Multiple Contingency	<100	NConv	<100	<100	NConv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-67	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Eagle Rock- Fulton-Silverado 115 kv (Eagle rock - Silverado Jct2)	P6	Multiple Contingency	<100	98.40	98.86	99.39	100.57	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-68	Knocti - Middletown 60kV line	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	109.11	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-69	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	Hopland 115/60 kV Bank #2 and Clear Lake - Eagle Rock 60 kV Line (Clear Lake - Konocti)	P6	Multiple Contingency	<100	110.74	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-70	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	MENDOCINO - REDBUD 115 KV (Mendocino-LUCERN JCT2) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	101.65	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor

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NCNB-T-71	Fulton #1 60kV line (Fulton - Fitch Mtn tap)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-72	Fulton - Calistoga 60kV line (Dunbar - St Helna)	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	NConv	NConv	NConv	NConv	NConv	NConv	<100	Mitigation Under Review
NCNB-T-73	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	<100	<100	<100	115.69	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-74	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	<100	<100	<100	121.37	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-75	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael)	P6	Multiple Contingency	<100	<100	<100	101.96	<100	<100	<100	<100	This line needs to be built for a higher rating as a part of the Ignacio - Alto voltage conversion project
NCNB-T-76	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	<100	<100	<100	131.86	<100	<100	92.86	<100	This line needs to be built for a higher rating as a part of the Ignacio - Alto voltage conversion project
NCNB-T-78	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20)	P6	Multiple Contingency	<100	145.06	145.89	<100	102.14	100.95	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-79	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD)	P6	Multiple Contingency	<100	144.85	145.69	<100	102.14	100.95	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-80	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20)	P6	Multiple Contingency	<100	144.04	144.87	<100	101.44	100.26	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-81	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD)	P6	Multiple Contingency	<100	143.70	144.53	<100	101.44	100.26	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-82	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	Geyser #3 - Eagle Rock 115 kv Line and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerine Jct1)	P6	Multiple Contingency	<100	104.14	<100	<100	98.38	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-83	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerine Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	103.93	96.88	<100	107.44	97.31	<100	<100	New Bridgeville - Garberville 115kV line

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-T-84	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - City of Ukiah) and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	<100	104.84	<100	<100	96.85	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-85	Geysys #3 - Cloverdale 115kV line (Cloverdale - MPE Tap)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	100.49	95.84	93.51	<100	<100	<100	<100	<100	Adjust Generation
NCNB-T-86	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	109.90	111.46	111.51	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-87	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	114.72	116.61	116.83	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-88	Corona - Lakeville 115kV line	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	108.56	110.46	110.91	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-89	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	<100	102.74	98.87	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-90	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	Eagle Rock-Cortina 115kV Lines & Cortina-Mendocino No.1 115kV	P7	DCTL	104.15	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-91	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio-San Rafael #2 & Ignacio-San Rafael #1 115kV Lines	P7	DCTL	<100	<100	115.72	<100	<100	<100	<100	<100	Drop load at San Rafael
NCNB-T-92	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Ignacio-Las Gallinas #1 115kV Lines	P7	DCTL	<100	<100	131.88	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project. Reconductor the line to a higher rating (at least 620 Amps)
NCNB-T-93	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Las Gallinas-San Rafael #3 115kV Lines	P7	DCTL	<100	<100	102.09	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project. Reconductor the line to a higher rating (at least 620 Amps)
NCNB-T-94	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	142.90	144.78	<100	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project.
NCNB-T-95	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	141.92	143.79	<100	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project.
NCNB-T-96	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	104.86	108.73	29.63	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-97	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	107.02	111.19	25.79	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-98	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	104.97	109.11	24.09	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-1	BIG RIVR 60 kV	BIG RIVR 60.00 SVD ID v	P1-4	Shunt Device	1.35	1.138	6.09	6.276	6.865	5.181	5.202	5.561	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-2	FRT BRGG 60 kV	BIG RIVR 60.00 SVD ID v	P1-4	Shunt Device	0.609	0.441	4.825	5.034	5.561	4.166	4.101	4.477	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-3	CALPELLA 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	5.602	2.122	9.979	10.525	10.283	8.549	8.016	6.407	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-4	HPLND JT 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	3.032	1.097	5.434	5.697	5.661	4.766	4.355	3.274	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-5	UKIAH 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	4.852	1.836	8.726	9.194	9.012	7.504	7.002	5.536	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-6	CALPELLA 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	4.928	1.242	11.736	12.431	12.221	8.954	8.173	7.943	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-7	HPLND JT 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	2.63	0.675	6.639	6.958	6.866	4.932	4.455	4.336	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-8	MENDOCNO 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	5.347	1.339	12.608	13.368	13.138	9.651	8.819	8.57	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-9	REDBUD 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	2.56	0.635	6.301	6.62	6.495	4.714	4.286	4.147	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-10	UKIAH 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	4.258	1.086	10.336	10.927	10.748	7.836	7.135	6.934	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-11	CALPELLA 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.339	-0.605	9.555	4.203	-0.876	-0.619	-0.25	0.159	Clear Lake 60kV reinforcement project
NCNB-VD-12	CLER LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	5.091	1.148	15.193	3.279	2.148	9.853	2.088	2.475	Clear Lake 60kV reinforcement project
NCNB-VD-13	EGLE RCK 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	11.97	3.034	29.474	7.775	6.966	22.443	6.918	7.417	Clear Lake 60kV reinforcement project
NCNB-VD-14	GRANITE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	4.098	1.004	13.138	2.906	1.606	7.921	1.589	1.935	Clear Lake 60kV reinforcement project
NCNB-VD-15	HARTLEY 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	4.206	0.979	12.606	2.71	1.754	8.052	1.667	2.064	Clear Lake 60kV reinforcement project
NCNB-VD-16	HPLND JT 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	1.316	0.616	7.127	1.868	0.131	2.4	0.198	0.433	Clear Lake 60kV reinforcement project
NCNB-VD-17	HPLND JT 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	1.05	-0.738	6.678	2.547	-0.385	0.68	0.211	0.513	Clear Lake 60kV reinforcement project
NCNB-VD-18	KONOCIT6 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	9.72	1.925	25.441	5.554	4.614	18.605	4.519	4.986	Clear Lake 60kV reinforcement project
NCNB-VD-19	LOWR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	9.863	0.79	26.696	3.962	3.059	19.199	2.89	3.383	Clear Lake 60kV reinforcement project
NCNB-VD-20	LUCERNE 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.033	-0.463	8.115	3.463	-0.14	-0.219	-0.108	0.159	Clear Lake 60kV reinforcement project
NCNB-VD-21	MENDOCNO 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.195	-0.579	10.049	4.473	-0.965	-0.852	-0.341	0.086	Clear Lake 60kV reinforcement project
NCNB-VD-22	MIDDLTWN 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	10.078	-1.175	28.495	1.118	0.279	20.07	0.133	0.692	Clear Lake 60kV reinforcement project
NCNB-VD-23	REDBUD 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	-1.672	-1.453	7.697	1.541	-3.677	-2.714	-2.022	-1.008	Clear Lake 60kV reinforcement project
NCNB-VD-24	UKIAH 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.563	-0.648	8.759	3.772	-0.73	-0.245	-0.102	0.28	Clear Lake 60kV reinforcement project
NCNB-VD-25	UPPR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	3.289	0.808	9.781	2.107	1.339	6.1	1.225	1.626	Clear Lake 60kV reinforcement project



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-26	BIG RIVR 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0	0	9.895	9.135	8.904	0	0	0	New Bridgeville - Garberville 115kV line
NCNB-VD-27	CALPELLA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	6.069	2.51	13.753	13.904	13.143	9.671	9.182	8.048	New Bridgeville - Garberville 115kV line
NCNB-VD-28	CLER LKE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.858	0.669	7.292	7.162	6.614	3.582	3.256	3.234	New Bridgeville - Garberville 115kV line
NCNB-VD-29	CLOVRDLE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.119	0.913	5.727	5.611	5.261	3.619	3.362	2.973	New Bridgeville - Garberville 115kV line
NCNB-VD-30	COVELO6 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.562	0.497	11.503	11.761	10.424	3.213	4.818	4.149	New Bridgeville - Garberville 115kV line
NCNB-VD-31	ELK 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.547	0.341	10.511	9.798	9.428	1.489	1.367	1.353	New Bridgeville - Garberville 115kV line
NCNB-VD-32	FRT BRGG 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.527	0.183	10.825	10.072	9.82	1.123	1.078	1.148	New Bridgeville - Garberville 115kV line
NCNB-VD-33	FRT SWRD 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.65	0.308	5.097	6.692	2.635	0.035	3.526	0.966	New Bridgeville - Garberville 115kV line
NCNB-VD-34	FRUITLND 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.505	0.25	4.443	5.715	2.361	0.231	2.955	0.853	New Bridgeville - Garberville 115kV line
NCNB-VD-35	GARCIA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.548	0.341	10.506	9.796	9.425	1.489	1.367	1.357	New Bridgeville - Garberville 115kV line
NCNB-VD-36	GRANITE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.906	0.665	7.604	7.43	6.912	3.773	3.457	3.405	New Bridgeville - Garberville 115kV line
NCNB-VD-37	GRBRVLE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.841	0.362	5.682	7.804	3.027	-0.527	4.179	1.117	New Bridgeville - Garberville 115kV line
NCNB-VD-38	HARTLEY 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.105	0.805	8.759	8.496	7.913	4.042	3.682	3.712	New Bridgeville - Garberville 115kV line
NCNB-VD-39	HPLND JT 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.021	0.654	8.381	8.099	7.664	4.26	3.975	3.843	New Bridgeville - Garberville 115kV line
NCNB-VD-40	HPLND JT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	3.494	1.483	9.12	8.999	8.455	5.862	5.493	4.876	New Bridgeville - Garberville 115kV line
NCNB-VD-41	KEKAWAKA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.959	0.363	7.194	8.885	5.033	0.423	4.445	1.98	New Bridgeville - Garberville 115kV line
NCNB-VD-42	LYTNVLE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.555	0.494	11.387	11.643	10.324	3.207	4.81	4.144	New Bridgeville - Garberville 115kV line
NCNB-VD-43	MASONITE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.329	0.951	11.705	11.02	10.509	4.765	4.342	4.439	New Bridgeville - Garberville 115kV line
NCNB-VD-44	MENDOCNO 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.747	1.039	13.786	12.854	12.454	5.587	5.002	5.406	New Bridgeville - Garberville 115kV line
NCNB-VD-45	PHILO 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.092	0.66	11.002	10.33	9.851	3.086	2.833	2.815	New Bridgeville - Garberville 115kV line
NCNB-VD-46	PNT ARNA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.547	0.341	10.504	9.794	9.423	1.489	1.367	1.357	New Bridgeville - Garberville 115kV line
NCNB-VD-47	PTTR VLY 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.645	1.023	13.575	12.709	12.316	5.286	4.854	5.191	New Bridgeville - Garberville 115kV line
NCNB-VD-48	UKIAH 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	5.319	2.224	12.496	12.571	11.87	8.625	8.167	7.175	New Bridgeville - Garberville 115kV line
NCNB-VD-49	UPPR LKE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.294	0.899	10.017	9.619	9.046	4.412	4.016	4.123	New Bridgeville - Garberville 115kV line
NCNB-VD-50	WILLITS 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.217	0.785	13.177	12.468	12.034	4.686	4.556	4.792	New Bridgeville - Garberville 115kV line



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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-51	BELLVUE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	5.656	5.27	9.713	10.508	10.744	8.396	8.456	8.66	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-52	MONROE1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.545	7.104	12.962	13.69	14.037	11.051	10.923	11.234	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-53	MONROE2 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.57	7.12	13.021	13.75	14.095	11.106	10.977	11.287	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-54	PENNGRVE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	4.216	3.89	7.005	7.826	7.979	6.254	6.452	6.586	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-55	SNTA RSA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.155	6.718	12.336	13.082	13.405	10.529	10.441	10.728	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-56	STONY PT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	6.164	5.767	10.642	11.427	11.691	9.166	9.176	9.408	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-57	CALPELLA 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.869	0.401	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-58	CLER LKE 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.142	0.602	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-59	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	11.661	7.636	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-60	GRANITE 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.374	0.73	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-61	HPLND JT 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.985	1.062	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-62	HPLND JT 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.956	0.518	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-63	MENDOCNO 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.852	0.38	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-64	UKIAH 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.896	0.434	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-65	CLER LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	5.396	1.305	12.778	2.54	2.591	11.535	2.54	2.761	Clear Lake 60kV reinforcement project
NCNB-VD-66	EGLER RCK 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	12.288	3.669	26.591	7.146	7.235	24.362	7.314	7.537	Clear Lake 60kV reinforcement project
NCNB-VD-67	GRANITE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	4.402	1.042	10.653	2.064	2.11	9.564	2.06	2.248	Clear Lake 60kV reinforcement project
NCNB-VD-68	HARTLEY 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	4.492	1.09	10.616	2.091	2.193	9.632	2.095	2.375	Clear Lake 60kV reinforcement project
NCNB-VD-69	KONOCIT6 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.038	2.56	22.558	4.926	4.883	20.523	4.915	5.106	Clear Lake 60kV reinforcement project
NCNB-VD-70	LOWR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.187	1.802	23.6	3.448	3.212	21.203	3.215	3.356	Clear Lake 60kV reinforcement project
NCNB-VD-71	MIDDLTWN 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.41	0.513	25.099	0.841	0.304	22.197	0.264	0.337	Clear Lake 60kV reinforcement project
NCNB-VD-72	UPPR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	3.549	0.873	8.244	1.617	1.768	7.54	1.622	1.958	Clear Lake 60kV reinforcement project
NCNB-VD-73	CALPELLA 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.909	0.427	7.929	8.649	7.782	3.932	3.736	0.761	Close switch #25 at Fitch mountain sub
NCNB-VD-74	CLER LKE 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.199	0.644	5.636	5.998	5.748	3.619	3.199	2.667	Close switch #25 at Fitch mountain sub



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-VD-75	FTCH MTN 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	11.717	7.672	63.108	65.172	65.032	38.165	38.303	36.456	Close switch #25 at Fitch mountain sub
NCNB-VD-76	GRANITE 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.429	0.77	7.208	7.625	7.373	4.449	4.071	3.41	Close switch #25 at Fitch mountain sub
NCNB-VD-77	HPLND JT 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	2.034	1.097	11.359	11.894	11.638	6.639	6.358	5.356	Close switch #25 at Fitch mountain sub
NCNB-VD-78	HPLND JT 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.003	0.549	7.054	7.515	7.019	3.793	3.62	1.979	Close switch #25 at Fitch mountain sub
NCNB-VD-79	LUCERNE 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.575	0.257	5.575	6.117	5.485	2.687	2.547	0.446	Close switch #25 at Fitch mountain sub
NCNB-VD-80	MENDOCNO 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.891	0.406	8.082	8.844	7.915	3.968	3.77	0.544	Close switch #25 at Fitch mountain sub
NCNB-VD-81	UKIAH 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.938	0.461	7.679	8.33	7.563	3.869	3.68	1.106	Close switch #25 at Fitch mountain sub
NCNB-VD-82	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	5.789	5.472	9.768	10.422	10.749	8.553	8.584	8.781	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-83	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.68	7.308	13.019	13.602	14.042	11.211	11.054	11.357	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-84	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.705	7.324	13.078	13.661	14.1	11.266	11.108	11.411	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-85	PENNGRVE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	4.347	4.088	7.057	7.745	7.984	6.405	6.576	6.702	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-86	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.289	6.921	12.392	12.994	13.41	10.689	10.572	10.851	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-87	STONY PT 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	6.298	5.971	10.698	11.339	11.696	9.325	9.306	9.531	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-88	ALTO 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	4.022	2.291	13.121	13.518	2.609	7.196	7.105	0.705	Ignacio - Alto Voltage conversion project
NCNB-VD-89	GREENBRE 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	3.354	1.924	11.441	11.805	1.576	6.134	6.047	0	Ignacio - Alto Voltage conversion project
NCNB-VD-90	HMLTNBFD 60 kV	IGNACO A-HMLTNBFD #1 60 kV	P2-1	Line Section Open	2.662	1.658	6.804	7.049		5.762	5.808		Ignacio - Alto Voltage conversion project
NCNB-VD-91	ALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.039	1.251	6.808	7.141		4.65	4.665		Ignacio - Alto Voltage conversion project
NCNB-VD-92	GREENBRE 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.8	1.691	8.785	9.181		6.108	6.14		Ignacio - Alto Voltage conversion project
NCNB-VD-93	NOVATO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	5.806	3.386	16.181	16.774		11.772	11.87		Ignacio - Alto Voltage conversion project



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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-VD-94	SAUSALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.026	1.244	6.831	7.167		4.688	4.705		Ignacio - Alto Voltage conversion project
NCNB-VD-95	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	3.549	1.821	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-96	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	8.617	4.913	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-97	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	11.665	6.465	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-98	TOCALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	10.363	5.845	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-99	WOODACRE 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	1.44	0.693	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-100	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	5.027	3.567	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-101	OLEMA 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	2.149	1.298	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-102	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	6.012	4.228	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-103	CLER LKE 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	5.46	1.156	12.871	2.581		11.605	2.387		Clear Lake 60kV reinforcement project
NCNB-VD-104	GRANITE 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	4.456	0.921	10.733	2.099		9.623	1.916		Clear Lake 60kV reinforcement project
NCNB-VD-105	HARTLEY 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	4.546	0.966	10.699	2.127		9.693	1.889		Clear Lake 60kV reinforcement project
NCNB-VD-106	KONOCI6 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	10.149	2.28	22.708	4.992	4.949	20.644	4.83	5.171	Clear Lake 60kV reinforcement project
NCNB-VD-107	LOWR LKE 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	10.3	1.39	23.761	3.498		21.329	3.151		Clear Lake 60kV reinforcement project
NCNB-VD-108	MIDDLTWN 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	10.526	-0.114	25.274	0.867		22.331	0.234		Clear Lake 60kV reinforcement project
NCNB-VD-109	UPPR LKE 60 kV	Ko nocti - Eagle Rock 60kV	P1-2	Line	3.595	0.773	8.315	1.647		7.591	1.366		Clear Lake 60kV reinforcement project
NCNB-VD-110	CALPELLA 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	2.833	0	8.661	8.996	9.046	5.821	5.794	5.156	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-111	LUCERNE 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	1.989	0	5.905	6.353	6.368	4.071	4.084	3.667	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-112	MENDOCNO 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	3.054	0	9.359	9.711	9.764	6.293	6.272	5.571	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-113	UKIAH 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	2.48	0	7.538	7.844	7.89	5.061	5.024	4.487	Need additional reactive support in the Mendocino 60kV area



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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-114	COVELO6 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.9	0.192	-4.436	0.447	-3.433	-4.237	-5.93	-5.274	New Bridgeville - Garberville 115kV line
NCNB-VD-115	GRBRVLE 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	0.007		-6.063		-0.802	-2.934		0.311	New Bridgeville - Garberville 115kV line
NCNB-VD-116	KEKAWAKA 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.239		-5.829		-1.861	-3.448		-1.425	New Bridgeville - Garberville 115kV line
NCNB-VD-117	LYTNVLE 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.896	0.191	-4.398	0.443	-3.404	-4.229	-5.92	-5.267	New Bridgeville - Garberville 115kV line

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-1	SAUSALTO 60 kV	BUS FAULT AT 30445 IGNACIO BUS 1 230.00	P2-2	Bus	1.0127	1.0496	0.8996	0.8971	0.9913	0.9383	0.9439	1.0325	Ignacio - Alto Voltage conversion project
NCNB-V-2	CLER LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9652	1.0135	0.8315	0.9681	0.9782	0.8943	0.979	0.9775	Clear lake 60kV reinforcement project
NCNB-V-3	EGLE RCK 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9344	1.0204	0.744	0.9719	0.9778	0.8187	0.9755	0.9723	Clear lake 60kV reinforcement project
NCNB-V-4	GRANITE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9778	1.0153	0.8589	0.9766	0.9884	0.9193	0.9879	0.9858	Clear lake 60kV reinforcement project
NCNB-V-5	HARTLEY 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9676	1.0108	0.8501	0.9637	0.973	0.9041	0.9734	0.9728	Clear lake 60kV reinforcement project
NCNB-V-6	KONOCIT6 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9342	1.0202	0.7438	0.9717	0.9776	0.8185	0.9753	0.9721	Clear lake 60kV reinforcement project
NCNB-V-7	LOWR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9217	1.0313	0.7075	0.9952	0.999	0.7936	0.9979	0.9952	Clear lake 60kV reinforcement project
NCNB-V-8	MIDDLTWN 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9015	1.0502	0.6518	1.0356	1.0361	0.7543	1.0355	1.0332	Clear lake 60kV reinforcement project
NCNB-V-9	UPPR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9768	1.0113	0.8843	0.9725	0.9805	0.9289	0.981	0.9811	Clear lake 60kV reinforcement project
NCNB-V-10	BELLVUE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9675	0.9792	0.89	0.8853	0.8856	0.9149	0.9223	0.9191	Drop load at Santa Rosa
NCNB-V-11	MONROE1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9554	0.9714	0.8643	0.8592	0.8594	0.8952	0.9029	0.8998	Drop load at Santa Rosa
NCNB-V-12	MONROE2 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9547	0.9709	0.8629	0.8578	0.858	0.8938	0.9015	0.8985	Drop load at Santa Rosa
NCNB-V-13	SNTA RSA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9561	0.9718	0.8659	0.8608	0.861	0.8961	0.9038	0.9007	Drop load at Santa Rosa
NCNB-V-14	STONY PT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9601	0.9717	0.8763	0.8714	0.8717	0.901	0.9085	0.9054	Drop load at Santa Rosa
NCNB-V-15	PUEBLO 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Tie-Breaker	1.0326	1.035	0.9046	0.8988	0.9045	1.0093	0.9946	0.9979	Drop load at Santa Rosa
NCNB-V-16	SONOMA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Tie-Breaker	1.0245	1.0312	0.8854	0.8777	0.8816	0.9986	0.9829	0.9854	Drop load at Santa Rosa
NCNB-V-17	BIG RIVR 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.035	1.035	0.9822	0.8343	0.9898	1.035	1.035	1.035	Need additional reactive support in Mendocino area
NCNB-V-18	COVELO6 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0045	0.9977	0.865	0.7095	0.8859	0.9913	0.9952	1.0037	Need additional reactive support in Mendocino area
NCNB-V-19	ELK 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0213	1.0227	0.9785	0.8554	0.9901	1.0315	1.0306	1.0337	Need additional reactive support in Mendocino area
NCNB-V-20	FRT BRGG 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0214	1.0208	0.952	0.7965	0.9564	1.0252	1.0267	1.0251	Need additional reactive support in Mendocino area
NCNB-V-21	FRT SWRD 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0301	1.0246	0.9381	0.8502	1.0274	1.0082	1.0047	1.0524	Need additional reactive support in Mendocino area
NCNB-V-22	FRUITLND 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0306	1.024	0.9478	0.8781	1.0238	1.0115	1.0079	1.0498	Need additional reactive support in Mendocino area
NCNB-V-23	GARCIA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0211	1.0227	0.9809	0.8578	0.9925	1.0332	1.0323	1.0356	Need additional reactive support in Mendocino area
NCNB-V-24	GRBRVLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0303	1.0237	0.9332	0.8201	1.033	1.0197	1.0162	1.0669	Need additional reactive support in Mendocino area
NCNB-V-25	KEKAWAKA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0258	1.0192	0.915	0.7912	0.9933	1.0112	1.0099	1.0491	Need additional reactive support in Mendocino area
NCNB-V-26	LYTNVLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.008	1.003	0.8736	0.7201	0.8942	0.9919	0.9957	1.0038	Need additional reactive support in Mendocino area

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NCNB-V-27	PHILO 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0153	1.0191	0.9768	0.8881	0.9899	1.025	1.0244	1.0299	Need additional reactive support in Mendocino area
NCNB-V-28	PNT ARNA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.021	1.0226	0.9808	0.8577	0.9924	1.033	1.0322	1.0354	Need additional reactive support in Mendocino area
NCNB-V-29	PTTR VLY 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	0.9978	0.995	0.9052	0.7494	0.9066	1.0252	1.0301	1.0251	Need additional reactive support in Mendocino area
NCNB-V-30	WILLITS 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0032	1.0015	0.8847	0.7251	0.8854	0.9882	0.9929	0.9873	Need additional reactive support in Mendocino area
NCNB-V-31	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.9111	0.9659	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add redundant tie breaker at Fulton 60kV
NCNB-V-32	CLER LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9621	1.0119	0.8556	0.9755	0.9738	0.8774	0.9745	0.9746	Clear lake 60kV reinforcement project
NCNB-V-33	EGLE RCK 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9312	1.014	0.7728	0.9782	0.9751	0.7995	0.9716	0.9711	Clear lake 60kV reinforcement project
NCNB-V-34	GRANITE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9747	1.015	0.8837	0.985	0.9833	0.9029	0.9832	0.9827	Clear lake 60kV reinforcement project
NCNB-V-35	HARTLEY 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9647	1.0097	0.87	0.9699	0.9686	0.8883	0.9691	0.9697	Clear lake 60kV reinforcement project
NCNB-V-36	KONOCIT6 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.931	1.0138	0.7727	0.978	0.9749	0.7994	0.9714	0.9709	Clear lake 60kV reinforcement project
NCNB-V-37	LOWR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9185	1.0212	0.7385	1.0003	0.9975	0.7735	0.9947	0.9954	Clear lake 60kV reinforcement project
NCNB-V-38	MIDDLTWN 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.8982	1.0333	0.6858	1.0384	1.0358	0.733	1.0341	1.0367	Clear lake 60kV reinforcement project
NCNB-V-39	UPPR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9742	1.0107	0.8996	0.9774	0.9762	0.9145	0.9771	0.9778	Clear lake 60kV reinforcement project
NCNB-V-40	FTCH MTN 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line section Open	0.9105	0.9656	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Close Switch @25 at Fitch mountain sub
NCNB-V-41	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9662	0.9772	0.8895	0.8862	0.8855	0.9133	0.921	0.9179	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-42	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.954	0.9693	0.8637	0.8601	0.8593	0.8936	0.9015	0.8986	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-43	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9534	0.9689	0.8623	0.8587	0.8579	0.8922	0.9002	0.8972	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-44	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9548	0.9697	0.8653	0.8617	0.8609	0.8945	0.9025	0.8995	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-45	STONY PT 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9588	0.9696	0.8757	0.8723	0.8716	0.8994	0.9072	0.9041	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-46	ALTO 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	0.9919	1.0389	0.8295	0.8253	0.9956	0.913	0.9202	1.026	Ignacio - Alto Voltage conversion project
NCNB-V-47	GREENBRE 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	0.9983	1.0427	0.8459	0.8418	1.0091	0.9235	0.9306	1.035	Ignacio - Alto Voltage conversion project
NCNB-V-48	ALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.0117	1.0493	0.8926	0.8891	>0.9	0.9384	0.9446	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-49	GREENBRE 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.0039	1.045	0.8724	0.8681	>0.9	0.9238	0.9297	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-50	NOVATO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	0.992	1.0392	0.8414	0.836	>0.9	0.9038	0.9096	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-51	SAUSALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.007	1.0445	0.8816	0.878	>0.9	0.922	0.9277	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-52	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	1.0075	1.0504	Nconv	Nconv	Nconv	0.9238	0.9335	0.9446	Reconductor the line between Olema and Bolinas
NCNB-V-53	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.952	1.016	Nconv	Nconv	Nconv	0.8092	0.8222	0.8386	Reconductor the line between Olema and Bolinas
NCNB-V-54	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.9238	1.0044	Nconv	Nconv	Nconv	0.7533	0.7678	0.7866	Reconductor the line between Olema and Bolinas
NCNB-V-55	TICALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.9358	1.009	Nconv	Nconv	Nconv	0.7768	0.7908	0.8087	Reconductor the line between Olema and Bolinas
NCNB-V-56	WOODACRE 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	1.0312	1.0638	Nconv	Nconv	Nconv	0.9751	0.9833	0.992	Reconductor the line between Olema and Bolinas

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-57	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line section Open	0.9927	1.0329	Nconv	Nconv	Nconv	0.8786	0.8876	0.8968	Reconductor the line between Olema and Bolinas
NCNB-V-58	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line section Open	0.9855	1.0284	Nconv	Nconv	Nconv	0.8598	0.869	0.8786	Reconductor the line between Olema and Bolinas
NCNB-V-59	CLER LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9615	1.0134	0.8547	0.9751	>0.9	0.8767	0.976	>0.9	Clear lake 60kV reinforcement project
NCNB-V-60	GRANITE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9742	1.0162	0.8829	0.9847	>0.9	0.9023	0.9846	>0.9	Clear lake 60kV reinforcement project
NCNB-V-61	HARTLEY 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9642	1.011	0.8692	0.9696	>0.9	0.8877	0.9711	>0.9	Clear lake 60kV reinforcement project
NCNB-V-62	KONCOCTI6 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9299	1.0166	0.7712	0.9774	0.9743	0.7982	0.9722	0.9703	Clear lake 60kV reinforcement project
NCNB-V-63	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9174	1.0253	0.7369	0.9998	>0.9	0.7723	0.9953	>0.9	Clear lake 60kV reinforcement project
NCNB-V-64	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.897	1.0396	0.684	1.0381	>0.9	0.7317	1.0344	>0.9	Clear lake 60kV reinforcement project
NCNB-V-65	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9738	1.0117	0.8989	0.9771	>0.9	0.914	0.9796	>0.9	Clear lake 60kV reinforcement project
NCNB-V-66	MONROE2 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8764	0.8757	0.8763	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-67	SNTA RSA 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8794	0.8787	0.8793	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-68	STONY PT 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8876	0.887	0.8877	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-69	ANNAPOLS 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-70	CALISTGA 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-71	COTATI 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-72	DUNBAR 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-73	FORT RSS 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-74	FTCH MTN 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-75	FULTON 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-76	HPLND JT 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-77	LAGUNA 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	>0.9	>0.9	>0.9	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-78	CLER LKE 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8492	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-79	EGLE RCK 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7652	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-80	GRANITE 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8775	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-81	HARTLEY 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8643	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-82	ANNAPOLS 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8083	0.8252	>0.9	0.8515	0.845	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-83	BELLVUE 115 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8811	0.894	>0.9	0.9111	0.9075	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-84	CALISTGA 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.7992	0.8188	>0.9	0.9283	0.931	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-85	COTATI 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8414	0.8585	>0.9	0.87	0.8648	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-86	FORT RSS 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8203	0.8375	>0.9	0.8624	0.8566	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-87	FTCH MTN 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8606	0.8901	>0.9	0.9146	0.9123	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-88	FULTON 115 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8492	0.8638	>0.9	0.889	0.8849	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-89	GUALALA 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.7867	0.8031	>0.9	0.8316	0.8238	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-90	GYSRVLL 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8789	0.8948	>0.9	0.9292	0.9245	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-91	BELLVUE 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8851	0.8852	0.8856	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-92	MONROE1 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8593	0.8592	0.8592	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-93	MONROE2 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8578	0.8577	0.8578	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-94	SNTA RSA 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8608	0.8608	0.8609	>0.9	>0.9	>0.9	Drop load at Santa Rosa

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-95	STONY PT 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	>0.9	>0.9	0.8713	0.8714	0.8716	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-96	CLER LKE 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8522	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-97	EGLE RCK 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7687	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-98	GRANITE 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8805	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-99	HARTLEY 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8667	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-100	KONOCIT6 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7686	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-101	LOWR LKE 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7341	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-102	MIDDLTWN 60 kV	GEO. ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.681	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-103	CLOVRDLE 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8029	0.8282	0.8248	0.8573	0.8619	0.8612	Clear Lake 60kV reinforcement project
NCNB-V-104	GRANITE 60 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8832	0.9088	0.9079	0.9161	0.9269	0.928	Clear Lake 60kV reinforcement project
NCNB-V-105	HPLND JT 60 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.85	0.8737	0.872	0.8936	0.8987	0.899	Clear Lake 60kV reinforcement project
NCNB-V-106	HPLND JT 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8071	0.8324	0.8292	0.8591	0.8637	0.863	Clear Lake 60kV reinforcement project
NCNB-V-107	UKIAH 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.7882	0.8139	0.8104	0.841	0.8454	0.8442	Clear Lake 60kV reinforcement project
NCNB-V-108	CLER LKE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.8124	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-109	EGLE RCK 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.7234	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-110	GRANITE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.8489	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-111	HPLND JT 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.9582	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-112	KONOCIT6 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.7233	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-113	LOWR LKE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.6934	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-114	MIDDLTWN 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.6471	>0.9	>0.9	Clear Lake 60kV reinforcement project

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					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-115	ALTO 60 kV	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO-TWR2_20)	P6	Multiple Contingency	>0.9	>0.9	0.8168	0.8189	>0.9	0.9066	0.916	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-116	GREENBRE 60 kV	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO-TWR2_20)	P6	Multiple Contingency	>0.9	>0.9	0.8335	0.8355	>0.9	0.9173	0.9265	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-117	ALTO 60 kV	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO-HMLTNBFD)	P6	Multiple Contingency	>0.9	>0.9	0.8177	0.8197	>0.9	>0.9	>0.9	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-118	GREENBRE 60 kV	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO-HMLTNBFD)	P6	Multiple Contingency	>0.9	>0.9	0.8343	0.8363	>0.9	>0.9	>0.9	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-119	CLER LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7904	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-120	HARTLEY 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.8224	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-121	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7492	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-122	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7327	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-123	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7064	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-124	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.8639	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-125	GRANITE 60 kV	Konocti - Eagle Rock 60kV and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	>0.9	>0.9	0.868	>0.9	>0.9	0.8784	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-126	CALPELLA 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8175	>0.9	>0.9	0.9587	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-127	CLOVRDL 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7852	>0.9	>0.9	0.9416	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-128	COVELO6 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8682	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-129	ELK 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8814	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-130	FRT BRGG 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8844	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-V-131	GARCIA 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8839	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-132	HPLND JT 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7694	>0.9	>0.9	0.9324	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-133	LYTNVLE 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8767	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-134	MASONITE 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8413	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-135	MENDOCNO 115 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8264	>0.9	>0.9	0.9647	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-136	PHILO 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8531	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-137	PNT ARNA 60 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8838	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-138	UKIAH 115 kV	Konocti - Eagle Rock 60kV and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8046	>0.9	>0.9	0.9501	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-139	MASONITE 60 kV	Konocti - Eagle Rock 60kV and Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	>0.9	>0.9	0.863	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-140	MENDOCNO 115 kV	Konocti - Eagle Rock 60kV and Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	>0.9	>0.9	0.8645	>0.9	>0.9	0.9718	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-141	CLOVRDLE 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8133	0.8356	0.8285	0.8608	0.8626	0.8634	Clear Lake 60kV reinforcement project
NCNB-V-142	HPLND JT 60 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8591	0.8803	0.8754	0.8968	0.8993	0.9011	Clear Lake 60kV reinforcement project
NCNB-V-143	HPLND JT 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8174	0.8398	0.8329	0.8626	0.8644	0.8653	Clear Lake 60kV reinforcement project
NCNB-V-144	UKIAH 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7989	0.8216	0.8141	0.8446	0.8461	0.8466	Clear Lake 60kV reinforcement project

ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
NCNB-TS-1	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P1-2	Line			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-2	NON-BUS-TIE BREAKER CB532 FAULT AT 30430 FULTON 230.00	P2-3	Breaker			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-3	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-4	GEYSER11 ID 1 and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P3-2	G-1/L-1			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.



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.



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

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A	
NCNB-T-SEN-1	Ignacio - Mare Island #2 115kV line (Highway J2 - Highway)	Base Case	P0	No Contingency	104.99	99.46								Load growth seen from 56.5 MW in 2017 to 73.6 MW in 2025. EE of 3.5 MW modeled in 2025. Line is rated 75 MVA. Line section needs to be reconducted if EE doesn't materialize.
NCNB-T-SEN-2	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Bus Tie Breaker	112.89	99.30								No overload with EE. Overloaded without EE.
NCNB-T-SEN-3	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	123.14	111.56								Overloads worsen without EE.
NCNB-T-SEN-4	Santa Rosa - Corona 115kV line (Penngrove - Corona)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	128.93	116.88								Overloads worsen without EE.
NCNB-T-SEN-5	Corona - Lakeville 115kV line	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	122.18	110.96								Overloads worsen without EE.
NCNB-T-SEN-6	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	103.06	91.77								No overload with EE. Overloaded without EE.
NCNB-T-SEN-7	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-8	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-9	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-10	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	Eagle Rock-Cortina 115kV Lines & Cortina-Mendocino No.1 115kV	P7	DCTL	105.27	95.69								No overload with EE. Overloaded without EE.
NCNB-T-SEN-11	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	104.18	96.15								No overload with EE. Overloaded without EE.
NCNB-T-SEN-12	Geysers #3 - Cloverdale 115kV line (Cloverdale - MPE Tap)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	100.29	93.59								No overload with EE. Overloaded without EE.
NCNB-T-SEN-13	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	108.78	99.00								No overload with EE. Overloaded without EE.
NCNB-T-SEN-14	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-15	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-16	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE.
NCNB-T-SEN-17	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	123.06	111.56								Overloads worsen without EE.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
NCNB-T-SEN-18	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	128.85	116.88							Overloads worsen without EE.
NCNB-T-SEN-19	Corona - Lakeville 115kV line	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	122.10	110.96							Overloads worsen without EE.
NCNB-T-SEN-20	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Ignacio-Las Gallinas #1 115kV Lines	P7	DCTL	149.02	131.92							Overloads worsen without EE.
NCNB-T-SEN-21	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Las Gallinas-San Rafael #3 115kV Lines	P7	DCTL	115.10	102.12							Overloads worsen without EE.
NCNB-T-SEN-22	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio-San Rafael #2 & Ignacio-San Rafael #1 115kV Lines	P7	DCTL	130.47	115.75							Overloads worsen without EE.
NCNB-T-SEN-23	Ignacio - San Rafael #3 115kV line (Las gallinas - San Rafael)	Ignacio-San Rafael #2 & Ignacio-San Rafael #1 115kV Lines	P7	DCTL	107.71	95.56							Overloads worsen without EE.
NCNB-T-SEN-24	Ignacio - Bolinas #1 60kV line (Ignacio - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-25	Ignacio - Bolinas #2 60kV line (Stafford Jct - Tocaloma Jct)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-26	Ignacio - Bolinas #1 60kV line Bolinas - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-27	Ignacio - Bolinas #2 60kV line (Olema - Bolinas)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-28	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-29	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-30	Tulucay - Napa 60kV line #1 (Napa - Tulucay Jct)	TULUCAY-BSLT TAP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Case diverges with and without EE.
NCNB-T-SEN-31	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	<100%							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-32	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct) and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	113.77	99.96							Overload worsens without EE. Open Breaker at Laytonville.
NCNB-T-SEN-33	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	Eagle Rock - Redbud 115 kV Line (Eagle rock - Highland J1) and Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	104.02	95.25							No overload with EE. Line overloaded without EE.. Clear Lake 60kV reinforcement project

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
NCNB-T-SEN-34	Fulton - Santa Rosa #1 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	132.13	120.87							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-35	Fulton - Santa Rosa #2 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	131.41	120.30							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-36	Fulton - Santa Rosa #1 115kV line (Monroe - Santa Rosa)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	121.29	111.12							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-37	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	123.20	111.67							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-38	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	128.98	116.98							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-39	Corona - Lakeville 115kV line	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	108.93	99.77							Overload worsens without EE. Drop load in the Santa Rosa Corona corridor as needed
NCNB-T-SEN-40	Mendocino - Philo Jct - Hopland 60kV line (Mendocino - Ukiah Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-41	Mendocino - Hartley 60 kV Line #1 (Mendocino - Upper Lake)	Konocti - Eagle Rock 60kV and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	118.08	98.41							No overload with EE. Line overloaded without EE.. Clear Lake 60kV reinforcement project
NCNB-T-SEN-42	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-43	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	112.43	103.20							Overload worsens without EE. Clear Lake 60kV reinforcement project
NCNB-T-SEN-44	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	151.01	129.56							Overload worsens without EE. Clear Lake 60kV reinforcement project
NCNB-T-SEN-45	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	145.25	122.58							Overload worsens without EE. Clear Lake 60kV reinforcement project
NCNB-T-SEN-46	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
NCNB-T-SEN-47	Clear Lake-Hopland 60kV line (Granite-Hopland)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	157.28	135.33							Overload worsens without EE. Clear Lake 60kV reinforcement project
NCNB-T-SEN-48	Hopland Sub 115kV / 60kV transformer	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-49	Hopland Sub 115kV / 60kV transformer	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	148.05	141.50							Overload worsens without EE. Mitigation under review.
NCNB-T-SEN-50	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Eagle Rock- Fulton-Silverado 115 kv (Eagle rock - Silverado Jct2	P6	Multiple Contingency	100.64	100.05							Overload worsens without EE. Clear Lake 60kV reinforcement project
NCNB-T-SEN-51	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-52	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-53	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-54	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	NConv	NConv							Case diverges with and without EE. Mitigation under review.
NCNB-T-SEN-55	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	130.52	115.79							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-56	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No. 1 115 kV Line	P6	Multiple Contingency	130.52	115.79							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-57	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio 230/115 kV Bank #3 and Ignacio B 115/60.00 kV BANK No. 1	P6	Multiple Contingency	100.66	<100%							No overload with EE. Line overloaded without EE.. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-58	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio B 115/60.00 kV BANK No. 1 and Ignacio 230/115 kV Bank #3	P6	Multiple Contingency	100.66	<100%							No overload with EE. Line overloaded without EE.. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-59	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael)	P6	Multiple Contingency	105.99	94.04							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
NCNB-T-SEN-60	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	137.22	121.46							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-61	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael) and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	105.99	94.04							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-62	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas) and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	137.22	121.46							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-63	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael)	P6	Multiple Contingency	115.14	102.15							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-64	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	149.09	131.96							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-65	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael) and Ignacio - San Rafael No. 1 115 kV Line	P6	Multiple Contingency	115.14	102.15							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-66	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas) and Ignacio - San Rafael No. 1 115 kV Line	P6	Multiple Contingency	149.09	131.96							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-67	Ignacio - San Rafael #3 115kV line (Las gallinas - San Rafael)	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	107.75	95.59							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-68	Ignacio - San Rafael #3 115kV line (Las gallinas - San Rafael)	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No. 1 115 kV Line	P6	Multiple Contingency	107.75	95.59							Significant increase in overload without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-69	New Ignacio - San Rafael #2 115kV line (San Rafael - Greenbrae)	Ignacio 230/115 kV Bank #3 and Ignacio B 115/60.00 kV BANK No. 1	P6	Multiple Contingency	158.50	134.58							Overload worsens without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-70	New Ignacio - San Rafael #2 115kV line (San Rafael - Greenbrae)	Ignacio B 115/60.00 kV BANK No. 1 and Ignacio 230/115 kV Bank #3	P6	Multiple Contingency	158.50	134.58							Overload worsens without EE. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-71	Ignacio - Alto 60kV line (Greenbrae - Alto)	Ignacio 230/115 kV Bank #3 and Ignacio B 115/60.00 kV BANK No. 1	P6	Multiple Contingency	117.60	98.58							No overload with EE. Line overloaded without EE.. Ignacio - Alto Voltage conversion Project will fix it.
NCNB-T-SEN-72	Ignacio - Alto 60kV line (Greenbrae - Alto)	Ignacio B 115/60.00 kV BANK No. 1 and Ignacio 230/115 kV Bank #3	P6	Multiple Contingency	117.60	98.58							No overload with EE. Line overloaded without EE.. Ignacio - Alto Voltage conversion Project will fix it.



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions	
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A
NCNB-VD-SEN-1	BELLVUE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	11.861	10.743						Voltage deviation worsens without EE
NCNB-VD-SEN-2	MONROE1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	15.437	14.035						Voltage deviation worsens without EE
NCNB-VD-SEN-3	MONROE2 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	15.501	14.093						Voltage deviation worsens without EE
NCNB-VD-SEN-4	SNTA RSA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	14.761	13.403						Voltage deviation worsens without EE
NCNB-VD-SEN-5	STONY PT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Bus Tie Breaker	12.901	11.69						Voltage deviation worsens without EE
NCNB-VD-SEN-6	PUEBLO 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Bus Tie Breaker	12.132	10.469						Voltage deviation worsens without EE
NCNB-VD-SEN-7	SILVRDJ1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Bus Tie Breaker	8.114	6.97						Voltage deviation worsens without EE
NCNB-VD-SEN-8	SONOMA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Bus Tie Breaker	15.537	13.556						Voltage deviation worsens without EE
NCNB-VD-SEN-9	BIG RIVR 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	12.193	4.584						Voltage deviation worsens without EE
NCNB-VD-SEN-10	COVELO6 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	16.615	10.046						Voltage deviation worsens without EE
NCNB-VD-SEN-11	ELK 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	10.266	4.279						Voltage deviation worsens without EE
NCNB-VD-SEN-12	FRT BRGG 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	14.081	6.228						Voltage deviation worsens without EE
NCNB-VD-SEN-13	GARCIA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	10.266	4.281						Voltage deviation worsens without EE
NCNB-VD-SEN-14	KEKAWAKA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	7.888	4.919						Voltage deviation worsens without EE
NCNB-VD-SEN-15	LYTNVLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	16.426	9.949						Voltage deviation worsens without EE
NCNB-VD-SEN-16	PHILO 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	7.426	3.505						Voltage deviation worsens without EE
NCNB-VD-SEN-17	PNT ARNA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	10.263	4.28						Voltage deviation worsens without EE
NCNB-VD-SEN-18	PTTR VLY 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	19.117	11.088						Voltage deviation worsens without EE
NCNB-VD-SEN-19	WILLITS 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	19.3	11.362						Voltage deviation worsens without EE
NCNB-VD-SEN-20	CALPELLA 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	7.407	4.848						Voltage deviation worsens without EE
NCNB-VD-SEN-21	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	65.68	46.528						Voltage deviation worsens without EE
NCNB-VD-SEN-22	GRANITE 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	7.151	5.37						Voltage deviation worsens without EE
NCNB-VD-SEN-23	HPLND JT 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	11.493	8.163						Voltage deviation worsens without EE
NCNB-VD-SEN-24	HPLND JT 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	6.761	4.625						Voltage deviation worsens without EE

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
NCNB-VD-SEN-25	MENDOCNO 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	7.519	4.896							Voltage deviation worsens without EE
NCNB-VD-SEN-26	UKIAH 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	7.221	4.766							Voltage deviation worsens without EE
NCNB-VD-SEN-27	MIDDLTWN 60 kV	Eagle Rock-Cortina 115kV Lines & Cortina-Mendocino No.1 115kV	P7	DCTL	11.925	10.886							Voltage deviation worsens without EE
NCNB-VD-SEN-28	CALPELLA 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	10.546	7.807							Voltage deviation worsens without EE
NCNB-VD-SEN-29	HPLND JT 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	6.783	5.221							Voltage deviation worsens without EE
NCNB-VD-SEN-30	LUCERNE 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	13.084	9.915							Voltage deviation worsens without EE
NCNB-VD-SEN-31	MENDOCNO 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	11.102	8.183							Voltage deviation worsens without EE
NCNB-VD-SEN-32	REDBUD 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	10.997	7.438							Voltage deviation worsens without EE
NCNB-VD-SEN-33	UKIAH 115 kV	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	9.63	7.184							Voltage deviation worsens without EE
NCNB-VD-SEN-34	MIDDLTWN 60 kV	Eagle Rock-Redbud & Eagle Rock-Cortina 115kV Lines	P7	DCTL	11.823	10.558							Voltage deviation worsens without EE
NCNB-VD-SEN-35	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	11.808	10.744							Voltage deviation worsens without EE
NCNB-VD-SEN-36	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	15.382	14.035							Voltage deviation worsens without EE
NCNB-VD-SEN-37	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	15.446	14.093							Voltage deviation worsens without EE
NCNB-VD-SEN-38	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	14.706	13.404							Voltage deviation worsens without EE
NCNB-VD-SEN-39	STONY PT 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	12.847	11.691							Voltage deviation worsens without EE
NCNB-VD-SEN-40	MIDDLTWN 60 kV	HOMSTKTP-MIDDLTWN #1 115 kV	P2-1	Line Section Open	11.77	10.415							Voltage deviation worsens without EE
NCNB-VD-SEN-41	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-42	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-43	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-44	TOCALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-45	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %						Potential Mitigation Solutions		
					2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
NCNB-VD-SEN-46	OLEMA 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-47	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv							Voltage deviation worsens without EE
NCNB-VD-SEN-48	PUEBLO 115 kV	Lakeville-Sonoma #1 & #2 115kV Lines	P7	DCTL	10.682	9.246							Voltage deviation worsens without EE
NCNB-VD-SEN-49	SONOMA 115 kV	Lakeville-Sonoma #1 & #2 115kV Lines	P7	DCTL	14.036	12.296							Voltage deviation worsens without EE

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions		
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A	
NCNB-V-SEN-1	COVELO6 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	0.8123	0.8853								Low voltage worsens without EE
NCNB-V-SEN-2	FRT BRGG 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	0.875	0.9557								Low voltage worsens without EE
NCNB-V-SEN-3	LYTNVLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	0.8222	0.8936								Low voltage worsens without EE
NCNB-V-SEN-4	PTTR VLY 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	0.8228	0.9059								Low voltage worsens without EE
NCNB-V-SEN-5	WILLITS 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Bus Tie Breaker	0.8011	0.8847								Low voltage worsens without EE
NCNB-V-SEN-6	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Bus Tie Breaker	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-7	FTCH MTN 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-8	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.8689	0.8852								Low voltage worsens without EE
NCNB-V-SEN-9	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.8404	0.8589								Low voltage worsens without EE
NCNB-V-SEN-10	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.8388	0.8575								Low voltage worsens without EE
NCNB-V-SEN-11	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.8421	0.8606								Low voltage worsens without EE
NCNB-V-SEN-12	STNY PTP 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.8586	0.8757								Low voltage worsens without EE
NCNB-V-SEN-13	MIDDLTWN 115 kV	HOMSTKTP-MIDDLTWN #1 115 kV	P2-1	Line Section Open	0.8511	0.8639								Low voltage worsens without EE
NCNB-V-SEN-14	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-15	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-16	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-17	TOCALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-18	WOODACRE 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-19	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE
NCNB-V-SEN-20	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	Nconv	Nconv								Case diverges with and without EE

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions		
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
NCNB-V-SEN-21	SONOMA 115 kV	Lakeville-Sonoma #1 & #2 115kV Lines	P7	DCTL	0.8709	0.8934							Low voltage worsens without EE
NCNB-V-SEN-22	CLER LKE 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-23	GRANITE 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-24	HARTLEY 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-25	KONOCI6 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-26	LOWR LKE 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-27	MIDDLTWN 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-28	MIDDLTWN 115 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-29	UPPR LKE 60 kV	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	Nconv	Nconv							Non-Convergent case with and without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-30	CLER LKE 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.8018	0.8456							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-31	EGLE RCK 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.6877	0.7537							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-32	GRANITE 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.8372	0.8753							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-33	HARTLEY 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.8244	0.8619							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-34	KONOCI6 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.6875	0.7535							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-35	LOWR LKE 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.6396	0.7166							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-36	MIDDLTWN 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.5676	0.6599							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-37	MIDDLTWN 115 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.5247	0.6101							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A	N/A		N/A
NCNB-V-SEN-38	UPPR LKE 60 kV	Eagle Rock 115/60 KV Bank #1 and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	0.864	0.8933							Voltage worsens without EE. Clear Lake 60kV reinforcement project will fix it.
NCNB-V-SEN-39	BELLVUE 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa)	P6	Multiple Contingency	0.8877	0.8993							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-40	MONROE2 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa)	P6	Multiple Contingency	0.8619	0.8753							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-41	SNTA RSA 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa)	P6	Multiple Contingency	0.8651	0.8783							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-42	STONY PT 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa)	P6	Multiple Contingency	0.8745	0.8867							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-43	BELLVUE 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	0.8682	0.8846							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-44	MONROE1 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	0.8396	0.8583							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-45	MONROE2 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	0.8381	0.8569							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-46	SNTA RSA 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	0.8414	0.8599							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-47	STONY PT 115 kV	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	0.8534	0.8707							Low voltages due to thermal overloads. Drop load in Santa Rosa - Corono corridor.
NCNB-V-SEN-48	CLOVRDLE 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	0.8047	0.8216							Clear Lake 60kV reinforcement project
NCNB-V-SEN-49	HPLND JT 60 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	0.8565	0.8692							Clear Lake 60kV reinforcement project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)						Potential Mitigation Solutions		
					2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A	N/A	N/A		N/A	N/A
NCNB-V-SEN-50	HPLND JT 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	0.8095	0.826							Clear Lake 60kV reinforcement project
NCNB-V-SEN-51	UKIAH 115 kV	Geysers # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	0.7896	0.807							Clear Lake 60kV reinforcement project



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				NVLY Action Plan
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				Short Term: Limit Load at Anita Substation, 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				Short Term: Limit Load at Anita Substation, 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				Short Term: Limit Load at Anita Substation, 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				NVLY Action Plan
NYVL-T-6	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	<100.0	125.87	127.93	<100.0	<100.0				Short Term: Limit Load at Anita Substation, Long Term: Anita Substation Project
NYVL-T-7	31731 CAPAYJCT 60.0 31736 HEADGATE 60.0 3	Normal	P0	N-0	<100.0	<100.0	<100.0	<100.0	<100.0				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-8	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	<100.0	125.90	127.96	<100.0	<100.0				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-9	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	<100.0	141.68	144.59	<100.0	<100.0				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-10	31480 WYANDTTE 115 31518 WYANDJT1 115 1	Normal	P0	N-0	<100.0	102.22	106.47	<100.0	<100.0				NVLY Action Plan
NYVL-T-11	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	<100.0	125.87	127.93	<100.0	<100.0				Short Term: Limit Load at Anita Substation, Long Term: Anita Substation Project

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-12	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	<100.0	125.90	127.96	<100.0	<100.0				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-13	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	<100.0	141.68	144.59	<100.0	<100.0				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-14	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-15	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-16	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-17	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-18	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
NYVL-T-19	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-20	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-21	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				Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
NYVL-T-22	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				Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
NYVL-T-23	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				Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project

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-24	31580 CASCADE 60.0 31582 STILLWATR 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				Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
NYVL-T-25	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				Short Term: Limit Load at Anita Substation, Long Term: Anita Substation Project (Project Proposed in 2014)
NYVL-T-26	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				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-27	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				Load Cap at Anita Substation; Transfer load to near by distribution substation
NYVL-T-28	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-29	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-30	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				NYVL action plan
NYVL-T-31	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				NYVL action plan
NYVL-T-32	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				Short Term: Humbolt Action Plan, Long Term: Cascade - Benton 60 kV Line Project and New Bridgeville - Gaberville 115 kV Line Project

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-33	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				Long Term: Cascade - Benton 60 kV Line Project and New Bridgeville - Gaberville 115 kV Line Project
NYVL-T-34	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
NYVL-T-35	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-36	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-37	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-38	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				Short Term: Humbolt Action Plan, Long Term: Cascade - Benton 60 kV Line Project and New Bridgeville - Gaberville 115 kV Line Project
NYVL-T-39	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				NVLY Action Plan
NYVL-T-40	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				NVLY Action Plan
NYVL-T-41	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				NVLY Action Plan
NYVL-T-42	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				Short Term: NVLY Action Plan, Long Term: Cascade - Benton 60 kV Line Project
NYVL-T-43	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				Short Term: Interim NVLY Area Summer Action Plan, Long Term: Cottonwood - Red Bluff No. 2 60 kV Line Project



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-44	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				Short Term: Interim NVLY Area Summer Action Plan, Long Term: Cottonwood - Red Bluff No. 2 60 kV Line Project
NYVL-T-45	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				Short Term: Interim NVLY Area Summer Action Plan, Long Term: Cottonwood - Red Bluff No. 2 60 kV Line Project
NYVL-T-46	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-47	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				Turn on Yuba City Peakers or need any other Voltage Support. Long Term: South of Palermo 115 kV Reinforcement



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				NVLY Action Plan
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				Caribou Thermal SPS
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				Caribou Thermal SPS
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				Caribou Thermal SPS
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				Caribou Thermal SPS
NYVL-VD-6	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				North Valley Action Plan
NYVL-VD-7	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				North Valley Action Plan
NYVL-VD-8	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				Caribou Thermal SPS
NYVL-VD-9	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				North Valley Action Plan
NYVL-VD-10	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				Caribou Thermal SPS
NYVL-VD-11	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				NVLY Action Plan
NYVL-VD-12	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				North Valley Action Plan
NYVL-VD-13	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				Caribou Thermal SPS
NYVL-VD-14	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				NVLY Action Plan
NYVL-VD-15	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				North Valley Action Plan
NYVL-VD-16	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				North Valley Action Plan
NYVL-VD-17	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-18	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-19	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-20	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-21	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-22	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
NYVL-VD-23	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				North Valley Action Plan
NYVL-VD-24	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-25	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



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-26	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-27	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-28	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-29	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-30	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-31	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-32	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-33	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-34	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-35	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-36	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-37	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-38	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-39	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-40	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-41	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-42	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-43	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				North Valley Action Plan
NYVL-VD-44	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-45	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



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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-46	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-47	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-48	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-49	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-50	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-51	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-52	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-53	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-54	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-55	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-56	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-57	SPANSCHK 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-58	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-59	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
NYVL-VD-60	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-61	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



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-62	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

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

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				North Valley Action Plan
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				North Valley Action Plan
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				North Valley Action Plan
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				North Valley Action Plan
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				Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
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				North Valley Action Plan
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				North Valley Action Plan

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				Short Term: Coleman Thermal SPS, Long Term: Red Bluff Area Substation Project
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				North Valley Action Plan
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				North Valley Action Plan

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	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.



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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-1	30110 GLENN 230 31722 GLENN 60.0 2	P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P1	N-1	101.91	105.12	104.93						Glenn 230/60 kV Transformer No. 1 Replacement Project
NYVL-T-2	31474 FRBSTNTP 115 31814 FORBSTWN 11.5 1	P1-3:A3:31:_Palermo No.2 230/115 kV Transformer	P1	N-1	100.73	<100.0	100.57						Explore potential mitigation
NYVL-T-3	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	140.13	NConv	105.36						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-4	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	109.44	NConv	<100.0						Caribou Thermal SPS
NYVL-T-5	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	131.80	NConv	<100.0						Caribou Thermal SPS
NYVL-T-6	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	140.40	NConv	105.59						Caribou Thermal SPS
NYVL-T-7	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<100.0	103.64	102.52						Explore potential mitigation
NYVL-T-8	31664 WESTWOOD 60.0 31668 ULTR WSD 60.0 1	P2-1:A26:204:_RICHMOND-WESTWOOD #1 60 kV	P1	N-1	<100.0	121.17	<100.0						Explore potential mitigation
NYVL-T-9	31735 CHICO JT 60.0 31738 ANITA 60.0 3	P1-3:A3:55:_Glenn No.2 230/60 kV Transformer	P1	N-1	124.65	128.56	128.51						Long Term: Anita Substation Project
NYVL-T-10	31818 PIT 1 U1 11.0 30185 PIT 1 230 1	P1-3:A3:8:_Pit 1 PH No.2 230/11 kV Transformer	P1	N-1	<100.0	<100.0	115.05						Explore potential mitigation
NYVL-T-11	31826 SOUTH G 4.16 31596 SOUTH 60.0 1	P1-2:A3:83:_Coleman-Red Bluff 60 kV Line	P1	N-1	<100.0	102.37	102.97						Explore potential mitigation
NYVL-T-12	31923 COLUSGT1 18.0 30114 DELEVN 230 1	P1-2:A3:24:_Delevan 230 kV Tie Line	P1	N-1	100.01	102.06	101.62						Explore potential mitigation
NYVL-T-13	36900 RICHMOND 60.0 31664 WESTWOOD 60.0 1	P2-1:A26:205:_MEADOWWW-WESTWOOD #1 60 kV	P1	N-1	<100.0	133.43	<100.0						Explore potential mitigation
NYVL-T-14	31474 FRBSTNTP 115 31814 FORBSTWN 11.5 1	P2-3:A3:5:_NON-BUS-TIE BREAKER CB2032 FAILURE AT PALERMO 230kV	P2	Non Bus-tie breaker	100.78	<100.0	100.60						Explore potential mitigation
NYVL-T-15	31482 PALERMO 115 31516 WYANDJT2 115 2	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NConv	111.38	112.36						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-16	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NConv	101.15	105.97						Caribou Thermal SPS
NYVL-T-17	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NConv	104.83	105.71						Caribou Thermal SPS
NYVL-T-18	31516 WYANDJT2 115 31512 BIG BEND 115 2	P2-4:A3:11_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NConv	111.67	112.61						Caribou Thermal SPS
NYVL-T-19	31570 BENTON 60.0 31572 GIRVAN 60.0 1	P2-2:A3:53_BUS FAULT AT 31604 COTTONWD 60.00	P2	Bus-tie breaker	<100.0	100.19	100.04						Explore potential mitigation
NYVL-T-20	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P2-2:A3:35_BUS FAULT AT 31468 CASCADE 115.00	P2	Bus-tie breaker	<100.0	101.67	100.55						Explore potential mitigation
NYVL-T-21	31677 GRS F JT 60.0 31689 ELIZ TWN 60.0 1	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus-tie breaker	NConv	<100.0	<100.0						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-22	31688 SPI 60.0 38056 PLMS-SRA 60.0 1	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus-tie breaker	NConv	<100.0	<100.0						Explore potential mitigation
NYVL-T-23	31690 CARIBOU 60.0 31677 GRS F JT 60.0 1	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus-tie breaker	NConv	<100.0	<100.0						Explore potential mitigation
NYVL-T-24	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	110.38	114.11	114.04						Long Term: Anita Substation Project
NYVL-T-25	31826 SOUTH G 4.16 31596 SOUTH 60.0 1	P2-2:A3:52_BUS FAULT AT 31602 COLEMAN 60.00	P2	Bus-tie breaker	<100.0	101.46	101.46						Explore potential mitigation
NYVL-T-26	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	NConv	104.07	105.12						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-27	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P2-1	Line section w/o fault	<100.0	108.80	<100.0						Caribou Thermal SPS
NYVL-T-28	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P2-1	Line section w/o fault	NConv	<100.0	<100.0						Caribou Thermal SPS
NYVL-T-29	31664 WESTWOOD 60.0 31668 ULTR WSD 60.0 1	P2-1:A26:205:_MEADOWVW-WESTWOOD #1 60 kV	P2-1	Line section w/o fault	<100.0	104.73	<100.0						Explore potential mitigation
NYVL-T-30	31690 CARIBOU 60.0 31677 GRS F JT 60.0 1	P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P2-1	Line section w/o fault	NConv	<100.0	<100.0						Explore potential mitigation
NYVL-T-31	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	109.21	<100.0						Glenn 230/60 kV Transformer No. 1 Replacement Project
NYVL-T-32	30110 GLENN 230 31722 GLENN 60.0 2	P1-1:A3:68:_CSC HYDR 9.11 Generator ID 2 and P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P3	G-1/N-1	102.16	<100.0	<100.0						Glenn 230/60 kV Transformer No. 1 Replacement Project
NYVL-T-33	31472 WODLF TP 115 31794 WOODLEAF 13.8 1	P1-1:A3:107:_COLUSGT1 18.00 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-34	31474 FRBSTNTP 115 31814 FORBSTWN 11.5 1	P1-1:A3:32:_POE 2 13.80 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-35	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-1:A3:44:_CRBOU2-3 11.50 Generator ID 2 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	106.18	<100.0	<100.0						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-36	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	NConv						Long Term: South of Palermo 115 kV Reinforcement

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-37	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-1:A3:94:_SPI-QUCY 13.80 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	<100.0	NConv						Caribou Thermal SPS
NYVL-T-38	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P1-1:A3:97:_GRIZZLYG 6.90 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	107.96	NConv	<100.0						Caribou Thermal SPS
NYVL-T-39	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	NConv						Caribou Thermal SPS
NYVL-T-40	31488 GRIZ JCT 115 31512 BIG BEND 115 1	P1-1:A3:97:_GRIZZLYG 6.90 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	107.69	NConv	<100.0						Caribou Thermal SPS
NYVL-T-41	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:44:_CRBOU2-3 11.50 Generator ID 2 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	106.40	NConv	<100.0						Caribou Thermal SPS
NYVL-T-42	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	NConv						Caribou Thermal SPS
NYVL-T-43	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-1:A3:54:_VOLTA1-2 9.11 Generator ID 1 and P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P3	G-1/N-1	<100.0	107.12	105.98						Explore potential mitigation
NYVL-T-44	31677 GRS F JT 60.0 31689 ELIZ TWN 60.0 1	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-45	31688 SPI 60.0 38056 PLMS-SRA 60.0 1	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-46	31690 CARIBOU 60.0 31677 GRS F JT 60.0 1	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-47	31834 KELLYRDG 4.16 31646 KLLY RDE 60.0 1	P1-1:A3:107:_COLUSGT1 18.00 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-48	31838 CNTRVL12 9.11 31696 CNTRVLE 60.0 1	P1-1:A3:45:_CRBU 1 11.50 Generator ID 1 and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P3	G-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-49	31840 BLCKBUTT 9.11 31723 ORLND JT 60.0 1	P1-1:A3:107:_COLUSGT1 18.00 Generator ID 1 and P1-3:A3:66:_Glenn 230/60 kV Transformer No. 1	P3	G-1/N-1	<100.0	<100.0	106.29						Explore potential mitigation
NYVL-T-50	36900 RICHMOND 60.0 31664 WESTWOOD 60.0 1	P1-1:A3:25:_BUTTVLLY 13.80 Generator ID 1 and P2-1:A26:205:_MEADOWVW-WESTWOOD #1 60 kV	P3	G-1/N-1	<100.0	126.14	<100.0						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-51	30280 POE 230 30330 RIO OSO 230 1	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	NConv						Explore potential mitigation
NYVL-T-52	31472 WODLF TP 115 31794 WOODLEAF 13.8 1	P1-3:A3:26:_Poe 2 No.2 230/13.8 kV Transformer and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-53	31472 WODLF TP 115 31794 WOODLEAF 13.8 1	P1-3:A3:31:_Palermo No.2 230/115 kV Transformer and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	100.20	<100.0	<100.0						Explore potential mitigation
NYVL-T-54	31474 FRBSTNTP 115 31814 FORBSTWN 11.5 1	P1-2:A27:110:_Oroville-Thermalito-Table Mountain No.3 230 kV Line and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-55	31474 FRBSTNTP 115 31814 FORBSTWN 11.5 1	P1-3:A3:31:_Palermo No.2 230/115 kV Transformer and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	103.76	<100.0	<100.0						Explore potential mitigation
NYVL-T-56	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	139.34	158.43						Caribou Thermal SPS
NYVL-T-57	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line and P1-2:A3:58:_Palermo-Wyandotte 115 kV Line	P6	N-1/N-1	113.41	169.65	141.78						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-58	31482 PALERMO 115 31516 WYANDJT2 115 2	P1-2:A3:58:_Palermo-Wyandotte 115 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	112.66	164.68	140.86						Long Term: South of Palermo 115 kV Reinforcement
NYVL-T-59	31516 WYANDJT2 115 31512 BIG BEND 115 2	P1-3:A3:50:_Caribou No.8 60/11.5 Transformer and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	NConv						Caribou Thermal SPS
NYVL-T-60	31566 KESWICK 60.0 31582 STILLWATR 60.0 1	P2-1:A3:47:_FRSTGLEN-LOW GAP1 #1 115 kV and P1-2:A3:52:_Trinity-Cottonwood 115 kV Line	P6	N-1/N-1	<100.0	100.13	100.15						Explore potential mitigation
NYVL-T-61	31572 GIRVAN 60.0 31574 ANDERSON 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	102.47	104.28	102.21						Explore potential mitigation
NYVL-T-62	31574 ANDERSON 60.0 31604 COTTONWD 60.0 1	P1-2:A3:10:_New Q643G SPI Anderson 2 Gen Tap 60 kV Line (tap from Cascade-Cottonwd 115kV) and P1-2:A3:55B:_Cascade-Craig View 115 kV Line (Path 25)	P6	N-1/N-1	<100.0	101.39	100.28						Explore potential mitigation
NYVL-T-63	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	141.81	150.14	148.07						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-64	31602 COLEMAN 60.0 31606 CLMN JCT 60.0 1	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	104.11	108.00	<100.0						Explore potential mitigation
NYVL-T-65	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	108.93	108.90						Explore potential mitigation
NYVL-T-66	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	108.89	108.89						Explore potential mitigation
NYVL-T-67	31607 RED B JT 60.0 31608 RED BLFF 60.0 1	P1-3:A3:65:_New NewBus 230/60 kV Transformer and P1-2:A3:83:_Coleman-Red Bluff 60 kV Line	P6	N-1/N-1	100.61	108.32	<100.0						Explore potential mitigation
NYVL-T-68	31674 BIG MDWS 60.0 31690 CARIBOU 60.0 1	P2-1:A26:204:_RICHMOND-WESTWOOD #1 60 kV and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-69	31786 ROCK CK1 13.8 30268 ROCKCK 1 230 1	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	NConv						Explore potential mitigation
NYVL-T-70	31818 PIT 1 U1 11.0 30185 PIT 1 230 1	P1-2:A3:70:_Pit No.1-McArthur 60 kV Line and P1-3:A3:8:_Pit 1 PH No.2 230/11 kV Transformer	P6	N-1/N-1	109.45	99.71	99.83						Explore potential mitigation
NYVL-T-71	31826 SOUTH G 4.16 31596 SOUTH 60.0 1	P1-2:A3:80:_Volta-Deschutes 60 kV Line and P1-2:A3:82:_Coleman-Cottonwood 60 kV Line	P6	N-1/N-1	<100.0	105.65	107.27						Explore potential mitigation
NYVL-T-72	31840 BLCKBUTT 9.11 31723 ORLND JT 60.0 1	P1-2:A3:103:_Glenn No.1 60 kV Line and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-73	31908 INSKIP 4.16 31600 INSKIP 60.0 1	P1-2:A3:80:_Volta-Deschutes 60 kV Line and P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
NYVL-T-74	31486 CARIBOU 115 31488 GRIZ JCT 115 1	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<100.0	108.74	<100.0						Caribou Thermal SPS
NYVL-T-75	31501 CHICOTP1 115 31504 TBLE MTN 115 1	P7-1:A3:4_Sycamore Creek-Notre Dame-Table Mountain and Table Mountain-Butte No.2 115 kV Lines	P7	DCTL	<100.0	102.23	102.05						Explore potential mitigation
NYVL-T-76	31516 WYANDJT2 115 31512 BIG BEND 115 2	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<100.0	100.22	<100.0						Caribou Thermal SPS
NYVL-T-77	31640 TRES VIS 60.0 31644 BIGGSJCT 60.0 1	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-T-78	31642 PEACHTON 60.0 31644 BIGGSJCT 60.0 1	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation
NYVL-T-79	31664 WESTWOOD 60.0 31668 ULTR WSD 60.0 1	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<100.0	111.41	<100.0						Explore potential mitigation
NYVL-T-80	31718 TBLE MTN 60.0 30301 TBL MT2M 230 2	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation
NYVL-T-81	31826 SOUTH G 4.16 31596 SOUTH 60.0 1	P7-1:A3:2_Cottonwood No.1 and No.2 60 kV Lines	P7	DCTL	<100.0	102.11	102.27						Explore potential mitigation



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		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	5.351	5.236						Explore potential mitigation
NYVL-VD-2	BIG BEND 115 kV	P1-3:A3:19:_Caribou No.11 230/115/60 kV Transformer	P1	N-1	7.81	<5.0	<5.0						Explore potential mitigation
NYVL-VD-3	CASCADE 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	5.197	5.086						Explore potential mitigation
NYVL-VD-4	CHESTER 60 kV	P1-1:A3:93:_COLLINS 13.00 Generator ID 1	P1	N-1	<5.0	<5.0	5.037						Explore potential mitigation
NYVL-VD-5	ELKCREEK 60 kV	P1-1:A3:68:_CSC HYDR 9.11 Generator ID 2	P1	N-1	<5.0	5.871	5.876						Explore potential mitigation
NYVL-VD-6	MTN GATE 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	5.32	5.206						Explore potential mitigation
NYVL-VD-7	OREGNTRL 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	5.076	<5.0						Explore potential mitigation
NYVL-VD-8	PPL 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	5.351	5.236						Explore potential mitigation
NYVL-VD-9	RED B JT 60 kV	P1-3:A3:65:_New NewBus 230/60 kV Transformer	P1	N-1	5.561	5.676	<5.0						Explore potential mitigation
NYVL-VD-10	STLLWATR 60 kV	P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P1	N-1	<5.0	5.062	<5.0						Explore potential mitigation
NYVL-VD-11	ANDERSON 60 kV	P2-2:A3:53_BUS FAULT AT 31604 COTTONWD 60.00	P2	Bus	6.791	7.938	7.897						Explore potential mitigation
NYVL-VD-12	BIG BEND 115 kV	P2-4:A3:12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NCon	6.331	5.741						Explore potential mitigation
NYVL-VD-13	CHESTER 60 kV	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus-tie breaker	NCon	<5.0	<5.0						Explore potential mitigation
NYVL-VD-14	CHICO B 115 kV	P2-2:A3:42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	P2	Bus-tie breaker	5.534	5.841	5.828						Explore potential mitigation
NYVL-VD-15	CHICOTP1 115 kV	P2-2:A3:42A_BUS FAULT AT 31504 TBLE MTN Bus 1 115.00	P2	Bus-tie breaker	5.518	5.823	5.809						Explore potential mitigation
NYVL-VD-16	ELIZ TWN 60 kV	P2-2:A3:60_BUS FAULT AT 31690 CARIBOU 60.00	P2	Bus	7.553	8.631	<5.0						Explore potential mitigation
NYVL-VD-17	EST QNCY 60 kV	P2-2:A3:60_BUS FAULT AT 31690 CARIBOU 60.00	P2	Bus	6.995	8.14	<5.0						Explore potential mitigation
NYVL-VD-18	GRS F JT 60 kV	P2-2:A3:60_BUS FAULT AT 31690 CARIBOU 60.00	P2	Bus	9.226	10.119	<5.0						Explore potential mitigation
NYVL-VD-19	KESWICK 60 kV	P2-2:A3:46_BUS FAULT AT 31580 CASCADE 60.00	P2	Bus	5.986	7.047	7.151						Explore potential mitigation
NYVL-VD-20	PLMS JCT 60 kV	P2-2:A3:60_BUS FAULT AT 31690 CARIBOU 60.00	P2	Bus	6.995	8.14	<5.0						Explore potential mitigation
NYVL-VD-21	SPI 60 kV	P2-2:A3:60_BUS FAULT AT 31690 CARIBOU 60.00	P2	Bus	6.991	8.142	<5.0						Explore potential mitigation
NYVL-VD-22	STLLWATR 60 kV	P2-2:A3:46_BUS FAULT AT 31580 CASCADE 60.00	P2	Bus	7.055	8.268	8.389						Explore potential mitigation
NYVL-VD-23	TBLM JCT 115 kV	P2-2:A3:42B_BUS FAULT AT 31504 TBLE MTN Bus 2 115.00	P2	Bus	<5.0	<5.0	5.38						Explore potential mitigation
NYVL-VD-24	ULTR WSD 60 kV	P2-4:A3:12_TABLE MOUNTAIN CB 203 BUS PARALLEL STUCK	P2	Bus-tie breaker	NCon	<5.0	<5.0						Explore potential mitigation



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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-VD-25	WESTWOOD 60 kV	P2-2:A3:25_Table Mountain 230 kV Bus Section 1D	P2	Bus-tie breaker	NCon	<5.0	<5.0						Explore potential mitigation
NYVL-VD-26	STLLWATR 60 kV	P1-1:A3:54:_VOLTA1-2 9.11 Generator ID 1 and P1-3:A3:34B:_Cascade No.1 115/60/13.8 kV Transformer	P3	G-1/N-1	<5.0	5.284	5.177						Explore potential mitigation
NYVL-VD-27	TYLER 60 kV	P1-1:A3:100:_COLEMAN 6.60 Generator ID 1 and P1-3:A3:65:_New NewBus 230/60 kV Transformer	P3	G-1/N-1	<5.0	5.828	<5.0						Explore potential mitigation
NYVL-VD-28	TYLER 60 kV	P1-1:A3:15:_NEO REDB 13.80 Generator ID 1 and P1-3:A3:65:_New NewBus 230/60 kV Transformer	P3	G-1/N-1	<5.0	<5.0	5.607						Explore potential mitigation
NYVL-VD-29	CHESTER 60 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	<10.0	38.699	10.231						Explore potential mitigation
NYVL-VD-30	ELIZ JT1 60 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	<10.0	24.737	11.571						Explore potential mitigation
NYVL-VD-31	EST QNCY 60 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	53.983	<10.0						Explore potential mitigation
NYVL-VD-32	GANSNER 60 kV	P2-1:A3:170:_EST Q1-SPI #1 60 kV and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	50.028	<10.0						Explore potential mitigation
NYVL-VD-33	GANSNER 60 kV	P2-1:A3:70:_WYANDTTE-WYANDJT1 #1 115 kV and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	<10.0	24.861	11.616						Explore potential mitigation
NYVL-VD-34	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	<10.0	26.659	17.964						Explore potential mitigation
NYVL-VD-35	GRS F JT 60 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	54.362	<10.0						Explore potential mitigation
NYVL-VD-36	GRYS FLT 60 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	<10.0	24.625	11.529						Explore potential mitigation
NYVL-VD-37	HMLTN BR 60 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	<10.0	37.688	10.258						Explore potential mitigation
NYVL-VD-38	HOWELLS 60 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	<10.0	24.624	11.529						Explore potential mitigation
NYVL-VD-39	MTN GATE 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	<10.0	10.273	10.197						Explore potential mitigation
NYVL-VD-40	SPANSHCK 60 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	56.946	<10.0						Explore potential mitigation



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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-VD-41	SPI 60 kV	P2-1:A3:174:_SPI-PLMS-SRA #1 60 kV and P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV	P6	N-1/N-1	<10.0	48.723	<10.0						Explore potential mitigation
NYVL-VD-42	ULTR WSD 60 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	60.988	<10.0						Explore potential mitigation
NYVL-VD-43	WESTWOOD 60 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:37:_Caribou-Table Mountain 230 kV Line	P6	N-1/N-1	<10.0	61.223	<10.0						Explore potential mitigation
NYVL-VD-44	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	<10.0	78.943	75.86						Explore potential mitigation
NYVL-VD-45	BIG BEND 115 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	30.056	<10.0						Explore potential mitigation
NYVL-VD-46	BIG MDWS 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	50.176	<10.0						Explore potential mitigation
NYVL-VD-47	BIGGSJCT 60 kV	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	54.06	NCon	<10.0						Explore potential mitigation
NYVL-VD-48	CARIBOU 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	45.338	<10.0						Explore potential mitigation
NYVL-VD-49	CARIBOU 115 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	44.546	<10.0						Explore potential mitigation
NYVL-VD-50	CHESTER 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	55.257	<10.0						Explore potential mitigation
NYVL-VD-51	ELIZ JT1 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	46.825	<10.0						Explore potential mitigation
NYVL-VD-52	ELIZ JT2 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	46.855	<10.0						Explore potential mitigation
NYVL-VD-53	EST QNCY 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	39.557	<10.0						Explore potential mitigation
NYVL-VD-54	GANSNER 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	47.159	<10.0						Explore potential mitigation
NYVL-VD-55	GRIZ JCT 115 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	40.04	<10.0						Explore potential mitigation
NYVL-VD-56	HMLTN BR 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	53.796	<10.0						Explore potential mitigation



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
NYVL-VD-57	HOWELLS 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	46.515	<10.0						Explore potential mitigation
NYVL-VD-58	PEACHTON 60 kV	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	61.712	NCon	<10.0						Explore potential mitigation
NYVL-VD-59	PLMS JCT 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	39.555	<10.0						Explore potential mitigation
NYVL-VD-60	SPANSHCK 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	46.852	<10.0						Explore potential mitigation
NYVL-VD-61	SPI 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	39.502	<10.0						Explore potential mitigation
NYVL-VD-62	TRES VIS 60 kV	P7-1:A3:15_Palermo-Pease 115 kV Line and Pease-Rio Oso 115 kV Line	P7	DCTL	39.887	NCon	<10.0						Explore potential mitigation
NYVL-VD-63	ULTR WSD 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	55.99	<10.0						Explore potential mitigation
NYVL-VD-64	WESTWOOD 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	<10.0	56.373	<10.0						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
NYVL-V-1	CHESTER 60 kV	P1-1:A3:1:_Q720 4.16 Generator ID 1 and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P3	G-1/N-1	>0.90	0.8878	>0.90						Explore potential mitigation
NYVL-V-2	HMLTN BR 60 kV	P1-1:A3:60:_HAMIL.BR 2.40 Generator ID 2 and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P3	G-1/N-1	>0.90	0.8936	>0.90						Explore potential mitigation
NYVL-V-3	ULTR WSD 60 kV	P1-1:A3:1:_Q720 4.16 Generator ID 1 and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P3	G-1/N-1	>0.90	0.8798	>0.90						Explore potential mitigation
NYVL-V-4	WESTWOOD 60 kV	P1-1:A3:1:_Q720 4.16 Generator ID 1 and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P3	G-1/N-1	>0.90	0.8759	>0.90						Explore potential mitigation
NYVL-V-5	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	>0.90	0.8752	0.8748						Explore potential mitigation
NYVL-V-6	ANTLER 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	>0.90	0.8834	0.8862						Explore potential mitigation
NYVL-V-7	APT ORVC 60 kV	P1-2:A3:37:_Caribou-Table Mountain 230 kV Line and P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line	P6	N-1/N-1	>0.90	0.8747	>0.90						Explore potential mitigation
NYVL-V-8	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	>0.90	0.5929	0.6698						Explore potential mitigation
NYVL-V-9	DIRYVLE 60 kV	P1-3:A3:65:_New NewBus 230/60 kV Transformer and P2-1:A3:121:_COLEMAN-CLMN JCT #1 60 kV	P6	N-1/N-1	>0.90	0.8922	>0.90						Explore potential mitigation
NYVL-V-10	ELIZ JT2 60 kV	P2-1:A3:70:_WYANDTTE-WYANDJT1 #1 115 kV and P2-1:A3:73:_PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.90	0.7384	0.8993						Explore potential mitigation
NYVL-V-11	EST Q JT 60 kV	P2-1:A3:90:_WYANDJT2-BIG BEND #2 115 kV and P2-1:A3:36:_BELDENTP-TBL MT D #1 230 kV	P6	N-1/N-1	>0.90	0.8943	0.9308						Explore potential mitigation
NYVL-V-12	GANSNER 60 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	>0.90	0.7339	0.8955						Explore potential mitigation
NYVL-V-13	GIRVAN 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	>0.90	0.8986	0.898						Explore potential mitigation
NYVL-V-14	GRIZZLY1 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	>0.90	0.7615	0.855						Explore potential mitigation
NYVL-V-15	KLLY RDE 60 kV	P2-1:A3:34:_CARIBOU-BELDENTP #1 230 kV and P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line	P6	N-1/N-1	>0.90	0.8755	>0.90						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
NYVL-V-16	LOMS JCT 60 kV	P2-1:A3:102:_WNTU PMS-BENTON #1 60 kV and P2-1:A3:104:_CASCADE-OREGNTRL #1 60 kV	P6	N-1/N-1	>0.90	0.8852	>0.90						Explore potential mitigation
NYVL-V-17	LS ML JT 60 kV	P2-1:A3:121:_COLEMAN-CLMN JCT #1 60 kV and P1-2:A3:3:_NewBus 60.00 to RED BLFF 60.00	P6	N-1/N-1	>0.90	0.8923	0.8931						Explore potential mitigation
NYVL-V-18	PALRMO M 230 kV	P1-2:A3:43:_Table Mountain(D)-Palermo 230 kV Line and P1-2:A3:48:_Palermo-Colgate 230 kV Line	P6	N-1/N-1	0.889	0.8822	>0.90						Explore potential mitigation
NYVL-V-19	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	>0.90	0.8864	0.8871						Explore potential mitigation
NYVL-V-20	SPANSHCK 60 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	>0.90	0.7383	0.8992						Explore potential mitigation
NYVL-V-21	TYLER 60 kV	P1-2:A3:3:_NewBus 60.00 to RED BLFF 60.00 and P1-3:A3:65:_New NewBus 230/60 kV Transformer	P6	N-1/N-1	>0.90	0.8959	>0.90						Explore potential mitigation
NYVL-V-22	WYANDTTE 115 kV	P2-1:A3:70:_ WYANDTTE-WYANDJT1 #1 115 kV and P2-1:A3:73:_ PALERMO-WYANDJT2 #2 115 kV	P6	N-1/N-1	>0.90	0.2334	0.2637						Explore potential mitigation
NYVL-V-23	BIG MDWS 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.4555	>0.90						Explore potential mitigation
NYVL-V-24	CARIBOU 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5448	>0.90						Explore potential mitigation
NYVL-V-25	CARIBOU 115 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5768	>0.90						Explore potential mitigation
NYVL-V-26	CARIBOU 230 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5871	>0.90						Explore potential mitigation
NYVL-V-27	CHESTER 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.3608	>0.90						Explore potential mitigation
NYVL-V-28	ELIZ JT1 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5194	>0.90						Explore potential mitigation
NYVL-V-29	ELIZ JT2 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5189	>0.90						Explore potential mitigation
NYVL-V-30	EST QNCY 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5689	>0.90						Explore potential mitigation
NYVL-V-31	GANSNER 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5125	>0.90						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
NYVL-V-32	GRIZ JCT 115 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.6235	>0.90						Explore potential mitigation
NYVL-V-33	HMLTN BR 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.3884	>0.90						Explore potential mitigation
NYVL-V-34	HOWELLS 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5254	>0.90						Explore potential mitigation
NYVL-V-35	PLMS JCT 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.569	>0.90						Explore potential mitigation
NYVL-V-36	SPANSHCK 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5189	>0.90						Explore potential mitigation
NYVL-V-37	SPI 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.5696	>0.90						Explore potential mitigation
NYVL-V-38	ULTR WSD 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.3461	>0.90						Explore potential mitigation
NYVL-V-39	WESTWOOD 60 kV	P7-1:A3:6_Table Mountain-Paradise 115 kV Line and Caribou-Table Mountain 230 kV Line	P7	DCTL	>0.90	0.3386	>0.90						Explore potential mitigation

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
CYVL-T-1	31610 TYLER 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	102.71	<100	<100	<100				Explore potential mitigation
CYVL-T-2	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	111.53	<100	<100	<100				Explore potential mitigation
CYVL-T-3	31722 GLENN 60.0 31733 CAPYSWCH 60.0 3	Normal	P0	N-0	105.48	105.57	107.81	<100	<100				Explore potential mitigation
CYVL-T-4	31733 CAPYSWCH 60.0 31731 CAPAYJCT 60.0 3	Normal	P0	N-0	105.51	105.59	107.83	<100	<100				Explore potential mitigation
CYVL-T-5	31735 CHICO JT 60.0 31738 ANITA 60.0 3	Normal	P0	N-0	117.95	118.34	121.37	<100	<100				Explore potential mitigation
CYVL-T-6	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	Normal	P0	N-0	108.69	110.08	<100	<100	<100				Explore potential mitigation
CYVL-T-7	32088 VACA-DXN 60.0 32090 WINTERS 60.0 1	Normal	P0	N-0	103.99	104.92	<100	<100	<100				Explore potential mitigation
CYVL-T-8	32342 E.NICOLS 60.0 32344 PLUMAS 60.0 1	Normal	P0	N-0	<100	101.13	<100	<100	<100				Explore potential mitigation
CYVL-T-12	31610 TYLER 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	102.71	<100	<100	<100				Explore potential mitigation
CYVL-T-13	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	111.53	<100	<100	<100				Explore potential mitigation
CYVL-T-14	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	Normal	P0	N-0	108.69	110.08	<100	<100	<100				Explore potential mitigation
CYVL-T-15	32088 VACA-DXN 60.0 32090 WINTERS 60.0 1	Normal	P0	N-0	103.99	104.92	<100	<100	<100				Explore potential mitigation
CYVL-T-28	31610 TYLER 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	102.71	<100	<100	<100				Explore potential mitigation
CYVL-T-29	31611 RASN JNT 60.0 31603 CANAL TP 60.0 2	Normal	P0	N-0	<100	111.53	<100	<100	<100				Explore potential mitigation
CYVL-T-30	32082 PLFLDJCT 60.0 32090 WINTERS 60.0 1	Normal	P0	N-0	107.37	108.75	<100	<100	<100				Explore potential mitigation
CYVL-T-31	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	Normal	P0	N-0	108.69	110.08	<100	<100	<100				Explore potential mitigation
CYVL-T-32	32088 VACA-DXN 60.0 32090 WINTERS 60.0 1	Normal	P0	N-0	103.99	104.92	<100	<100	<100				Explore potential mitigation
CYVL-T-35	32342 E.NICOLS 60.0 32344 PLUMAS 60.0 1	Normal	P0	N-0	<100	101.13	<100	<100	<100				Action Plan
CYVL-T-46	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-2:A4:38:_Vaca - Suisun 115 kV Line	P1	N-1	<100	101.94	113.60	<100	<100				Explore potential mitigation
CYVL-T-47	32088 VACA-DXN 60.0 31998 VACA-DIX 115 5	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P1	N-1	120.03	122.21	<100	<100	<100				Explore potential mitigation
CYVL-T-49	32342 E.NICOLS 60.0 32212 E.NICOLS 115 2	P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P1	N-1	<100	<100	118.91	<100	<100				Explore potential mitigation

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
CYVL-T-50	32342 E.NICOLS 60.0 32212 E.NICOLS 115 3	P1-3:A5:38:_East Nicolaus #2 115/60 kV Transformer	P1	N-1	<100	<100	118.87	<100	<100				Explore potential mitigation
CYVL-T-51	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P1-2:A11:69:_Valley Springs-Clay 60 kV Line	P1	N-1	129.61	135.52	125.52	<100	<100				Action Plan
CYVL-T-52	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P1	N-1	<100	114.39	<100	<100	<100				Action Plan
CYVL-T-53	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-2:A11:74:_Valley Springs-Clay 60 kV Line	P1	N-1	<100	<100	112.77	<100	<100				Action Plan
CYVL-T-54	33636 N.HGN JT 60.0 33640 CORRAL 60.0 1	P1-2:A11:72:_Weber - Mormon Jct 60 kV Line	P1	N-1	106.13	105.58	106.34	<100	<100				Action Plan
CYVL-T-55	30330 RIO OSO 230 30335 ATLANTC 230 1	P2-2:A5:4_BUS FAULT AT 30337 GOLDHILL 230.00 Bus 2	P2	Bus	101.35	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: Gold Hill SPS and add 3rd Gold Hill 230/115 kV Transformer or Pine Hill Sub
CYVL-T-56	30330 RIO OSO 230 30348 BRIGHTON 230 1	P2-4:A5:2_RIO OSO 115 kV Bus 1 and 2 - CB 102 Failure	P2	Bus-tie breaker	105.88	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-57	30482 LOCKFORD 230 30500 BELLOTA 230 1	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	112.61	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-58	30515 WARNERVL 230 30800 WILSON 230 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	<100	<100	<100	102.09	<100				Action plan - Trip Helms pump
CYVL-T-59	31482 PALERMO 115 31506 HONC JT1 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	126.63	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-60	31962 WDLND_BM 115 31990 DAVIS 115 1	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	161.11	136.84	<100	<100	<100				Explore potential mitigation
CYVL-T-61	31978 DPWT_TP2 115 31984 BRIGHTN 115 1	P2-4:A5:2_RIO OSO 115 kV Bus 1 and 2 - CB 102 Failure	P2	Bus-tie breaker	102.78	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-62	31993 BRKRJCT 115 32001 UCD_TP2 115 1	P2-4:A5:2_RIO OSO 115 kV Bus 1 and 2 - CB 102 Failure	P2	Bus-tie breaker	126.77	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion

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
CYVL-T-63	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P2-3:A4:5:_NON-BUS-TIE BREAKER CB1422 FAILURE AT VACA-DIXON 115kV	P2	Non Bus-tie breaker	<100	101.94	113.64	<100	<100				Explore potential mitigation
CYVL-T-64	32001 UCD_TP2 115 31990 DAVIS 115 1	P2-4:A5:2_RIO OSO 115 kV Bus 1 and 2 - CB 102 Failure	P2	Bus-tie breaker	102.49	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-65	32018 GOLDHILL 115 32231 HORSHE2 115 2	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	105.36	105.21	<100	<100				Explore potential mitigation
CYVL-T-66	32200 PEASE 115 32288 E.MRY J1 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	129.50	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-67	32206 BOGUE 115 32286 OLIVH J3 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	116.63	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-68	32208 GLEAF TP 115 32214 RIO OSO 115 1	P2-3:A5:7:_NON-BUS-TIE BREAKER CB132 FAILURE AT BOGUE 115 kV	P2	Non Bus-tie breaker	121.15	<100	<100	<100	<100				Short term: Action Plan
CYVL-T-69	32212 E.NICOLS 115 32214 RIO OSO 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	103.26	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-70	32214 RIO OSO 115 30330 RIO OSO 230 1	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	101.49	<100	<100	<100	<100				Short term: Action Plan
CYVL-T-71	32214 RIO OSO 115 31986 W.SCRMNO 115 1	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	137.48	118.16	<100	<100	<100				Explore potential mitigation
CYVL-T-72	32214 RIO OSO 115 32225 BRNSWKTP 115 1	P2-3:A5:12:_NON-BUS-TIE BREAKER CB340 FAILURE AT DRUM1 PH 115 kV	P2	Non Bus-tie breaker	<100	110.18	<100	<100	<100				Explore potential mitigation
CYVL-T-73	32218 DRUM 115 32220 DTCH FL1 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	219.57	222.75	106.56	<100				Explore potential mitigation
CYVL-T-74	32218 DRUM 115 32244 BRNSWKCP 115 2	P2-2:A5:13_BUS FAULT AT 32232 HIGGINS 115.00	P2	Bus	105.95	117.32	104.76	<100	<100				Explore potential mitigation
CYVL-T-75	32220 DTCH FL1 115 32224 CHCGO PK 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	135.21	136.89	<100	<100				Explore potential mitigation
CYVL-T-76	32224 CHCGO PK 115 32232 HIGGINS 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	160.34	161.11	<100	<100				Explore potential mitigation
CYVL-T-77	32225 BRNSWKTP 115 32222 DTCH FL2 115 1	P2-3:A5:12:_NON-BUS-TIE BREAKER CB340 FAILURE AT DRUM1 PH 115 kV	P2	Non Bus-tie breaker	110.49	129.98	112.22	<100	<100				Explore potential mitigation

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
CYVL-T-78	32228 PLACER 115 32238 BELL PGE 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	119.67	122.49	<100	<100				Explore potential mitigation
CYVL-T-79	32228 PLACER 115 32239 FLINT2 115 2	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	112.19	113.02	<100	<100				Explore potential mitigation
CYVL-T-80	32229 HORSHE1 115 32233 NEWCSTL1 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	127.73	125.72	<100	<100				Explore potential mitigation
CYVL-T-81	32231 HORSHE2 115 32235 NEWCSTL2 115 2	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	105.15	105.32	<100	<100				Explore potential mitigation
CYVL-T-82	32232 HIGGINS 115 32238 BELL PGE 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	132.71	134.29	<100	<100				Explore potential mitigation
CYVL-T-83	32233 NEWCSTL1 115 32236 FLINT1 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	116.93	121.48	<100	<100				Explore potential mitigation
CYVL-T-84	32235 NEWCSTL2 115 32239 FLINT2 115 2	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	104.99	105.10	<100	<100				Explore potential mitigation
CYVL-T-85	32236 FLINT1 115 32228 PLACER 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	116.82	121.41	<100	<100				Explore potential mitigation
CYVL-T-86	32250 ELDORAD 115 32481 APLHTAP2 115 2	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	227.72	197.04	189.42	<100	<100				Explore potential mitigation
CYVL-T-87	32255 PLCRVLT1 115 32261 MIZOU_T1 115 1	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	123.81	107.48	103.14	<100	<100				Explore potential mitigation
CYVL-T-88	32261 MIZOU_T1 115 32267 DIMOND_1 115 1	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	104.23	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: Gold Hill SPS and add 3rd Gold Hill 230/115 kV Transformer or Pine Hill Sub
CYVL-T-89	32267 DIMOND_1 115 32262 SHPRING1 115 1	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	104.20	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: Gold Hill SPS and add 3rd Gold Hill 230/115 kV Transformer or Pine Hill Sub
CYVL-T-90	32290 OLIVH J1 115 32214 RIO OSO 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	103.64	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-91	32290 OLIVH J1 115 32288 E.MRY J1 115 1	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	129.39	<100	<100	<100	<100				Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-92	32342 E.NICOLS 60.0 32212 E.NICOLS 115 3	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	<100	100.20	120.49	<100	<100				Explore potential mitigation
CYVL-T-93	32342 E.NICOLS 60.0 32344 PLUMAS 60.0 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	<100	115.40	<100	<100				Explore potential mitigation

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
CYVL-T-94	32342 E.NICOLS 60.0 32353 WHTLND1 60.0 1	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<100	<100	66.52	<100	101.48				Explore potential mitigation
CYVL-T-95	32345 BEALE1J2 60.0 32353 WHTLND1 60.0 1	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<100	<100	0.00	<100	109.23				Explore potential mitigation
CYVL-T-96	32412 ATLANTIC 115 32228 PLACER 115 1	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<100	151.00	157.28	<100	<100				Explore potential mitigation
CYVL-T-98	32481 APLHTAP2 115 32257 PLCRVLT2 115 2	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	227.77	197.04	189.45	<100	<100				Explore potential mitigation
CYVL-T-99	32482 APLHTAP1 115 32255 PLCRVLT1 115 1	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	205.72	178.58	<100	<100	<100				Explore potential mitigation
CYVL-T-100	33500 MELNS JA 115 33509 AVENATP1 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	114.21	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-101	33509 AVENATP1 115 33514 MANTECA 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	103.19	NConv	108.63	158.26				Action Plan. Concur further investigation required
CYVL-T-102	33511 AVENATP2 115 33514 MANTECA 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<100	NConv	<100	100.77				Action Plan. Concur further investigation required
CYVL-T-103	33516 RPN JNCN 115 33514 MANTECA 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<100	NConv	<100	157.67				Action Plan. Concur further investigation required
CYVL-T-104	33542 LEPRINO 115 33548 TRACY 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	102.82	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-105	33562 BELLOTA 115 33950 RVRBK TP 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	118.35	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-106	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	129.59	127.13	125.40	<100	<100				Action Plan
CYVL-T-107	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	116.51	114.27	112.66	<100	<100				Action Plan
CYVL-T-108	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P2-2:A11:23:_30505 Weber 230 kV Bus Section E	P2	Bus	<100	100.61	102.00	<100	<100				Action Plan
CYVL-T-109	33704 STAGG 60.0 33706 CNTRY CB 60.0 1	P2-2:A11:74:_33704 Stagg 60 kV Bus Section D	P2	Bus	117.28	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-110	33716 HMMR JCT 60.0 33717 MORADAJT 60.0 1	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	144.51	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-111	33717 MORADAJT 60.0 33740 MSHR 60V 60.0 1	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	203.96	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line

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
CYVL-T-112	33724 LOCKEFRD 60.0 33739 HNYLNJCT 60.0 1	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	171.15	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-113	33738 WATRLJCT 60.0 33740 MSHR 60V 60.0 1	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	171.22	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-114	33739 HNYLNJCT 60.0 33738 WATRLJCT 60.0 1	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	171.20	<100	<100	<100	<100				Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-115	33742 MANTECA 60.0 33514 MANTECA 115 3	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	203.76	209.42	217.84	<100	<100				Kasson SPS
CYVL-T-116	33742 MANTECA 60.0 33703 LOUISJCT 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	145.88	152.32	161.07	<100	<100				Kasson SPS
CYVL-T-117	33745 LID TAP 60.0 33750 CALVO 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	105.01	110.59	118.12	<100	<100				Kasson SPS
CYVL-T-118	33748 MSSDLESW 60.0 33745 LID TAP 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	107.74	113.32	120.86	<100	<100				Kasson SPS
CYVL-T-119	33750 CALVO 60.0 33756 KASSON 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	100.20	105.79	113.35	<100	<100				Kasson SPS
CYVL-T-120	33900 DONNELLS 115 34058 DONNELLS 13.8 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	108.90	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-121	33912 SPRNG GJ 115 33914 MI-WUK 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	117.50	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-122	33916 CURTISS 115 33917 FBERBORD 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	109.24	<100	<100	<100	<100				Action Plan. SPS Long term
CYVL-T-123	33932 MELONES 115 33934 TULLOCH 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	137.50	NConv	173.64	271.85				Explore potential mitigation
CYVL-T-124	33932 MELONES 115 33936 MELNS JB 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	130.85	NConv	138.01	205.04				Explore potential mitigation
CYVL-T-125	33936 MELNS JB 115 33947 RIVRBKJT 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	142.66	NConv	123.30	170.77				Explore potential mitigation
CYVL-T-126	33947 RIVRBKJT 115 33951 VLYHMTP1 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	142.30	NConv	123.01	170.71				Explore potential mitigation
CYVL-T-127	33950 RVRBK TP 115 33934 TULLOCH 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	119.71	NConv	148.12	259.50				Explore potential mitigation
CYVL-T-128	33951 VLYHMTP1 115 33517 RPNJN2 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	109.88	NConv	112.30	161.61				Explore potential mitigation
CYVL-T-129	34012 GUSTN JT 60.0 34014 NEWMAN 60.0 1	P2-2:A12:3:_34009 Q539SS 60 kV Bus	P2	Bus	116.05	119.80	127.18	<100	<100				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
CYVL-T-130	31263 LWRLAKEJ 115 31225 HGHLNDJ1 115 1	P2-1:A2:13:_INDIN VL-CORTINA #1 115 kV	P2-1	Line section w/o fault	123.21	117.28	111.35	<100	<100				Explore potential mitigation
CYVL-T-131	32057 HUSTD 60.0 32063 ARBJCT 60.0 2	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	137.59	142.28	148.83	<100	<100				Explore potential mitigation
CYVL-T-132	32063 ARBJCT 60.0 32061 ARBALT 60.0 2	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	108.61	113.11	<100	<100	<100				Explore potential mitigation
CYVL-T-133	32063 ARBJCT 60.0 32061 ARBALT 60.0 2	P2-1:A4:72:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	<100	<100	119.52	<100	<100				Explore potential mitigation
CYVL-T-134	32100 DIXONPGE 60.0 32101 DIXON- J2 60.0 2	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	116.00	117.37	<100	<100	<100				Explore potential mitigation
CYVL-T-135	32218 DRUM 115 32244 BRNSWCKP 115 2	P2-1:A5:38:_CHCGO PK-HIGGINS #1 115 kV	P2-1	Line section w/o fault	106.84	118.30	105.62	<100	<100				Explore potential mitigation
CYVL-T-136	32225 BRNSWKTP 115 32222 DTCH FL2 115 1	P2-1:A5:38:_CHCGO PK-HIGGINS #1 115 kV	P2-1	Line section w/o fault	93.36	106.92	<100	<100	<100				Explore potential mitigation
CYVL-T-138	32250 ELDORAD 115 32481 APLHTAP2 115 2	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	208.78	192.54	186.27	<100	<100				Explore potential mitigation
CYVL-T-139	32250 ELDORAD 115 32482 APLHTAP1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	159.25	146.68	140.95	<100	<100				Explore potential mitigation
CYVL-T-140	32255 PLCRVLT1 115 32261 MIZOU_T1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	113.93	105.21	101.46	<100	<100				Explore potential mitigation
CYVL-T-143	32481 APLHTAP2 115 32257 PLCRVLT2 115 2	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	208.84	192.45	186.31	<100	<100				Explore potential mitigation
CYVL-T-144	32482 APLHTAP1 115 32255 PLCRVLT1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	189.31	174.79	168.60	<100	<100				Explore potential mitigation
CYVL-T-145	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P2-1:A11:107:_CLAY-BUENA_TP #1 60 kV	P2-1	Line section w/o fault	130.07	114.06	126.06	<100	<100				Action Plan
CYVL-T-146	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P2-1:A11:107:_CLAY-BUENA_TP #1 60 kV	P2-1	Line section w/o fault	116.93	<100	<100	<100	<100				Action Plan

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
CYVL-T-147	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P2-1:A11:110:_CLAY-BUENA_TP #1 60 kV	P2-1	Line section w/o fault	<100	<100	113.26	<100	<100				Action Plan
CYVL-T-148	34012 GUSTN JT 60.0 34014 NEWMAN 60.0 1	P2-1:A12:50:_Q539SS-MEDLIN J #1 60 kV	P2-1	Line section w/o fault	115.92	119.60	126.97	<100	<100				Explore potential mitigation
CYVL-T-149	31984 BRIGHTN 115 31993 BRKRJCT 115 1	P1-1:A5:9:_DRUM 5 13.80 Generator ID 1 and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P3	G-1/N-1	100.71	<100	<100	<100	<100				Short term: Action Plan
CYVL-T-150	31993 BRKRJCT 115 32001 UCD_TP2 115 1	P1-1:A4:9:_WOODLAND 9.11 Generator ID 1 and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P3	G-1/N-1	104.69	<100	<100	<100	<100				Short term: Action Plan
CYVL-T-151	31998 VACA-DIX 115 30460 VACA-DIX 230 4	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P3	G-1/N-1	102.93	109.24	<100	<100	<100				Explore potential mitigation
CYVL-T-152	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:38:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<100	102.04	113.84	<100	<100				Explore potential mitigation
CYVL-T-153	31998 VACA-DIX 115 31999 VACA-D&1 115 1	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-2:A4:40:_Vaca - Suisun - Jameson 115 kV Line	P3	G-1/N-1	<100	<100	100.63	<100	<100				Explore potential mitigation
CYVL-T-154	32056 CORTINA 60.0 30451 CRTNA M 230 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	106.81	121.41	121.11	<100	<100				Explore potential mitigation
CYVL-T-155	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	101.00	105.72	114.14	<100	<100				Explore potential mitigation
CYVL-T-156	32057 HUSTD 60.0 32063 ARBJCT 60.0 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	101.11	105.73	114.26	<100	<100				Explore potential mitigation
CYVL-T-157	32070 CLSA JCT 60.0 32073 WESCOT1 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	<100	<100	104.64	<100	<100				Explore potential mitigation
CYVL-T-158	32073 WESCOT1 60.0 32075 WESCOT2 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	<100	<100	104.63	<100	<100				Explore potential mitigation
CYVL-T-159	32088 VACA-DXN 60.0 31998 VACA-DIX 115 5	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P3	G-1/N-1	120.04	122.07	<100	<100	<100				Explore potential mitigation
CYVL-T-160	32290 OLIVH J1 115 32214 RIO OSO 115 1	P1-1:A5:2:_YCEC 13.80 Generator ID 1 and P1-2:A5:28:_Palermo - Pease 115 kV Line	P3	G-1/N-1	105.51	<100	<100	<100	<100				Short term: Action Plan

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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
CYVL-T-161	32342 E.NICOLS 60.0 32212 E.NICOLS 115 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P3	G-1/N-1	<100	<100	118.90	<100	<100				Explore potential mitigation
CYVL-T-162	32374 DRUM 60.0 32376 BONNIE N 60.0 1	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:51:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	103.51	<100	<100	<100	<100				Explore potential mitigation
CYVL-T-163	32374 DRUM 60.0 32376 BONNIE N 60.0 1	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	<100	102.97	103.90	<100	<100				Explore potential mitigation
CYVL-T-164	33542 LEPRINO 115 33548 TRACY 115 1	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	107.27	<100	<100	<100	<100				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-165	33542 LEPRINO 115 33548 TRACY 115 1	P1-1:A12:6:_DONNELLS 13.80 Generator ID 1 and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	100.83	<100	<100	<100	<100				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-166	33542 LEPRINO 115 33548 TRACY 115 1	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	107.27	<100	<100	<100	<100				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-167	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P1-1:A11:23:_TIGR CRK 11.00 Generator ID 2 and P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P3	G-1/N-1	<100	127.20	<100	<100	<100				Action Plan
CYVL-T-168	33636 N.HGN JT 60.0 33640 CORRAL 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:72:_Weber - Mormon Jct 60 kV Line	P3	G-1/N-1	106.09	105.56	106.32	<100	<100				Action Plan
CYVL-T-169	33662 WEBER 2 60.0 33674 HAZLTN J 60.0 1	P1-1:A11:19:_COG.NTNL 13.80 Generator ID 1 and P1-2:A11:82:_Stockton 'A' - Weber 60 kV Line No. 2	P3	G-1/N-1	<100	<100	106.43	<100	<100				Under review
CYVL-T-170	34012 GUSTN JT 60.0 34014 NEWMAN 60.0 1	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	<100	105.24	112.86	<100	<100				Congestion Management
CYVL-T-171	30482 LOCKFORD 230 30500 BELLOTA 230 1	P1-3:A11:9:_Stagg 230/60 kV Transformer No. 4 and P1-3:A11:8:_Stagg 230/60 kV Transformer No. 1	P6	N-1/N-1	112.90	<100.0	<100.0	<100.0	<100.0				Action Plan
CYVL-T-172	31482 PALERMO 115 31506 HONC JT1 115 1	P1-2:A5:7:_Colgate - Rio Oso 230 kV Line and P1-2:A3:18:_Palermo-Nicolaus 115 kV Line	P6	N-1/N-1	104.74	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-173	31656 PALERMO 60.0 31658 BANGOR 60.0 1	P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	<100.0	<100.0	115.89				Explore potential mitigation
CYVL-T-174	31658 BANGOR 60.0 32308 COLGATE 60.0 1	P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	<100.0	<100.0	125.29				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
CYVL-T-175	31960 MOBILCHE 115 31966 WODLNDJ1 115 1	P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10 and P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9	P6	N-1/N-1	158.10	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-176	31962 WDLND_BM 115 31990 DAVIS 115 1	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	276.49	157.97	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-177	31964 KNIGHT2 115 31968 WODLNDJ2 115 2	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	165.80	94.92	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-178	31965 KNIGHT1 115 31966 WODLNDJ1 115 1	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	157.32	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-179	31968 WODLNDJ2 115 31970 WOODLD 115 2	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	152.58	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-180	31980 DPWTR_TP 115 31986 W.SCRMNO 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:33:_Brighton - Davis 115 kV Line	P6	N-1/N-1	102.05	102.69	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-181	31980 DPWTR_TP 115 31990 DAVIS 115 1	P1-2:A4:33:_Brighton - Davis 115 kV Line and P1-2:A4:29:_Woodland - Davis 115 kV Line	P6	N-1/N-1	100.35	101.12	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-182	31984 BRIGHTN 115 31993 BRKRJCT 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P6	N-1/N-1	150.70	139.46	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-183	31993 BRKRJCT 115 32001 UCD_TP2 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P6	N-1/N-1	149.39	138.10	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-184	31998 VACA-DIX 115 30460 VACA-DIX 230 2	P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3 and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P6	N-1/N-1	<100.0	<100.0	103.15	<100.0	<100.0				Explore potential mitigation
CYVL-T-185	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-2:A4:38:_Vaca - Suisun 115 kV Line and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P6	N-1/N-1	103.96	110.48	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-186	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4 and P1-3:A4:16:_Vaca Dixon 230/115 kV Transformer No. 2	P6	N-1/N-1	<100.0	<100.0	106.55	<100.0	<100.0				Explore potential mitigation

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
CYVL-T-187	32001 UCD_TP2 115 31990 DAVIS 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P6	N-1/N-1	120.79	111.66	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-188	32018 GOLDHILL 115 32231 HORSHE2 115 2	P1-2:A5:22:_Placer - Gold Hill 115 kV Line No. 1 and P1-2:A5:38:_Drum - Higgins 115 kV Line	P6	N-1/N-1	100.51	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-189	32018 GOLDHILL 115 32231 HORSHE2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	109.19	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-190	32056 CORTINA 60.0 30451 CRTNA M 230 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P6	N-1/N-1	106.81	121.41	121.11	<100.0	<100.0				Explore potential mitigation
CYVL-T-191	32056 CORTINA 60.0 30451 CRTNA M 230 1	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P6	N-1/N-1	124.06	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-192	32070 CLSA JCT 60.0 32073 WESCOT1 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P6	N-1/N-1	<100.0	<100.0	104.64	<100.0	<100.0				Explore potential mitigation
CYVL-T-193	32073 WESCOT1 60.0 32075 WESCOT2 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P6	N-1/N-1	<100.0	<100.0	104.63	<100.0	<100.0				Explore potential mitigation
CYVL-T-194	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9 and P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P6	N-1/N-1	99.21	100.57	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-195	32088 VACA-DXN 60.0 31998 VACA-DIX 115 5	P1-1:A11:12:_ELECTRA 13.80 Generator ID 1 and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P6	N-1/N-1	120.03	122.24	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-196	32200 PEASE 115 31506 HONC JT1 115 1	P1-1:A4:9:_WOODLAND 9.11 Generator ID 1 and P1-2:A3:18:_Palermo-Nicolaus 115 kV Line	P6	N-1/N-1	100.09	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-197	32208 GLEAF TP 115 32214 RIO OSO 115 1	P1-2:A5:7:_Colgate - Rio Oso 230 kV Line and P1-2:A3:5:_Table Mountain(D)-Rio Oso 230 kV Line	P6	N-1/N-1	109.54	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-198	32214 RIO OSO 115 30330 RIO OSO 230 1	P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10 and P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9	P6	N-1/N-1	140.22	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-199	32214 RIO OSO 115 31964 KNIGHT2 115 2	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	164.04	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-200	32214 RIO OSO 115 31986 W.SCRMNO 115 1	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:4:3:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	229.17	133.18	<100.0	<100.0	<100.0				Explore potential mitigation

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
CYVL-T-201	32214 RIO OSO 115 32404 SPI JCT 115 1	P1-2:A5:8:_Rio Oso - Atlantic 230 kV Line and P1-2:A5:12:_Atlantic - Gold Hill 230 kV Line	P6	N-1/N-1	135.20	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-202	32218 DRUM 115 32220 DTCH FL1 115 1	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	NConv	162.02	114.63	<100.0	<100.0				Explore potential mitigation
CYVL-T-203	32218 DRUM 115 32244 BRNSWCKP 115 2	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	116.13	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-204	32224 CHCGO PK 115 32232 HIGGINS 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	NConv	128.12	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-205	32225 BRNSWKTP 115 32222 DTCH FL2 115 1	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	100.49	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-206	32228 PLACER 115 32239 FLINT2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	116.05	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-208	32229 HORSHE1 115 32233 NEWCSTL1 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	130.55	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-209	32231 HORSHE2 115 32235 NEWCSTL2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	109.31	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-210	32232 HIGGINS 115 32238 BELL PGE 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	NConv	102.42	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-211	32233 NEWCSTL1 115 32236 FLINT1 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	120.07	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-212	32235 NEWCSTL2 115 32239 FLINT2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	109.07	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-213	32236 FLINT1 115 32228 PLACER 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	120.07	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-214	32290 OLIVH J1 115 32288 E.MRY J1 115 1	P1-2:A5:7:_Colgate - Rio Oso 230 kV Line and P1-2:A3:5:_Table Mountain(D)-Rio Oso 230 kV Line	P6	N-1/N-1	102.25	<100.0	<100.0	<100.0	<100.0				Short Term: Sierra Action Plan, Long term: South of Palermo 115 kV Reinforcement Project
CYVL-T-215	32342 E.NICOLS 60.0 32212 E.NICOLS 115 2	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P6	N-1/N-1	<100.0	100.09	120.40	<100.0	<100.0				Explore potential mitigation

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
CYVL-T-216	32342 E.NICOLS 60.0 32353 WHTLND1 60.0 1	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	<100.0	<100.0	116.84				Explore potential mitigation
CYVL-T-217	32345 BEALE1J2 60.0 32353 WHTLND1 60.0 1	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	<100.0	<100.0	<100.0	<100.0	126.95				Explore potential mitigation
CYVL-T-218	32356 LINCLN 115 32398 ULTRA JT 115 1	P1-2:A5:8:_Rio Oso - Atlantic 230 kV Line and P1-2:A5:12:_Atlantic - Gold Hill 230 kV Line	P6	N-1/N-1	107.13	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-219	32356 LINCLN 115 32404 SPI JCT 115 1	P1-2:A5:8:_Rio Oso - Atlantic 230 kV Line and P1-2:A5:12:_Atlantic - Gold Hill 230 kV Line	P6	N-1/N-1	139.53	<100.0	<100.0	<100.0	<100.0				Explore potential mitigation
CYVL-T-220	32398 ULTRA JT 115 32408 PLSNT GR 115 1	P1-2:A5:8:_Rio Oso - Atlantic 230 kV Line and P1-2:A5:12:_Atlantic - Gold Hill 230 kV Line	P6	N-1/N-1	121.25	<100.0	<100.0	<100.0	<100.0				Short term: Action Plan
CYVL-T-221	32412 ATLANTIC 115 32228 PLACER 115 1	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<100.0	168.67	111.60	<100.0	<100.0				Explore potential mitigation
CYVL-T-226	33526 KSSN-JC1 115 33528 KASSON 115 1	P1-2:A11:55:_Schulte - Lammers 115 kV Line and P1-2:A11:50:_Tesla - Tracy 115 kV Line	P6	N-1/N-1	149.25	106.42	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-227	33529 LAMMERS 115 33531 OWENSTP1 115 1	P1-2:A11:50:_Tesla - Tracy 115 kV Line and P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line	P6	N-1/N-1	103.18	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-228	33530 KSSN-JC2 115 33550 HJ HEINZ 115 1	P1-2:A11:55:_Schulte - Lammers 115 kV Line and P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line	P6	N-1/N-1	138.66	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-229	33533 OWENSTP2 115 33526 KSSN-JC1 115 1	P1-2:A11:50:_Tesla - Tracy 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	125.13	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-230	33540 TESLA 115 33541 AEC_TP1 115 1	P1-2:A11:48:_Tesla - Schulte 115 kV Line No. 2 and P1-2:A11:56:_GWF Tracy - Schulte 115 kV Line	P6	N-1/N-1	105.54	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-231	33540 TESLA 115 33544 ELLS GTY 115 1	P1-2:A11:55:_Schulte - Lammers 115 kV Line and P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line	P6	N-1/N-1	140.15	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-232	33542 LEPRINO 115 33548 TRACY 115 1	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	178.18	116.24	123.67	<100.0	<100.0				Action Plan
CYVL-T-233	33544 ELLS GTY 115 33546 TRACY JC 115 1	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	119.39	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project

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
CYVL-T-234	33548 TRACY 115 33550 HJ HEINZ 115 1	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	135.46	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-235	33549 SCHULTE 115 33533 OWENSTP2 115 2	P1-2:A11:50:_Tesla - Tracy 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	125.06	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Vierra Looping project
CYVL-T-236	33558 LCKFRDJB 115 33562 BELLOTA 115 1	P1-2:A11:63:_Gold Hill-Bellota-Lockeford 115 kV Line and P1-2:A11:62:_Stockton 'A' - Lockeford - Bellota 115 kV Line No. 1	P6	N-1/N-1	<100.0	97.53	102.36	<100.0	<100.0				Action Plan
CYVL-T-237	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P1-2:A11:13:_Stagg 230/21 kV Bank 6 and P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P6	N-1/N-1	<100.0	127.20	125.09	<100.0	<100.0				Action Plan
CYVL-T-238	33662 WEBER 2 60.0 33674 HAZLTN J 60.0 1	P1-2:A11:77:_Stockton 'A' - Weber 60 kV Line No. 2 and P1-2:A11:76:_Stockton 'A' - Weber 60 kV Line No. 1	P6	N-1/N-1	103.44	109.90	119.09	<100.0	<100.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-T-239	33704 STAGG 60.0 33706 CNTRY CB 60.0 1	P1-2:A11:84:_Stagg - Hammer 60 kV Line No. 1 and P1-2:A11:83:_Stagg - Country Club 60 kV Line No. 2	P6	N-1/N-1	116.01	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-T-240	33704 STAGG 60.0 33714 HAMMER 60.0 1	P1-2:A11:83:_Stagg - Country Club 60 kV Line No. 2 and P1-2:A11:82:_Stagg - Country Club 60 kV Line No. 1	P6	N-1/N-1	118.69	<100.0	<100.0	<100.0	<100.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-T-241	33706 CNTRY CB 60.0 33708 UOP 60.0 1	P1-2:A11:89:_New Stagg - Hammer 60 kV Line No. 2 and P1-2:A11:88:_Stagg - Hammer 60 kV Line No. 1	P6	N-1/N-1	100.09	101.63	104.07	<100.0	<100.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-T-242	33714 HAMMER 60.0 33716 HMMR JCT 60.0 1	P1-2:A11:86:_Stagg - Country Club 60 kV Line No. 1 and P1-2:A11:87:_Stagg - Country Club 60 kV Line No. 2	P6	N-1/N-1	<100.0	106.96	108.74	<100.0	<100.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-T-243	33716 HMMR JCT 60.0 33717 MORADAJT 60.0 1	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	153.07	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-244	33717 MORADAJT 60.0 33740 MSHR 60V 60.0 1	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	208.86	<100.0	<100.0	105.15	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-245	33724 LOCKEFRD 60.0 30482 LOCKFORD 230 2	P1-2:A11:85:_Hammer - Country Club 60 kV and P1-3:A11:5:_Lockeford 230/60 kV Transformer No. 3	P6	N-1/N-1	116.13	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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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
CYVL-T-246	33724 LOCKEFRD 60.0 33725 LOCKFRD1 60.0 1	P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2 and P1-2:A11:91:_Lockeford - Industrial 60 kV Line	P6	N-1/N-1	110.24	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-247	33724 LOCKEFRD 60.0 33726 VICTOR 60.0 1	P1-2:A28:105:_Lodi - Industrial 60 kV Line and P1-2:A11:91:_Lockeford - Industrial 60 kV Line	P6	N-1/N-1	175.00	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-248	33724 LOCKEFRD 60.0 33736 LODIJCT 60.0 1	P1-2:A11:91:_Lockeford - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	195.39	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-249	33724 LOCKEFRD 60.0 33739 HNYLNJCT 60.0 1	P1-3:A11:9:_Stagg 230/60 kV Transformer No. 4 and P1-3:A11:8:_Stagg 230/60 kV Transformer No. 1	P6	N-1/N-1	170.35	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-250	33724 LOCKEFRD 60.0 38060 INDUSTRL 60.0 1	P1-2:A28:105:_Lodi - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	160.96	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-251	33725 LOCKFRD1 60.0 33732 COLONY 60.0 1	P1-2:A11:91:_Lockeford - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	161.86	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-252	33726 VICTOR 60.0 33731 WODBRG J 60.0 1	P1-2:A28:105:_Lodi - Industrial 60 kV Line and P1-2:A11:91:_Lockeford - Industrial 60 kV Line	P6	N-1/N-1	164.61	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-253	33728 LODI 60.0 33734 CLNY JCT 60.0 1	P1-2:A11:91:_Lockeford - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	149.07	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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
CYVL-T-254	33729 LODI AUX 60.0 33736 LODI JCT 60.0 1	P1-2:A11:91:_Lockeford - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	157.90	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-255	33731 WODBRG J 60.0 33735 INDSTR J 60.0 1	P1-2:A28:105:_Lodi - Industrial 60 kV Line and P1-2:A11:91:_Lockeford - Industrial 60 kV Line	P6	N-1/N-1	164.60	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-256	33732 COLONY 60.0 33734 CLNY JCT 60.0 1	P1-2:A11:91:_Lockeford - Industrial 60 kV Line and P1-2:A11:88:_Lockeford - Lodi 60 kV Line No. 2	P6	N-1/N-1	149.01	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-257	33735 INDSTR J 60.0 38060 INDUSTR L 60.0 1	P1-2:A28:105:_Lodi - Industrial 60 kV Line and P1-2:A11:91:_Lockeford - Industrial 60 kV Line	P6	N-1/N-1	164.60	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-258	33738 WATRLJCT 60.0 33740 MSHR 60V 60.0 1	P1-3:A11:9:_Stagg 230/60 kV Transformer No. 4 and P1-3:A11:8:_Stagg 230/60 kV Transformer No. 1	P6	N-1/N-1	170.43	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-259	33739 HNYLNJCT 60.0 33738 WATRLJCT 60.0 1	P1-2:A11:8:_Stagg - Tesla 230 kV Line and P1-2:A11:12:_Stagg 230/21 kV Bank 6	P6	N-1/N-1	170.36	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: New Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-T-260	33750 CALVO 60.0 33756 KASSON 60.0 1	P1-2:A11:46:_Vierra - Tracy - Kasson 115 kV Line and P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line	P6	N-1/N-1	101.27	<100.0	<100.0	<100.0	<100.0				Short Term: Stockton Action Plan Long Term: Vierra Looping Project
CYVL-T-265	33504 CATARACT 115 33503 FRGTNTP2 115 1	P7-1:A12:18:_Stanislaus-Melones-Manteca No.1 115 kV & Stanislaus-Manteca No.2 115 kV Lines	P7	DCTL	110.11	110.56	111.03	<100.0	<100.0				Action Plan
CYVL-T-266	33506 STANISLS 115 33501 FRGTNTP1 115 1	P7-1:A12:14:_Stanislaus-Manteca No.2 115 kV & Stanislaus-Melones-Riverbank Jct 115 kV Lines	P7	DCTL	110.22	110.82	111.25	<100.0	<100.0				Action Plan
CYVL-T-267	33506 STANISLS 115 33504 CATARACT 115 1	P7-1:A12:18:_Stanislaus-Melones-Manteca No.1 115 kV & Stanislaus-Manteca No.2 115 kV Lines	P7	DCTL	110.15	110.62	111.08	<100.0	<100.0				Action Plan



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
CYVL-T-268	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P7-1:A12:6_Bellota-Tesla 230 kV Line & Bellota-Weber 230 kV Line	P7	DCTL	<100.0	<100.0	101.59	<100.0	<100.0				Explore potential mitigation

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
CYVL-VD-1	ALLEGHNY 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	5.776	9.609				Sierra Action Plan
CYVL-VD-2	BEALE_1 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	<5.0	8.786				Sierra Action Plan
CYVL-VD-3	BEALE_2 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	<5.0	6.98				Sierra Action Plan
CYVL-VD-4	BRWNS VY 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	<5.0	8.784				Sierra Action Plan
CYVL-VD-5	CLMBA HL 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	5.747	9.573				Sierra Action Plan
CYVL-VD-6	CLNY JCT 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.13	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-7	CMP FRWT 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	<5.0	8.759				Sierra Action Plan
CYVL-VD-8	COLGATE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	5.733	9.556				Sierra Action Plan
CYVL-VD-9	COLONY 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.097	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-10	DIST1001 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.788	8.607	8.426	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-11	DIST1500 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.817	8.632	8.447	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-12	DOBBINS 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	5.744	9.569				Sierra Action Plan
CYVL-VD-13	E.MRYSVE 115 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	4.556	7.062	9.568	<5.0	<5.0				Sierra Action Plan
CYVL-VD-14	E.NICOLS 115 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	7.759	11.388	15.017	<5.0	<5.0				Sierra Action Plan
CYVL-VD-15	ENVRO_HY 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	6.62	6.537	6.552	<5.0	<5.0				Sierra Action Plan
CYVL-VD-16	FORST HL 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	5.88	5.805	5.82	<5.0	<5.0				Sierra Action Plan
CYVL-VD-17	GRSS VLY 60 kV	P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P1	N-1	5.799	6.043	6.287	<5.0	<5.0				Sierra Action Plan
CYVL-VD-18	GUSTINE 60 kV	P1-2:A12:19:_S539SS-Newman #1 60 kV Line	P1	N-1	6.429	7.047	7.665	<5.0	<5.0				Explore potential mitigation
CYVL-VD-19	HNYLNJCT 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	7.633	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-20	INDUSTRL 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.101	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-21	JAMESN-A 115 kV	P1-2:A4:38:_Vaca - Suisun 115 kV Line	P1	N-1	5.784	5.882	6.882	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-22	KNGHTSLJ 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.815	8.63	8.445	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-23	KNTJALT 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.79	8.609	8.428	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-24	LEE_JCT 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	5.004	5.054	5.104	<5.0	<5.0				Explore potential mitigation
CYVL-VD-25	LTHRP JT 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	<5.0	<5.0	5.033	<5.0	<5.0				Explore potential mitigation



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
CYVL-VD-26	MANTECA 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	<5.0	<5.0	5.033	<5.0	<5.0				Explore potential mitigation
CYVL-VD-27	MARTELL 60 kV	P1-2:A11:71:_Valley Springs - Martell 60 kV Line No. 1	P1	N-1	5.349	5.792	6.235	<5.0	<5.0				Explore potential mitigation
CYVL-VD-28	MCLANE 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	7.767	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-29	MEDLIN J 60 kV	P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P1	N-1	<5.0	<5.0	5.46	<5.0	<5.0				Explore potential mitigation
CYVL-VD-30	NEWMAN 60 kV	P1-2:A12:19:_S539SS-Newman #1 60 kV Line	P1	N-1	6.142	6.801	7.46	<5.0	<5.0				Explore potential mitigation
CYVL-VD-31	NW HPE J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.182	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-32	OXBOW 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	6.805	6.721	6.736	<5.0	<5.0				Explore potential mitigation
CYVL-VD-33	PLUMAS 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	9.07	8.992	8.914	<5.0	<5.0				Sierra Action Plan
CYVL-VD-34	RIPON 115 kV	P1-2:A11:46:_Ripon - Manteca 115 kV Line	P1	N-1	6.005	6.25	6.495	<5.0	<5.0				Action Plan
CYVL-VD-35	ROLLINS 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P1	N-1	5.272	5.205	5.085	<5.0	<5.0				Sierra Action Plan
CYVL-VD-36	RPNJN2 115 kV	P1-2:A11:46:_Ripon - Manteca 115 kV Line	P1	N-1	5.624	5.847	6.07	<5.0	<5.0				Action Plan
CYVL-VD-37	SMRTSVLE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	<5.0	<5.0	<5.0	8.753				Sierra Action Plan
CYVL-VD-38	SUMMIT 60 kV	P1-2:A35:20B:_Spaulding - Summit 60 kV Line	P1	N-1	<5.0	<5.0	<5.0	5.042	5.036				Sierra Action Plan
CYVL-VD-39	TUDOR 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.931	8.747	8.563	<5.0	<5.0				Explore potential mitigation
CYVL-VD-40	UCD_TP2 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	5.069	<5.0	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-41	UCDAVSJ1 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	5.069	<5.0	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-42	VALLY HM 115 kV	P1-2:A11:46:_Ripon - Manteca 115 kV Line	P1	N-1	<5.0	<5.0	5.15	<5.0	<5.0				Explore potential mitigation
CYVL-VD-43	VICTOR 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.057	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-44	WESTLEY 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	5.541	5.607	5.673	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-45	WHEATLND 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	9.217	9.12	9.023	<5.0	<5.0				Sierra Action Plan
CYVL-VD-46	WINERY J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.124	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-47	WLLW SLJ 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.791	8.61	8.429	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-48	WODBRG J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	8.094	<5.0	<5.0	0.526	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-49	WOODJCT 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	8.791	8.61	8.429	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-50	WSID 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	5.539	5.605	5.671	<5.0	<5.0				Action Plan

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
CYVL-VD-51	WSID TAP 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	5.539	5.605	5.671	<5.0	<5.0				Action Plan
CYVL-VD-52	ALLEGHNY 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	5.776	9.609	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-53	BEALE_1 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	8.786	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-54	BEALE_2 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	6.98	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-55	BRWNS VY 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	8.784	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-56	CAMPUS 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	<5.0	<5.0	5.086	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-57	CLMBA HL 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	5.747	9.573	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-58	CLNY JCT 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.13	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-59	CMP FRWT 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	4.404	8.759	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-60	COLGATE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	5.733	9.556	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-61	COLONY 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	0.543	<5.0	8.097	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-62	DOBBINS 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	5.744	9.569	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-63	DST1001A 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.623	<5.0				Sacramento Action Plan
CYVL-VD-64	DST1001B 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.607	<5.0				Sacramento Action Plan
CYVL-VD-65	E.MRYSVE 115 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	7.062	<5.0				Sierra Action Plan
CYVL-VD-66	E.NICOLS 115 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	11.388	<5.0				Sierra Action Plan
CYVL-VD-67	ENVRO_HY 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	<5.0	<5.0	<5.0	6.537	<5.0				Sierra Action Plan
CYVL-VD-68	FORST HL 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	<5.0	<5.0	5.88	5.805	<5.0				Sierra Action Plan
CYVL-VD-69	GRSS VLY 60 kV	P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P1	N-1	<5.0	<5.0	<5.0	6.043	<5.0				Sierra Action Plan
CYVL-VD-70	GUSTINE 60 kV	P1-2:A12:19:_S539SS-Newman #1 60 kV Line	P1	N-1	<5.0	<5.0	<5.0	7.047	<5.0				Action Plan
CYVL-VD-71	HNYLNJCT 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	7.633	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-72	INDUSTRL 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.101	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-73	JAMESN-A 115 kV	P1-2:A4:38:_Vaca - Suisun 115 kV Line	P1	N-1	<5.0	<5.0	5.784	5.882	<5.0				Sacramento Action Plan
CYVL-VD-74	KNGHTSLJ 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.63	<5.0				Sacramento Action Plan
CYVL-VD-75	KNTJALT 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.609	<5.0				Sacramento Action Plan

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
CYVL-VD-78	MANTECA 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	<5.0	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-79	MCLANE 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	7.767	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-80	NW HPE J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.182	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-81	OXBOW 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	<5.0	<5.0	6.805	6.721	<5.0				Sierra Action Plan
CYVL-VD-82	POST 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	<5.0	<5.0	7.542	5.114	<5.0				Sacramento Action Plan
CYVL-VD-83	RIPON 115 kV	P1-2:A11:46:_Ripon - Manteca 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	6.25	<5.0				Action Plan
CYVL-VD-84	ROLLINS 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P1	N-1	<5.0	<5.0	5.272	5.205	<5.0				Sierra Action Plan
CYVL-VD-85	SMRTSVLE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P1	N-1	<5.0	8.753	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-86	SUMMIT 60 kV	P1-2:A35:20B:_Spaulding - Summit 60 kV Line	P1	N-1	5.042	5.036	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-87	TUDOR 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.747	<5.0				Sierra Action Plan
CYVL-VD-88	UCD_TP2 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	<5.0	<5.0	5.069	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-89	UCDAVSJ1 115 kV	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P1	N-1	<5.0	<5.0	5.069	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-90	VICTOR 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.057	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-91	WEST PNT 60 kV	P1-1:A11:21:_WEST PNT 11.50 Generator ID 1	P1	N-1	<5.0	<5.0	7.239	<5.0	<5.0				Explore potential mitigation
CYVL-VD-92	WESTLEY 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P1	N-1	<5.0	<5.0	<5.0	5.607	<5.0				Explore potential mitigation
CYVL-VD-93	WHEATLND 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	9.12	<5.0				Sierra Action Plan
CYVL-VD-94	WHTLND1 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	9.118	<5.0				Sierra Action Plan
CYVL-VD-95	WHTLNDAL 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.602	<5.0				Sierra Action Plan
CYVL-VD-96	WINERY J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.124	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-97	WLLW SLJ 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.61	<5.0				Sacramento Action Plan
CYVL-VD-98	WODBRG J 60 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	<5.0	<5.0	8.094	<5.0	<5.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-99	WOODJCT 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line	P1	N-1	<5.0	<5.0	<5.0	8.61	<5.0				Sacramento Action Plan
CYVL-VD-100	AEC_300 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	5.388	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-101	APPLE HL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	7.73				Sierra Action Plan
CYVL-VD-102	ARBALT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.238	9.07	11.357	<5.0	<5.0				Sacramento Action Plan

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
CYVL-VD-103	ARBUCKLE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.463	9.439	11.896	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-104	ATLANTC 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	14.13	13.678	<5.0	<5.0				Sierra Action Plan
CYVL-VD-105	ATLANTI 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.291	15.571	15.08	<5.0	<5.0				Sierra Action Plan
CYVL-VD-106	ATLANTIC 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	17.512	17.133	<5.0	<5.0				Sierra Action Plan
CYVL-VD-107	AUBURN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-108	AVENA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	8.481	NConv	27.328	NConv				Explore potential mitigation
CYVL-VD-109	BANTA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.828	NConv				Explore potential mitigation
CYVL-VD-110	BARRY 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	7.058	9.372	9.245	<5.0	<5.0				Explore potential mitigation
CYVL-VD-111	BEALE_1 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	19.822				Sierra Action Plan
CYVL-VD-112	BEALE_2 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	16.027				Sierra Action Plan
CYVL-VD-113	BEARDSLY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.052	NConv				Explore potential mitigation
CYVL-VD-114	BELL PGE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-115	BELLOTA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-116	BIGGS 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	5.272	6.853	7.295	<5.0	<5.0				Explore potential mitigation
CYVL-VD-117	BLLTAJCT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	76.529	75.662	75.311	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-118	BNTA CRB 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	27.412	NConv				Explore potential mitigation
CYVL-VD-119	BOGUE 115 kV	P2-3:A5:9:_NON-BUS-TIE BREAKER CB152 FAILURE AT BOGUE 115 kV	P2	Non Bus-tie breaker	6.587	6.402	7.101	<5.0	<5.0				Explore potential mitigation
CYVL-VD-120	BONNIE N 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	23.72	11.074	10.727	<5.0	<5.0				Sierra Action Plan
CYVL-VD-121	BRDSLY J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.052	43.016				Explore potential mitigation
CYVL-VD-122	BRIGHTON 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	7.932	7.09	<5.0	<5.0				Explore potential mitigation
CYVL-VD-123	BRKR SLG 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	22.651	10.165	2.325	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-124	BRNSWALT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	20.387	11.317	11.038	<5.0	<5.0				Sierra Action Plan
CYVL-VD-125	BRNSWKTP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	20.31	11.278	11.001	<5.0	<5.0				Sierra Action Plan
CYVL-VD-126	BRUNSWCK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	21.118	11.88	11.595	<5.0	<5.0				Sierra Action Plan

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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
CYVL-VD-127	BRWNS VY 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	19.816				Explore potential mitigation
CYVL-VD-128	CACHE J1 115 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	9.356	10.831	11.908	<5.0	5.349				Explore potential mitigation
CYVL-VD-129	CACHE J2 115 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	<5.0	<5.0	5.521	<5.0	<5.0				Explore potential mitigation
CYVL-VD-130	CALPELLA 115 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.902	6.938	9.012	<5.0	<5.0				Explore potential mitigation
CYVL-VD-131	CALVO 60 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.793	75.966				Explore potential mitigation
CYVL-VD-132	CAMANCHE 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-133	CAMPUS 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	21.412	9.427	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-134	CAPEHORN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.017	11.191	10.846	1.389	1.198				Sierra Action Plan
CYVL-VD-135	CARBONA 60 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.997	76.181				Explore potential mitigation
CYVL-VD-136	CATARACT 115 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	19.131	51.453				Explore potential mitigation
CYVL-VD-137	CATLETT 60 kV	P2-3:A5:17_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.968	9.271	9.171	<5.0	<5.0				Explore potential mitigation
CYVL-VD-138	CDCRSTN 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-139	CH.STN 115 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.181	NConv				Explore potential mitigation
CYVL-VD-140	CHCGO PK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	26.178	26.018	<5.0	<5.0				Sierra Action Plan
CYVL-VD-141	CISCO GR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	20.459	9.383	9.16	<5.0	<5.0				Sierra Action Plan
CYVL-VD-142	CISCOTAP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	20.465	9.385	9.162	<5.0	<5.0				Sierra Action Plan
CYVL-VD-143	CITY UKH 115 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.35	6.305	8.13	<5.0	<5.0				Explore potential mitigation
CYVL-VD-144	CL AMMNA 115 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	8.95	NConv	NConv	78.97				Explore potential mitigation
CYVL-VD-145	CLAY 60 kV	P2-4:A11:69_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	5.752	5.072	5.145	<5.0	<5.0				Action Plan
CYVL-VD-146	CLRKSULE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	5.069	8.247				Sierra Action Plan
CYVL-VD-147	CLRKSULT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	5.016	8.088				Sierra Action Plan
CYVL-VD-148	CLSA CRS 60 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.813	9.929	12.523	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-149	CMNCHETP 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	2.067	2.255				Action Plan. Long term mitigation SPS
CYVL-VD-150	CMP FRWT 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	5.179	19.753				Sierra Action Plan

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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
CYVL-VD-151	CNTRY CB 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	<5.0	11.677	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-152	COLFAXJT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	11.185	10.841	<5.0	<5.0				Sierra Action Plan
CYVL-VD-153	COLGATE 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	5.214	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-154	COLONY 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	12.143	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-155	CORT_D 115 kV	P2-3:A4:18:_NON-BUS-TIE BREAKER CB512 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	5.663	7.864	7.837	6.163	<5.0				Explore potential mitigation
CYVL-VD-156	CORT_D 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	18.234	21.025	22.924	6.513	9.587				Sacramento Action Plan
CYVL-VD-157	CPC STCN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-158	CPEHRNTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.001	11.184	10.839	<5.0	<5.0				Sierra Action Plan
CYVL-VD-159	CPM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	9.146	7.061	70.42	5.022	8.108				Explore potential mitigation
CYVL-VD-160	CPM TAP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	9.146	7.061	70.42	5.022	8.108				Explore potential mitigation
CYVL-VD-161	CRBNA JC 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.837	NConv				Explore potential mitigation
CYVL-VD-162	CRESTA 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	5.108	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-163	CROSRDJT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	8.949	NConv	31.345	NConv				Explore potential mitigation
CYVL-VD-164	CRWS LDG 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	14.619	NConv	25.327	NConv				Explore potential mitigation
CYVL-VD-165	CRWS LDJ 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	14.553	NConv	25.306	NConv				Explore potential mitigation
CYVL-VD-166	CURTISS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.017	NConv				Explore potential mitigation
CYVL-VD-167	DAVIS 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	21.38	9.415	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-168	DEEPWATR 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	24.092	11.041	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-169	DEL MAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.408	15.932	15.432	<5.0	<5.0				Sierra Action Plan
CYVL-VD-170	DELEVAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.665	9.702	12.224	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-171	DIMOND_1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	7.926				Sierra Action Plan
CYVL-VD-172	DIMOND_2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	7.897				Sierra Action Plan
CYVL-VD-173	DIST1001 60 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.872	9.127	8.405	<5.0	<5.0				Explore potential mitigation
CYVL-VD-174	DIST1500 60 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.893	9.154	8.426	<5.0	<5.0				Explore potential mitigation

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
CYVL-VD-175	DIST2047 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.474	9.419	11.807	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-176	DMND SPR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	7.897				Sierra Action Plan
CYVL-VD-177	DONNELLS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.053	NConv				Explore potential mitigation
CYVL-VD-178	DPWTR_TP 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	23.556	10.761	2.777	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-179	DRAKE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.543	9.561	12.052	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-180	DRUM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	27.994	15.257	15.085	<5.0	<5.0				Sierra Action Plan
CYVL-VD-181	DST1001A 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.906	9.163	9.034	<5.0	<5.0				Explore potential mitigation
CYVL-VD-182	DST1001B 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.893	9.146	9.02	<5.0	<5.0				Explore potential mitigation
CYVL-VD-183	DTCH FL1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	20.802	20.654	<5.0	<5.0				Sierra Action Plan
CYVL-VD-184	DTCH FL2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	13.64	13.429	<5.0	<5.0				Sierra Action Plan
CYVL-VD-185	DUNNIGAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.665	9.752	12.292	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-186	DUNNTAP 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.464	9.441	11.898	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-187	E.MRY J2 115 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	<5.0	7.31	10.033	<5.0	<5.0				Sierra Action Plan
CYVL-VD-188	E.MRYSVE 115 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	<5.0	7.312	10.036	<5.0	<5.0				Sierra Action Plan
CYVL-VD-189	E.NICOLS 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.886	9.136	9.011	<5.0	<5.0				Explore potential mitigation
CYVL-VD-190	E.NICOLS 115 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.297	11.813	15.817	<5.0	<5.0				Sierra Action Plan
CYVL-VD-191	EIGHT MI 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	13.08	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-192	ELDORAD 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	7.64				Sierra Action Plan
CYVL-VD-193	ELLS GTY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	11.703	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-194	ENCINAL 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	8.874	11.344	12.048	<5.0	<5.0				Sierra Action Plan
CYVL-VD-195	ENVRO_HY 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.245	11.284	10.943	<5.0	<5.0				Sierra Action Plan
CYVL-VD-196	FBERBORD 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.013	NConv				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
CYVL-VD-197	FLINT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	48.931	NConv	<5.0	5.299				Sierra Action Plan
CYVL-VD-198	FORST HL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.46	11.374	11.03	<5.0	<5.0				Sierra Action Plan
CYVL-VD-199	FRGTNTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	18.875	NConv				Explore potential mitigation
CYVL-VD-200	FRGTNTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	18.921	NConv				Explore potential mitigation
CYVL-VD-201	FRNCH MS 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	7.159	<5.0	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-202	FROGTOWN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	18.875	NConv				Explore potential mitigation
CYVL-VD-203	GOLD HLL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-204	GOLDHILL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	5.051	8.197				Sierra Action Plan
CYVL-VD-205	GOLDHILL 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	7.796	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-206	GRANITE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	15.492	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-207	GRIDLEY 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	6.405	8.279	8.806	<5.0	<5.0				Explore potential mitigation
CYVL-VD-208	GRONMYER 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-209	GUSTINE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	15.464	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-210	GWFRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	5.434	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-211	HALSEY 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-212	HAMMER 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	<5.0	11.213	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-213	HARINTON 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.518	9.523	12.003	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-214	HAYPRESS 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	20.513	7.924	7.456	<5.0	<5.0				Sierra Action Plan
CYVL-VD-215	HIGHLAND 115 kV	P2-3:A4:24:_NON-BUS-TIE BREAKER CB322 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.329	6.684	7.301	<5.0	<5.0				Explore potential mitigation
CYVL-VD-216	HIGHLNDJ2 115 kV	P2-3:A4:24:_NON-BUS-TIE BREAKER CB322 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.328	6.683	7.299	<5.0	<5.0				Explore potential mitigation
CYVL-VD-217	HIGGINS 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	67.21	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-218	HJ HEINZ 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	9.616	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-219	HMMR JCT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	<5.0	10.923	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-220	HNYLNJCT 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	16.602	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-221	HOMGRND 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	7.051	8.157	9.018	<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
CYVL-VD-222	HOMSTKTP 115 kV	P2-3:A4:20:_NON-BUS-TIE BREAKER CB532 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	<5.0	13.572	13.408	<5.0	9.63				Explore potential mitigation
CYVL-VD-223	HORSESHE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	6.988				Sierra Action Plan
CYVL-VD-224	HPLND JT 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	<5.0	<5.0	5.795	<5.0	<5.0				Explore potential mitigation
CYVL-VD-225	HUSTD 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.106	8.875	11.104	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-226	INDIN VL 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	14.318	16.624	18.663	5.317	7.852				Explore potential mitigation
CYVL-VD-227	INDSTR J 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	11.951	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-228	INDUSTR L 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.042	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-229	INE PRSN 60 kV	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	5.43	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-230	INE_TP 60 kV	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	5.371	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-231	INGRM C. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	12.081	NConv	28.857	NConv				Explore potential mitigation
CYVL-VD-232	JAMESN-A 115 kV	P2-3:A4:5:_NON-BUS-TIE BREAKER CB1422 FAILURE AT VACA-DIXON 115kV	P2	Non Bus-tie breaker	5.786	5.883	6.91	1.25	1.209				Explore potential mitigation
CYVL-VD-233	KASSON 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	3.01	NConv	26.823	NConv				Explore potential mitigation
CYVL-VD-234	KASSON 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	8.372	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-235	KNGHTSLJ 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.912	9.17	9.04	<5.0	<5.0				Explore potential mitigation
CYVL-VD-236	KNIGHT2 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	12.228	<5.0	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-237	KNIGHTLD 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	12.186	<5.0	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-238	KNTJALT 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	6.894	9.148	9.022	<5.0	<5.0				Explore potential mitigation
CYVL-VD-239	LAMMERS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	5.774	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-240	LCKFRDJA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-241	LEE_JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.817	NConv				Explore potential mitigation
CYVL-VD-242	LEPRINO 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	9.768	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-243	LID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.702	NConv				Explore potential mitigation
CYVL-VD-244	LIMESTNE 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-245	LINCLN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.322	10.989	10.556	<5.0	<5.0				Sierra Action Plan

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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
CYVL-VD-246	LIVE OAK 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	8.399	10.758	11.43	<5.0	<5.0				Sierra Action Plan
CYVL-VD-247	LOCKEFRD 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	9.865	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-248	LOCKFORD 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	NConv	NConv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-249	LOCKFORD 230 kV	P2-4:A11:17:_30500 Bellota 230 kV Bus CB822 Internal Breaker Fault (2D and 2E)	P2	Bus-tie breaker	12.277	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-250	LOCKFRD1 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	9.865	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-251	LODI 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.062	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-252	LODI 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus-tie breaker	12.864	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-253	LODI JCT 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.032	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-254	LOUISE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.687	NConv				Explore potential mitigation
CYVL-VD-255	LOUISJCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.674	NConv				Explore potential mitigation
CYVL-VD-256	LOWR LKE 60 kV	P2-3:A4:20:_NON-BUS-TIE BREAKER CB532 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	0.331	5.154	5.102	<5.0	<5.0				Explore potential mitigation
CYVL-VD-257	LTHRP JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.653	NConv				Explore potential mitigation
CYVL-VD-258	LUCERNE 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	10.963	12.808	14.963	<5.0	6.292				Explore potential mitigation
CYVL-VD-259	LYOTH-SP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.837	NConv				Explore potential mitigation
CYVL-VD-260	MANTECA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	26.653	NConv				Explore potential mitigation
CYVL-VD-261	MANTECA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	9.608	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-262	MAXWELL 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.666	9.703	12.226	<5.0	<5.0				Explore potential mitigation
CYVL-VD-263	MCLANE 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	11.922	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-264	MCSP 60 kV	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	5.428	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-265	MCSPJT 60 kV	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	5.428	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-266	MDSTO CN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	15.254	NConv	27.402	NConv				Explore potential mitigation
CYVL-VD-267	MEDLIN J 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	14.118	NConv	24.415	NConv				Explore potential mitigation
CYVL-VD-268	MELNS JA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	18.583	NConv				Sierra Action Plan
CYVL-VD-269	MELNS JB 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	18.701	NConv				Explore potential mitigation
CYVL-VD-270	MELONES 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.581	42.58				Explore potential mitigation

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
CYVL-VD-271	METTLER 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	8.764	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-272	MIDDLTWN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	<5.0	<5.0	5.329	<5.0	<5.0				Explore potential mitigation
CYVL-VD-273	MIDDLTWN 115 kV	P2-3:A4:20:_NON-BUS-TIE BREAKER CB532 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	12.582	12.44	12.298	7.462	9.468				Explore potential mitigation
CYVL-VD-274	MIDLFORK 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	7.606	<5.0	<5.0	<5.0	<5.0				Sierra Action Plan
CYVL-VD-275	MILER TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.591	Nconv	27.243	82.861				Explore potential mitigation
CYVL-VD-276	MI-WUK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	NConv	15.036	NConv				Explore potential mitigation
CYVL-VD-277	MIZOU_T1 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	14.306	8.987	8.326	<5.0	<5.0				Sierra Action Plan
CYVL-VD-278	MIZOU_T1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	4.949	7.885				Sierra Action Plan
CYVL-VD-279	MNTCA JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	4.059	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-280	MONDAVI 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.071	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-281	MORADAJT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	79.35	<5.0	<5.0	10.494	<5.0				Short term: Action Plan
CYVL-VD-282	MSHR 60V 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	7.845	<5.0				Short term: Action Plan
CYVL-VD-283	MSSDLESW 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	26.689	Nconv				Explore potential mitigation
CYVL-VD-284	MTN_QJCT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-285	MTN_QUAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-286	NARRWS 2 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	5.198	19.761				Sierra Action Plan
CYVL-VD-287	NEWCSTLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	5.839				Sierra Action Plan
CYVL-VD-288	NEWMAN 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	15.017	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-289	NRRWS1TP 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	5.213	19.773				Explore potential mitigation
CYVL-VD-290	NRRWS2TP 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	5.193	19.751				Sierra Action Plan
CYVL-VD-291	NW HPE J 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.121	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-292	NWMN JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.94	Nconv	24.228	Nconv				Explore potential mitigation
CYVL-VD-293	OI GLASS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	5.819	Nconv	32.55	Nconv				Explore potential mitigation
CYVL-VD-294	OLETA 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Explore potential mitigation
CYVL-VD-295	OLIVHRST 115 kV	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	6.115	5.341	5.948	<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
CYVL-VD-296	OWENSTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.816	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-297	OWENSTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.645	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-298	OXBOW 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.19	11.261	10.921	<5.0	<5.0				Sierra Action Plan
CYVL-VD-299	PATTERSN 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.329	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-300	PEACHTON 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	6.022	7.799	8.297	<5.0	<5.0				Explore potential mitigation
CYVL-VD-301	PENRYN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-302	PEORIA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	2.673	Nconv	15.284	42.457				Explore potential mitigation
CYVL-VD-303	PLACER 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Sierra Action Plan
CYVL-VD-304	PLACER 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	5.043				Sierra Action Plan
CYVL-VD-305	PLSNT GR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.106	15.847	15.447	<5.0	<5.0				Sierra Action Plan
CYVL-VD-306	PLUMAS 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	7.125	9.556	9.548	<5.0	<5.0				Sierra Action Plan
CYVL-VD-307	POST 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	23.558	10.762	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-308	Q539 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	13.853	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-309	Q539SS 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	13.853	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-310	R.TRACK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	15.589	Nconv				Explore potential mitigation
CYVL-VD-311	RCTRK J. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	15.118	Nconv				Explore potential mitigation
CYVL-VD-312	REDBUD 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	<5.0	<5.0	5.885	<5.0	<5.0				Explore potential mitigation
CYVL-VD-313	RIO OSO 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	5.877	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-314	RIO OSO 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	<5.0	10.433	9.961	<5.0	<5.0				Sierra Action Plan
CYVL-VD-315	RIPON 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	9.117	NConv	28.467	NConv				Explore potential mitigation
CYVL-VD-316	RIVRBKJT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	7.866	NConv	24.957	NConv				Explore potential mitigation
CYVL-VD-317	ROCKLIN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.317	15.653	15.163	<5.0	<5.0				Sierra Action Plan
CYVL-VD-318	ROLLNSTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	23.893	11.138	10.797	<5.0	<5.0				Sierra Action Plan
CYVL-VD-319	RPN JNCN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	9.136	Nconv	29.277	74.02				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
CYVL-VD-320	RPNJN2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	21.196	17.053	17.294	<5.0	<5.0				Explore potential mitigation
CYVL-VD-321	RVRBANK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	<5.0	<5.0	NConv	<5.0	7.836				Explore potential mitigation
CYVL-VD-322	SAFEWAY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.455	Nconv	32.76	Nconv				Explore potential mitigation
CYVL-VD-323	SALADO 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.057	Nconv	26.131	Nconv				Explore potential mitigation
CYVL-VD-324	SALADO 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.206	Nconv	27.049	Nconv				Explore potential mitigation
CYVL-VD-325	SALADO J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	13.856	Nconv	27.337	Nconv				Explore potential mitigation
CYVL-VD-326	SALDO TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	14.529	Nconv	27.124	Nconv				Explore potential mitigation
CYVL-VD-327	SANDBAR 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	15.051	Nconv				Explore potential mitigation
CYVL-VD-328	SCHULTE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.505	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-329	SEBASTIA 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus-tie breaker	10.562	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-330	SFWY_TP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.455	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-331	SFWY_TP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	5.457	Nconv	Nconv	Nconv				Explore potential mitigation
CYVL-VD-332	SHADYGLN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.002	11.184	10.84	<5.0	<5.0				Sierra Action Plan
CYVL-VD-333	SHPRING 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	8.013				Sierra Action Plan
CYVL-VD-334	SHW 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	12.214	<5.0				Short term: Action Plan
CYVL-VD-335	SHWSS 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	12.214	<5.0				Short term: Action Plan
CYVL-VD-336	SIERRAPI 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.408	15.932	15.433	<5.0	<5.0				Sierra Action Plan
CYVL-VD-337	SJ COGEN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	<5.0	9.07	Nconv	<5.0	Nconv				Explore potential mitigation
CYVL-VD-338	SMRTSVLE 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus-tie breaker	<5.0	<5.0	<5.0	5.176	19.739				Sierra Action Plan
CYVL-VD-339	SNDBR JT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	15.051	Nconv				Explore potential mitigation
CYVL-VD-340	SP CMPNY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	<5.0	8.315	Nconv	<5.0	Nconv				Explore potential mitigation
CYVL-VD-341	SPC JCT. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	<5.0	9.112	Nconv	<5.0	79.6				Explore potential mitigation
CYVL-VD-342	SPI JCT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.337	10.578	10.143	<5.0	<5.0				Explore potential mitigation
CYVL-VD-343	SPICAMIN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	7.729				Sierra Action Plan
CYVL-VD-344	SPRNG GJ 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	Nconv	Nconv	Nconv	1.052	1.769				Action Plan. Long term mitigation 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
CYVL-VD-345	STAGG 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	11.97	<5.0				Short term: Action Plan
CYVL-VD-346	STAGG 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus-tie breaker	13.748	<5.0	<5.0	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-347	STAGG JT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	NConv	<5.0	<5.0	11.973	<5.0				Short term: Action Plan
CYVL-VD-348	STANISLS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	19.217	Nconv				Action Plan. Long term mitigation SPS
CYVL-VD-349	STCKTNJB 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-350	STKTON A 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-351	STN COGN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	Nconv	Nconv	Nconv	<5.0	<5.0				Action Plan. Long term mitigation SPS
CYVL-VD-352	STNSLSRP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	13.707	Nconv	24.634	Nconv				Explore potential mitigation
CYVL-VD-353	SUISUN 115 kV	P2-3:A4:5:_NON-BUS-TIE BREAKER CB1422 FAILURE AT VACA-DIXON 115kV	P2	Bus-tie breaker	6.099	6.202	7.293	<5.0	<5.0				Explore potential mitigation
CYVL-VD-354	SUMMIT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	Nconv	9.545	9.434	<5.0	<5.0				Explore potential mitigation
CYVL-VD-355	TAYLOR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.309	15.629	15.138	<5.0	<5.0				Sierra Action Plan
CYVL-VD-356	TCHRT_T1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	15.462	Nconv	27.478	Nconv				Explore potential mitigation
CYVL-VD-357	TCHRT_T2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	12.569	Nconv	29.063	Nconv				Explore potential mitigation
CYVL-VD-358	TEICHERT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	15.498	Nconv	27.511	Nconv				Explore potential mitigation
CYVL-VD-359	TERMNOUS 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	12.141	<5.0				Explore potential mitigation
CYVL-VD-360	TERMNS J 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	84.749	<5.0	<5.0	12.126	<5.0				Explore potential mitigation
CYVL-VD-361	TH.E.DV. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	<5.0	9.765	NConv	<5.0	NConv				Explore potential mitigation
CYVL-VD-362	TRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	9.676	NConv	NConv	NConv				Explore potential mitigation
CYVL-VD-363	TUDOR 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Bus-tie breaker	7.002	9.295	9.168	<5.0	<5.0				Explore potential mitigation
CYVL-VD-364	TULLOCH 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	1.538	Nconv	11.722	NConv				Explore potential mitigation
CYVL-VD-365	UCD_TP2 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	21.392	9.422	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-366	UCDAVSJ1 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	21.392	9.422	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-367	UKIAH 115 kV	P2-3:A4:24:_NON-BUS-TIE BREAKER CB322 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	<5.0	<5.0	5.505	<5.0	<5.0				Explore potential mitigation
CYVL-VD-368	ULTRA JT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.142	14.914	14.504	<5.0	<5.0				Sierra Action Plan

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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
CYVL-VD-369	ULTR-RCK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	5.129	14.868	14.452	<5.0	<5.0				Sierra Action Plan
CYVL-VD-370	UOP 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	11.627	<5.0				Short term: Action Plan
CYVL-VD-371	VALLY HM 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	8.149	Nconv	25.612	Nconv				Explore potential mitigation
CYVL-VD-372	VICTOR 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	9.944	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-373	VIERRA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	9.057	Nconv	NConv	Nconv				Explore potential mitigation
CYVL-VD-374	VLYHMTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	8.148	Nconv	25.612	Nconv				Explore potential mitigation
CYVL-VD-375	VLYHMTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	8.399	Nconv	27.237	Nconv				Explore potential mitigation
CYVL-VD-376	W.SCRMNO 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	23.789	10.901	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-377	WADHMJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.911	8.343	10.629	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-378	WATRLJCT 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	41.833	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan Long term mitigation is Stagg-Hammer 60 kV Line
CYVL-VD-379	WDLND_BM 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	16.747	6.784	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-380	WEMR SWS 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.162	11.25	10.904	<5.0	<5.0				Sierra Action Plan
CYVL-VD-381	WESCOT1 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.097	8.628	11.046	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-382	WESCOT2 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.937	8.38	10.683	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-383	WEST JCT 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	5.179	19.751				Sierra Action Plan
CYVL-VD-384	WESTLEY 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	4.315	Nconv	28.137	Nconv				Sacramento Action Plan
CYVL-VD-385	WHEATLND 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	7.233	9.692	9.666	<5.0	<5.0				Explore potential mitigation
CYVL-VD-386	WHTLND1 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	7.232	9.691	9.664	<5.0	<5.0				Explore potential mitigation
CYVL-VD-387	WHTLNDAL 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	0.027	9.14	9.015	<5.0	<5.0				Explore potential mitigation
CYVL-VD-388	WILKINS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.472	9.416	11.803	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-389	WILL JCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.351	9.241	11.599	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-390	WILLIAMS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	5.975	8.435	10.754	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-391	WILSONAV 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.84	9.972	12.579	<5.0	<5.0				Sacramento Action Plan



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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
CYVL-VD-392	WINERY J 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	10.063	<5.0	<5.0	<5.0	<5.0				Short term: Action Plan
CYVL-VD-393	WLKSLJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	6.452	9.386	11.765	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-394	WOODLD 115 kV	P2-2:A4:8:_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	15.91	6.302	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-395	WSID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	28.136	Nconv				Explore potential mitigation
CYVL-VD-396	WSID TAP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	Nconv	28.135	Nconv				Explore potential mitigation
CYVL-VD-397	WSTLNSW 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	Nconv	<5.0	<5.0	11.27	<5.0				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-VD-398	YUBAGOLD 60 kV	P2-2:A5:17:_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	<5.0	<5.0	<5.0	<5.0	19.814				Sierra Action Plan
CYVL-VD-399	ZAMORA 115 kV	P2-2:A4:8:_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	12.648	<5.0	<5.0	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-400	APLHTAP2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	20.402	16.645	15.886	<5.0	<5.0				Sierra Action Plan
CYVL-VD-401	APPLE HL 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	14.729	11.624	11.024	<5.0	<5.0				Sierra Action Plan
CYVL-VD-402	ARBALT 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	12.765	13.348	13.931	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-403	ARBJCT 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	12.135	12.695	13.255	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-404	ARBUCKLE 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	9.943	10.274	10.605	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-405	BEALE_2 60 kV	P2-1:A5:91:_SMRTSVLE-BEALE2J1 #1 60 kV	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	6.785				Explore potential mitigation
CYVL-VD-406	BEALE1J2 60 kV	P2-1:A5:91:_SMRTSVLE-BEALE2J1 #1 60 kV	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	6.776				Explore potential mitigation
CYVL-VD-407	BEALE2J1 60 kV	P2-1:A5:91:_SMRTSVLE-BEALE2J1 #1 60 kV	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	6.784				Explore potential mitigation
CYVL-VD-408	BIGGS 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	5.114	6.7	7.103	<5.0	<5.0				Explore potential mitigation
CYVL-VD-409	BRNSWCKP 115 kV	P2-1:A5:36:_DRUM-BRNSWCKP #2 115 kV	P2-1	Line section w/o fault	6.063	<5.0	<5.0	<5.0	2.682				Explore potential mitigation
CYVL-VD-410	CACHSLJ1 60 kV	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	5.685	5.774	<5.0	<5.0	2.662				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
CYVL-VD-411	CALVO 60 kV	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	NConv				Explore potential mitigation
CYVL-VD-412	CAMPUS 115 kV	P2-1:A4:35:_DPWT_TP2-BRIGHTN #1 115 kV	P2-1	Line section w/o fault	5.033	<5.0	<5.0	<5.0	0.628				Explore potential mitigation
CYVL-VD-413	CHCGO PK 115 kV	P2-1:A5:37:_DTCH FL1-CHCGO PK #1 115 kV	P2-1	Line section w/o fault	6.619	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-414	CLAY 60 kV	P2-1:A11:107:_CLAY-BUENA_TP #1 60 kV	P2-1	Line section w/o fault	6.116	5.669	5.669	<5.0	<5.0				Explore potential mitigation
CYVL-VD-415	DEEPWATR 115 kV	P2-1:A4:35:_DPWT_TP2-BRIGHTN #1 115 kV	P2-1	Line section w/o fault	7.844	5.171	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-416	DIMOND_2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	23.357	19.403	18.588	<5.0	<5.0				Sierra Action Plan
CYVL-VD-417	DIST2047 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	12.628	13.158	14.01	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-418	DMND SPR 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	23.363	19.407	18.593	<5.0	<5.0				Sierra Action Plan
CYVL-VD-419	DRAKE 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	10.071	10.398	10.99	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-420	DUNNIGAN 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	10.267	10.577	11.207	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-421	DUNNTAP 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	9.945	10.276	10.851	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-422	ELDORAD 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	17.071	13.602	12.928	<5.0	<5.0				Sierra Action Plan
CYVL-VD-423	ENCINAL 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	8.891	11.365	12.039	<5.0	<5.0				Sierra Action Plan
CYVL-VD-424	ENVRO_HY 60 kV	P2-1:A5:127:_ENVRO_HY-OXBOW #1 60 kV	P2-1	Line section w/o fault	6.636	6.557	6.573	<5.0	<5.0				Explore potential mitigation
CYVL-VD-425	FORST HL 60 kV	P2-1:A5:127:_ENVRO_HY-OXBOW #1 60 kV	P2-1	Line section w/o fault	5.893	5.822	5.837	<5.0	1.937				Explore potential mitigation
CYVL-VD-426	GRIDLEY 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	6.217	8.095	8.583	<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
CYVL-VD-427	GRONMYER 60 kV	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00	P2-1	Line section w/o fault	<5.0	<5.0	5.418	<5.0	NConv				Explore potential mitigation
CYVL-VD-428	HARINTON 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	10.031	10.359	10.687	<5.0	<5.0				Sacramento Action Plan
CYVL-VD-429	JAMESN-A 115 kV	P2-1:A4:60:_WEC-SUISUN #1 115 kV	P2-1	Line section w/o fault	5.799	5.897	5.995	<5.0	<5.0				Explore potential mitigation
CYVL-VD-430	MEDLIN J 60 kV	P2-1:A12:50:_Q539SS-MEDLIN J #1 60 kV	P2-1	Line section w/o fault	<5.0	5.823	6.826	<5.0	<5.0				Explore potential mitigation
CYVL-VD-431	MIZOU_T2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	22.934	18.995	18.186	<5.0	<5.0				Sierra Action Plan
CYVL-VD-432	MNTCA JT 60 kV	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	NConv				Explore potential mitigation
CYVL-VD-433	MSSDLESW 60 kV	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	NConv				Explore potential mitigation
CYVL-VD-434	OLIVHRST 115 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	5.089	<5.0	<5.0				Explore potential mitigation
CYVL-VD-435	PATTERSN 60 kV	P2-1:A12:43:_SALADO-PATTERSN #1 60 kV	P2-1	Line section w/o fault	6.278	7.102	7.926	<5.0	<5.0				Explore potential mitigation
CYVL-VD-436	PEACHTON 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	5.844	7.625	8.085	<5.0	<5.0				Explore potential mitigation
CYVL-VD-437	PLCRVLB2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	22.498	18.577	17.773	<5.0	<5.0				Sierra Action Plan
CYVL-VD-438	PLCRVLB3 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	22.501	18.58	17.775	<5.0	<5.0				Sierra Action Plan
CYVL-VD-439	PLCRVLT1 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	10.921	8.426	7.955	<5.0	<5.0				Sierra Action Plan
CYVL-VD-440	PLCRVLT2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	22.493	18.574	17.77	<5.0	<5.0				Sierra Action Plan
CYVL-VD-441	POST 115 kV	P2-1:A4:38:_DPWTR_TP-W.SCRMNO #1 115 kV	P2-1	Line section w/o fault	6.161	5.838	5.515	<5.0	<5.0				Explore potential mitigation
CYVL-VD-442	ROLLNSTP 60 kV	P2-1:A5:131:_ROLLINS-ROLLNSTP #1 60 kV	P2-1	Line section w/o fault	5.038	<5.0	<5.0	<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
CYVL-VD-443	SCHMLBCH 115 kV	P2-1:A4:60:_WEC-SUISUN #1 115 kV	P2-1	Line section w/o fault	5.798	5.896	5.994	<5.0	<5.0				Explore potential mitigation
CYVL-VD-444	SPICAMIN 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	14.727	11.622	11.022	<5.0	<5.0				Sierra Action Plan
CYVL-VD-445	SUMMIT 60 kV	P2-1:A35:10B:_SUMMIT 3-SUMMIT #1 60 kV	P2-1	Line section w/o fault	<5.0	<5.0	2.283	5.042	5.036				Explore potential mitigation
CYVL-VD-446	TRAVIS 60 kV	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	6.536	6.627	6.718	<5.0	<5.0				Explore potential mitigation
CYVL-VD-447	TRVS_HPT 60 kV	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	6.512	6.603	6.694	<5.0	<5.0				Explore potential mitigation
CYVL-VD-448	UCD_TP2 115 kV	P2-1:A4:35:_DPWT_TP2-BRIGHTN #1 115 kV	P2-1	Line section w/o fault	5.016	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-449	UCDAVSJ1 115 kV	P2-1:A4:35:_DPWT_TP2-BRIGHTN #1 115 kV	P2-1	Line section w/o fault	5.016	<5.0	<5.0	<5.0	<5.0				Explore potential mitigation
CYVL-VD-450	VACA-JT1 60 kV	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	6.214	6.307	6.4	<5.0	<5.0				Explore potential mitigation
CYVL-VD-451	VALLY HM 115 kV	P2-1:A11:35:_RPN JNCN-RIPON #1 115 kV	P2-1	Line section w/o fault	<5.0	8.149	5.147	<5.0	NConv				Explore potential mitigation
CYVL-VD-452	ALMENDRA 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-453	COLONY 60 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	10.022	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-454	DEEPWATR 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	12.085	<10.0	<10.0	<10.0	<10.0				Sacramento Action Plan
CYVL-VD-455	E.MRY J2 115 kV	P7-1:A5:12_Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	<10.0	<10.0	10.228	<10.0	<10.0				Sierra Action Plan
CYVL-VD-456	E.NICOLS 115 kV	P7-1:A5:12_Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	<10.0	11.887	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-457	EIGHT MI 230 kV	P7-1:A12:1:_Stagg-Tesla 230 kV Line & Eight Mile Road-Tesla 230 kV Line	P7	DCTL	10.658	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-458	ENCINAL 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-459	GLEAF2 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-460	HARTER 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-461	LIVE OAK 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-462	LOCKFORD 230 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	13.873	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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
CYVL-VD-463	LODI 60 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	10.086	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-464	LODI 230 kV	P7-1:A12:1:_Stagg-Tesla 230 kV Line & Eight Mile Road-Tesla 230 kV Line	P7	DCTL	10.44	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-465	MONDAVI 60 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	10.096	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-466	MRYSVLE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-467	PEASE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan
CYVL-VD-468	PEASE 115 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	10.397	<10.0				Sierra Action Plan
CYVL-VD-469	POST 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	11.806	<10.0	<10.0	<10.0	<10.0				Sacramento Action Plan
CYVL-VD-470	STAGG 230 kV	P7-1:A12:1:_Stagg-Tesla 230 kV Line & Eight Mile Road-Tesla 230 kV Line	P7	DCTL	11.353	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-471	W.SCRMNO 115 kV	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line	P7	DCTL	11.816	<10.0	<10.0	<10.0	<10.0				Sacramento Action Plan
CYVL-VD-472	WINERY J 60 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	10.088	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-473	WODBRG J 60 kV	P7-1:A12:11:_Lockeford-Bellota 230 kV Line & Brighton-Bellota 230 kV Line	P7	DCTL	10.045	<10.0	<10.0	<10.0	<10.0				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-VD-474	YBA CTYJ 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	Nconv	<10.0	<10.0	<10.0	<10.0				Sierra Action Plan

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
CYVL-V-1	APPLE HL 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1171				Explore potential mitigation
CYVL-V-2	CACHSLJ1 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.077	1.106				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-3	CACHSLJ2 60 kV	P1-2:A4:51:_Dixon - Vaca 60 kV Line No. 1	P1	N-1	<1.1	<1.1	<1.1	1.069	1.1029				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-4	CACHSTAP 60 kV	P1-2:A4:51:_Dixon - Vaca 60 kV Line No. 1	P1	N-1	<1.1	<1.1	<1.1	1.069	1.1029				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-5	CACHSTAP 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0791	1.1089				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-6	CLRKSVLE 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0791	1.1148				Explore potential mitigation
CYVL-V-7	CLRKSVLT 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0791	1.1202				Explore potential mitigation
CYVL-V-8	CORDELIA 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	<1.1	1.1092				Explore potential mitigation
CYVL-V-9	CPM 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0791	1.1202				Explore potential mitigation
CYVL-V-10	CPM TAP 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.077	1.1202				Explore potential mitigation
CYVL-V-11	DEL MAR 60 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.069	1.114				Explore potential mitigation
CYVL-V-12	DIMOND_1 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0763	1.1196				Explore potential mitigation
CYVL-V-13	DIMOND_2 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.077	1.1176				Explore potential mitigation
CYVL-V-14	DIXONCAN 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0749	1.1049				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-15	DIXON-J2 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0759	1.1062				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-16	DIXONPGE 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0759	1.1062				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-17	DMND SPR 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0798	1.1176				Explore potential mitigation
CYVL-V-18	ELDORAD 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0796	1.1169				Explore potential mitigation
CYVL-V-19	FLINT 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0824	1.1027				Explore potential mitigation
CYVL-V-20	GOLDHILL 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0796	1.1204				Explore potential mitigation
CYVL-V-21	HALE 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0765	1.1069				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-22	HORSESHE 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0765	1.1124				Explore potential mitigation
CYVL-V-23	HORSHE1 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0738	1.1124				Explore potential mitigation
CYVL-V-24	HORSHE2 115 kV	P1-4:A3:2:_RIO OSO 230.00 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0752	1.1129				Explore potential mitigation
CYVL-V-25	JAMESN-A 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0718	1.1013				Explore potential mitigation
CYVL-V-26	JAMESON 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0737	1.1053				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-27	JMSN JCT 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0747	1.1059				Explore potential mitigation
CYVL-V-28	LOCKFORD 230 kV	P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P1	N-1	0.8484	>0.9	>0.9	>0.9	1.0469				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-29	MADISON 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0786	1.11				Explore potential mitigation
CYVL-V-30	MAINE-PR 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0791	1.1089				Explore potential mitigation

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
CYVL-V-31	PLAINFLD 60 kV	P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P1	N-1	0.8603	0.863	>0.9	1.0268	1.0842				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-32	SCHMLBCH 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	>0.9	>0.9	>0.9	1.0718	1.1012				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-33	SUISUN 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	>0.9	>0.9	>0.9	1.0716	1.1014				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-34	TABLE MT 500 kV	P1-4:A4:7:_VC DX12T 13.80 SVD ID v	P1	N-1	>0.9	>0.9	>0.9	1.0825	1.1037				Explore potential mitigation
CYVL-V-35	TRAVISJT 60 kV	P1-2:A4:51:_Dixon - Vaca 60 kV Line No. 1	P1	N-1	>0.9	>0.9	>0.9	1.0706	1.1036				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-36	VACA-DIX 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0835	1.1122				Explore potential mitigation
CYVL-V-37	VACA-DXN 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0831	1.1123				Explore potential mitigation
CYVL-V-38	VACA-JT2 60 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0802	1.1099				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-39	WEC 115 kV	P1-4:A4:6:_VC DX11T 13.80 SVD ID v	P1	N-1	<1.1	<1.1	<1.1	1.0731	1.1028				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-40	WESTLEY 60 kV	P1-3:A11:19:_Manteca 115/60 kV Transformer No. 3	P1	N-1	0.8641	0.8826	0.8764	0.99	0.9558				Explore potential mitigation
CYVL-V-41	WILKINS 60 kV	P1-2:A4:42:_Cortina 60 kV Line No. 1	P1	N-1	0.8942	0.8978	0.8883	>0.9	>0.9				Sacramento Action Plan
CYVL-V-42	AEC_300 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7059	0.261				Explore potential mitigation
CYVL-V-43	APPLE HL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0642	0.304	0.3064	>0.9	>0.9				Sierra Action Plan
CYVL-V-44	ARBALT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	>0.9	0.8943	>0.9	>0.9				Sacramento Action Plan
CYVL-V-45	ARBUCKLE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	0.8833	0.8553	>0.9	>0.9				Sacramento Action Plan
CYVL-V-46	ATLANTC 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8891	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-47	ATLANTC 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	>0.9	0.8643	0.8702	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-48	ATLANTI 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	>0.9	0.8743	0.8798	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-49	ATLANTIC 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	>0.9	0.8522	0.8573	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-50	AUBURN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1941	0.589	0.5903	>0.9	>0.9				Sierra Action Plan
CYVL-V-51	AVENA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7815	0.8406	0.8342	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-52	AVENA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7578	0.361				Explore potential mitigation

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
CYVL-V-53	BANTA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7794	0.2885				Explore potential mitigation
CYVL-V-54	BEARDSLY 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7114	0.7608	0.7598	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-55	BEARDSLY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8966	0.6184				Explore potential mitigation
CYVL-V-56	BELL PGE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2296	0.5729	0.5745	>0.9	>0.9				Sierra Action Plan
CYVL-V-57	BELLOTA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2795	0.2926	0.2922	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-58	BLTAJCT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2692	0.2809	0.2796	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-59	BNTA CRB 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8773	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-60	BNTA CRB 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7585	0.245				Explore potential mitigation
CYVL-V-61	BNTA JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7795	0.2885				Explore potential mitigation
CYVL-V-62	BONNIE N 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7495	0.8865	0.8915	>0.9	>0.9				Sierra Action Plan
CYVL-V-63	BOWMN PH 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8259	0.9534	0.9584	>0.9	>0.9				Sierra Action Plan
CYVL-V-64	BOWMN TP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.805	0.9351	0.9405	>0.9	>0.9				Sierra Action Plan
CYVL-V-65	BRDSLY J 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7101	0.7595	0.7585	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-66	BRDSLY J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8966	0.6184				Explore potential mitigation
CYVL-V-67	BRIGHTON 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8964	>0.9	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project
CYVL-V-68	BRIGHTON 230 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8819	>0.9	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project
CYVL-V-69	BRIGHTON 230 kV	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8928	>0.9	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project

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
CYVL-V-70	BRKR SLG 115 kV	P2-4:A5:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7769	>0.9	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-71	BRUNSWCK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7922	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-72	BRWNS VY 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	>0.9	>0.9	>0.9	>0.9	0.858				Sierra Action Plan
CYVL-V-73	CALVO 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7799	0.2875				Explore potential mitigation
CYVL-V-74	CAMANCHE 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2737	0.2858	0.2843	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-75	CAMPUS 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7755	0.9153	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-76	CAPEHORN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.743	0.8818	0.8862	0.995	1.0129				Sierra Action Plan
CYVL-V-77	CARBONA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7729	0.2847				Explore potential mitigation
CYVL-V-78	CATARACT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6896	0.7414	0.7379	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-79	CATARACT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8525	0.5349				Explore potential mitigation
CYVL-V-80	CDCRSTN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2366	0.2461	0.246	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-81	CDCRSTNJT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2391	0.2487	0.2484	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-82	CH.STN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6083	0.6548	0.6534	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-83	CH.STN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8966	0.63				Explore potential mitigation
CYVL-V-84	CH.STNJT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6055	0.6522	0.6507	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-85	CHCGO PK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5733	0.7871	0.79	>0.9	>0.9				Sierra Action Plan
CYVL-V-86	CISCO GR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8078	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-87	CL AMMNA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8699	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-88	CL AMMNA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7141	0.2684				Explore potential mitigation
CYVL-V-89	CLNY JCT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8938	>0.9	>0.9	>0.9	>0.9				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
CYVL-V-90	CLRKSFLT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1018	0.3386	0.341	>0.9	>0.9				Sierra Action Plan
CYVL-V-91	CLSA CRS 60 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8659	0.843	0.8144	>0.9	>0.9				Sacramento Action Plan
CYVL-V-92	CMNCHETP 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2702	0.2821	0.2808	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-93	CMP FRWT 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus	>0.9	>0.9	>0.9	>0.9	0.8625				Sierra Action Plan
CYVL-V-94	COLFAXJT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7438	0.8825	0.8868	>0.9	>0.9				Sierra Action Plan
CYVL-V-95	COLUSA 60 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.862	0.839	0.8101	>0.9	>0.9				Sacramento Action Plan
CYVL-V-96	CORTINA 115 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8785	0.862	0.8424	>0.9	>0.9				Sacramento Action Plan
CYVL-V-97	CORTINA 230 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7692	0.7546	0.7373	0.8722	0.8468				Sacramento Action Plan
CYVL-V-98	CPC STCN 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2336	0.2427	0.2424	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-99	CPEHRNTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7437	0.8824	0.8868	>0.9	>0.9				Sierra Action Plan
CYVL-V-100	CPM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1038	0.3403	0.3427	>0.9	>0.9				Sierra Action Plan
CYVL-V-101	CPM TAP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1038	0.3403	0.3427	>0.9	>0.9				Sierra Action Plan
CYVL-V-102	CRBNA JC 60 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7791	0.2871				Explore potential mitigation
CYVL-V-103	CROSRDJT 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.87	0.9364	0.9288	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-104	CROSRDJT 115 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7142	0.2685				Explore potential mitigation
CYVL-V-105	CRWS LDJ 60 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7867	0.2416				Explore potential mitigation
CYVL-V-106	CURTISS 115 kV	P2-4:A11:18_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6202	0.6699	0.6685	1.0351	1.03				Action Plan. Long term mitigation SPS
CYVL-V-107	CURTISS 115 kV	P2-4:A11:60_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8954	0.6191				Explore potential mitigation
CYVL-V-108	DEEPWATR 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7758	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-109	DEL MAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.9085	0.856	0.8613	>0.9	>0.9				Sierra Action Plan
CYVL-V-110	DELEVAN 60 kV	P2-3:A4:22_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8852	0.8633	0.8358	>0.9	>0.9				Sacramento Action Plan
CYVL-V-111	DIMOND_1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0853	0.3256	0.328	1.036	1.0218				Sierra Action Plan
CYVL-V-112	DIMOND_2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0771	0.289	0.2912	>0.9	>0.9				Sierra Action Plan

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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
CYVL-V-113	DIST2047 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	0.9059	0.8854	0.8602	>0.9	>0.9				Sacramento Action Plan
CYVL-V-114	DMND SPR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.077	0.2886	0.2908	1.0317	1.02				Sierra Action Plan
CYVL-V-115	DONNELLS 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7294	0.7781	0.7772	1.0367	1.0309				Action Plan. Long term mitigation SPS
CYVL-V-116	DPWTR_TP 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7795	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-117	DRAKE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8959	0.8717	0.8434	>0.9	>0.9				Sacramento Action Plan
CYVL-V-118	DRUM 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.754	0.8897	0.895	>0.9	>0.9				Sierra Action Plan
CYVL-V-119	DRUM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7566	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-120	DTCH FL1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.6662	0.8437	0.8468	>0.9	>0.9				Sierra Action Plan
CYVL-V-121	DTCH FL2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7816	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-122	DUNNIGAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8786	0.8535	0.8249	>0.9	>0.9				Sacramento Action Plan
CYVL-V-123	E.NICOLS 115 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	>0.9	0.915	0.8766	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-124	EIGHT MI 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8461	0.9746	0.9741	>0.9	>0.9				Explore potential mitigation
CYVL-V-125	ELDORAD 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0587	0.3034	0.306	>0.9	>0.9				Sierra Action Plan
CYVL-V-126	ELLS GTY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7053	0.2634				Explore potential mitigation
CYVL-V-127	ENCINAL 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	0.8952	>0.9	0.8972	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-128	ENVRO_HY 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.738	0.8779	0.8816	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-129	FBERBORD 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.621	0.6708	0.6693	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-130	FBERBORD 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8954	0.619				Explore potential mitigation
CYVL-V-131	FLINT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1902	0.5379	0.5393	>0.9	>0.9				Sierra Action Plan
CYVL-V-132	FORST HL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7283	0.8696	0.8733	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-133	FROGTOWN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6643	0.7153	0.7122	1.0341	1.0366				Action Plan. Long term mitigation 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
CYVL-V-134	GOLD HLL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1184	0.3656	0.368	>0.9	>0.9				Sierra Action Plan
CYVL-V-135	GOLDHILL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1133	0.3483	0.3506	>0.9	>0.9				Sierra Action Plan
CYVL-V-136	GRANITE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.761	0.2251				Explore potential mitigation
CYVL-V-137	GRONMYER 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7825	0.2871				Explore potential mitigation
CYVL-V-138	GUSTINE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8027	0.2375				Explore potential mitigation
CYVL-V-139	GUSTN JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7973	0.2421				Explore potential mitigation
CYVL-V-140	GWFRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2617				Explore potential mitigation
CYVL-V-141	HALSEY 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2044	0.5886	0.5893	>0.9	1.0234				Sierra Action Plan
CYVL-V-142	HARINTON 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8994	0.8753	0.8471	>0.9	>0.9				Sacramento Action Plan
CYVL-V-143	HIGGINS 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3332	0.6332	0.6353	>0.9	>0.9				Sierra Action Plan
CYVL-V-144	HJ HEINZ 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7066	0.2639				Explore potential mitigation
CYVL-V-145	HNYLNJCT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8687	>0.9	>0.9	>0.9	>0.9				Action Plan
CYVL-V-146	HORSESHE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.137	0.407	0.4098	>0.9	>0.9				Sierra Action Plan
CYVL-V-147	INDIN VL 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.9114	0.8959	0.8758	>0.9	>0.9				Explore potential mitigation
CYVL-V-148	INDSTR J 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8916	>0.9	>0.9	>0.9	>0.9				Action Plan
CYVL-V-149	INDUSTR L 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8876	>0.9	>0.9	>0.9	>0.9				Action Plan
CYVL-V-150	INGRM C. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7445	0.2605				Explore potential mitigation
CYVL-V-151	KASSON 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7796	0.2886				Explore potential mitigation
CYVL-V-152	KASSON 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8868	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-153	KASSON 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.711	0.2672				Explore potential mitigation
CYVL-V-154	KNIGHT1 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8648	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-155	KNIGHT2 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8632	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-156	KNIGHTLD 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8648	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.

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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
CYVL-V-157	KSSN-JC1 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8869	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-158	KSSN-JC1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7112	0.2675				Sierra Action Plan
CYVL-V-159	KSSN-JC2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8836	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-160	KSSN-JC2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7115	0.2672				Explore potential mitigation
CYVL-V-161	KYOHOTAP 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2649	0.2768	0.2767	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-162	LAMMERS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7062	0.2615				Explore potential mitigation
CYVL-V-163	LCKFRDJA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2486	0.2591	0.2588	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-164	LCKFRDJB 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2675	0.2796	0.2794	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-165	LEE_JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7789	0.2808				Explore potential mitigation
CYVL-V-166	LEPRINO 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7062	0.2637				Explore potential mitigation
CYVL-V-167	LID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7812	0.287				Explore potential mitigation
CYVL-V-168	LIMESTNE 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1095	0.343	0.3452	>0.9	>0.9				Explore potential mitigation
CYVL-V-169	LIVE OAK 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	0.8957	0.905	0.8977	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-170	LOCKFORD 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.267	0.2784	0.2771	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-171	LOCKFORD 230 kV	P2-4:A11:17:_30500 Bellota 230 kV Bus CB822 Internal Breaker Fault (2D and 2E)	P2	Bus-tie breaker	0.8472	0.9884	0.9869	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-172	LOCKFORD 230 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8309	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-173	LODI 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8885	>0.9	>0.9	>0.9	>0.9				Action Plan
CYVL-V-174	LODI 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8478	>0.9	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-175	LOUISE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7819	0.287				Explore potential mitigation
CYVL-V-176	LOUISJCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.783	0.2885				Explore potential mitigation

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
CYVL-V-177	LTHRP JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7843	0.2908				Explore potential mitigation
CYVL-V-178	LYOTH-SP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7791	0.2871				Explore potential mitigation
CYVL-V-179	MANTECA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7843	0.2908				Explore potential mitigation
CYVL-V-180	MANTECA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7204	0.2842				Explore potential mitigation
CYVL-V-181	MAXTAP 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8852	0.8632	0.8358	0.9847	0.993				Sacramento Action Plan
CYVL-V-182	MAXWELL 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.885	0.863	0.8356	0.9846	0.993				Action Plan
CYVL-V-183	MCLANE 60 kV	P2-4:A11:4:_30482 Lockeford 230 kV Bus CB272 Internal Breaker Fault	P2	Bus-tie breaker	0.8998	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-184	MDDLE FK 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8816	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-185	MDDLFK M 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8813	>0.9	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-186	MDSTO CN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7631	0.2297				Explore potential mitigation
CYVL-V-187	MEDLIN J 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8012	0.2416				Explore potential mitigation
CYVL-V-188	MELNS JA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6501	0.6995	0.6967	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-189	MELNS JA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8577	0.5558				Explore potential mitigation
CYVL-V-190	MELNS JB 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6496	0.6991	0.696	1.0336	1.037				Action Plan. Long term mitigation SPS
CYVL-V-191	MELNS JB 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8563	0.5554				Explore potential mitigation
CYVL-V-192	MELONES 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5981	0.6429	0.6416	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-193	MELONES 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8912	0.6248				Explore potential mitigation
CYVL-V-194	MERIDIAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	0.898	0.8677	>0.9	>0.9				Sacramento Action Plan
CYVL-V-195	MERIDJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	>0.9	0.8728	>0.9	>0.9				Sacramento Action Plan
CYVL-V-196	MIDDLTWN 115 kV	P2-3:A4:20:_NON-BUS-TIE BREAKER CB532 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	>0.9	0.8827	0.8837	>0.9	>0.9				Explore potential mitigation
CYVL-V-197	MILER TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7635	0.2342				Explore potential mitigation
CYVL-V-198	MILLER 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7633	0.2339				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
CYVL-V-199	MI-WUK 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6537	0.7043	0.7029	>0.9	>0.9				Explore potential mitigation
CYVL-V-200	MI-WUK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8959	0.618				Explore potential mitigation
CYVL-V-201	MIZOU_T1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0813	0.3224	0.3248	>0.9	>0.9				Sierra Action Plan
CYVL-V-202	MIZOU_T2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0756	0.2892	0.2914	>0.9	>0.9				Sierra Action Plan
CYVL-V-203	MNTCA JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7613	0.2497				Explore potential mitigation
CYVL-V-204	MOBILCHE 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	0.8242	0.9494	1.0124	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-205	MONDAVI 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8875	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-206	MONDAVI 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	0.8901	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-207	MORADAJT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.2323	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-208	MSHR 60V 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	0.3888	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-209	MSSDLESW 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7814	0.287				Explore potential mitigation
CYVL-V-210	MTN_QUAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1904	0.5821	0.5836	>0.9	>0.9				Sierra Action Plan
CYVL-V-211	NEW HOPE 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8754	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-212	NEWCASTLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1675	0.4947	0.4973	>0.9	>0.9				Sierra Action Plan
CYVL-V-213	NEWMAN 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7974	0.2421				Explore potential mitigation
CYVL-V-214	NRRWS1TP 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.8618				Sierra Action Plan
CYVL-V-215	NRRWS2TP 60 kV	P2-2:A5:17_BUS FAULT AT 32308 COLGATE 60.00	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.8618				Sierra Action Plan
CYVL-V-216	NW HPE J 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8879	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-217	NWMN JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7994	0.241				Explore potential mitigation
CYVL-V-218	OI GLASS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7059	0.2606				Explore potential mitigation
CYVL-V-219	OLETA 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0864	0.2833	0.2848	>0.9	>0.9				Action Plan
CYVL-V-220	OWENSTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2615				Explore potential mitigation
CYVL-V-221	OWENSTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7066	0.262				Explore potential mitigation
CYVL-V-222	OXBOW 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7404	0.88	0.8836	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer

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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
CYVL-V-223	PATTERSN 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7829	0.2419				Explore potential mitigation
CYVL-V-224	PEAS RG 60 kV	P2-4:A5:1_RIO OSO 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8964	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-225	PENRYN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1702	0.5611	0.5625	>0.9	>0.9				Sierra Action Plan
CYVL-V-226	PEORIA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6036	0.65	0.6485	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-227	PEORIA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8945	0.6262				Explore potential mitigation
CYVL-V-228	PLACER 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1936	0.5929	0.5944	>0.9	>0.9				Explore potential mitigation
CYVL-V-229	PLACER 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.1974	0.5574	0.5589	>0.9	>0.9				Explore potential mitigation
CYVL-V-230	PLAINFLD 60 kV	P2-2:A11:63:_33551 GWF Tracy 115 kV Bus	P2	Bus-tie breaker	0.8754	0.8783	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion
CYVL-V-231	PLCRVLB2 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus-tie breaker	0.7114	0.8206	0.8331	>0.9	>0.9				Sierra Action Plan
CYVL-V-232	PLCRVLB3 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus-tie breaker	0.7113	0.8205	0.833	>0.9	>0.9				Sierra Action Plan
CYVL-V-233	PLCRVLT1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0772	0.3193	0.3217	>0.9	>0.9				Sierra Action Plan
CYVL-V-234	PLCRVLT2 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus-tie breaker	0.7117	0.8208	0.8333	>0.9	>0.9				Sierra Action Plan
CYVL-V-235	PLSNT GR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.9262	0.866	0.8712	>0.9	>0.9				Sierra Action Plan
CYVL-V-236	POST 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	0.7794	0.9235	1.0109	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-237	Q539 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8013	0.2416				Explore potential mitigation
CYVL-V-238	Q539SS 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8013	0.2416				Sierra Action Plan
CYVL-V-239	R.TRACK 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.595	0.6402	0.6388	>0.9	>0.9				Sierra Action Plan
CYVL-V-240	RIPON 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7847	0.8451	0.8372	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-241	RIVRBKJT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7249	0.7818	0.7755	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-242	ROLLINS 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.752	0.8896	0.8937	>0.9	>0.9				Sierra Action Plan
CYVL-V-243	ROLLNSTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7489	0.887	0.8912	>0.9	>0.9				Sierra Action Plan

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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
CYVL-V-244	RPN JNCN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8105	0.8718	0.864	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-245	RPNJN2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7643	0.8238	0.8162	1.026	1.0519				Action Plan. Long term mitigation SPS
CYVL-V-246	RVRBANK 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.306	0.3217	0.3221	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-247	SAFEWAY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2613				Explore potential mitigation
CYVL-V-248	SALADO J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7639	0.244				Explore potential mitigation
CYVL-V-249	SALDO TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7664	0.2381				Explore potential mitigation
CYVL-V-250	SANDBAR 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7059	0.7553	0.7543	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-251	SANDBAR 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8965	0.6183				Explore potential mitigation
CYVL-V-252	SCHULTE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2617				Explore potential mitigation
CYVL-V-253	SFWY_TP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2615				Explore potential mitigation
CYVL-V-254	SFWY_TP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2616				Explore potential mitigation
CYVL-V-255	SHADYGLN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7439	0.8826	0.8869	>0.9	>0.9				Sierra Action Plan
CYVL-V-256	SHPRING 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	0.688	0.801	0.8139	>0.9	>0.9				Sierra Action Plan
CYVL-V-257	SHW 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8971	>0.9	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-258	SHWSS 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8971	>0.9	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-259	SIERRAPI 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8857	0.9974	>0.9	>0.9	>0.9				Sierra Action Plan
CYVL-V-260	SNDBR JT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7025	0.7522	0.7511	1.0365	1.0308				Action Plan. Long term mitigation SPS
CYVL-V-261	SNDBR JT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8965	0.6183				Explore potential mitigation
CYVL-V-262	SPAULDNG 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.807	0.9368	0.9423	1.0234	1.015				Sierra Action Plan
CYVL-V-263	SPICAMIN 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus	0.8095	0.9011	0.9105	>0.9	>0.9				Sierra Action Plan
CYVL-V-264	SPICAMIN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.0643	0.3043	0.3067	>0.9	>0.9				Sierra Action Plan

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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
CYVL-V-265	SPRNG GJ 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7009	0.7507	0.7496	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-266	SPRNG GJ 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8965	0.6183				Explore potential mitigation
CYVL-V-267	SPRNG GP 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7027	0.7523	0.7513	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-268	SPRNG GP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.8965	0.6183				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-269	STAGG 230 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8374	>0.9	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-270	STANISLS 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6982	0.7504	0.7468	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-271	STCKTNJB 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2592	0.2708	0.271	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-272	STKTON A 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2282	0.2368	0.2364	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-273	STKTON B 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2583	0.2699	0.2701	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-274	STN COGN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2337	0.2428	0.2425	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-275	STNSLSRP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7975	0.2416				Explore potential mitigation
CYVL-V-276	SUMMIT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8148	0.9356	0.9449	>0.9	>0.9				Sierra Action Plan
CYVL-V-277	TAMARACK 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8098	0.9345	0.943	>0.9	>0.9				Sierra Action Plan
CYVL-V-278	TAYLOR 60 kV	P2-2:A11:41:_30624 Tesla 230 kV Bus CB202 Internal Breaker Fault (1E and 2E)	P2	Bus	0.8995	1.0094	1.0137	>0.9	>0.9				Sierra Action Plan
CYVL-V-279	TCHRTJCT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7618	0.2268				Explore potential mitigation
CYVL-V-280	TEICHERT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7608	0.2247				Explore potential mitigation
CYVL-V-281	TESLAMTR 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.2667				Explore potential mitigation
CYVL-V-282	TH.E.DV. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.2559				Explore potential mitigation
CYVL-V-283	TRACY 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.898	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-284	TRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7063	0.2637				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
CYVL-V-285	TULLOCH 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5038	0.5387	0.5388	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-286	TULLOCH 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.9328	0.731				Explore potential mitigation
CYVL-V-287	UCD_TP2 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7769	0.9165	1.0061	>0.9	>0.9				Explore potential mitigation
CYVL-V-288	UCDAVSJ1 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.777	0.9165	1.0061	>0.9	>0.9				Explore potential mitigation
CYVL-V-289	ULTRA JT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.9282	0.877	0.8822	>0.9	>0.9				Sierra Action Plan
CYVL-V-290	ULTR-RCK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.931	0.8799	0.8852	>0.9	>0.9				Sierra Action Plan
CYVL-V-291	VALLY HM 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7333	0.791	0.7844	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-292	VALLY HM 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7755	0.4058				Explore potential mitigation
CYVL-V-293	VIERATP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.2677				Explore potential mitigation
CYVL-V-294	VIERATP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	>0.9	0.268				Explore potential mitigation
CYVL-V-295	VIERRA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8655	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-296	VIERRA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7151	0.2689				Explore potential mitigation
CYVL-V-297	VLYHMTP1 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7335	0.7911	0.7845	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-298	VLYHMTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7755	0.4058				Explore potential mitigation
CYVL-V-299	VLYHMTP2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8005	0.8601	0.8537	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-300	VLYHMTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7614	0.3604				Explore potential mitigation
CYVL-V-301	W.SCRMNO 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.7799	>0.9	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project
CYVL-V-302	WATRLJCT 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.5992	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-303	WATRLJCT 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	0.6087	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-304	WDLND_BM 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8148	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-305	WEMR SWS 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7384	0.8782	0.8825	>0.9	>0.9				Sierra Action Plan

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CYVL-V-306	WESCOT1 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.9387	0.9167	0.8889	>0.9	>0.9				Sacramento Action Plan
CYVL-V-307	WESTLEY 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8248	0.8983	0.8932	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-308	WESTLEY 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7324	0.2063				Explore potential mitigation
CYVL-V-309	WHEATLND 60 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Bus-tie breaker	0.9175	0.8986	0.8973	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-310	WHEATLND 60 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	0.9173	0.8985	0.8907	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-311	WILKINS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	0.8851	0.8598	>0.9	>0.9				Sacramento Action Plan
CYVL-V-312	WILL JCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	>0.9	>0.9	0.879	>0.9	>0.9				Sacramento Action Plan
CYVL-V-313	WILSONAV 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8621	0.8391	0.8103	>0.9	>0.9				Sacramento Action Plan
CYVL-V-314	WINERY J 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8883	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-315	WINERY J 60 kV	P2-4:A11:76:_33704 Stagg 60 kV Bus CB2 Internal Breaker Failure	P2	Bus-tie breaker	0.891	>0.9	>0.9	>0.9	>0.9				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-316	WLKSLJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.9083	0.8879	0.8627	>0.9	>0.9				Sacramento Action Plan
CYVL-V-317	WODBRG J 60 kV	P2-4:A11:11:_30496 Stagg 230 kV Bus CB252 Internal Breaker Fault	P2	Bus-tie breaker	0.8936	1.0438	1.0477	1.0164	1.0401				Action Plan. Long term mitigation Stagg-Hammer 60 kV Line
CYVL-V-318	WOODLD 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8211	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-319	WSID 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.8251	0.8986	0.8935	>0.9	>0.9				Action Plan. Long term mitigation SPS
CYVL-V-320	WSID 60 kV	P2-4:A11:50:_33514 Manteca 115 kV Bus CB124 Internal Breaker Fault	P2	Bus-tie breaker	0.8607	0.8879	0.8823	>0.9	>0.9				Action Plan
CYVL-V-321	WSID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	>0.9	>0.9	>0.9	0.7324	0.2064				Explore potential mitigation
CYVL-V-322	ZAMORA 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	0.8538	>0.9	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-323	APLHTAP2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7983	0.8608	0.869	>0.9	>0.9				Sacramento Action Plan
CYVL-V-324	APPLE HL 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8603	>0.9	>0.9	>0.9	>0.9				Sacramento Action Plan
CYVL-V-325	ARBALT 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8727	0.8755	0.8783	>0.9	>0.9				Sacramento Action Plan

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CYVL-V-326	ARBJCT 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.879	0.882	0.885	>0.9	>0.9				Sacramento Action Plan
CYVL-V-327	ARBUCKLE 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8722	0.8749	0.8776	>0.9	>0.9				Sacramento Action Plan
CYVL-V-328	DIMOND_2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7641	0.8299	0.8388	>0.9	>0.9				Sacramento Action Plan
CYVL-V-329	DIST2047 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8444	0.8444	0.8444	>0.9	>0.9				Sacramento Action Plan
CYVL-V-330	DMND SPR 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7639	0.8297	0.8386	>0.9	>0.9				Sacramento Action Plan
CYVL-V-331	DRAKE 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8606	0.8633	0.866	>0.9	>0.9				Sacramento Action Plan
CYVL-V-332	DUNNIGAN 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8426	0.8452	0.8776	0.9873	0.9938				Sacramento Action Plan
CYVL-V-333	ENCL TAP 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	0.8955	>0.9	0.8977	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-334	LIVE OAK 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	0.8956	>0.9	0.8978	>0.9	1.0355				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-335	MIZOU_T2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7688	0.8341	0.8429	>0.9	>0.9				Sacramento Action Plan
CYVL-V-336	PLAINFLD 60 kV	P2-1:A4:60:_WEC-SUISUN #1 115 kV	P2-1	Line section w/o fault	0.8723	0.8773	>0.9	>0.9	>0.9				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-337	PLCRVLB3 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7732	0.838	0.8468	>0.9	>0.9				Sacramento Action Plan
CYVL-V-338	PLCRVLT2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7735	0.8383	0.8471	>0.9	>0.9				Sacramento Action Plan
CYVL-V-339	PLFLDJCT 60 kV	P2-1:A4:60:_WEC-SUISUN #1 115 kV	P2-1	Line section w/o fault	0.885	0.8901	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-340	SHPRING 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7523	0.8192	0.8281	>0.9	>0.9				Sacramento Action Plan
CYVL-V-341	SHPRING2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7527	0.8196	0.8285	>0.9	>0.9				Sacramento Action Plan
CYVL-V-342	SPICAMIN 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8605	>0.9	>0.9	>0.9	>0.9				Sacramento Action Plan

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CYVL-V-343	WILKINS 60 kV	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV	P2-1	Line section w/o fault	0.8441	0.8477	>0.9	>0.9	>0.9				Sacramento Action Plan
CYVL-V-344	ARBALT 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	>0.9	0.8954	>0.9	>0.9				Sacramento Action Plan
CYVL-V-345	ARBUCKLE 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	>0.9	0.895	>0.9	>0.9				Sacramento Action Plan
CYVL-V-346	CLSA JCT 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.9	>0.9	0.8966	>0.9	>0.9				Sacramento Action Plan
CYVL-V-347	COLUSA 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.9	>0.9	0.8897	>0.9	>0.9				Sacramento Action Plan
CYVL-V-348	DIST2047 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	0.8818	0.8866	>0.9	>0.9	>0.9				Sacramento Action Plan
CYVL-V-349	DIST2047 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	>0.9	0.8663	>0.9	>0.9				Sacramento Action Plan
CYVL-V-350	GRSS VLY 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	>0.9	0.8975	0.8973	>0.9	>0.9				Sierra Action Plan
CYVL-V-351	MERIDIAN 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.9	>0.9	0.883	>0.9	>0.9				Sacramento Action Plan
CYVL-V-352	MERIDJCT 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.9	>0.9	0.8881	>0.9	>0.9				Sacramento Action Plan
CYVL-V-353	PLAINFLD 60 kV	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P3	G-1/N-1	0.8458	0.8498	>0.9	>0.9	>0.9				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion
CYVL-V-354	PLFLDJCT 60 kV	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P3	G-1/N-1	0.8589	0.8632	>0.9	>0.9	>0.9				Explore potential mitigation
CYVL-V-355	WILKINS 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	0.8814	0.8862	0.8659	>0.9	>0.9				Sacramento Action Plan
CYVL-V-356	WILSONAV 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	>0.9	0.8972	>0.9	>0.9				Sacramento Action Plan
CYVL-V-357	WLKSLJCT 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	0.8843	0.889	0.8688	>0.9	>0.9				Sacramento Action Plan
CYVL-V-358	ALLEGHNY 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8349				Sierra Action Plan

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
CYVL-V-359	ALMENDRA 60 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8855	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-360	APLHTAP1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3206	0.7695	>0.90	>0.90				Sierra Action Plan
CYVL-V-361	APLHTAP2 115 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8955	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-362	APPLE HL 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3188	0.7755	>0.90	>0.90				Sierra Action Plan
CYVL-V-363	ARBALT 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P6	N-1/N-1	>0.90	>0.90	0.8954	>0.90	>0.90				Sacramento Action Plan
CYVL-V-364	ARBUCKLE 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P6	N-1/N-1	>0.90	>0.90	0.895	>0.90	>0.90				Sacramento Action Plan
CYVL-V-365	ATLANTC 230 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8381	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-366	ATLANTI 60 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8458	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-367	ATLANTIC 115 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8462	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic - Placer 115 kV Line & Rio Oso Voltage Support
CYVL-V-368	AUBURN 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6164	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-369	AVENA 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8955	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-370	BARRY 60 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8459	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-371	BCKS CRK 230 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8398	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-372	BEALE_1 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8348				Sierra Action Plan
CYVL-V-373	BELDEN 230 kV	P1-2:4:3_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.843	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-374	BELL PGE 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5957	0.8673	>0.90	>0.90				Sierra Action Plan

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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
CYVL-V-375	BIGGS 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8774	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-376	BOGUE 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8529	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-377	BONNIE N 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8127	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-378	BOWMN PH 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8639	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-379	BRIGHTN 115 kV	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:A4:10:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.2987	0.8945	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-380	BRIGHTON 230 kV	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:A4:10:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.26	0.7788	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-381	BRKR SLG 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3079	0.8921	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-382	BRKR TP 115 kV	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:4:3:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.315	0.8974	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-383	BRKRJCT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3091	0.8924	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage convesion & Rio Oso Voltage Support Project
CYVL-V-384	BRNSWALT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8564	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-385	BRUNSWCK 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	0.8584	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-386	BRUNSWCK 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8996	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-387	BRWNS VY 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8351				Sierra Action Plan

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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
CYVL-V-388	CAMPUS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3136	0.8904	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-389	CAPEHORN 60 kV	P1-2:A4:10:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8985	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-390	CAPEHORN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.7824	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-391	CATLETT 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8579	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-392	CHALLENGE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8617				Sierra Action Plan
CYVL-V-393	CHCGO PK 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.7787	0.9634	>0.90	>0.90				Sierra Action Plan
CYVL-V-394	CHLLNGEA 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8634				Sierra Action Plan
CYVL-V-395	CISCO GR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8753	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-396	CL AMMNA 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8885	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-397	CLMBA HL 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate)	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8383				Sierra Action Plan
CYVL-V-398	CLNY JCT 60 kV	P1-3:A11:9:_Stagg 230/60 kV Transformer No. 4 and P1-3:A11:8:_Stagg 230/60 kV Transformer No. 1	P6	N-1/N-1	0.892	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-399	CLRKSVLE 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3312	0.7668	>0.90	>0.90				Sierra Action Plan
CYVL-V-400	CLSA CRS 60 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8594	0.8511	0.8193	>0.90	>0.90				Sacramento Action Plan
CYVL-V-401	CMP FRWT 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8396				Sierra Action Plan
CYVL-V-402	CNTRY CB 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.148	>0.90	>0.90	0.8282	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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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
CYVL-V-403	COLFAXJT 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8991	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-404	COLFAXJT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.7823	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-405	COLGATE 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.839				Sierra Action Plan
CYVL-V-406	COLGATE 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.889	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-407	COLONY 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.8839	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-408	COLUSA 60 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8555	0.8471	0.815	>0.90	>0.90				Sacramento Action Plan
CYVL-V-409	CORTINA 115 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8734	0.8684	0.8461	>0.90	>0.90				Sacramento Action Plan
CYVL-V-410	CORTINA 230 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.7647	0.7603	0.7406	>0.90	>0.90				Sacramento Action Plan
CYVL-V-411	CPEHRNTP 60 kV	P1-2:A4:10:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.899	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-412	CPM 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3564	0.7834	>0.90	>0.90				Sierra Action Plan
CYVL-V-413	CRESTA 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8397	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-414	CROSRDJT 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8885	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-415	CRTNA M 230 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8412	0.836	0.8137	>0.90	>0.90				Action Plan
CYVL-V-416	CRWS LDG 60 kV	P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3 and P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1	P6	N-1/N-1	0.8836	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-417	DAVIS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3157	0.8916	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-418	DEEPWATR 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.2913	0.8905	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.

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
CYVL-V-419	DEL MAR 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.827	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-420	DELEVAN 60 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8789	0.8712	0.8406	>0.90	>0.90				Sacramento Action Plan
CYVL-V-421	DIMOND_1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.341	0.786	>0.90	>0.90				Sierra Action Plan
CYVL-V-422	DIMOND_2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3028	0.7622	>0.90	>0.90				Sierra Action Plan
CYVL-V-423	DIST1001 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8722	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-424	DIST1500 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8681	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-425	DIST2047 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P6	N-1/N-1	0.8818	0.8866	0.8663	>0.90	>0.90				Sacramento Action Plan
CYVL-V-426	DMND SPR 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8896	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-427	DOBBINS 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8378				Sierra Action Plan
CYVL-V-428	DPWT_TP2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.2962	0.8934	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-429	DPWTR_TP 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.2995	0.8941	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-430	DRAKE 60 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8896	0.8795	>0.90	>0.90	>0.90				Sacramento Action Plan
CYVL-V-431	DRAKE 60 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.90	>0.90	0.8481	>0.90	>0.90				Sacramento Action Plan
CYVL-V-432	DRUM 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8284	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-433	DRUM 1M 115 kV	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:A4:10:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.897	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-434	DRUM 1M 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.81	>0.90	>0.90	>0.90				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
CYVL-V-435	DRUM 2M 115 kV	P1-2:A5:9:_Rio Oso - Brighton 230 kV Line and P1-2:A4:10:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.8963	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vaca-Davis Voltage Conversion
CYVL-V-436	DRUM 2M 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.81	>0.90	>0.90	>0.90				Explore potential mitigation
CYVL-V-437	DST1001A 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8692	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-438	DST1001B 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8722	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-439	DTCH FL1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8245	0.9832	>0.90	>0.90				Sierra Action Plan
CYVL-V-440	DTCH FL2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8895	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-441	DUNNIGAN 60 kV	P1-2:A4:13:_Cortina - Vaca 230 kV Line and P1-2:A3:5:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	0.8723	0.8614	0.8297	>0.90	>0.90				Sacramento Action Plan
CYVL-V-442	E.MRYSVE 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8356	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: East Nicolaus Reinforcement Project
CYVL-V-443	ELDORAD 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3186	0.7691	>0.90	>0.90				Explore potential mitigation
CYVL-V-444	ELLS GTY 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8986	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-445	ENCINAL 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8647	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-446	ENVRO_HY 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P6	N-1/N-1	>0.90	0.8641	0.8752	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-447	FLINT 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5618	0.8533	>0.90	>0.90				Sierra Action Plan
CYVL-V-448	FORST HL 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P6	N-1/N-1	>0.90	0.864	0.8751	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-449	FREC TAP 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8552	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-450	GLEAF 1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8591	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan

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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
CYVL-V-451	GLEAF2 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8929	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-452	GOLDHILL 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3647	0.7856	>0.90	>0.90				Sierra Action Plan
CYVL-V-453	GOLDHILL 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8674	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-454	GRAND IS 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	0.2797	0.8771	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project
CYVL-V-455	GRANITE 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8928	>0.90	>0.90	>0.90	>0.90				Explore potential mitigation
CYVL-V-456	GRIDLEY 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8691	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vaca-Davis Voltage Conversion
CYVL-V-457	GRSS VLY 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P6	N-1/N-1	>0.90	0.8975	0.8973	>0.90	>0.90				Sierra Action Plan
CYVL-V-458	GRSS VLY 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8351				Sierra Action Plan
CYVL-V-459	GRSS VLY 60 kV	P1-2:A5:51:_Colgate-Grass Valley 60 kV Line and P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P6	N-1/N-1	0.8872	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-460	GUSTINE 60 kV	P1-2:A12:17:_Salado-S539SS #1 60 kV Line and P1-2:A12:19:_S539SS-Newman #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	0.8861	>0.90	>0.90				
CYVL-V-461	GUSTINE 60 kV	P1-2:A12:18:_S539SS-Newman #1 60 kV Line and P1-2:A12:16:_Salado-S539SS #1 60 kV Line	P6	N-1/N-1	0.8899	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-462	GUSTN JT 60 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8759	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-463	HALSEY 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6161	0.9237	>0.90	>0.90				Sierra Action Plan
CYVL-V-464	HAMMER 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1622	>0.90	>0.90	0.8339	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-465	HARINTON 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-2:A4:13:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	0.8951	0.8799	0.8547	>0.90	>0.90				Sacramento Action Plan

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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
CYVL-V-466	HARTER 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8666	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-467	HAYPRESS 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8639	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-468	HIGGINS 115 kV	P1-2:A5:38:_Drum - Higgins 115 kV Line and P1-2:A5:22:_Placer - Gold Hill 115 kV Line No. 1	P6	N-1/N-1	0.8719	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-469	HIGGINS 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6482	0.8974	>0.90	>0.90				Sierra Action Plan
CYVL-V-470	HJ HEINZ 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8774	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-471	HMMR JCT 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1759	>0.90	>0.90	0.8388	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-472	HNYLNJCT 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.851	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-473	HONC JT1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8864	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-474	HORSESHE 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.899	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-475	HORSESHE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.4272	0.8107	>0.90	>0.90				Sierra Action Plan
CYVL-V-476	HORSHE1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.899	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-477	HORSHE1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.4272	0.8108	>0.90	>0.90				Sierra Action Plan
CYVL-V-478	HORSHE2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.4401	0.8106	>0.90	>0.90				Sierra Action Plan
CYVL-V-479	INDIN VL 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.90	>0.90	0.883	>0.90	>0.90				Explore potential mitigation
CYVL-V-480	INDUSTRL 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8854	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-481	INGRM C. 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8906	>0.90	>0.90	>0.90	>0.90				Action Plan

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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
CYVL-V-482	KASSON 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8871	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-483	KNIGHTSLJ 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8684	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-484	KNIGHT1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.5563	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-485	KNIGHT2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.5535	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-486	KNIGHTLD 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.5562	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-487	KNTJALT 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8724	>0.90	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan
CYVL-V-488	KSSN-JC1 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8813	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-489	KSSN-JC2 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8893	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-490	LAMMERS 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.876	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-491	LEPRINO 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.878	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-492	LIMESTNE 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.359	0.8288	>0.90	>0.90				Sierra Action Plan
CYVL-V-493	LINCLN 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.7951	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-494	LIVE OAK 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8638	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-495	LOCKEFRD 60 kV	P1-2:A11:11:_Stagg 230/21 kV Bank 6 and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.8996	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-496	LOCKFORD 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8119	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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
CYVL-V-497	LODI 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8863	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-498	LODI JCT 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8934	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-499	MANTECA 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8911	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-500	MAXTAP 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-2:A4:13:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	0.8808	0.8678	>0.90	>0.90	>0.90				Sacramento Action Plan
CYVL-V-501	MAXTAP 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.90	>0.90	0.8435	>0.90	>0.90				Sacramento Action Plan
CYVL-V-502	MCLANE 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8862	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-503	MDDLE FK 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8601	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-504	MDDLFK M 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8597	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-505	MERIDIAN 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P6	N-1/N-1	>0.90	>0.90	0.883	>0.90	>0.90				Sacramento Action Plan
CYVL-V-506	METTLER 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1889	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-507	MIDLFORK 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8927	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-508	MIZOU_T1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.338	0.778	>0.90	>0.90				Sierra Action Plan
CYVL-V-509	MIZOU_T2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3029	0.7554	>0.90	>0.90				Sierra Action Plan
CYVL-V-510	MOBILCHE 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.4495	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-511	MONDAVI 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8853	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-512	MORADAJT 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1972	>0.90	>0.90	0.8456	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL

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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
CYVL-V-513	MSHR 60V 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.3489	>0.90	>0.90	0.8901					Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-514	MTN_QJCT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6154	0.9228	>0.90	>0.90				Sierra Action Plan
CYVL-V-515	MTN_QUAR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6099	0.9193	>0.90	>0.90				Sierra Action Plan
CYVL-V-516	NARRWS 1 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.848				Sierra Action Plan
CYVL-V-517	NARRWS 2 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8483				Sierra Action Plan
CYVL-V-518	NEW HOPE 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8732	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-519	NEWCSTL1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5174	0.838	>0.90	>0.90				Sierra Action Plan
CYVL-V-520	NEWCSTL2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8944	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-521	NEWCSTLE 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5176	0.8383	>0.90	>0.90				Sierra Action Plan
CYVL-V-522	NEWMAN 60 kV	P1-2:A12:19:_S539SS-Newman #1 60 kV Line and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	0.8998	>0.90	>0.90				Explore potential mitigation
CYVL-V-523	NEWMAN 60 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8756	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-524	NRRWS1TP 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.839				Sierra Action Plan
CYVL-V-525	NRRWS2TP 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8489				Sierra Action Plan
CYVL-V-526	NW HPE J 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8858	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-527	NWMN JCT 60 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8776	>0.90	>0.90	>0.90	>0.90				Action Plan

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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
CYVL-V-528	OI GLASS 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8756	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-529	OLETA 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.2962	0.7897	>0.90	>0.90				Explore potential mitigation
CYVL-V-530	OLIVH J1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.7846	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-531	OLIVH J3 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8768	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-532	OLIVHRST 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.7843	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-533	OWENSTP1 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8763	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-534	OWENSTP2 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8995	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-535	OXBOW 60 kV	P1-3:A5:27:_ROLLINS 60/6.6 kV GSU Transformer and P1-3:A5:28:_OXBOW 60/9.11 kV GSU Transformer	P6	N-1/N-1	0.8615	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-536	OXBOW 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P6	N-1/N-1	>0.90	0.8641	0.8752	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Atlantic-Placer 115 kV Line and serve Forest Hill from Placer
CYVL-V-537	PALERMO 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8832	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-538	PATTERSN 60 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8945	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-539	PEACHTON 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8716	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-540	PEASE 60 kV	P1-2:A4:10:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8696	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-541	PENRYN 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5903	0.9123	>0.90	>0.90				Sierra Action Plan
CYVL-V-542	PIKE CTY 60 kV	P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8619				Sierra Action Plan

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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
CYVL-V-543	PLACER 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.62	0.9303	>0.90	>0.90				Sierra Action Plan
CYVL-V-544	PLACER 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.6201	0.9256	>0.90	>0.90				Sierra Action Plan
CYVL-V-545	PLACER 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8884	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-546	PLACER 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.5819	0.8611	>0.90	>0.90				Sierra Action Plan
CYVL-V-547	PLAINFLD 60 kV	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P6	N-1/N-1	0.8503	0.8529	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion
CYVL-V-548	PLCRVLB2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8906	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-549	PLCRVLB2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.303	0.763	>0.90	>0.90				Sierra Action Plan
CYVL-V-550	PLCRVLT1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3349	0.777	>0.90	>0.90				Sierra Action Plan
CYVL-V-551	PLCRVLT2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8908	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-552	PLCRVLT2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3031	0.7559	>0.90	>0.90				Sierra Action Plan
CYVL-V-553	PLFLDJCT 60 kV	P1-1:A4:22:_WOLFSKIL 13.80 Generator ID 1 and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P6	N-1/N-1	0.8589	0.8632	>0.90	>0.90	>0.90				Explore potential mitigation
CYVL-V-554	PLSNT GR 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8285	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-555	PLUMAS 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8352	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: East Nicolaus Reinforcement Project
CYVL-V-556	POE 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8419	>0.90	>0.90	>0.90	>0.90				Explore potential mitigation
CYVL-V-557	POST 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.2994	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-558	POST 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	>0.90	0.894	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-559	RALSTON 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8901	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan

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
CYVL-V-560	RIO OSO 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.7535	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-561	RIPON 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.892	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-562	RK C JT1 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8429	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-563	RK C JT2 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8398	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-564	ROCKCK 1 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8429	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-565	ROCKCK 2 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8398	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-566	ROCKLIN 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8408	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-567	ROLLINS 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.7885	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-568	ROLLNSTP 60 kV	P1-2:A5:13:_Rio Oso - Brighton 230 kV Line and P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P6	N-1/N-1	>0.90	0.8827	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-569	RPN JCN 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8916	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-570	RPNJN2 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:55:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8972	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-571	SEBASTIA 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1173	>0.90	>0.90	0.8059	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-572	SHADYGLN 60 kV	P1-2:A4:10:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8992	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-573	SHADYGLN 60 kV	P1-2:A5:13:_Rio Oso - Brighton 230 kV Line and P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P6	N-1/N-1	>0.90	0.8827	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-574	SHPRING 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8927	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-575	SHPRING 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3101	0.7657	>0.90	>0.90				Sierra Action Plan

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
CYVL-V-576	SHPRING 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.31	0.7584	>0.90	>0.90				Sierra Action Plan
CYVL-V-577	SHPRING1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3442	0.78	>0.90	>0.90				Sierra Action Plan
CYVL-V-578	SHPRING2 115 kV	P1-2:A4:10:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8931	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-579	SHPRING2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3107	0.7589	>0.90	>0.90				Sierra Action Plan
CYVL-V-580	SHW 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1147	>0.90	>0.90	0.8036	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-581	SHWSS 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1148	>0.90	>0.90	0.8036	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-582	SIERRAPI 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.827	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-583	SMRTSVLE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8488				Sierra Action Plan
CYVL-V-584	SMRTVLE1 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8488				Sierra Action Plan
CYVL-V-585	SMRTVLE 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8488				Sierra Action Plan
CYVL-V-586	SPAULDNG 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8515	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-587	SPI JCT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.793	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vaca-Davis Voltage Conversion
CYVL-V-588	SPICAMIN 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.3191	0.7685	>0.90	>0.90				Sierra Action Plan
CYVL-V-589	SPI-LINC 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.793	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-590	STAGG 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1423	>0.90	>0.90	0.8254	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-591	SUMMIT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8895	>0.90	>0.90	>0.90				Sierra Action Plan

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
CYVL-V-592	TAMARACK 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.90	0.8796	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-593	TAYLOR 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8423	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-594	TERMNOUS 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1219	>0.90	>0.90	0.8104	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-595	TERMNS J 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1242	>0.90	>0.90	0.8118	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-596	TRACY 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8773	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-597	TRACY JC 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8827	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-598	TRES VIS 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8948	>0.90	>0.90	>0.90	>0.90				Explore potential mitigation
CYVL-V-599	TUDOR 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8543	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: East Nicolaus Reinforcement Project
CYVL-V-600	UCD_TP2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3156	0.8916	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-601	UCDAVSJ1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.3156	0.8916	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-602	ULTRA JT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8232	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-603	UOP 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1494	>0.90	>0.90	0.8287	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-604	VALLY HM 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8961	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-605	VICTOR 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.8895	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-606	VIERRA 115 kV	P1-2:A11:41:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:46:_Vierra - Tracy - Kasson 115 kV Line	P6	N-1/N-1	0.8993	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project

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
CYVL-V-607	VLHMT1 115 kV	P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8962	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-608	W.SCRMNO 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:9:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.2978	0.8944	>0.90	>0.90	>0.90				Short Term: Sacramento Action Plan, Long Term: Vaca-Davis voltage conversion & Rio Oso Voltage Support Project
CYVL-V-609	WATRLJCT 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.5867	>0.90	>0.90	0.9501	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-610	WDLND_BM 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.4199	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-611	WEMR SWS 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8949	>0.90	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-612	WEMR SWS 60 kV	P1-2:A5:13:_Rio Oso - Brighton 230 kV Line and P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P6	N-1/N-1	>0.90	0.8727	>0.90	>0.90	>0.90				Sierra Action Plan
CYVL-V-613	WESCOT1 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.90	>0.90	0.896	>0.90	>0.90				Sacramento Action Plan
CYVL-V-614	WEST JCT 60 kV	P1-2:A5:23:_Colgate - Palermo 60 kV Line (Bangor-Colgate) and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8395				Sierra Action Plan
CYVL-V-615	WESTLEY 60 kV	P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3 and P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1	P6	N-1/N-1	0.8507	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-616	WESTLEY 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	>0.90	>0.90	0.865	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-617	WHEATLND 60 kV	P1-2:A5:10:_Rio Oso - Brighton 230 kV Line and P1-2:A4:10:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.8386	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-618	WHEATLND 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P6	N-1/N-1	>0.90	0.8996	0.8919	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-619	WHTLND1 60 kV	P1-2:A5:10:_Rio Oso - Brighton 230 kV Line and P1-2:4:3:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	0.8387	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-620	WHTLND1 60 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P6	N-1/N-1	>0.90	0.8998	0.892	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line
CYVL-V-621	WHTLND1 60 kV	P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line and P1-3:A5:1:_Colgate #3 230/60 kV Transformer	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.8292				Short Term: Sierra Action Plan, Long Term: New Pease - Marysville 60 kV Line

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
CYVL-V-622	WODBRG J 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A11:4:_Lockeford - Bellota 230 kV Line	P6	N-1/N-1	0.8915	>0.90	>0.90	>0.90	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-623	WOODLD 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.4396	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.
CYVL-V-624	WSID 60 kV	P1-3:A11:17:_Tesla 230/115 kV Transformer No. 3 and P1-3:A11:16:_Tesla 230/115 kV Transformer No. 1	P6	N-1/N-1	0.851	>0.90	>0.90	>0.90	>0.90				Action Plan
CYVL-V-625	WSID 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	>0.90	>0.90	0.8653	>0.90	>0.90				Action Plan. Long term mitigation Vierra looping project
CYVL-V-626	WSTLNESW 60 kV	P1-2:A11:10:_Eight Mile - Stagg 230 kV Line and P1-2:A11:8:_Stagg - Tesla 230 kV Line	P6	N-1/N-1	0.1617	>0.90	>0.90	0.8338	>0.90				Action Plan. Long term mitigation Eight Mile Lodi Industrial - Lockeford 230 kV DCTL
CYVL-V-627	YBA CTYJ 60 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8855	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: New Pease 115/60 kV Transformer
CYVL-V-628	YUBAGOLD 60 kV	P1-3:A5:1:_Colgate #3 230/60 kV Transformer and P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line	P6	N-1/N-1	>0.90	>0.90	>0.90	>0.90	0.845				Sierra Action Plan
CYVL-V-629	ZAMORA 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:10:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.5338	>0.90	>0.90	>0.90	>0.90				Short Term: Sierra Action Plan, Long Term: Vaca - Davis Voltage Conversion Project.

ID	Contingency	Category	Category Description	Transient Stability Performance						Potential Mitigation Solutions		
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	N/A	N/A	N/A		N/A	N/A
CYVL-TS-1	Vaca - Lambie 230 kV Line	P1-2	Line	Non	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Non						Investigate/ Explore potential mitigation
CYVL-TS-2	Vaca-Dixon No. 12 500/230 kV Transformer Tertiary	P1-3	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
CYVL-TS-3	30460 VACA-DIX 115kV Bus	P2-2	Bus	Non	Load Bus Voltage Dip> 20%; Load Bus Voltage Dip 20% for 20 Cycles	Non						Investigate/ Explore potential mitigation
CYVL-TS-4	BUS FAULT AT NON-BUS-TIE BREAKER CB1722 FAILURE AT VACA-DIXON 115kV BUS 2 FAULT AT 30460 VACA-DIX	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
				frequency at bus 31974 below limit [59.6] for [6.0] cycles	frequency at bus 31974 below limit [59.6] for [6.0] cycles	frequency at bus 31974 below limit [59.6] for [6.0] cycles						Investigate/ Explore potential mitigation
CYVL-TS-5	BUS-TIE BREAKER 202 FAULT AT VACA-DIX E 230 kV Bus 1 and Bus 2 - CB 202 Failure	P2-4	Tie-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	Non						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.

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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-1	31263 LWRLAKEJ 115 31225 HGHLNDJ1 115 1	P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P1	N-1	101.00	<100	<100						Explore potential mitigation
CYVL-T-2	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P1	N-1	119.87	<100	<100						Explore potential mitigation
CYVL-T-3	32008 SUISUN 115 31997 SCHMLBCH 115 1	P1-2:A4:41:_Vaca - Suisun 115 kV Line	P1	N-1	<100	<100	105.05						Explore potential mitigation
CYVL-T-4	32056 CORTINA 60.0 30451 CRTNA M 230 1	P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P1	N-1	155.70	159.66	145.28						Explore potential mitigation
CYVL-T-5	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P1-2:A4:42:_Cortina 60 kV Line No. 1	P1	N-1	106.01	<100	<100						Explore potential mitigation
CYVL-T-6	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P1-2:A4:44:_Cortina 60 kV Line No. 1	P1	N-1	<100	111.18	113.00						Explore potential mitigation
CYVL-T-7	32073 WESCOT1 60.0 32075 WESCOT2 60.0 3	P1-2:A4:43:_Cortina No. 4 60 kV Line	P1	N-1	<100	104.24	103.66						Explore potential mitigation
CYVL-T-8	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P1	N-1	100.38	<100	<100						Explore potential mitigation
CYVL-T-9	32088 VACA-DXN 60.0 31998 VACA-DIX 115 5	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P1	N-1	122.81	<100	<100						Explore potential mitigation
CYVL-T-10	32302 YUBACITY 60.0 32496 YCEC 13.8 1	P1-3:A5:21:_GRNLEAF2 60/13.8 kV GSU Transformer	P1	N-1	<100	109.71	<100						Explore potential mitigation
CYVL-T-11	32342 E.NICOLS 60.0 32212 E.NICOLS 115 2	P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P1	N-1	<100	118.93	122.76						Explore potential mitigation
CYVL-T-12	32514 ELDRADO2 21.6 32250 ELBORAD 115 1	P1-2:A5:28:_Missouri Flat - Gold Hill 115 kV No. 2 Line	P1	N-1	<100	100.72	<100						Explore potential mitigation
CYVL-T-13	32514 ELDRADO2 21.6 32250 ELBORAD 115 1	P1-2:A5:29:_Missouri Flat - Gold Hill 115 kV No. 1 Line	P1	N-1	101.48	<100	100.54						Explore potential mitigation
CYVL-T-14	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P1	N-1	115.61	<100	<100						Explore potential mitigation
CYVL-T-15	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-2:A11:74:_Valley Springs-Clay 60 kV Line	P1	N-1	<100	113.07	122.39						Explore potential mitigation
CYVL-T-16	33548 TRACY 115 33550 HJ HEINZ 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-17	33562 BELLOTA 115 30500 BELLOTA 230 2	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-18	33562 BELLOTA 115 33946 RVRBK J1 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-19	33562 BELLOTA 115 33950 RVRBK TP 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	121.34	128.79						Explore potential mitigation
CYVL-T-20	33562 BELLOTA 115 33950 RVRBK TP 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-21	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	128.48	125.74	135.75						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-22	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P2-4:A11:69:_33610 Valley Springs 70 kV CB6222 Internal Breaker Fault	P2	Bus-tie breaker	115.48	112.97	122.30						Explore potential mitigation
CYVL-T-23	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P2-3:A11:39:_30624 Tesla 230 kV Bus CB292 Internal Breaker Fault (1E and Bank #2)	P2	Bus-tie breaker	100.57	101.87	<100						Explore potential mitigation
CYVL-T-24	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P2-4:A11:16:_30500 Bellota 230 kV Bus CB812 Internal Breaker Fault (1D and 1E)	P2	Bus-tie breaker	<100	101.88	106.58						Explore potential mitigation
CYVL-T-25	33717 MORADAJT 60.0 33740 MSHR 60V 60.0 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	<100	<100						Short Term: Stockton Action Plan Long Term: New Stagg - Hammer 60 kV Line
CYVL-T-26	33742 MANTECA 60.0 33514 MANTECA 115 3	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	210.71	217.92	227.48						Explore potential mitigation
CYVL-T-27	33745 LID TAP 60.0 33750 CALVO 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	111.56	118.12	124.11						Explore potential mitigation
CYVL-T-28	33748 MSSDLESW 60.0 33745 LID TAP 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	114.31	120.85	126.84						Explore potential mitigation
CYVL-T-29	33750 CALVO 60.0 33756 KASSON 60.0 1	P2-2:A11:57:_33528 Kasson 115 kV Bus	P2	Bus	106.72	113.34	119.23						Explore potential mitigation
CYVL-T-30	33766 MNTCA JT 60.0 33768 BNTA CRB 60.0 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	<100	<100						Explore potential mitigation
CYVL-T-31	33768 BNTA CRB 60.0 34003 WSID TAP 60.0 1	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	102.70	<100	<100						Explore potential mitigation
CYVL-T-32	33805 GWFTRCY1 13.8 33551 GWFTRACY 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	<100	<100						Explore potential mitigation
CYVL-T-33	33807 GWFTRCY2 13.8 33551 GWFTRACY 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	<100	<100						Explore potential mitigation
CYVL-T-34	33810 SP CMPNY 13.8 33572 SP CMPNY 115 1	P2-2:A11:63:_33551 GWF Tracy 115 kV Bus	P2	Bus	<100	104.42	<100						Explore potential mitigation
CYVL-T-35	33846 PRDE 1-3 7.20 33634 PRDESWS 60.0 1	P2-4:A11:68:_33610 Valley Springs 70 kV CB6122 Internal Breaker Fault	P2	Bus-tie breaker	<100	107.48	104.30						Explore potential mitigation
CYVL-T-36	33900 DONNELLS 115 34058 DONNELLS 13.8 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	109.51	109.72						Explore potential mitigation
CYVL-T-37	33902 BRDSLY J 115 33912 SPRNG GJ 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	<100	<100						Explore potential mitigation
CYVL-T-38	33912 SPRNG GJ 115 33914 MI-WUK 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	119.39	114.55						Explore potential mitigation
CYVL-T-39	33914 MI-WUK 115 33917 FBERBORD 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	109.67	104.21						Explore potential mitigation
CYVL-T-40	33916 CURTISS 115 33917 FBERBORD 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	109.73	106.14						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-41	33932 MELONES 115 33934 TULLOCH 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	210.94	224.69						Explore potential mitigation
CYVL-T-42	33932 MELONES 115 33934 TULLOCH 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-43	33936 MELNS JB 115 33947 RIVRBKJT 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	122.51	116.92						Explore potential mitigation
CYVL-T-44	33947 RIVRBKJT 115 33951 VLYHMTP1 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	121.04	115.36						Explore potential mitigation
CYVL-T-45	33948 RVRBK J2 115 33953 VLYHMTP2 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-46	33950 RVRBK TP 115 33944 RVRBANK 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	119.41	126.68						Explore potential mitigation
CYVL-T-47	33951 VLYHMTP1 115 33517 RPNJN2 115 1	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	NConv	127.55	120.96						Explore potential mitigation
CYVL-T-48	33951 VLYHMTP1 115 33517 RPNJN2 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-49	34012 GUSTN JT 60.0 34014 NEWMAN 60.0 1	P2-2:A12:3:_34009 Q539SS 60 kV Bus	P2	Bus	130.01	130.03	134.45						Explore potential mitigation
CYVL-T-50	34050 CH.STN. 13.8 33928 CH.STN 115 1	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-51	31998 VACA-DIX 115 32003 VACA-D&1 115 1	P2-1:A4:49:_VACA-DIX-SCHMLBCH #1 115 kV and 99.4	P2-1	Line section w/o fault	104.17	<100	<100						Explore potential mitigation
CYVL-T-52	32008 SUISUN 115 31997 SCHMLBCH 115 1	P2-1:A4:65:_WEC-SUISUN #1 115 kV and 106.6	P2-1	Line section w/o fault	<100	<100	104.93						Explore potential mitigation
CYVL-T-53	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV and 29	P2-1	Line section w/o fault	145.37	<100	<100						Explore potential mitigation
CYVL-T-54	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P2-1:A4:72:_CORTINA-ARBUCKLE #1 60 kV and 29	P2-1	Line section w/o fault	<100	148.64	155.37						Explore potential mitigation
CYVL-T-55	32063 ARBJCT 60.0 32061 ARBALT 60.0 2	P2-1:A4:67:_CORTINA-ARBUCKLE #1 60 kV and 29	P2-1	Line section w/o fault	116.04	<100	<100						Explore potential mitigation
CYVL-T-56	32063 ARBJCT 60.0 32061 ARBALT 60.0 2	P2-1:A4:72:_CORTINA-ARBUCKLE #1 60 kV and 29	P2-1	Line section w/o fault	<100	119.45	124.36						Explore potential mitigation
CYVL-T-57	32073 WESCOT1 60.0 32075 WESCOT2 60.0 3	P2-1:A4:83:_WILSONAV-COLUSA #1 60 kV and 29	P2-1	Line section w/o fault	<100	100.60	103.77						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-58	32100 DIXONPGE 60.0 32101 DIXON-J2 60.0 2	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV and 62.3	P2-1	Line section w/o fault	119.46	<100	<100						Explore potential mitigation
CYVL-T-59	32218 DRUM 115 32244 BRNSWCKP 115 2	P2-1:A5:38:_CHCGO PK-HIGGINS #1 115 kV and 64.7	P2-1	Line section w/o fault	112.70	103.78	105.53						Explore potential mitigation
CYVL-T-60	32250 ELDORAD 115 32481 APLHTAP2 115 2	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV and 64.7	P2-1	Line section w/o fault	199.23	188.19	229.38						Explore potential mitigation
CYVL-T-61	32255 PLCRVLT1 115 32261 MIZOU_T1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV and 125.7	P2-1	Line section w/o fault	108.61	102.51	126.00						Explore potential mitigation
CYVL-T-62	32267 DIMOND_1 115 32262 SHPRING1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV and 151.2	P2-1	Line section w/o fault	<100	<100	106.06						Short Term: Sierra Action Plan, Long Term: Gold Hill SPS and add 3rd Gold Hill 230/115 kV Transformer or Pine Hill Sub
CYVL-T-63	32302 YUBACITY 60.0 32496 YCEC 13.8 1	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV and 56	P2-1	Line section w/o fault	<100	111.63	99.77						Explore potential mitigation
CYVL-T-64	32302 YUBACITY 60.0 32496 YCEC 13.8 1	P2-1:A5:99:_YBA CTYJ-PEASE #1 60 kV and 56	P2-1	Line section w/o fault	<100	109.72	98.95						Explore potential mitigation
CYVL-T-65	32481 APLHTAP2 115 32257 PLCRVLT2 115 2	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV and 64.7	P2-1	Line section w/o fault	199.25	188.19	229.28						Explore potential mitigation
CYVL-T-66	32482 APLHTAP1 115 32255 PLCRVLT1 115 1	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV and 77.5	P2-1	Line section w/o fault	180.46	170.32	209.32						Explore potential mitigation
CYVL-T-67	32514 ELDRADO2 21.6 32250 ELDORAD 115 1	P2-1:A5:55:_PLCRVLT1-MIZOU_T1 #1 115 kV and 11.5	P2-1	Line section w/o fault	101.50	<100	100.57						Explore potential mitigation
CYVL-T-68	33500 MELNS JA 115 33509 AVENATP1 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-69	33506 STANISLS 115 33948 RVRBK J2 115 1	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-70	33509 AVENATP1 115 33514 MANTECA 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-71	33511 AVENATP2 115 33514 MANTECA 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-72	33516 RPN JNCN 115 33514 MANTECA 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-73	33516 RPN JNCN 115 33520 RIPON 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 87.6	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-74	33530 KSSN-JC2 115 33550 HJ HEINZ 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 105.2	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-75	33540 TESLA 115 33544 ELLS GTY 115 1	P2-2:A11:20:_BUS FAULT AT 33549 SCHULTE 115.00 and 164.3	P2-1	Line section w/o fault	108.48	<100	<100						Explore potential mitigation
CYVL-T-76	33540 TESLA 115 33544 ELLS GTY 115 1	P2-4:A11:20:_BUS-TIE BREAKER FAULT AT 33549 SCHULTE 115.00 and 164.3	P2-1	Line section w/o fault	108.48	<100	<100						Explore potential mitigation
CYVL-T-77	33548 TRACY 115 33550 HJ HEINZ 115 1	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00 and 105.2	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-78	33562 BELLOTA 115 30500 BELLOTA 230 2	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 200	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-79	33562 BELLOTA 115 33946 RVRBK J1 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 87	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-80	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P2-1:A11:110:_CLAY-BUENA_TP #1 60 kV and 30.9	P2-1	Line section w/o fault	<100	113.26	122.94						Explore potential mitigation
CYVL-T-81	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P2-2:A11:12:_BUS FAULT AT 30624 TESLA E 230.00 and 41.3	P2-1	Line section w/o fault	100.59	<100	<100						Explore potential mitigation
CYVL-T-82	33742 MANTECA 60.0 33514 MANTECA 115 3	P2-4:A11:19:_BUS-TIE BREAKER FAULT AT 33540 TESLA 115.00 and 31.2	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-83	33742 MANTECA 60.0 33703 LOUISJCT 60.0 1	P2-2:A11:18:_BUS FAULT AT 33528 KASSON 115.00 and 29	P2-1	Line section w/o fault	153.69	<100	<100						Explore potential mitigation
CYVL-T-84	33745 LID TAP 60.0 33750 CALVO 60.0 1	P2-2:A11:18:_BUS FAULT AT 33528 KASSON 115.00 and 35	P2-1	Line section w/o fault	111.56	<100	<100						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-85	33748 MSSDLESW 60.0 33745 LID TAP 60.0 1	P2-2:A11:18:_BUS FAULT AT 33528 KASSON 115.00 and 35	P2-1	Line section w/o fault	114.31	<100	<100						Explore potential mitigation
CYVL-T-86	33750 CALVO 60.0 33756 KASSON 60.0 1	P2-2:A11:18:_BUS FAULT AT 33528 KASSON 115.00 and 35	P2-1	Line section w/o fault	106.72	<100	<100						Explore potential mitigation
CYVL-T-87	33805 GWFTRCY1 13.8 33551 GWFTRACY 115 1	P2-2:A11:13:_BUS FAULT AT 30625 TESLA D 230.00 and 100	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-88	33807 GWFTRCY2 13.8 33551 GWFTRACY 115 1	P2-2:A11:13:_BUS FAULT AT 30625 TESLA D 230.00 and 100	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-89	33846 PRDE 1-3 7.20 33634 PRDESW 60.0 1	P2-1:A11:111:_LINE_TP-CLAY #1 60 kV and 19	P2-1	Line section w/o fault	<100	109.40	108.22						Explore potential mitigation
CYVL-T-90	33932 MELONES 115 33500 MELNS JA 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-91	33932 MELONES 115 33934 TULLOCH 115 1	P2-2:A11:7:_BUS FAULT AT 30500 BELLOTA 230.00 and 87.6	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-92	33932 MELONES 115 33936 MELNS JB 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-93	33947 RVRBKJT 115 33951 VLYHMTP1 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 56	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-94	33948 RVRBK J2 115 33953 VLYHMTP2 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 60.4	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-95	33950 RVRBK TP 115 33934 TULLOCH 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 87.6	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-96	33951 VLYHMTP1 115 33517 RPNJN2 115 1	P2-2:A11:19:_BUS FAULT AT 33540 TESLA 115.00 and 60.4	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation
CYVL-T-97	34016 MEDLIN J 60.0 34018 NWMN JCT 60.0 1	P2-1:A12:43:_SALADO-PATTERSN #1 60 kV and 42.7	P2-1	Line section w/o fault	98.78	101.08	102.15						Explore potential mitigation
CYVL-T-98	34050 CH.STN. 13.8 33928 CH.STN 115 1	P2-2:A11:13:_BUS FAULT AT 30625 TESLA D 230.00 and 25	P2-1	Line section w/o fault	NConv	<100	<100						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-99	30500 BELLOTA 230 30505 WEBER 230 1	P1-1:A11:19:_COG.NTNL 13.80 Generator ID 1 and P1-2:A11:21:_Tesla - Weber 230 kV Line	P3	G-1/N-1	<100.0	<100.0	102.11						Explore potential mitigation
CYVL-T-100	30505 WEBER 230 30624 TESLA E 230 1	P1-1:A11:19:_COG.NTNL 13.80 Generator ID 1 and P1-2:A11:17:_Bellota - Weber 230 kV Line	P3	G-1/N-1	<100.0	<100.0	103.01						Explore potential mitigation
CYVL-T-101	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P3	G-1/N-1	119.88	<100.0	<100.0						Explore potential mitigation
CYVL-T-102	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:38:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	103.37	<100.0	<100.0						Explore potential mitigation
CYVL-T-103	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<100.0	114.56	123.65						Explore potential mitigation
CYVL-T-104	32008 SUISUN 115 31997 SCHMLBCH 115 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<100.0	<100.0	105.33						Explore potential mitigation
CYVL-T-105	32056 CORTINA 60.0 30451 CRTNA M 230 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	155.70	137.08	123.28						Explore potential mitigation
CYVL-T-106	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	106.01	<100.0	<100.0						Explore potential mitigation
CYVL-T-107	32057 HUSTD 60.0 32056 CORTINA 60.0 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	<100.0	114.10	116.13						Explore potential mitigation
CYVL-T-108	32070 CLSA JCT 60.0 32073 WESCOT1 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	<100.0	106.89	106.36						Explore potential mitigation
CYVL-T-109	32073 WESCOT1 60.0 32075 WESCOT2 60.0 3	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	<100.0	106.90	106.36						Explore potential mitigation
CYVL-T-110	32088 VACA-DIXN 60.0 31998 VACA-DIX 115 5	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P3	G-1/N-1	122.81	<100.0	<100.0						Explore potential mitigation
CYVL-T-111	32342 E.NICOLS 60.0 32212 E.NICOLS 115 2	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P3	G-1/N-1	<100.0	118.94	122.75						Explore potential mitigation
CYVL-T-112	32374 DRUM 60.0 32376 BONNIE N 60.0 1	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	103.16	104.03	110.72						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-113	32376 BONNIE N 60.0 32367 CPEHRNTP 60.0 1	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	<100.0	<100.0	102.92						Explore potential mitigation
CYVL-T-114	33540 TESLA 115 33541 AEC_TP1 115 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:53:_Tesla - Schulte 115 kV Line No. 2	P3	G-1/N-1	102.07	<100.0	<100.0						Explore potential mitigation
CYVL-T-115	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P3	G-1/N-1	128.62	<100.0	<100.0						Explore potential mitigation
CYVL-T-116	33610 VLLY SPS 60.0 33619 AMFOR_SW 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:74:_Valley Springs-Clay 60 kV Line	P3	G-1/N-1	<100.0	125.89	<100.0						Explore potential mitigation
CYVL-T-117	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:73:_Valley Springs-Clay 60 kV Line	P3	G-1/N-1	115.61	<100.0	<100.0						Explore potential mitigation
CYVL-T-118	33619 AMFOR_SW 60.0 33616 MARTELL 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:74:_Valley Springs-Clay 60 kV Line	P3	G-1/N-1	<100.0	113.10	<100.0						Explore potential mitigation
CYVL-T-119	33636 N.HGN JT 60.0 33640 CORRAL 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:76:_Weber - Mormon Jct 60 kV Line	P3	G-1/N-1	106.57	<100.0	<100.0						Explore potential mitigation
CYVL-T-120	33636 N.HGN JT 60.0 33640 CORRAL 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A11:77:_Weber - Mormon Jct 60 kV Line	P3	G-1/N-1	<100.0	106.61	114.20						Explore potential mitigation
CYVL-T-121	33662 WEBER 2 60.0 33674 HAZLTN J 60.0 1	P1-1:A11:19:_COG.NTNL 13.80 Generator ID 1 and P1-2:A11:82:_Stockton 'A' - Weber 60 kV Line No. 2	P3	G-1/N-1	<100.0	<100.0	112.86						Explore potential mitigation
CYVL-T-122	33805 GWFTRCY1 13.8 33551 GWFTRACY 115 1	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-2:A11:5:_Tesla - Vierra 115 kV Line	P3	G-1/N-1	<100.0	<100.0	102.32						Explore potential mitigation
CYVL-T-123	33900 DONNELLS 115 34058 DONNELLS 13.8 1	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	101.62	<100.0	<100.0						Explore potential mitigation
CYVL-T-124	33936 MELNS JB 115 33947 RIVRBKJT 115 1	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	<100.0	<100.0	101.22						Explore potential mitigation
CYVL-T-125	34002 SALADO 60.0 34008 STNSLSRP 60.0 1	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	<100.0	100.10	<100.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-126	34008 STNSLSRP 60.0 34009 Q539SS 60.0 1	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	100.14	100.30	101.10						Explore potential mitigation
CYVL-T-127	34009 Q539SS 60.0 34016 MEDLIN J 60.0 1	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	<100.0	100.93	101.87						Explore potential mitigation
CYVL-T-128	34009 Q539SS 60.0 34016 MEDLIN J 60.0 1	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	100.13	100.30	101.10						Explore potential mitigation
CYVL-T-129	34012 GUSTN JT 60.0 34014 NEWMAN 60.0 1	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	<100.0	111.61	118.36						Explore potential mitigation
CYVL-T-130	31116 GRBRVLE 60.0 31118 KEKAWAKA 60.0 1	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	101.35	100.96						Explore potential mitigation
CYVL-T-131	31118 KEKAWAKA 60.0 31308 LYTNVLE 60.0 1	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	101.27	100.86						Explore potential mitigation
CYVL-T-132	31220 EGLE RCK 115 31228 HOMSTKTP 115 1	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	107.60	<100.0						Explore potential mitigation
CYVL-T-133	31263 LWRLAKEJ 115 31225 HGHLNDJ1 115 1	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	132.05	120.95						Explore potential mitigation
CYVL-T-134	31640 TRES VIS 60.0 31644 BIGGSJCT 60.0 1	P1-2:A5:31:_Palermo - Pease 115 kV Line and P1-2:A5:32:_Pease - Rio Oso 115 kV Line	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
CYVL-T-135	31642 PEACHTON 60.0 31644 BIGGSJCT 60.0 1	P1-2:A5:31:_Palermo - Pease 115 kV Line and P1-2:A5:32:_Pease - Rio Oso 115 kV Line	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
CYVL-T-136	31962 WDLND_BM 115 31970 WOODLD 115 1	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	155.55	<100.0	<100.0						Explore potential mitigation
CYVL-T-137	31964 KNIGHT2 115 31968 WODLNDJ2 115 2	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	102.21	<100.0	<100.0						Explore potential mitigation
CYVL-T-138	31984 BRIGHTN 115 31993 BRKRJCT 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P6	N-1/N-1	139.02	<100.0	<100.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-139	31993 BRKRJCT 115 32001 UCD_TP2 115 1	P1-2:A4:32:_West Sacramento - Brighton 115 kV Line and P1-2:A4:29:_Woodland - Davis 115 kV Line	P6	N-1/N-1	137.65	<100.0	<100.0						Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-140	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-3:A4:16:_Vaca Dixon 230/115 kV Transformer No. 2 and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P6	N-1/N-1	<100.0	111.38	117.57						Explore potential mitigation
CYVL-T-141	31998 VACA-DIX 115 30460 VACA-DIX 230 3	P1-3:A4:17:_Cortina #5 115/60 kV Transformer and P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4	P6	N-1/N-1	119.88	<100.0	<100.0						Explore potential mitigation
CYVL-T-142	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-2:A11:28:_Delta Switching Yard - Tesla 230 kV Line and P1-2:A4:38:_Vaca - Suisun 115 kV Line	P6	N-1/N-1	103.39	<100.0	<100.0						Explore potential mitigation
CYVL-T-143	31998 VACA-DIX 115 31997 SCHMLBCH 115 1	P1-2:A11:28:_Delta Switching Yard - Tesla 230 kV Line and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P6	N-1/N-1	<100.0	114.62	123.68						Explore potential mitigation
CYVL-T-144	32001 UCD_TP2 115 31990 DAVIS 115 1	P1-2:A4:29:_Woodland - Davis 115 kV Line and P1-2:A4:32:_West Sacramento - Brighton 115 kV Line	P6	N-1/N-1	111.32	<100.0	<100.0						Short Term: Sierra Action Plan, Long Term: South of Palermo 115 kV Reinforcement Project and Rio Oso 230 kV BAAH Conversion
CYVL-T-145	32008 SUISUN 115 31997 SCHMLBCH 115 1	P1-4:A5:3:_GOLDHILL 115.00 SVD ID v and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P6	N-1/N-1	<100.0	<100.0	105.37						Explore potential mitigation
CYVL-T-146	32018 GOLDHILL 115 32231 HORSHE2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	108.46	106.36	108.18						Explore potential mitigation
CYVL-T-147	32056 CORTINA 60.0 32065 WILL JCT 60.0 4	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	112.06	<100.0						Explore potential mitigation
CYVL-T-148	32065 WILL JCT 60.0 32055 MAXTAP 60.0 4	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<100.0	112.11	<100.0						Explore potential mitigation
CYVL-T-149	32082 PLFLDJCT 60.0 32090 WINTERS 60.0 1	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9 and P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P6	N-1/N-1	103.81	<100.0	<100.0						Explore potential mitigation
CYVL-T-150	32082 PLFLDJCT 60.0 32092 PLAINFLD 60.0 1	P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9 and P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P6	N-1/N-1	104.74	<100.0	<100.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-151	32174 GOOSEHGT 13.8 30478 LAMBIE 230 1	P1-3:A4:1:_Vaca-Dixon No. 11 500/230 kV Transformer Tertiary and P1-3:A4:2:_Vaca-Dixon No. 12 500/230 kV Transformer Tertiary	P6	N-1/N-1	<100.0	101.12	101.25						Explore potential mitigation
CYVL-T-152	32185 WOLFSKIL 13.8 32011 WEC 115 1	P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4 and P1-3:A4:7:_Vaca Dixon 230/115 kV Transformer No. 3	P6	N-1/N-1	<100.0	100.45	100.45						Explore potential mitigation
CYVL-T-153	32214 RIO OSO 115 31964 KNIGHT2 115 2	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	102.20	<100.0	<100.0						Explore potential mitigation
CYVL-T-154	32214 RIO OSO 115 31986 W.SCRMNO 115 1	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	139.76	<100.0	<100.0						Explore potential mitigation
CYVL-T-155	32214 RIO OSO 115 32244 BRNSWCKP 115 2	P1-2:A5:43:_Higgins - Bell 115 kV Line and P1-2:A5:39:_Drum - Rio Oso 115 kV No. 1 Line	P6	N-1/N-1	108.30	<100.0	<100.0						Explore potential mitigation
CYVL-T-156	32214 RIO OSO 115 32244 BRNSWCKP 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	108.75	<100.0						Explore potential mitigation
CYVL-T-157	32218 DRUM 115 32220 DTCH FL1 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	217.34	152.64	175.36						Explore potential mitigation
CYVL-T-158	32218 DRUM 115 32244 BRNSWCKP 115 2	P1-2:A5:41:_Drum - Higgins 115 kV Line and P1-2:A5:39:_Drum - Rio Oso 115 kV No. 1 Line	P6	N-1/N-1	125.65	100.22	100.37						Explore potential mitigation
CYVL-T-159	32220 DTCH FL1 115 32224 CHCGO PK 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	133.91	<100.0	110.82						Explore potential mitigation
CYVL-T-160	32224 CHCGO PK 115 32232 HIGGINS 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	158.04	123.65	135.81						Explore potential mitigation
CYVL-T-161	32225 BRNSWKTP 115 32222 DTCH FL2 115 1	P1-2:A5:41:_Drum - Higgins 115 kV Line and P1-2:A5:40:_Drum - Rio Oso 115 kV No. 2 Line	P6	N-1/N-1	133.05	100.71	100.79						Explore potential mitigation
CYVL-T-162	32228 PLACER 115 32238 BELL PGE 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	118.55	<100.0	90.99						Explore potential mitigation
CYVL-T-163	32228 PLACER 115 32239 FLINT2 115 2	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	115.31	113.88	115.91						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-164	32228 PLACER WISE 115 12.0 32512 1	P1-2:A11:44:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A5:43:_Higgins - Bell 115 kV Line	P6	N-1/N-1	<100.0	102.66	101.97						Explore potential mitigation
CYVL-T-165	32229 HORSHE1 NEWCSTL1 115 115 1 32233	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	128.47	127.67	131.41						Explore potential mitigation
CYVL-T-166	32232 HIGGINS BELL PGE 115 115 1 32238	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	130.93	<100.0	107.58						Explore potential mitigation
CYVL-T-167	32233 NEWCSTL1 FLINT1 115 115 1 32236	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	124.31	117.49	121.12						Explore potential mitigation
CYVL-T-168	32235 NEWCSTL2 FLINT2 115 115 2 32239	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	108.28	106.13	107.73						Explore potential mitigation
CYVL-T-169	32236 FLINT1 PLACER 115 115 1 32228	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	124.26	117.42	121.06						Explore potential mitigation
CYVL-T-170	32302 YUBACITY YCEC 60.0 13.8 32496 1	P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2 and P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1	P6	N-1/N-1	<100.0	NConv	<100.0						Explore potential mitigation
CYVL-T-171	32326 ENCL TAP PEASE 60.0 60.0 32332 1	P1-2:A5:32:_Pease - Rio Oso 115 kV Line and P1-2:A5:31:_Palermo - Pease 115 kV Line	P6	N-1/N-1	NConv	<100.0	<100.0						Explore potential mitigation
CYVL-T-172	32326 ENCL TAP PEASE 60.0 60.0 32332 1	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	135.66	<100.0	<100.0						Explore potential mitigation
CYVL-T-173	32342 E.NICOLS E.NICOLS 60.0 115 2 32212	P1-2:A5:66:_Smartville - Nicolaus #1 60 kV Line and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P6	N-1/N-1	100.05	120.29	123.14						Explore potential mitigation
CYVL-T-174	32412 ATLANTIC PLACER 115 115 1 32228	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	162.22	169.73	175.28						Explore potential mitigation
CYVL-T-175	32450 COLGATE1 COLGATE 13.8 230 1 30327	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	101.21	<100.0						Explore potential mitigation
CYVL-T-176	32458 RALSTON RALSTON 13.8 230 1 30340	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	101.83	101.84						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-177	32460 NEWCASTLE 13.2 32234 NEWCASTLE 115 1	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<100.0	104.36	103.96						Explore potential mitigation
CYVL-T-178	32462 CHI.PARK 11.5 32224 CHCGO PK 115 1	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<100.0	103.91	103.86						Explore potential mitigation
CYVL-T-179	32508 FRNCH MD 4.16 32388 FRNCH MS 60.0 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<100.0	101.77	101.74						Explore potential mitigation
CYVL-T-180	32513 ELDRADO1 21.6 32250 ELDORAD 115 1	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	108.06	107.71	106.98						Explore potential mitigation
CYVL-T-181	32514 ELDRADO2 21.6 32250 ELDORAD 115 1	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	108.06	107.39	107.20						Explore potential mitigation
CYVL-T-182	33504 CATARACT 115 33503 FRGTNTP2 115 1	P1-2:A11:3:_Stanislaus - Manteca 115 kV Line No. 2 and P1-2:A11:41:_Stanislaus-Melones-Manteca 115 kV Line No. 1	P6	N-1/N-1	110.67	<100.0	<100.0						Explore potential mitigation
CYVL-T-183	33506 STANISLS 115 33501 FRGTNTP1 115 1	P1-2:A11:2:_Stanislaus-Melones-Riverbank Jct 115 kV Line and P1-2:A11:3:_Stanislaus - Manteca 115 kV Line No. 2	P6	N-1/N-1	110.54	<100.0	<100.0						Explore potential mitigation
CYVL-T-184	33506 STANISLS 115 33504 CATARACT 115 1	P1-2:A11:3:_Stanislaus - Manteca 115 kV Line No. 2 and P1-2:A11:41:_Stanislaus-Melones-Manteca 115 kV Line No. 1	P6	N-1/N-1	110.68	<100.0	<100.0						Explore potential mitigation
CYVL-T-185	33506 STANISLS 115 33948 RVRBK J2 115 1	P1-2:A11:2:_Stanislaus-Melones-Riverbank Jct 115 kV Line and P1-2:A11:41:_Stanislaus-Melones-Manteca 115 kV Line No. 1	P6	N-1/N-1	110.55	<100.0	<100.0						Explore potential mitigation
CYVL-T-186	33514 MANTECA 115 33526 KSSN-JC1 115 1	P1-2:A11:51:_Tesla - Vierra 115 kV Line and P1-2:A11:49:_Vierra - Tracy - Kasson 115 kV Line	P6	N-1/N-1	<100.0	101.40	101.24						Explore potential mitigation
CYVL-T-187	33516 RPN JNCN 115 33514 MANTECA 115 1	P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2 and P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1	P6	N-1/N-1	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-188	33526 KSSN-JC1 115 33528 KASSON 115 1	P1-2:A11:59:_Schulte - Lammers 115 kV Line and P1-2:A11:55:_Tesla - Tracy 115 kV Line	P6	N-1/N-1	111.43	109.12	119.22						Explore potential mitigation
CYVL-T-189	33533 OWENSTP2 115 33526 KSSN-JC1 115 1	P1-2:A11:5:_Tesla - Vierra 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	<100.0	105.21	106.94						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-190	33537 SFWY_TP1 115 33549 SCHULTE 115 1	P1-2:A11:55:_Tesla - Tracy 115 kV Line and P1-2:A11:53:_Tesla - Schulte 115 kV Line No. 2	P6	N-1/N-1	108.20	<100.0	<100.0						Explore potential mitigation
CYVL-T-191	33540 TESLA 115 33543 AEC_TP2 115 1	P1-2:A11:51:_Tesla - Vierra 115 kV Line and P1-2:A11:54:_Tesla - Schulte 115 kV Line No. 1	P6	N-1/N-1	134.04	<100.0	<100.0						Explore potential mitigation
CYVL-T-192	33540 TESLA 115 33544 ELLS GTU 115 1	P1-2:A11:44:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	108.78	101.49	108.02						Explore potential mitigation
CYVL-T-193	33542 LEPRINO 115 33546 TRACY JC 115 1	P1-2:A11:44:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	106.81	<100.0	106.08						Explore potential mitigation
CYVL-T-194	33542 LEPRINO 115 33548 TRACY 115 1	P1-2:A11:44:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	137.41	128.06	136.52						Explore potential mitigation
CYVL-T-195	33549 SCHULTE 115 33533 OWENSTP2 115 2	P1-2:A11:51:_Tesla - Vierra 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	<100.0	105.12	106.85						Explore potential mitigation
CYVL-T-196	33558 LCKFRDJB 115 33562 BELLOTA 115 1	P1-2:A11:62:_Stockton 'A' - Lockeford - Bellota 115 kV Line No. 1 and P1-2:A11:63:_Gold Hill-Bellota-Lockeford 115 kV Line	P6	N-1/N-1	<100.0	102.23	110.59						Explore potential mitigation
CYVL-T-197	33562 BELLOTA 115 33950 RVRBK TP 115 1	P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1 and P1-3:A11:13:_Bellota 230/115 kV Transformer No. 2	P6	N-1/N-1	<100.0	NConv	NConv						Explore potential mitigation
CYVL-T-198	33662 WEBER 2 60.0 33654 SNTA FEA 60.0 1	P1-2:A11:82:_Stockton 'A' - Weber 60 kV Line No. 2 and P1-2:A11:83:_Stockton 'A' - Weber 60 kV Line No. 3	P6	N-1/N-1	<100.0	101.16	<100.0						Explore potential mitigation
CYVL-T-199	33662 WEBER 2 60.0 33674 HAZLTN J 60.0 1	P1-2:A11:82:_Stockton 'A' - Weber 60 kV Line No. 2 and P1-2:A11:81:_Stockton 'A' - Weber 60 kV Line No. 1	P6	N-1/N-1	<100.0	173.52	129.05						Explore potential mitigation
CYVL-T-200	33674 HAZLTN J 60.0 33670 STCKTN A 60.0 1	P1-2:A11:80:_Stockton 'A' - Weber 60 kV Line No. 1 and P1-2:A11:81:_Stockton 'A' - Weber 60 kV Line No. 2	P6	N-1/N-1	148.81	<100.0	<100.0						Explore potential mitigation
CYVL-T-201	33674 HAZLTN J 60.0 33670 STCKTN A 60.0 1	P1-2:A11:81:_Stockton 'A' - Weber 60 kV Line No. 1 and P1-2:A11:82:_Stockton 'A' - Weber 60 kV Line No. 2	P6	N-1/N-1	<100.0	159.50	<100.0						Explore potential mitigation
CYVL-T-202	33706 CNTRY CB 60.0 33708 UOP 60.0 1	P1-2:A11:89:_New Stagg - Hammer 60 kV Line No. 2 and P1-2:A11:88:_Stagg - Hammer 60 kV Line No. 1	P6	N-1/N-1	102.26	<100.0	<100.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-203	33706 CNTRY CB 60.0 33708 UOP 60.0 1	P1-2:A11:89:_Stagg - Hammer 60 kV Line No. 1 and P1-2:A11:90:_New Stagg - Hammer 60 kV Line No. 2	P6	N-1/N-1	<100.0	104.55	113.32						Explore potential mitigation
CYVL-T-204	33714 HAMMER 60.0 33716 HMMR JCT 60.0 1	P1-2:A11:86:_Stagg - Country Club 60 kV Line No. 1 and P1-2:A11:87:_Stagg - Country Club 60 kV Line No. 2	P6	N-1/N-1	107.59	<100.0	<100.0						Explore potential mitigation
CYVL-T-205	33714 HAMMER 60.0 33716 HMMR JCT 60.0 1	P1-2:A11:87:_Stagg - Country Club 60 kV Line No. 1 and P1-2:A11:88:_Stagg - Country Club 60 kV Line No. 2	P6	N-1/N-1	<100.0	109.22	118.53						Explore potential mitigation
CYVL-T-206	33810 SP CMPNY 13.8 33572 SP CMPNY 115 1	P1-2:A11:44:_Schulte Sw Sta - Kasson - Manteca 115 kV Line and P1-2:A11:2:_Stanislaus-Melones-Riverbank Jct 115 kV Line	P6	N-1/N-1	<100.0	104.75	103.88						Explore potential mitigation
CYVL-T-207	33846 PRDE 1-3 7.20 33634 PRDESWS 60.0 1	P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1 and P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2	P6	N-1/N-1	<100.0	NConv	NConv						Explore potential mitigation
CYVL-T-208	33904 BEARDSLY 115 34074 BEARDSLY 6.90 1	P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2 and P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1	P6	N-1/N-1	<100.0	NConv	NConv						Explore potential mitigation
CYVL-T-209	33932 MELONES 115 33500 MELNS JA 115 1	P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1 and P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2	P6	N-1/N-1	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-210	33936 MELNS JB 115 33947 RVRBKJT 115 1	P1-3:A11:18:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:19:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	NConv	<100.0	<100.0						Explore potential mitigation
CYVL-T-211	33948 RVRBK J2 115 33953 VLYHMTP2 115 1	P1-2:A12:12:_Stanislaus-Melones-Manteca 115 kV Line No. 1 and P1-2:A11:42:_Stanislaus-Melones-Riverbank Jct 115 kV Line	P6	N-1/N-1	105.54	<100.0	<100.0						Explore potential mitigation
CYVL-T-212	33950 RVRBK TP 115 33934 TULLOCH 115 1	P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1 and P1-3:A11:13:_Belltoa 230/115 kV Transformer No. 2	P6	N-1/N-1	NConv	NConv	NConv						Explore potential mitigation
CYVL-T-213	33953 VLYHMTP2 115 33511 AVENATP2 115 1	P1-2:A11:2:_Stanislaus-Melones-Riverbank Jct 115 kV Line and P1-2:A11:41:_Stanislaus-Melones-Manteca 115 kV Line No. 1	P6	N-1/N-1	105.49	<100.0	<100.0						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-214	34008 STNSLSRP 60.0 34009 Q539SS 60.0 1	P1-2:A12:18:_Q539SS-Q539 60 kV Line and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P6	N-1/N-1	100.14	100.31	101.10						Explore potential mitigation
CYVL-T-215	34009 Q539SS 60.0 34016 MEDLIN J 60.0 1	P1-2:A11:58:_Tesla - Salado 115 kV Line No. 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P6	N-1/N-1	100.14	103.42	102.31						Explore potential mitigation
CYVL-T-216	34060 SANDBAR 13.8 33908 SANDBAR 115 1	P1-3:A11:12:_Bellota 230/115 kV Transformer No. 1 and P1-3:A11:13:_Bellota 230/115 kV Transformer No. 2	P6	N-1/N-1	<100.0	NConv	NConv						Explore potential mitigation
CYVL-T-217	37649 LLNLAB 115 33574 LLNL TAP 115 1	P1-3:A11:18:_Tesla 230/115 kV Transformer No. 1 and P1-3:A11:19:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	NConv	<100.0	<100.0						Explore potential mitigation
CYVL-T-218	38054 GRIDLEY 60.0 32334 LIVE OAK 60.0 1	P1-2:A5:31:_Palermo - Pease 115 kV Line and P1-2:A5:32:_Pease - Rio Oso 115 kV Line	P6	N-1/N-1	NConv	<100.0	<100.0						Explore potential mitigation
CYVL-T-219	31263 LWRLAKEJ 115 31225 HGHLNDJ1 115 1	P7-1:A4:5_Logan Creek-Delevan 230 kV Line & Delevan-Cortina 230 kV Line and 41.6	P7	DCTL	100.46	<100.0	<100.0						Explore potential mitigation
CYVL-T-220	31610 TYLER 60.0 31603 CANAL TP 60.0 2	P7-1:A4:18_Glenn-Delevan 230 kV Line & Cottonwood(F)-New Bus 230 kV Line and 30.9	P7	DCTL	<100.0	109.60	108.75						Explore potential mitigation
CYVL-T-221	31640 TRES VIS 60.0 31644 BIGGSJCT 60.0 1	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line and 65.6	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation
CYVL-T-222	31642 PEACHTON 60.0 31644 BIGGSJCT 60.0 1	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line and 65.6	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation
CYVL-T-223	31962 WDLND_BM 115 31970 WOODLD 115 1	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line and 119.5	P7	DCTL	105.92	<100.0	<100.0						Explore potential mitigation
CYVL-T-224	31962 WDLND_BM 115 31990 DAVIS 115 1	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line and 119.5	P7	DCTL	110.87	<100.0	<100.0						Explore potential mitigation
CYVL-T-225	31980 DPWTR_TP 115 31986 W.SCRMNO 115 1	P7-1:A4:16_Rio Oso-Woodland #1 115 kV Line & Rio Oso-Woodland #2 115 kV Line and 125.7	P7	DCTL	101.90	<100.0	<100.0						Explore potential mitigation
CYVL-T-226	31980 DPWTR_TP 115 31990 DAVIS 115 1	P7-1:A5:15_Rio Oso-Woodland No. 1 115 kV Line & Rio Oso-Woodland No. 2 115 kV Line and 125.7	P7	DCTL	100.19	<100.0	<100.0						Explore potential mitigation
CYVL-T-227	31984 BRIGHTN 115 31993 BRKRJCT 115 1	P7-1:A4:17_Rio Oso-West Sacramento 115 kV Line & West Sacramento-Brighton 115 kV Line and 89.4	P7	DCTL	125.04	<100.0	<100.0						Explore potential mitigation

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-T-228	32302 YUBACITY 60.0 32496 YCEC 13.8 1	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line and 56	P7	DCTL	NConv	NConv	102.54						Explore potential mitigation
CYVL-T-229	33504 CATARACT 115 33503 FRGTNTP2 115 1	P7-1:A12:18:_Stanislaus-Melones-Manteca No.1 115 kV & Stanislaus-Manteca No.2 115 kV Lines and 56	P7	DCTL	110.67	110.96	109.51						Explore potential mitigation
CYVL-T-230	33506 STANISLS 115 33501 FRGTNTP1 115 1	P7-1:A12:14:_Stanislaus-Manteca No.2 115 kV & Stanislaus-Melones-Riverbank Jct 115 kV Lines and 56	P7	DCTL	110.54	111.04	109.68						Explore potential mitigation
CYVL-T-231	33506 STANISLS 115 33504 CATARACT 115 1	P7-1:A12:18:_Stanislaus-Melones-Manteca No.1 115 kV & Stanislaus-Manteca No.2 115 kV Lines and 56	P7	DCTL	110.68	110.99	109.56						Explore potential mitigation
CYVL-T-232	33542 LEPRINO 115 33548 TRACY 115 1	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2 and 125.7	P7	DCTL	138.60	<100.0	<100.0						Explore potential mitigation
CYVL-T-233	33646 MORMON 60.0 33650 WEBER 1 60.0 1	P7-1:A12:6_Bellota-Tesla 230 kV Line & Bellota-Weber 230 kV Line and 41.3	P7	DCTL	100.38	101.68	106.41						Explore potential mitigation
CYVL-T-234	33810 SP CMPNY 13.8 33572 SP CMPNY 115 1	P7-1:A12:21:_Schulte-Kasson-Manteca 115 kV Line & Tesla-Salado-Manteca 115 kV Line and 54	P7	DCTL	<100.0	102.65	103.02						Explore potential mitigation
CYVL-T-235	33846 PRDE 1-3 7.20 33634 PRDESWS 60.0 1	P7-1:A12:25:_Valley Springs-Martell No.1 & Clay-Martell 60 kV Lines and 19	P7	DCTL	<100.0	108.21	108.20						Explore potential mitigation
CYVL-T-236	38054 GRIDLEY 60.0 32334 LIVE OAK 60.0 1	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line and 62.4	P7	DCTL	NConv	NConv	<100.0						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-1	ALMENDRA 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer	P1	N-1	6.061	<5.0	<5.0						Explore potential mitigation
CYVL-VD-2	ENCINAL 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer	P1	N-1	5.191	<5.0	<5.0						Explore potential mitigation
CYVL-VD-3	ENVRO_HY 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	6.567	6.56	6.683						Explore potential mitigation
CYVL-VD-4	FORST HL 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	5.833	5.828	5.945						Explore potential mitigation
CYVL-VD-5	HARTER 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer	P1	N-1	6.15	<5.0	<5.0						Explore potential mitigation
CYVL-VD-6	MRYSVLE 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer	P1	N-1	6.138	<5.0	<5.0						Explore potential mitigation
CYVL-VD-7	OXBOW 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P1	N-1	6.751	6.744	6.868						Explore potential mitigation
CYVL-VD-8	ROLLINS 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P1	N-1	5.104	5.097	5.162						Explore potential mitigation
CYVL-VD-9	AEC_300 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.609	372.262	397.318						Explore potential mitigation
CYVL-VD-10	AEC_JCT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.622	372.272	397.335						Explore potential mitigation
CYVL-VD-11	APPLE HL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.467	73.28	75.935						Explore potential mitigation
CYVL-VD-12	ARBJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	19.698	25.717	13.277						Explore potential mitigation
CYVL-VD-13	ARBUCKLE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	20.745	27.36	13.951						Explore potential mitigation
CYVL-VD-14	ATLANTC 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	17.466	15.116	14.754						Explore potential mitigation
CYVL-VD-15	ATLANTIC 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	21.12	18.653	18.407						Explore potential mitigation
CYVL-VD-16	AVENA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	643.839	351.421	379.186						Explore potential mitigation
CYVL-VD-17	BANTA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.682	410.508	437.853						Explore potential mitigation
CYVL-VD-18	BEARDSLY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	489.321	253.931	288.991						Explore potential mitigation
CYVL-VD-19	BELLOTA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	145.73	76.44	76.392						Explore potential mitigation
CYVL-VD-20	BLLTAJCT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	145.441	76.981	76.978						Explore potential mitigation
CYVL-VD-21	BNTA CRB 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	734.368	417.459	460.5						Explore potential mitigation
CYVL-VD-22	BNTA JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.691	410.526	437.878						Explore potential mitigation
CYVL-VD-23	BONNIE N 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.585	12.647	12.364						Explore potential mitigation
CYVL-VD-24	BOWMN PH 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	11.306	11.099	9.059						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-25	BOWMN TP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	12.403	11.246	10.204						Explore potential mitigation
CYVL-VD-26	BRDSLY J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	489.363	253.99	289.073						Explore potential mitigation
CYVL-VD-27	BRKR SLG 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	10.561	<5.0	<5.0						Explore potential mitigation
CYVL-VD-28	BRKR TP 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	10.56	<5.0	<5.0						Explore potential mitigation
CYVL-VD-29	BRKRJCT 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	10.546	<5.0	<5.0						Explore potential mitigation
CYVL-VD-30	BRNSWALT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	15.337	12.529	12.409						Explore potential mitigation
CYVL-VD-31	BRNSWCKP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	15.823	13	12.892						Explore potential mitigation
CYVL-VD-32	CACHE J1 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	15.635	18.164	12.848						Explore potential mitigation
CYVL-VD-33	CALPELLA 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	11.021	13.916	9.964						Explore potential mitigation
CYVL-VD-34	CALVO 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	717.285	410.621	438.176						Explore potential mitigation
CYVL-VD-35	CAMANCHE 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	144.266	76.626	76.651						Explore potential mitigation
CYVL-VD-36	CAMPUS 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	9.809	<5.0	<5.0						Explore potential mitigation
CYVL-VD-37	CAPEHORN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.759	12.791	12.545						Explore potential mitigation
CYVL-VD-38	CARBONA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.953	411.004	439.329						Explore potential mitigation
CYVL-VD-39	CATARACT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	583.368	300.816	337.084						Explore potential mitigation
CYVL-VD-40	CDCRSTN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	146.521	78.238	78.328						Explore potential mitigation
CYVL-VD-41	CH.STN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	502.629	268.199	298.739						Explore potential mitigation
CYVL-VD-42	CH.STNJT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	502.763	268.243	301.333						Explore potential mitigation
CYVL-VD-43	CISCO GR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	12.42	11.151	10.569						Explore potential mitigation
CYVL-VD-44	CISCOTAP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	12.423	11.154	10.572						Explore potential mitigation
CYVL-VD-45	CITY UKH 115 kV	P2-3:A4:24:_NON-BUS-TIE BREAKER CB322 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	7.321	10.269	6.136						Explore potential mitigation
CYVL-VD-46	CL AMMNA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.935	376.004	399.759						Explore potential mitigation
CYVL-VD-47	CLRKSVLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	72.957	72.2	74.015						Explore potential mitigation
CYVL-VD-48	CLRKSVLT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	72.119	71.125	73.191						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-49	CLSA CRS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	22.121	29.318	14.832						Explore potential mitigation
CYVL-VD-50	CMNCHETP 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	145.125	76.901	76.918						Explore potential mitigation
CYVL-VD-51	COLFAXJT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.752	12.785	12.54						Explore potential mitigation
CYVL-VD-52	CORT_D 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	29.475	34.011	24.593						Explore potential mitigation
CYVL-VD-53	CORTINA 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	18.923	24.634	12.785						Explore potential mitigation
CYVL-VD-54	CORTINA 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	29.474	34.009	24.593						Explore potential mitigation
CYVL-VD-55	CORTINA 230 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	32.781	36.441	27.903						Explore potential mitigation
CYVL-VD-56	CPEHRNTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.75	12.783	12.537						Explore potential mitigation
CYVL-VD-57	CPM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	71.983	71.001	73.036						Explore potential mitigation
CYVL-VD-58	CRBNA JC 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.56	410.456	437.802						Explore potential mitigation
CYVL-VD-59	CROSRDJT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.955	376.013	399.769						Explore potential mitigation
CYVL-VD-60	CRWS LDG 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	732.539	515.585	402.383						Explore potential mitigation
CYVL-VD-61	CRWS LDJ 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	732.053	514.713	402.459						Explore potential mitigation
CYVL-VD-62	CURTISS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	498.376	265.043	298.525						Explore potential mitigation
CYVL-VD-63	DAVIS 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	9.797	<5.0	<5.0						Explore potential mitigation
CYVL-VD-64	DEEPWATR 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	11.572	<5.0	<5.0						Explore potential mitigation
CYVL-VD-65	DEL MAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	19.882	17.129	16.828						Explore potential mitigation
CYVL-VD-66	DELEVAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	21.514	28.426	14.439						Explore potential mitigation
CYVL-VD-67	DIMOND_1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	73.176	72.072	74.437						Explore potential mitigation
CYVL-VD-68	DIMOND_2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.78	73.855	76.117						Explore potential mitigation
CYVL-VD-69	DIST2047 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	20.589	26.959	13.847						Explore potential mitigation
CYVL-VD-70	DMND SPR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.792	73.87	76.129						Explore potential mitigation
CYVL-VD-71	DPWTR_TP 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	11.272	<5.0	<5.0						Explore potential mitigation
CYVL-VD-72	DRUM 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.476	12.557	12.253						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-73	DRUM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	18.889	16.627	16.689						Explore potential mitigation
CYVL-VD-74	DTCH FL1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	24.51	22.197	22.481						Explore potential mitigation
CYVL-VD-75	DTCH FL2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	17.401	14.963	14.966						Explore potential mitigation
CYVL-VD-76	DUNNIGAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	21.561	28.503	14.457						Explore potential mitigation
CYVL-VD-77	DUNNTAP 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	20.75	27.367	13.954						Explore potential mitigation
CYVL-VD-78	E.MRY J2 115 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Bus-tie breaker	7.741	10.176	10.68						Explore potential mitigation
CYVL-VD-79	E.NICOLS 115 kV	P2-3:A5:17:_NON-BUS-TIE BREAKER CB1122 FAILURE AT EAST NICOLAUS 115 kV	P2	Bus-tie breaker	12.788	16.034	16.738						Explore potential mitigation
CYVL-VD-80	ELDORAD 115 kV	P2-2:A5:7_BUS FAULT AT 32018 GOLDHILL 115.00 Bus 2E	P2	Bus-tie breaker	16.496	14.808	21.658						Explore potential mitigation
CYVL-VD-81	ELLS GTY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.944	379.369	404.23						Explore potential mitigation
CYVL-VD-82	ENCINAL 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus-tie breaker	9.877	11.585	12.469						Explore potential mitigation
CYVL-VD-83	ENCL TAP 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus-tie breaker	9.873	11.58	12.464						Explore potential mitigation
CYVL-VD-84	FBERBORD 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	498.307	264.979	298.465						Explore potential mitigation
CYVL-VD-85	FLINT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	51.902	50.019	51.206						Explore potential mitigation
CYVL-VD-86	FORST HL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	15.013	13.014	12.815						Explore potential mitigation
CYVL-VD-87	FRGTNTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	570.001	295.473	332.043						Explore potential mitigation
CYVL-VD-88	FRGTNTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	574.009	295.855	332.883						Explore potential mitigation
CYVL-VD-89	FROGTOWN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	569.993	295.474	332.048						Explore potential mitigation
CYVL-VD-90	GOLD HLL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	70.299	68.5	70.524						Explore potential mitigation
CYVL-VD-91	GOLDHILL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	71.344	70.404	72.293						Explore potential mitigation
CYVL-VD-92	GRANITE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	708.81	477.618	397.719						Explore potential mitigation
CYVL-VD-93	GRONMYER 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	721.343	411.167	439.361						Explore potential mitigation
CYVL-VD-94	GUSTINE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	764.029	572.969	411.762						Explore potential mitigation
CYVL-VD-95	GUSTN JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	747.743	539.464	406.774						Explore potential mitigation



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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-96	GWFRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.652	372.232	397.353						Explore potential mitigation
CYVL-VD-97	HARINTON 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	20.966	27.67	14.087						Explore potential mitigation
CYVL-VD-98	HIGHLAND 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	12.903	15.009	10.595						Explore potential mitigation
CYVL-VD-99	HGHLNDJ2 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	12.901	15.006	10.593						Explore potential mitigation
CYVL-VD-100	HIGGINS 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	43.195	40.947	41.903						Explore potential mitigation
CYVL-VD-101	HOMEGRND 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	11.867	13.814	9.742						Explore potential mitigation
CYVL-VD-102	HOMSTKTP 115 kV	P2-3:A4:20:_NON-BUS-TIE BREAKER CB532 FAILURE AT CORTINA 115kV	P2	Non Bus-tie breaker	13.334	13.371	13.438						Explore potential mitigation
CYVL-VD-103	HORSESHE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	64.572	63.357	64.9						Explore potential mitigation
CYVL-VD-104	HORSHE1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	64.571	63.356	64.899						Explore potential mitigation
CYVL-VD-105	HORSHE2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	63.803	62.522	64.074						Explore potential mitigation
CYVL-VD-106	HUSTD 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	19.194	25.013	12.957						Explore potential mitigation
CYVL-VD-107	INDIN VL 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	23.842	28.023	20.146						Explore potential mitigation
CYVL-VD-108	INGRM C. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	694.388	434.209	398.017						Explore potential mitigation
CYVL-VD-109	KASSON 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.69	410.512	437.844						Explore potential mitigation
CYVL-VD-110	KASSON 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	673.209	376.976	401.801						Explore potential mitigation
CYVL-VD-111	LAMMERS 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	29.329	<5.0	<5.0						Explore potential mitigation
CYVL-VD-112	LEE_JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	725.549	412.808	444.357						Explore potential mitigation
CYVL-VD-113	LEPRINO 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.325	377.455	402.242						Explore potential mitigation
CYVL-VD-114	LID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	718.74	410.939	438.933						Explore potential mitigation
CYVL-VD-115	LINCLN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	15.455	12.339	11.65						Explore potential mitigation
CYVL-VD-116	LIVE OAK 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	9.255	10.98	11.834						Explore potential mitigation
CYVL-VD-117	LOCKFORD 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	145.492	77.086	77.084						Explore potential mitigation
CYVL-VD-118	LOUISE 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	719.931	411.028	439.155						Explore potential mitigation
CYVL-VD-119	LTHRP JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	722.639	411.325	439.479						Explore potential mitigation



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-120	LUCERNJ1 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	18.881	22.691	16.267						Explore potential mitigation
CYVL-VD-121	LYOTH-SP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.559	410.455	437.801						Explore potential mitigation
CYVL-VD-122	MANTECA 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	722.634	411.323	439.477						Explore potential mitigation
CYVL-VD-123	MANTECA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	674.517	377.012	396.639						Explore potential mitigation
CYVL-VD-124	MAXTAP 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	21.512	28.423	14.438						Explore potential mitigation
CYVL-VD-125	MDSTO CN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	709.831	477.686	398.126						Explore potential mitigation
CYVL-VD-126	MEDLIN J 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	730.872	513.422	399.254						Explore potential mitigation
CYVL-VD-127	MELNS JA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	557.339	292.76	326.149						Explore potential mitigation
CYVL-VD-128	MELNS JB 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	564.011	293.434	327.863						Explore potential mitigation
CYVL-VD-129	MELONES 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	505.064	273.047	306.622						Explore potential mitigation
CYVL-VD-130	MILER TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	711.629	477.511	398.403						Explore potential mitigation
CYVL-VD-131	MILLER 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	711.602	477.506	398.383						Explore potential mitigation
CYVL-VD-132	MI-WUK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	494.971	261.412	295.63						Explore potential mitigation
CYVL-VD-133	MIZOU_T1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	73.419	72.292	74.727						Explore potential mitigation
CYVL-VD-134	MNTCA JT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	733.309	416.906	458.461						Explore potential mitigation
CYVL-VD-135	MSSDLESW 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	718.93	410.977	439.022						Explore potential mitigation
CYVL-VD-136	MTN_QJCT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	48.222	44.891	46.319						Explore potential mitigation
CYVL-VD-137	NEWCSTL1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	56.115	54.458	55.746						Explore potential mitigation
CYVL-VD-138	NEWCSTL2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	55.771	54.089	55.378						Explore potential mitigation
CYVL-VD-139	NEWCSTLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	56.082	54.423	55.71						Explore potential mitigation
CYVL-VD-140	NWMN JCT 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	748.402	541.588	406.558						Explore potential mitigation
CYVL-VD-141	OI GLASS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.408	373.325	398.052						Explore potential mitigation
CYVL-VD-142	OWENSTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.552	373.398	398.14						Explore potential mitigation
CYVL-VD-143	OWENSTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.745	372.872	397.786						Explore potential mitigation



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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-144	OXBOW 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.858	12.883	12.684						Explore potential mitigation
CYVL-VD-145	PATTERSN 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	725.327	502.918	400.653						Explore potential mitigation
CYVL-VD-146	PENRYN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	49.888	46.352	47.988						Explore potential mitigation
CYVL-VD-147	PEORIA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	503.148	268.516	301.75						Explore potential mitigation
CYVL-VD-148	PLACER 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	47.894	44.618	45.986						Explore potential mitigation
CYVL-VD-149	PLACER 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	49.978	47.997	49.134						Explore potential mitigation
CYVL-VD-150	PLCRVLB2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.865	73.871	76.256						Explore potential mitigation
CYVL-VD-151	PLSNT GR 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	19.729	17.077	16.698						Explore potential mitigation
CYVL-VD-152	POST 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	11.273	2.919	3.1						Explore potential mitigation
CYVL-VD-153	Q539 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	725.224	503.484	396.767						Explore potential mitigation
CYVL-VD-154	Q539SS 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	725.229	503.501	396.775						Explore potential mitigation
CYVL-VD-155	R.TRACK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	504.89	269.678	306.697						Explore potential mitigation
CYVL-VD-156	RCTRK J. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	500.626	266.698	300.023						Explore potential mitigation
CYVL-VD-157	RIO OSO 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	13.204	11.135	10.729						Explore potential mitigation
CYVL-VD-158	RIPON 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	666.733	359.046	388.349						Explore potential mitigation
CYVL-VD-159	RIVRBKJT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	635.053	332.722	370.732						Explore potential mitigation
CYVL-VD-160	ROCKLIN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	19.491	16.815	16.498						Explore potential mitigation
CYVL-VD-161	RPN JNCN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	670.264	366.602	392.503						Explore potential mitigation
CYVL-VD-162	RPNJN2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	661.233	351.325	383.316						Explore potential mitigation
CYVL-VD-163	RVRBANK 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	161.694	95.484	110.847						Explore potential mitigation
CYVL-VD-164	RVRBK J1 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	144.132	74.418	74.263						Explore potential mitigation
CYVL-VD-165	RVRBK J2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	650.757	351.797	378.47						Explore potential mitigation
CYVL-VD-166	RVRBK TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	188.188	109.608	125.14						Explore potential mitigation
CYVL-VD-167	SAFEWAY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.62	372.356	397.406						Explore potential mitigation



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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-168	SALADO 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	716.977	487.101	398.17						Explore potential mitigation
CYVL-VD-169	SALADO 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	711.654	476.719	398.215						Explore potential mitigation
CYVL-VD-170	SALADO J 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	708.924	470.212	398.225						Explore potential mitigation
CYVL-VD-171	SALDO TP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	711.556	477.22	398.423						Explore potential mitigation
CYVL-VD-172	SANDBAR 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	489.902	254.492	289.487						Explore potential mitigation
CYVL-VD-173	SCHULTE 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.659	372.435	397.479						Explore potential mitigation
CYVL-VD-174	SFWY_TP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.632	372.361	397.413						Explore potential mitigation
CYVL-VD-175	SFWY_TP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	671.648	372.371	397.423						Explore potential mitigation
CYVL-VD-176	SHADYGLN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	14.75	12.784	12.539						Explore potential mitigation
CYVL-VD-177	SHPRING 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.307	73.473	75.546						Explore potential mitigation
CYVL-VD-178	SHPRING1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	72.955	71.877	74.178						Explore potential mitigation
CYVL-VD-179	SHPRING2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.283	73.446	75.521						Explore potential mitigation
CYVL-VD-180	SIERRAPI 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	19.882	17.129	16.828						Explore potential mitigation
CYVL-VD-181	SJ COGEN 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.521	375.519	398.971						Explore potential mitigation
CYVL-VD-182	SNDBR JT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	490.201	254.871	289.962						Explore potential mitigation
CYVL-VD-183	SP CMPNY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	673.444	370.818	391.157						Explore potential mitigation
CYVL-VD-184	SPAULDNG 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	12.336	11.169	10.141						Explore potential mitigation
CYVL-VD-185	SPC JCT. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	673.253	375.03	398.511						Explore potential mitigation
CYVL-VD-186	SPICAMIN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	74.456	73.267	75.924						Explore potential mitigation
CYVL-VD-187	SPRNG GP 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	490.185	254.851	289.929						Explore potential mitigation
CYVL-VD-188	STANISLS 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	587.18	302.778	338.625						Explore potential mitigation
CYVL-VD-189	STKTON A 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	146.674	78.534	78.655						Explore potential mitigation
CYVL-VD-190	STKTON B 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	145.916	77.437	77.478						Explore potential mitigation
CYVL-VD-191	STNSLSRP 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	722.323	497.901	395.583						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-192	TAYLOR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	19.459	16.787	16.47						Explore potential mitigation
CYVL-VD-193	TCHRT_T1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	709.239	477.754	397.991						Explore potential mitigation
CYVL-VD-194	TCHRT_T2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	694.398	434.901	398.602						Explore potential mitigation
CYVL-VD-195	TCHRTJCT 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	709.087	477.692	397.903						Explore potential mitigation
CYVL-VD-196	TESLAMTR 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.52	375.519	398.971						Explore potential mitigation
CYVL-VD-197	TH.E.DV. 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	673.37	375.069	398.335						Explore potential mitigation
CYVL-VD-198	TRACY 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.377	377.384	402.17						Explore potential mitigation
CYVL-VD-199	TRACY JC 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.24	377.92	402.714						Explore potential mitigation
CYVL-VD-200	TULLOCH 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	412.224	233.947	263.079						Explore potential mitigation
CYVL-VD-201	UCD_TP2 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	9.804	<5.0	<5.0						Explore potential mitigation
CYVL-VD-202	ULTRA JT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	18.923	16.183	15.733						Explore potential mitigation
CYVL-VD-203	VALLY HM 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	642.646	337.385	375.039						Explore potential mitigation
CYVL-VD-204	VIERATP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.699	375.604	399.058						Explore potential mitigation
CYVL-VD-205	VIERATP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	673.014	375.628	399.106						Explore potential mitigation
CYVL-VD-206	VIERRA 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	672.952	375.723	399.182						Explore potential mitigation
CYVL-VD-207	VLYHMTP1 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	642.648	337.382	375.03						Explore potential mitigation
CYVL-VD-208	VLYHMTP2 115 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	654.496	354.477	380.482						Explore potential mitigation
CYVL-VD-209	W.SCRMNO 115 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus	11.427	<5.0	<5.0						Explore potential mitigation
CYVL-VD-210	WADHMJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	19.36	25.304	12.494						Explore potential mitigation
CYVL-VD-211	WESCOT1 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	20.184	26.593	13.014						Explore potential mitigation
CYVL-VD-212	WESCOT2 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	19.47	25.47	12.562						Explore potential mitigation
CYVL-VD-213	WESTLEY 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	743.825	422.288	479.864						Explore potential mitigation
CYVL-VD-214	WILKINS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	20.582	26.95	13.842						Explore potential mitigation
CYVL-VD-215	WILL JCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	20.23	26.55	13.619						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-216	WILLIAMS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	19.621	25.679	12.652						Explore potential mitigation
CYVL-VD-217	WILSONAV 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	22.234	29.484	14.906						Explore potential mitigation
CYVL-VD-218	WLKSLJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	20.507	26.845	13.793						Explore potential mitigation
CYVL-VD-219	WSID 60 kV	P2-4:A11:60:_33540 Tesla 115 kV Bus CB102 Internal Breaker Fault	P2	Bus-tie breaker	743.767	422.26	479.75						Explore potential mitigation
CYVL-VD-220	APLHTAP1 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	12.834	11.399	16.204						Explore potential mitigation
CYVL-VD-221	APLHTAP2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	18.132	16.337	22.599						Explore potential mitigation
CYVL-VD-222	APPLE HL 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	12.847	11.41	16.222						Explore potential mitigation
CYVL-VD-223	BIGGS 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	5.332	6.925	7.552						Explore potential mitigation
CYVL-VD-224	BIGGSJCT 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	5.327	6.918	7.544						Explore potential mitigation
CYVL-VD-225	CLRKSVLT 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	5.263						Explore potential mitigation
CYVL-VD-226	DIMOND_1 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	7.707	6.745	9.861						Explore potential mitigation
CYVL-VD-227	DIMOND_2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	20.972	19.051	25.964						Explore potential mitigation
CYVL-VD-228	DMND SPR 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	20.977	19.055	25.971						Explore potential mitigation
CYVL-VD-229	ELDORAD 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	14.972	13.356	18.799						Explore potential mitigation
CYVL-VD-230	ENCINAL 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	9.796	11.548	12.451						Explore potential mitigation
CYVL-VD-231	ENVRO_HY 60 kV	P2-1:A5:127:_ENVRO_HY-OXBOW #1 60 kV	P2-1	Line section w/o fault	6.585	6.579	6.702						Explore potential mitigation
CYVL-VD-232	FORST HL 60 kV	P2-1:A5:126:_ENVRO_HY-FORST HL #1 60 kV	P2-1	Line section w/o fault	5.924	5.918	6.035						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-233	GLEAF2 60 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	8.795	1.895	1.401						Explore potential mitigation
CYVL-VD-234	GRIDLEY 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	6.664	8.386	9.112						Explore potential mitigation
CYVL-VD-235	HARTER 60 kV	P2-1:A5:101:_PEASE-PEASETP #1 60 kV	P2-1	Line section w/o fault	13.022	<5.0	<5.0						Explore potential mitigation
CYVL-VD-236	LIVE OAK 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	8.919	10.681	11.542						Explore potential mitigation
CYVL-VD-237	OLIVH J1 115 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	11.757	5.761	5.019						Explore potential mitigation
CYVL-VD-238	PEACHTON 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	6.006	7.688	8.372						Explore potential mitigation
CYVL-VD-239	PEAS RG 60 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	8.181	<5.0	<5.0						Explore potential mitigation
CYVL-VD-240	PEASE 60 kV	P2-1:A5:73:_OLIVH J1-E.MRY J1 #1 115 kV	P2-1	Line section w/o fault	5.586	<5.0	<5.0						Explore potential mitigation
CYVL-VD-241	PEASE 115 kV	P2-1:A5:73:_OLIVH J1-E.MRY J1 #1 115 kV	P2-1	Line section w/o fault	5.497	<5.0	<5.0						Explore potential mitigation
CYVL-VD-242	PLCRVLB2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	20.132	18.235	24.977						Explore potential mitigation
CYVL-VD-243	PLCRVLB3 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	20.135	18.237	24.981						Explore potential mitigation
CYVL-VD-244	PLCRVLT1 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	9.406	8.269	12.004						Explore potential mitigation
CYVL-VD-245	SHPRING 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	22.444	20.5	27.652						Explore potential mitigation
CYVL-VD-246	VACA-JT1 60 kV	P2-1:A4:97:_VACA-DXN-VACA-JT1 #1 60 kV	P2-1	Line section w/o fault	6.493	<5.0	<5.0						Explore potential mitigation
CYVL-VD-247	YUBACITY 60 kV	P2-1:A5:101:_PEASE-PEASETP #1 60 kV	P2-1	Line section w/o fault	13.003	<5.0	<5.0						Explore potential mitigation
CYVL-VD-248	ARBUCKLE 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	<5.0	5.921	6.001						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-249	CATARACT 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.078	<5.0	<5.0						Explore potential mitigation
CYVL-VD-250	CH.STN 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.756	<5.0	<5.0						Explore potential mitigation
CYVL-VD-251	CLSA JCT 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	<5.0	5.69	5.387						Explore potential mitigation
CYVL-VD-252	CORTINA 115 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	<5.0	5.663	<5.0						Explore potential mitigation
CYVL-VD-253	CORTINA 115 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	<5.0	<5.0	6.582						Explore potential mitigation
CYVL-VD-254	CURTISS 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P3	G-1/N-1	5.573	<5.0	<5.0						Explore potential mitigation
CYVL-VD-255	ENCINAL 60 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A5:31:_Palermo - Pease 115 kV Line	P3	G-1/N-1	5.275	<5.0	<5.0						Explore potential mitigation
CYVL-VD-256	ENVRO_HY 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	<5.0	<5.0	7.311						Explore potential mitigation
CYVL-VD-257	FORST HL 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	<5.0	<5.0	6.538						Explore potential mitigation
CYVL-VD-258	FRGTNTP1 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.293	<5.0	<5.0						Explore potential mitigation
CYVL-VD-259	FROGTOWN 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.294	<5.0	<5.0						Explore potential mitigation
CYVL-VD-260	GUSTINE 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	5.455	5.122	8.105						Explore potential mitigation
CYVL-VD-261	HARTER 60 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A5:31:_Palermo - Pease 115 kV Line	P3	G-1/N-1	5.369	<5.0	<5.0						Explore potential mitigation
CYVL-VD-262	JAMESN-A 115 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<5.0	7.142	7.647						Explore potential mitigation
CYVL-VD-263	LAMMERS 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	<5.0	5.511	5.514						Explore potential mitigation
CYVL-VD-264	LIVE OAK 60 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A5:31:_Palermo - Pease 115 kV Line	P3	G-1/N-1	5.237	<5.0	<5.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-265	LTHRP JT 60 kV	P1-1:A11:7:_GWFTRCY1 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	<5.0	<5.0	5.276						Explore potential mitigation
CYVL-VD-266	MANTECA 60 kV	P1-1:A11:7:_GWFTRCY1 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	<5.0	<5.0	5.276						Explore potential mitigation
CYVL-VD-267	MELONES 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	6.298	<5.0	<5.0						Explore potential mitigation
CYVL-VD-268	MERIDIAN 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.90	5.773	5.465						Explore potential mitigation
CYVL-VD-269	MRYSVLE 60 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A5:31:_Palermo - Pease 115 kV Line	P3	G-1/N-1	5.359	<5.0	<5.0						Explore potential mitigation
CYVL-VD-270	NEWMAN 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	7.109	6.876	5.332						Explore potential mitigation
CYVL-VD-271	OI GLASS 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	<5.0	5.4	5.399						Explore potential mitigation
CYVL-VD-272	OWENSTP1 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P3	G-1/N-1	<5.0	5.397	5.396						Explore potential mitigation
CYVL-VD-273	OXBOW 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	<5.0	<5.0	7.505						Explore potential mitigation
CYVL-VD-274	PEORIA 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.857	<5.0	<5.0						Explore potential mitigation
CYVL-VD-275	Q539 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	7.342	6.99	10.147						Explore potential mitigation
CYVL-VD-276	Q539SS 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	7.342	6.99	10.147						Explore potential mitigation
CYVL-VD-277	R.TRACK 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	6.313	<5.0	<5.0						Explore potential mitigation
CYVL-VD-278	RIPON 115 kV	P1-1:A12:6:_DONNELLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	5.579	8.026	<5.0						Explore potential mitigation
CYVL-VD-279	RIPON 115 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	7.331	<5.0	9.777						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-280	ROLLINS 60 kV	P1-1:A5:26:_OXBOW F 9.11 Generator ID 1 and P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1	P3	G-1/N-1	<5.0	<5.0	5.531						Explore potential mitigation
CYVL-VD-281	RPNJN2 115 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	7	<5.0	9.253						Explore potential mitigation
CYVL-VD-282	SCHMLBCH 115 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<5.0	7.126	7.661						Explore potential mitigation
CYVL-VD-283	STANISLS 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line	P3	G-1/N-1	5.004	<5.0	<5.0						Explore potential mitigation
CYVL-VD-284	SUISUN 115 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P3	G-1/N-1	<5.0	7.539	8.064						Explore potential mitigation
CYVL-VD-285	VALLY HM 115 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	6.035	<5.0	7.942						Explore potential mitigation
CYVL-VD-286	WESTLEY 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	<5.0	<5.0	5.143						Explore potential mitigation
CYVL-VD-287	WILKINS 60 kV	P1-1:A4:6:_SOLANO 34.50 Generator ID 1 and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	8.323	<5.0	<5.0						Explore potential mitigation
CYVL-VD-288	WSID 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	<5.0	<5.0	5.141						Explore potential mitigation
CYVL-VD-289	ALMENDRA 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	80.64	<10.0	<10.0						Explore potential mitigation
CYVL-VD-290	AMERESCO 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	17.059	<10.0	<10.0						Explore potential mitigation
CYVL-VD-291	APLHTAP1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	70.46	71.067	73.547						Explore potential mitigation
CYVL-VD-292	APLHTAP2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	70.966	71.581	73.945						Explore potential mitigation
CYVL-VD-293	APPLE HL 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	70.483	71.099	73.538						Explore potential mitigation
CYVL-VD-294	ARBALT 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	22.743	10.486						Explore potential mitigation
CYVL-VD-295	ARBALT 60 kV	P1-3:A4:6:_Cortina 230/115/60 kV Transformer No. 1 and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P6	N-1/N-1	<10.0	10.482	<10.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-296	ARBJCT 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	22.743	10.486						Explore potential mitigation
CYVL-VD-297	ARBJCT 60 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	<10.0	22.812	10.433						Explore potential mitigation
CYVL-VD-298	ATLANTIC 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	13.169	13.825	13.794						Explore potential mitigation
CYVL-VD-299	AUBURN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	41.28	41.57	43.073						Explore potential mitigation
CYVL-VD-300	BELL PGE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	42.319	43.635	44.852						Explore potential mitigation
CYVL-VD-301	BIGGS 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	46.693	<10.0	<10.0						Explore potential mitigation
CYVL-VD-302	BONNIE N 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.05	18.008	16.214						Explore potential mitigation
CYVL-VD-303	BRIGHTN 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	16.151	<10.0	<10.0						Explore potential mitigation
CYVL-VD-304	BRIGHTON 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	18.428	<10.0	<10.0						Explore potential mitigation
CYVL-VD-305	BRKR SLG 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	12.945	<10.0	<10.0						Explore potential mitigation
CYVL-VD-306	BRKR TP 115 kV	P1-2:A5:13:_Rio Oso - Brighton 230 kV Line and P1-2:4:3:_Brighton - Bellota 230 kV Line	P6	N-1/N-1	12.261	<10.0	<10.0						Explore potential mitigation
CYVL-VD-307	BRKRJCT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	11.952	<10.0	<10.0						Explore potential mitigation
CYVL-VD-308	BRUNSWCK 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.46	13.649	12.979						Explore potential mitigation
CYVL-VD-309	CACHE J1 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	17.138	11.592						Explore potential mitigation
CYVL-VD-310	CAMPUS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	11.236	<10.0	<10.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-311	CAPEHORN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.161	18.815	16.935						Explore potential mitigation
CYVL-VD-312	CH.STN 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	11.578	6.428	5.051						Explore potential mitigation
CYVL-VD-313	CH.STNJT 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	11.574	6.426	5.06						Explore potential mitigation
CYVL-VD-314	CHCGO PK 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	24.417	27.566	27.535						Explore potential mitigation
CYVL-VD-315	CHILCT 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<10.0	15.036	<10.0						Explore potential mitigation
CYVL-VD-316	CISCO GR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	8.66	15.697	13.424						Explore potential mitigation
CYVL-VD-317	CISCOTAP 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	8.663	15.701	13.427						Explore potential mitigation
CYVL-VD-318	CITY UKH 115 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	<10.0	11.505	7.901						Explore potential mitigation
CYVL-VD-319	CLARK RD 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	17.172	<10.0	<10.0						Explore potential mitigation
CYVL-VD-320	CLRKSULE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	69.088	70.024	72.044						Explore potential mitigation
CYVL-VD-321	CLRKSVLT 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	68.002	68.841	71.031						Explore potential mitigation
CYVL-VD-322	CLSA CRS 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.907	11.733						Explore potential mitigation
CYVL-VD-323	COLFAXJT 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	10.15	18.797	16.954						Explore potential mitigation
CYVL-VD-324	CORT_D 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	31.532	21.693						Explore potential mitigation
CYVL-VD-325	CORTINA 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	21.786	10.093						Explore potential mitigation
CYVL-VD-326	CORTINA 230 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	30.248	23.169						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-327	CPEHRNTP 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.155	18.802	16.923						Explore potential mitigation
CYVL-VD-328	CPM 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	67.859	68.712	70.884						Explore potential mitigation
CYVL-VD-329	CPM TAP 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	67.859	68.712	70.884						Explore potential mitigation
CYVL-VD-330	CRTNA M 230 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	24.129	14.717						Explore potential mitigation
CYVL-VD-331	DAVIS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	11.222	<10.0	<10.0						Explore potential mitigation
CYVL-VD-332	DEL MAR 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	10.46	11.117	11.04						Explore potential mitigation
CYVL-VD-333	DELEVAN 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.121	11.418						Explore potential mitigation
CYVL-VD-334	DIMOND_1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	69.092	69.827	72.157						Explore potential mitigation
CYVL-VD-335	DIMOND_2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	71.13	71.822	74						Explore potential mitigation
CYVL-VD-336	DMND SPR 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	71.147	71.839	74.014						Explore potential mitigation
CYVL-VD-337	DRAKE 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	24.586	11.185						Explore potential mitigation
CYVL-VD-338	DRHM JCA 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	17.152	<10.0	<10.0						Explore potential mitigation
CYVL-VD-339	DRHMSW45 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	17.158	<10.0	<10.0						Explore potential mitigation
CYVL-VD-340	DRUM 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	14.018	18.616	17.846						Explore potential mitigation
CYVL-VD-341	DTCH FL1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	19.32	23.217	22.828						Explore potential mitigation
CYVL-VD-342	DTCH FL2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	12.383	16.89	16.171						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-343	DUNNIGAN 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.197	11.429						Explore potential mitigation
CYVL-VD-344	DUNNTAP 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	24.195	11.029						Explore potential mitigation
CYVL-VD-345	EDGMNT 69 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<10.0	18.567	<10.0						Explore potential mitigation
CYVL-VD-346	ELDORAD 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	70.565	71.124	73.638						Explore potential mitigation
CYVL-VD-347	ENVRO_HY 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	10.238	20.335	18.36						Explore potential mitigation
CYVL-VD-348	FLINT 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	45.93	47.133	48.495						Explore potential mitigation
CYVL-VD-349	FRGTNTP1 115 kV	P1-2:A12:10:_Donnells - Curtis 115 kV Line and P1-2:A11:7:_Bellota-Riverbank-Melones 115 kV Line	P6	N-1/N-1	10.118	<10.0	<10.0						Explore potential mitigation
CYVL-VD-350	GOLD HLL 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	65.941	66.083	68.341						Explore potential mitigation
CYVL-VD-351	GOLDHILL 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	67.167	68.085	70.185						Explore potential mitigation
CYVL-VD-352	GRAND IS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	15.541	<10.0	<10.0						Explore potential mitigation
CYVL-VD-353	GRIDLEY 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	55.329	<10.0	<10.0						Explore potential mitigation
CYVL-VD-354	GRSS VLY 60 kV	P1-3:A5:27:_ROLLINS 60/6.6 kV GSU Transformer and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P6	N-1/N-1	10.967	11.509	11.996						Explore potential mitigation
CYVL-VD-355	HALSEY 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	41.317	41.557	43.153						Explore potential mitigation
CYVL-VD-356	HARTER 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	80.916	<10.0	<10.0						Explore potential mitigation
CYVL-VD-357	HAYPRESS 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<10.0	16.999	13.591						Explore potential mitigation
CYVL-VD-358	HIGHLAND 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	14.169	<10.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-359	HHSIERRA 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<10.0	19.064	<10.0						Explore potential mitigation
CYVL-VD-360	HIGGINS 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	37.106	38.823	39.677						Explore potential mitigation
CYVL-VD-361	HOMEGRND 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	13.043	<10.0						Explore potential mitigation
CYVL-VD-362	HOMEPROC 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	13.043	<10.0						Explore potential mitigation
CYVL-VD-363	HOMSTKTP 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	12.98	<10.0						Explore potential mitigation
CYVL-VD-364	HORSESHE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	59.779	60.841	62.764						Explore potential mitigation
CYVL-VD-365	HORSHE1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	59.778	60.84	62.763						Explore potential mitigation
CYVL-VD-366	HORSHE2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	58.989	59.986	61.783						Explore potential mitigation
CYVL-VD-367	HUSTD 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	22.121	10.23						Explore potential mitigation
CYVL-VD-368	INDIN VL 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.971	17.592						Explore potential mitigation
CYVL-VD-369	LIMESTNE 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	67.395	67.53	69.712						Explore potential mitigation
CYVL-VD-370	LIVE OAK 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	70.13	<10.0	<10.0						Explore potential mitigation
CYVL-VD-371	LUCERNE 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	20.944	13.937						Explore potential mitigation
CYVL-VD-372	MARBLE 69 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	<10.0	13.466	5.118						Explore potential mitigation
CYVL-VD-373	MAXTAP 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.118	11.417						Explore potential mitigation
CYVL-VD-374	MAXWELL 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	25.125	11.42						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-375	MELONES 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	10.774	<10.0	<10.0						Explore potential mitigation
CYVL-VD-376	MENDOCNO 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	<10.0	13.302	8.488						Explore potential mitigation
CYVL-VD-377	MRYSVLE 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	80.68	<10.0	<10.0						Explore potential mitigation
CYVL-VD-378	MTN_QJCT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	41.338	41.622	43.137						Explore potential mitigation
CYVL-VD-379	MTN_QUAR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	41.573	41.856	43.404						Explore potential mitigation
CYVL-VD-380	NEWCSTL1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	50.574	51.745	53.319						Explore potential mitigation
CYVL-VD-381	NEWCSTL2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	50.189	51.319	52.813						Explore potential mitigation
CYVL-VD-382	PENRYN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	42.525	42.887	44.584						Explore potential mitigation
CYVL-VD-383	PLACER 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	41.054	41.35	42.869						Explore potential mitigation
CYVL-VD-384	PLACER 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	43.83	45.061	46.359						Explore potential mitigation
CYVL-VD-385	PLCRVLB2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	71.166	71.821	74.065						Explore potential mitigation
CYVL-VD-386	PLCRVLB2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	71.234	71.862	74.157						Explore potential mitigation
CYVL-VD-387	PLCRVLB3 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	71.176	71.83	74.073						Explore potential mitigation
CYVL-VD-388	POST 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	14.091	<10.0	<10.0						Explore potential mitigation
CYVL-VD-389	R.TRACK 115 kV	P1-2:A12:10:_Donnells - Curtis 115 kV Line and P1-2:A11:7:_Bellota-Riverbank-Melones 115 kV Line	P6	N-1/N-1	12.147	<10.0	<10.0						Explore potential mitigation
CYVL-VD-390	RCTRK J. 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	12.594	<10.0	<10.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-391	RIPON 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P6	N-1/N-1	<10.0	11.083	<10.0						Explore potential mitigation
CYVL-VD-392	ROLLINS 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.089	18.696	16.826						Explore potential mitigation
CYVL-VD-393	ROLLNSTP 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	10.109	18.717	16.882						Explore potential mitigation
CYVL-VD-394	SHPRING 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	70.669	71.429	73.538						Explore potential mitigation
CYVL-VD-395	SPAULDNG 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<10.0	16.981	14.359						Explore potential mitigation
CYVL-VD-396	SPICAMIN 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	70.469	71.084	73.525						Explore potential mitigation
CYVL-VD-397	SUMMIT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<10.0	14.993	12.902						Explore potential mitigation
CYVL-VD-398	TAMARACK 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	<10.0	15.483	13.265						Explore potential mitigation
CYVL-VD-399	TAYLOR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	10.281	10.929	10.828						Explore potential mitigation
CYVL-VD-400	TBL MT2M 230 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	10.758	<10.0	<10.0						Explore potential mitigation
CYVL-VD-401	TBLE MTN 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	17.274	<10.0	<10.0						Explore potential mitigation
CYVL-VD-402	TRES VIS 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	34.788	<10.0	<10.0						Explore potential mitigation
CYVL-VD-403	UCD_TP2 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	12.198	<10.0	<10.0						Explore potential mitigation
CYVL-VD-404	UCDAVSJ1 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	12.198	<10.0	<10.0						Explore potential mitigation
CYVL-VD-405	ULTRA JT 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	11.235	11.708	11.477						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
CYVL-VD-406	W.SCRMNO 115 kV	P1-3:A4:4:_Brighton 230/115 kV Transformer No. 9 and P1-3:A4:3:_Brighton 230/115 kV Transformer No. 10	P6	N-1/N-1	14.291	<10.0	<10.0						Explore potential mitigation
CYVL-VD-407	WADHMJCT 60 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	<10.0	22.445	10.102						Explore potential mitigation
CYVL-VD-408	WEMR SWS 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	10.208	19.1	17.229						Explore potential mitigation
CYVL-VD-409	WILSONAV 60 kV	P1-3:A4:6:_Cortina 230/115/60 kV Transformer No. 1 and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P6	N-1/N-1	<10.0	11.697	<10.0						Explore potential mitigation
CYVL-VD-410	YBA CTYJ 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	80.639	<10.0	<10.0						Explore potential mitigation
CYVL-VD-411	ALMENDRA 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.306	483.375	<10.0						Explore potential mitigation
CYVL-VD-412	E.MRYSVE 115 kV	P7-1:A5:12_Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	<10.0	10.093	10.422						Explore potential mitigation
CYVL-VD-413	ENCINAL 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	79.633	444.327	<10.0						Explore potential mitigation
CYVL-VD-414	GLEAF2 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.305	481.863	<10.0						Explore potential mitigation
CYVL-VD-415	GLEAF2TP 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.305	482.579	<10.0						Explore potential mitigation
CYVL-VD-416	HARTER 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.274	495.95	<10.0						Explore potential mitigation
CYVL-VD-417	LIVE OAK 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	76.223	426.164	<10.0						Explore potential mitigation
CYVL-VD-418	MRYSVLE 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.101	488.936	<10.0						Explore potential mitigation
CYVL-VD-419	PEAS RG 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	82.15	451.056	<10.0						Explore potential mitigation
CYVL-VD-420	PEASE 115 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	85.328	462.18	<10.0						Explore potential mitigation
CYVL-VD-421	YBA CTYJ 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.305	483.371	<10.0						Explore potential mitigation
CYVL-VD-422	YUBACITY 60 kV	P7-1:A5:20_Palermo-Pease 115 kV Line & Pease-Rio Oso 115 kV Line	P7	DCTL	88.306	495.966	<10.0						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-1	PLAINFLD 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line	P1	N-1	0.8586	>0.90	>0.90						Explore potential mitigation
CYVL-V-2	PLFLDJCT 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line	P1	N-1	0.8718	>0.90	>0.90						Explore potential mitigation
CYVL-V-3	AEC_300 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7301	>0.90	>0.90						Explore potential mitigation
CYVL-V-4	AEC_JCT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7308	>0.90	>0.90						Explore potential mitigation
CYVL-V-5	APLHTAP1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2791	0.2976	0.2691						Explore potential mitigation
CYVL-V-6	APLHTAP2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2691	0.287	0.2586						Explore potential mitigation
CYVL-V-7	APPLE HL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2775	0.296	0.2674						Explore potential mitigation
CYVL-V-8	ARBALT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7992	0.752	0.8737						Explore potential mitigation
CYVL-V-9	ARBUCKLE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.757	0.702	0.8329						Explore potential mitigation
CYVL-V-10	ATLANTC 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8174	0.8497	0.8545						Explore potential mitigation
CYVL-V-11	ATLANTIC 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8028	0.8352	0.8397						Explore potential mitigation
CYVL-V-12	AUBURN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5412	0.5713	0.5561						Explore potential mitigation
CYVL-V-13	AVENA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2734	0.8122	0.8218						Explore potential mitigation
CYVL-V-14	BANTA 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5859	>0.90	>0.90						Explore potential mitigation
CYVL-V-15	BELL PGE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5303	0.5573	0.5454						Explore potential mitigation
CYVL-V-16	BNTA CRB 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.4108	>0.90	>0.90						Explore potential mitigation
CYVL-V-17	BNTA JCT 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5861	>0.90	>0.90						Explore potential mitigation
CYVL-V-18	BONNIE N 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8496	0.8716	0.8723						Explore potential mitigation
CYVL-V-19	BRIGHTON 230 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8712	0.9075	0.9108						Explore potential mitigation
CYVL-V-20	BRNSWALT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8883	0.9177	0.9188						Explore potential mitigation
CYVL-V-21	BRNSWCKP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8775	0.9076	0.9081						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-22	CACHE J1 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8672	0.8461	>0.90						Explore potential mitigation
CYVL-V-23	CALVO 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.576	>0.90	>0.90						Explore potential mitigation
CYVL-V-24	CAPEHORN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8438	0.8661	0.8641						Explore potential mitigation
CYVL-V-25	CHCGO PK 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.7453	0.7722	0.7665						Explore potential mitigation
CYVL-V-26	CL AMMNA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5558	>0.90	>0.90						Explore potential mitigation
CYVL-V-27	CLRKSVLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2936	0.3087	0.2894						Explore potential mitigation
CYVL-V-28	CLSA CRS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	0.7072	0.6478	0.7856						Explore potential mitigation
CYVL-V-29	CLSA JCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Bus-tie breaker	0.7693	0.7136	0.8603						Explore potential mitigation
CYVL-V-30	COLFAXJT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8444	0.8668	0.8646						Explore potential mitigation
CYVL-V-31	COLUSA 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7024	0.6425	0.7809						Explore potential mitigation
CYVL-V-32	CORT_D 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7666	0.7296	0.8267						Explore potential mitigation
CYVL-V-33	CORTINA 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7667	0.7297	0.8268						Explore potential mitigation
CYVL-V-34	CORTINA 230 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.6699	0.6369	0.7234						Explore potential mitigation
CYVL-V-35	CPEHRNTP 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8444	0.8667	0.8647						Explore potential mitigation
CYVL-V-36	CPM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3153	0.3324	0.3115						Explore potential mitigation
CYVL-V-37	CPM TAP 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3153	0.3324	0.3115						Explore potential mitigation
CYVL-V-38	CROSRDJT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5559	0.9151	>0.90						Explore potential mitigation
CYVL-V-39	CRTNA M 230 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7319	0.6939	0.7942						Explore potential mitigation
CYVL-V-40	CRWS LDG 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6218	>0.90	>0.90						Explore potential mitigation
CYVL-V-41	CRWS LDJ 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6274	>0.90	>0.90						Explore potential mitigation
CYVL-V-42	DEL MAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8014	0.8374	0.8398						Explore potential mitigation
CYVL-V-43	DELEVAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7316	0.6752	0.8092						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-44	DIMOND_1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2997	0.3176	0.293						Explore potential mitigation
CYVL-V-45	DIMOND_2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2655	0.2819	0.2566						Explore potential mitigation
CYVL-V-46	DIST2047 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7605	0.71	0.8369						Explore potential mitigation
CYVL-V-47	DRAKE 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7432	0.6872	0.8202						Explore potential mitigation
CYVL-V-48	DRUM 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8646	0.8899	0.8889						Explore potential mitigation
CYVL-V-49	DTCH FL1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8029	0.8291	0.8256						Explore potential mitigation
CYVL-V-50	DTCH FL2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8782	>0.90	>0.90						Explore potential mitigation
CYVL-V-51	DUNNTAP 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7568	0.7018	0.8328						Explore potential mitigation
CYVL-V-52	E.NICOLS 115 kV	P2-3:A5:16:_NON-BUS-TIE BREAKER CB1112 FAILURE AT EAST NICOLAUS 115 kV	P2	Non Bus-tie breaker	0.9009	0.8666	0.8618						Explore potential mitigation
CYVL-V-53	ELDORAD 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.276	0.2954	0.2649						Explore potential mitigation
CYVL-V-54	ELLS GTY 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.6888	>0.90	>0.90						Explore potential mitigation
CYVL-V-55	ENCINAL 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	0.8939	0.8929	0.8884						Explore potential mitigation
CYVL-V-56	ENCL TAP 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	0.8943	0.8933	0.8888						Explore potential mitigation
CYVL-V-57	ENVRO_HY 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8394	0.8613	0.8556						Explore potential mitigation
CYVL-V-58	FLINT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.4976	0.523	0.5105						Explore potential mitigation
CYVL-V-59	FORST HL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8308	0.8528	0.8471						Explore potential mitigation
CYVL-V-60	GOLD HLL 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3394	0.3572	0.3365						Explore potential mitigation
CYVL-V-61	GOLDHILL 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3234	0.3403	0.3211						Explore potential mitigation
CYVL-V-62	GRANITE 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7166	>0.90	>0.90						Explore potential mitigation
CYVL-V-63	GRIDLEY 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus	0.9053	>0.90	>0.90						Explore potential mitigation
CYVL-V-64	GUSTINE 60 kV	P2-2:A11:42:_30625 Tesla 230 kV Bus Section 1D	P2	Bus-tie breaker	0.8929	>0.90	>0.90						Explore potential mitigation
CYVL-V-65	GUSTN JT 60 kV	P2-2:A11:43:_30625 Tesla 230 kV Bus Section 2D	P2	Bus-tie breaker	0.894	>0.90	>0.90						Explore potential mitigation
CYVL-V-66	GWFRACY 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.7587	>0.90	>0.90						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-67	HARINTON 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7476	0.6918	0.8242						Explore potential mitigation
CYVL-V-68	HIGGINS 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5896	0.6176	0.607						Explore potential mitigation
CYVL-V-69	HJ HEINZ 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6146	>0.90	>0.90						Explore potential mitigation
CYVL-V-70	HOMEGRND 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.892	0.8758	>0.90						Explore potential mitigation
CYVL-V-71	HORSESHE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.378	0.3972	0.3811						Explore potential mitigation
CYVL-V-72	HUSTD 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8189	0.7736	0.8922						Explore potential mitigation
CYVL-V-73	INDIN VL 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.814	0.7807	0.8617						Explore potential mitigation
CYVL-V-74	INGRM C. 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6299	>0.90	>0.90						Explore potential mitigation
CYVL-V-75	KASSON 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5866	>0.90	>0.90						Explore potential mitigation
CYVL-V-76	KASSON 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5803	>0.90	>0.90						Explore potential mitigation
CYVL-V-77	KSSN-JC1 115 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8922	>0.90	>0.90						Explore potential mitigation
CYVL-V-78	KSSN-JC2 115 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.892	>0.90	>0.90						Explore potential mitigation
CYVL-V-79	LEPRINO 115 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8962	>0.90	>0.90						Explore potential mitigation
CYVL-V-80	LID 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.555	>0.90	>0.90						Explore potential mitigation
CYVL-V-81	LIMESTNE 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3183	0.3351	0.3144						Explore potential mitigation
CYVL-V-82	LINCLN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8636	0.8977	0.9088						Explore potential mitigation
CYVL-V-83	LIVE OAK 60 kV	P2-2:A5:21_BUS FAULT AT 32332 PEASE 60.00	P2	Bus-tie breaker	0.8944	0.8934	0.8889						Explore potential mitigation
CYVL-V-84	LOUISE 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5403	>0.90	>0.90						Explore potential mitigation
CYVL-V-85	LTHRP JT 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5183	>0.90	>0.90						Explore potential mitigation
CYVL-V-86	LUCERNE 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8551	0.8255	0.8914						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-87	MANTECA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.4705	0.8848	0.891						Explore potential mitigation
CYVL-V-88	MDSTO CN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7079	>0.90	>0.90						Explore potential mitigation
CYVL-V-89	MDWYWND 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.8681	>0.90	>0.90						Explore potential mitigation
CYVL-V-90	MEDLIN J 60 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.7561	>0.90	>0.90						Explore potential mitigation
CYVL-V-91	MERIDIAN 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7547	0.6962	0.8459						Explore potential mitigation
CYVL-V-92	MIDDLTWN 115 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8925	0.8777	0.9152						Explore potential mitigation
CYVL-V-93	MILLER 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6663	>0.90	>0.90						Explore potential mitigation
CYVL-V-94	MIZOU_T1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2963	0.3144	0.289						Explore potential mitigation
CYVL-V-95	MIZOU_T2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2653	0.282	0.2561						Explore potential mitigation
CYVL-V-96	MSSDLESW 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5524	>0.90	>0.90						Explore potential mitigation
CYVL-V-97	MTN_QJCT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5398	0.57	0.5546						Explore potential mitigation
CYVL-V-98	MTN_QUAR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5334	0.5641	0.5481						Explore potential mitigation
CYVL-V-99	NEWCASTLE 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.4591	0.4822	0.4687						Explore potential mitigation
CYVL-V-100	NEWMAN 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5987	>0.90	>0.90						Explore potential mitigation
CYVL-V-101	NWMN JCT 60 kV	P2-2:A11:43:_30625 Tesla 230 kV Bus Section 2D	P2	Bus-tie breaker	0.8952	>0.90	>0.90						Explore potential mitigation
CYVL-V-102	OI GLASS 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6722	>0.90	>0.90						Explore potential mitigation
CYVL-V-103	OWENSTP1 115 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8989	>0.90	>0.90						Explore potential mitigation
CYVL-V-104	OWENSTP2 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.7562	>0.90	>0.90						Explore potential mitigation
CYVL-V-105	OXBOW 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8416	0.8634	0.8578						Explore potential mitigation
CYVL-V-106	PATTERSN 60 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6416	>0.90	>0.90						Explore potential mitigation
CYVL-V-107	PEAS RG 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8828	0.9328	0.9421						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-108	PENRYN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5101	0.542	0.5241						Explore potential mitigation
CYVL-V-109	PLACER 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5459	0.5755	0.561						Explore potential mitigation
CYVL-V-110	PLACER 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.5156	0.5419	0.53						Explore potential mitigation
CYVL-V-111	PLAINFLD 60 kV	P2-2:A11:43:_30625 Tesla 230 kV Bus Section 2D	P2	Bus-tie breaker	0.8584	>0.90	>0.90						Explore potential mitigation
CYVL-V-112	PLCRVLT1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2929	0.3112	0.2849						Explore potential mitigation
CYVL-V-113	PLCRVLT2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2651	0.2821	0.2555						Explore potential mitigation
CYVL-V-114	Q539 60 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8623	>0.90	>0.90						Explore potential mitigation
CYVL-V-115	Q539SS 60 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8622	>0.90	>0.90						Explore potential mitigation
CYVL-V-116	RCTRK J. 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.8966	>0.90	>0.90						Explore potential mitigation
CYVL-V-117	RIO OSO 230 kV	P2-2:A4:8_BUS FAULT AT 31984 BRIGHTN 115.00	P2	Bus-tie breaker	0.9651	>0.90	>0.90						Explore potential mitigation
CYVL-V-118	RIPON 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2981	0.8166	0.8251						Explore potential mitigation
CYVL-V-119	RIVRBKJT 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.1064	0.7488	0.7612						Explore potential mitigation
CYVL-V-120	ROCKLIN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8159	0.8511	0.854						Explore potential mitigation
CYVL-V-121	RPN JNCN 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.3729	0.8453	0.8528						Explore potential mitigation
CYVL-V-122	SAFEWAY 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7035	>0.90	>0.90						Explore potential mitigation
CYVL-V-123	SALADO 60 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8638	>0.90	>0.90						Explore potential mitigation
CYVL-V-124	SCHULTE 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.7587	>0.90	>0.90						Explore potential mitigation
CYVL-V-125	SFWY_TP1 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.7586	>0.90	>0.90						Explore potential mitigation
CYVL-V-126	SFWY_TP2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7041	>0.90	>0.90						Explore potential mitigation
CYVL-V-127	SHADYGLN 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8445	0.8668	0.8647						Explore potential mitigation
CYVL-V-128	SHPRING 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2737	0.2893	0.2665						Explore potential mitigation
CYVL-V-129	SHPRING1 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.3027	0.3205	0.2966						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-130	SHPRING2 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2743	0.29	0.2671						Explore potential mitigation
CYVL-V-131	SIERRAPI 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8014	0.8374	0.8398						Explore potential mitigation
CYVL-V-132	SJ COGEN 115 kV	P2-2:A11:58:_33540 Tesla 115 kV Bus Section 1	P2	Bus-tie breaker	0.8888	>0.90	>0.90						Explore potential mitigation
CYVL-V-133	SPICAMIN 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.2778	0.2962	0.2677						Explore potential mitigation
CYVL-V-134	SUMMIT 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.9047	0.9274	0.9302						Explore potential mitigation
CYVL-V-135	TAYLOR 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8175	0.8528	0.8558						Explore potential mitigation
CYVL-V-136	TCHRT_T1 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7187	0.9619	0.9715						Explore potential mitigation
CYVL-V-137	TCHRT_T2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6804	>0.90	>0.90						Explore potential mitigation
CYVL-V-138	TESLA 115 kV	P2-2:A11:59:_33540 Tesla 115 kV Bus Section 2	P2	Bus-tie breaker	0.8682	>0.90	>0.90						Explore potential mitigation
CYVL-V-139	TESLAMTR 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5462	>0.90	>0.90						Explore potential mitigation
CYVL-V-140	TH.E.DV. 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.7122	>0.90	>0.90						Explore potential mitigation
CYVL-V-141	TRACY 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.6165	>0.90	>0.90						Explore potential mitigation
CYVL-V-142	ULTRA JT 115 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8227	0.8558	0.865						Explore potential mitigation
CYVL-V-143	VALLY HM 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.1361	0.7587	0.7704						Explore potential mitigation
CYVL-V-144	VIERATP1 115 kV	P2-3:A11:45:_30624 Tesla 230 kV Bus CB892 Internal Breaker Fault (2D and Bank #4)	P2	Bus-tie breaker	0.8993	>0.90	>0.90						Explore potential mitigation
CYVL-V-145	VIERATP2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5569	>0.90	>0.90						Explore potential mitigation
CYVL-V-146	VIERRA 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.5483	>0.90	>0.90						Explore potential mitigation
CYVL-V-147	VLYHMTP1 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.1363	0.7588	0.7705						Explore potential mitigation
CYVL-V-148	VLYHMTP2 115 kV	P2-4:A11:18:_30500 Bellota 230 kV Bus CB400 Internal Breaker Fault (1D and 2D)	P2	Bus-tie breaker	0.2787	0.8323	0.8416						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-149	WADHMJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8125	0.7652	>0.90						Explore potential mitigation
CYVL-V-150	WEMR SWS 60 kV	P2-4:A5:3_GOLDHILL 230 kV Bus 1 and 2 - CB 202 Failure	P2	Bus-tie breaker	0.8398	0.8622	0.8595						Explore potential mitigation
CYVL-V-151	WESCOT1 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7771	0.7229	0.868						Explore potential mitigation
CYVL-V-152	WESCOT2 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8078	0.7598	0.8986						Explore potential mitigation
CYVL-V-153	WILKINS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7602	0.7097	0.8366						Explore potential mitigation
CYVL-V-154	WILLIAMS 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.8001	0.7516	0.8914						Explore potential mitigation
CYVL-V-155	WILSONAV 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7026	0.6426	0.781						Explore potential mitigation
CYVL-V-156	WLKSLJCT 60 kV	P2-3:A4:22:_NON-BUS-TIE BREAKER CB312 FAILURE AT CORTINA 230kV	P2	Non Bus-tie breaker	0.7635	0.7133	0.8398						Explore potential mitigation
CYVL-V-157	WSID 60 kV	P2-4:A11:50:_33514 Manteca 115 kV Bus CB124 Internal Breaker Fault	P2	Bus-tie breaker	0.8618	0.8788	0.8745						Explore potential mitigation
CYVL-V-158	APPLE HL 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8937	0.9147	0.8646						Explore potential mitigation
CYVL-V-159	DIMOND_2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8036	0.8299	0.7582						Explore potential mitigation
CYVL-V-160	DMND SPR 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8033	0.8297	0.7579						Explore potential mitigation
CYVL-V-161	E.MRY J1 115 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	0.8846	0.9513	0.9622						Explore potential mitigation
CYVL-V-162	ELDORAD 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8724	0.8949	0.8384						Explore potential mitigation
CYVL-V-163	ENCINAL 60 kV	P2-1:A5:97:_ENCL TAP-PEASE #1 60 kV	P2-1	Line section w/o fault	0.8947	0.8932	0.8886						Explore potential mitigation
CYVL-V-164	LIVE OAK 60 kV	P2-1:A5:98:_ENCL TAP-LIVE OAK #1 60 kV	P2-1	Line section w/o fault	0.8978	0.8964	0.8919						Explore potential mitigation
CYVL-V-165	OLIVHRST 115 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	0.8812	>0.90	>0.90						Explore potential mitigation
CYVL-V-166	PEAS RG 60 kV	P2-1:A5:21:_PEASE-HONC JT1 #1 115 kV	P2-1	Line section w/o fault	0.8926	>0.90	>0.90						Explore potential mitigation
CYVL-V-167	PEASE 115 kV	P2-1:A5:72:_OLIVH J1-RIO OSO #1 115 kV	P2-1	Line section w/o fault	0.8886	>0.90	>0.90						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-168	PLAINFLD 60 kV	P2-1:A4:102:_TRAVIS-TRAVISJT #1 60 kV	P2-1	Line section w/o fault	0.8705	>0.90	>0.90						Explore potential mitigation
CYVL-V-169	PLCRVLT2 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.8124	0.8384	0.7682						Explore potential mitigation
CYVL-V-170	PLFLDJCT 60 kV	P2-1:A4:102:_TRAVIS-TRAVISJT #1 60 kV	P2-1	Line section w/o fault	0.8835	>0.90	>0.90						Explore potential mitigation
CYVL-V-171	SHPRING 115 kV	P2-1:A5:18:_GOLDHILL-SHPRING2 #2 115 kV	P2-1	Line section w/o fault	0.7923	0.8191	0.7454						Explore potential mitigation
CYVL-V-172	ARBALT 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	0.8957	0.8912						Explore potential mitigation
CYVL-V-173	ARBUCKLE 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	0.8953	0.8908						Explore potential mitigation
CYVL-V-174	CLSA CRS 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	0.8969	>0.9						Explore potential mitigation
CYVL-V-175	CLSA CRS 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	>0.9	0.8818						Explore potential mitigation
CYVL-V-176	COLUSA 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	0.8923	>0.9						Explore potential mitigation
CYVL-V-177	COLUSA 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	>0.9	>0.9	0.8976						Explore potential mitigation
CYVL-V-178	DIST2047 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	0.8666	0.8603						Explore potential mitigation
CYVL-V-179	DIST2047 60 kV	P1-1:A4:6:_SOLANO 34.50 Generator ID 1 and P1-2:A4:42:_Cortina 60 kV Line No. 1	P3	G-1/N-1	0.8813	>0.9	>0.9						Explore potential mitigation
CYVL-V-180	DUNNIGAN 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	>0.9	0.8937						Explore potential mitigation
CYVL-V-181	ENVRO_HY 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	>0.9	>0.9	0.8638						Explore potential mitigation
CYVL-V-182	FORST HL 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	>0.9	>0.9	0.8638						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-183	GRSS VLY 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-2:A5:54:_Colgate-Grass Valley 60 kV Line	P3	G-1/N-1	0.8958	0.8962	0.8903						Explore potential mitigation
CYVL-V-184	MEDLIN J 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	0.8817	0.9242	0.9138						Explore potential mitigation
CYVL-V-185	MERIDIAN 60 kV	P1-1:A4:8:_WADHAM 9.11 Generator ID 1 and P1-2:A4:43:_Cortina No. 4 60 kV Line	P3	G-1/N-1	>0.9	>0.9	0.8831						Explore potential mitigation
CYVL-V-186	NEWMAN 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	>0.9	0.8982	0.9298						Explore potential mitigation
CYVL-V-187	NEWMAN 60 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A12:16:_Salado - Newman 60 kV Line No. 2	P3	G-1/N-1	0.8825	>0.9	>0.9						Explore potential mitigation
CYVL-V-188	OXBOW 60 kV	P1-1:A5:23:_ROLLINSF 6.60 Generator ID 1 and P1-1:A5:26:_OXBOW F 9.11 Generator ID 1	P3	G-1/N-1	>0.9	>0.9	0.8639						Explore potential mitigation
CYVL-V-189	PLAINFLD 60 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-3:A4:14:_Vaca Dixon 115/60 kV Transformer No. 9	P3	G-1/N-1	0.8317	>0.9	>0.9						Explore potential mitigation
CYVL-V-190	Q539 60 kV	P1-1:A12:4:_Q539 34.50 Generator ID 1 and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P3	G-1/N-1	0.8817	0.9242	0.9138						Explore potential mitigation
CYVL-V-191	RIPON 115 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	0.8611	>0.9	0.8822						Explore potential mitigation
CYVL-V-192	RPNJN2 115 kV	P1-1:A12:8:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	0.8664	>0.9	0.8879						Explore potential mitigation
CYVL-V-193	VALLY HM 115 kV	P1-1:A11:46:_STANISLS 13.80 Generator ID 1 and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P3	G-1/N-1	0.8782	>0.9	0.9009						Explore potential mitigation
CYVL-V-194	WESTLEY 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	>0.9	>0.9	0.8602						Explore potential mitigation
CYVL-V-195	WILKINS 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-2:A4:44:_Cortina 60 kV Line No. 1	P3	G-1/N-1	>0.9	0.8663	0.86						Explore potential mitigation
CYVL-V-196	WILSONAV 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:15:_Cortina #5 115/60 kV Transformer	P3	G-1/N-1	>0.9	0.8924	>0.9						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-197	WILSONAV 60 kV	P1-1:A11:1:_0227-WD 230.00 Generator ID FW and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P3	G-1/N-1	>0.9	>0.9	0.8977						Explore potential mitigation
CYVL-V-198	WSID 60 kV	P1-1:A11:11:_GWFTRCY3 13.80 Generator ID 1 and P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3	P3	G-1/N-1	>0.9	>0.9	0.8605						Explore potential mitigation
CYVL-V-199	ALMENDRA 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.1667	>0.9	>0.9						Explore potential mitigation
CYVL-V-200	AMERESCO 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.8254	>0.9	>0.9						Explore potential mitigation
CYVL-V-201	APPLE HL 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.3114	0.3138	0.2865						Explore potential mitigation
CYVL-V-202	ARBALT 60 kV	P1-2:A4:41:_Vaca - Suisun 115 kV Line and P1-2:A4:44:_Cortina 60 kV Line No. 1	P6	N-1/N-1	>0.9	0.8943	0.8938						Explore potential mitigation
CYVL-V-203	ARBALT 60 kV	P1-2:A4:42:_Cortina 60 kV Line No. 1 and P1-3:A4:5:_Cortina 230/115 kV Transformer No. 4	P6	N-1/N-1	0.8896	>0.9	>0.9						Explore potential mitigation
CYVL-V-204	ARBUCKLE 60 kV	P1-2:A3:22:_Palermo - Bogue 115 kV Line and P1-2:A4:44:_Cortina 60 kV Line No. 1	P6	N-1/N-1	>0.9	0.8949	0.8909						Explore potential mitigation
CYVL-V-205	ARBUCKLE 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8773	>0.9	>0.9						Explore potential mitigation
CYVL-V-206	ATLANTC 230 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8978	0.9019	0.9037						Explore potential mitigation
CYVL-V-207	ATLANTIC 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8811	0.8837	0.8855						Explore potential mitigation
CYVL-V-208	AUBURN 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.6064	0.6034	0.5868						Explore potential mitigation
CYVL-V-209	AVENA 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8914	>0.9	>0.9						Explore potential mitigation
CYVL-V-210	BCKWRTH 69 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8683	>0.9						Explore potential mitigation
CYVL-V-211	BELL PGE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.5885	0.5831	0.5707						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-212	BIGGS 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.473	>0.9	>0.9						Explore potential mitigation
CYVL-V-213	BONNIE N 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8945	0.7862	0.8162						Explore potential mitigation
CYVL-V-214	BRIGHTN 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8825	>0.9	>0.9						Explore potential mitigation
CYVL-V-215	BRIGHTON 230 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.7684	>0.9	>0.9						Explore potential mitigation
CYVL-V-216	BRKR SLG 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8851	>0.9	>0.9						Explore potential mitigation
CYVL-V-217	BRKR TP 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8853	>0.9	>0.9						Explore potential mitigation
CYVL-V-218	BRKRJCT 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8854	>0.9	>0.9						Explore potential mitigation
CYVL-V-219	BRUNSWCK 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.9237	0.8794	0.8908						Explore potential mitigation
CYVL-V-220	BTTE CRK 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.8352	>0.9	>0.9						Explore potential mitigation
CYVL-V-221	CACHE J1 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.8524	0.9054						Explore potential mitigation
CYVL-V-222	CAMPUS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8834	>0.9	>0.9						Explore potential mitigation
CYVL-V-223	CAPEHORN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.8893	0.7562	0.7868						Explore potential mitigation
CYVL-V-224	CH.STN 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8396	>0.9	>0.9						Explore potential mitigation
CYVL-V-225	CH.STNJT 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8399	>0.9	>0.9						Explore potential mitigation
CYVL-V-226	CHCGO PK 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.7984	0.7592	0.764						Explore potential mitigation
CYVL-V-227	CHILCT 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8357	>0.9						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-228	CISCO GR 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.9393	0.8469	0.8923						Explore potential mitigation
CYVL-V-229	CL AMMNA 115 kV	P1-2:A11:5:_Tesla - Vierra 115 kV Line and P1-3:A11:18:_Tesla 230/115 kV Transformer No. 1	P6	N-1/N-1	0.8955	>0.9	>0.9						Explore potential mitigation
CYVL-V-230	CLARK RD 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.8146	>0.9	>0.9						Explore potential mitigation
CYVL-V-231	CLRKSULE 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3253	0.3253	0.3034						Explore potential mitigation
CYVL-V-232	CLSA CRS 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8367	>0.9	>0.9						Explore potential mitigation
CYVL-V-233	CNTRVLE 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.8282	>0.9	>0.9						Explore potential mitigation
CYVL-V-234	COLFAXJT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.8899	0.7561	0.7867						Explore potential mitigation
CYVL-V-235	CORT_D 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.74	0.8346						Explore potential mitigation
CYVL-V-236	CORTINA 115 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.7402	0.8311						Explore potential mitigation
CYVL-V-237	CPEHRNTP 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.8898	0.7568	0.7875						Explore potential mitigation
CYVL-V-238	CPM 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3498	0.3504	0.3276						Explore potential mitigation
CYVL-V-239	CROSRDJT 115 kV	P1-2:A11:5:_Tesla - Vierra 115 kV Line and P1-3:A11:18:_Tesla 230/115 kV Transformer No. 1	P6	N-1/N-1	0.8956	>0.9	>0.9						Explore potential mitigation
CYVL-V-240	CRTNA M 230 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8908	>0.9	>0.9						Explore potential mitigation
CYVL-V-241	CRTNA M 230 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7044	0.8019						Explore potential mitigation
CYVL-V-242	CRWS LDG 60 kV	P1-2:A12:19:_S539SS-Newman #1 60 kV Line and P1-2:A11:2:_Stanislaus-Melones-Riverbank Jct 115 kV Line	P6	N-1/N-1	0.8989	>0.9	>0.9						Explore potential mitigation
CYVL-V-243	CURTISS 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8268	0.9142	0.9416						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-244	DAVIS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8847	>0.9	>0.9						Explore potential mitigation
CYVL-V-245	DE SABLE 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.8352	>0.9	>0.9						Explore potential mitigation
CYVL-V-246	DEEPWATR 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8838	>0.9	>0.9						Explore potential mitigation
CYVL-V-247	DEL MAR 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8944	0.8975	0.8969						Explore potential mitigation
CYVL-V-248	DIMOND_1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3342	0.3357	0.3105						Explore potential mitigation
CYVL-V-249	DIMOND_2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.2956	0.298	0.2725						Explore potential mitigation
CYVL-V-250	DMND SPR 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.2952	0.2976	0.2722						Explore potential mitigation
CYVL-V-251	DRAKE 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7017	0.8302						Explore potential mitigation
CYVL-V-252	DRHMSW45 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.8215	>0.9	>0.9						Explore potential mitigation
CYVL-V-253	DRUM 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.898	0.8027	0.8326						Explore potential mitigation
CYVL-V-254	DTCH FL1 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8534	0.8031	0.8129						Explore potential mitigation
CYVL-V-255	DTCH FL2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.9275	0.8631	0.8781						Explore potential mitigation
CYVL-V-256	DUNNIGAN 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8474	>0.9	>0.9						Explore potential mitigation
CYVL-V-257	DUNNIGAN 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.6792	0.8105						Explore potential mitigation
CYVL-V-258	DUNNTAP 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8772	>0.9	>0.9						Explore potential mitigation
CYVL-V-259	DUNNTAP 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.716	0.8427						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-260	E.NICOLS 115 kV	P1-2:A5:35:_East Nicolaus - Rio Oso 115 kV Line and P1-3:A5:11:_East Nicolaus #3 115/60 kV Transformer	P6	N-1/N-1	>0.9	0.8659	0.8624						Explore potential mitigation
CYVL-V-261	ELDORAD 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.3107	0.3134	0.2852						Explore potential mitigation
CYVL-V-262	ENCINAL 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.2277	>0.9	>0.9						Explore potential mitigation
CYVL-V-263	ENCL TAP 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.2283	>0.9	>0.9						Explore potential mitigation
CYVL-V-264	ENVRO_HY 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8854	0.6908	0.7197						Explore potential mitigation
CYVL-V-265	FLINT 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.5533	0.5504	0.5361						Explore potential mitigation
CYVL-V-266	FRGTNTP1 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8707	>0.9	>0.9						Explore potential mitigation
CYVL-V-267	FROGTOWN 115 kV	P1-2:A11:7:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8706	>0.9	>0.9						Explore potential mitigation
CYVL-V-268	GOLD HLL 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.376	0.3762	0.3528						Explore potential mitigation
CYVL-V-269	GOLDHILL 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3583	0.3584	0.3367						Explore potential mitigation
CYVL-V-270	GRAEGL 69 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8929	>0.9						Explore potential mitigation
CYVL-V-271	GRAND IS 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8679	>0.9	>0.9						Explore potential mitigation
CYVL-V-272	GRIDLEY 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.3824	>0.9	>0.9						Explore potential mitigation
CYVL-V-273	HALSEY 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.6051	0.6031	0.5863						Explore potential mitigation
CYVL-V-274	HARINTON 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7063	0.8342						Explore potential mitigation
CYVL-V-275	HAYPRESS 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.9597	0.8157	0.895						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-276	HERLNG 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8141	>0.9						Explore potential mitigation
CYVL-V-277	HIGHLAND 115 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.8746	0.9166						Explore potential mitigation
CYVL-V-278	HIGGINS 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.6477	0.6335	0.6256						Explore potential mitigation
CYVL-V-279	HOMEGRND 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.8808	0.9214						Explore potential mitigation
CYVL-V-280	HOMSTKTP 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.8846	0.925						Explore potential mitigation
CYVL-V-281	HORSESHE 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.4203	0.4193	0.3987						Explore potential mitigation
CYVL-V-282	HUSTD 60 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.7862	0.8972						Explore potential mitigation
CYVL-V-283	INDIN VL 115 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.7912	0.8668						Explore potential mitigation
CYVL-V-284	LAMMERS 115 kV	P1-2:A11:5:_Tesla - Vierra 115 kV Line and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	0.8945	0.9316	0.9299						Explore potential mitigation
CYVL-V-285	LEAVIT1 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.7807	>0.9						Explore potential mitigation
CYVL-V-286	LEAVIT2 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.7806	>0.9						Explore potential mitigation
CYVL-V-287	LIMESTNE 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.3527	0.3533	0.3294						Explore potential mitigation
CYVL-V-288	LIVE OAK 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.2518	>0.9	>0.9						Explore potential mitigation
CYVL-V-289	LUCERNE 115 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.8357	0.8971						Explore potential mitigation
CYVL-V-290	MANTECA 115 kV	P1-2:A11:51:_Tesla - Vierra 115 kV Line and P1-3:A11:19:_Tesla 230/115 kV Transformer No. 3	P6	N-1/N-1	0.8957	>0.9	>0.9						Explore potential mitigation
CYVL-V-291	MAXTAP 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.857	>0.9	>0.9						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-292	MAXWELL 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8569	>0.9	>0.9						Explore potential mitigation
CYVL-V-293	MEDLIN J 60 kV	P1-2:A12:18:_Q539SS-Q539 60 kV Line and P1-2:A12:17:_Salado-S539SS #1 60 kV Line	P6	N-1/N-1	0.8817	>0.9	>0.9						Explore potential mitigation
CYVL-V-294	MELNS JA 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8633	>0.9	>0.9						Explore potential mitigation
CYVL-V-295	MELNS JB 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8632	>0.9	>0.9						Explore potential mitigation
CYVL-V-296	MELONES 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8477	>0.9	>0.9						Explore potential mitigation
CYVL-V-297	MERIDIAN 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7103	0.8555						Explore potential mitigation
CYVL-V-298	MERIDJCT 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7166	0.8608						Explore potential mitigation
CYVL-V-299	MIDDLTWN 115 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.8824	0.9186						Explore potential mitigation
CYVL-V-300	MILFDREG 69 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.806	>0.9						Explore potential mitigation
CYVL-V-301	MILFORD 69 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8061	>0.9						Explore potential mitigation
CYVL-V-302	MIZOU_T1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3308	0.3325	0.3068						Explore potential mitigation
CYVL-V-303	MIZOU_T2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.2958	0.2982	0.2724						Explore potential mitigation
CYVL-V-304	MRYSVLE 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.1551	>0.9	>0.9						Explore potential mitigation
CYVL-V-305	MTN_QJCT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.6052	0.6022	0.586						Explore potential mitigation
CYVL-V-306	MTN_QUAR 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.5996	0.5968	0.5794						Explore potential mitigation
CYVL-V-307	NEWCSTL1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.5095	0.5071	0.491						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-308	NEWCASTL2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.514	0.5119	0.4962						Explore potential mitigation
CYVL-V-309	OLETA 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.291	0.2916	0.2684						Explore potential mitigation
CYVL-V-310	OXBOW 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8874	0.6908	0.7197						Explore potential mitigation
CYVL-V-311	PEACHTON 60 kV	P1-2:A5:31:_Palermo - Pease 115 kV Line and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.8954	>0.9	>0.9						Explore potential mitigation
CYVL-V-312	PEAS RG 60 kV	P1-2:A11:26:_DGC Mariposa Gen - Kelso 230 kV Line and P1-2:A5:31:_Palermo - Pease 115 kV Line	P6	N-1/N-1	0.8901	>0.9	>0.9						Explore potential mitigation
CYVL-V-313	PENRYN 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.5802	0.576	0.5569						Explore potential mitigation
CYVL-V-314	PEORIA 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.841	0.9266	0.954						Explore potential mitigation
CYVL-V-315	PLACER 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.6105	0.607	0.5911						Explore potential mitigation
CYVL-V-316	PLCRVLB2 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.2956	0.2984	0.2718						Explore potential mitigation
CYVL-V-317	PLCRVLB3 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.2954	0.298	0.2718						Explore potential mitigation
CYVL-V-318	PLSNT GR 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.89	0.8924	0.8973						Explore potential mitigation
CYVL-V-319	POST 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8873	>0.9	>0.9						Explore potential mitigation
CYVL-V-320	R.TRACK 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8457	>0.9	>0.9						Explore potential mitigation
CYVL-V-321	RCTRK J. 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8333	>0.9	>0.9						Explore potential mitigation
CYVL-V-322	RIVRBKJT 115 kV	P1-2:A11:59:_Schulte - Lammers 115 kV Line and P1-2:A11:42:_Stanislaus-Melones-Riverbank Jct 115 kV Line	P6	N-1/N-1	0.8975	>0.9	>0.9						Explore potential mitigation
CYVL-V-323	RIVRBKJT 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P6	N-1/N-1	>0.9	0.8906	>0.9						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-324	ROLLINS 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8968	0.7629	0.7934						Explore potential mitigation
CYVL-V-325	SCHMLBCH 115 kV	P1-3:A4:8:_Vaca Dixon 230/115 kV Transformer No. 4 and P1-2:A4:41:_Vaca - Suisun 115 kV Line	P6	N-1/N-1	>0.9	0.9079	0.8985						Explore potential mitigation
CYVL-V-326	SCHULTE 115 kV	P1-2:A11:54:_Tesla - Schulte 115 kV Line No. 1 and P1-2:A11:53:_Tesla - Schulte 115 kV Line No. 2	P6	N-1/N-1	0.8987	>0.9	>0.9						Explore potential mitigation
CYVL-V-327	SHADYGLN 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.89	0.7561	0.7868						Explore potential mitigation
CYVL-V-328	SHPRING1 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3372	0.3385	0.3138						Explore potential mitigation
CYVL-V-329	SHPRING2 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.3041	0.306	0.2816						Explore potential mitigation
CYVL-V-330	SIERRAPI 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8944	0.8975	0.8969						Explore potential mitigation
CYVL-V-331	SJ COGEN 115 kV	P1-2:A11:49:_Vierra - Tracy - Kasson 115 kV Line and P1-2:A11:5:_Tesla - Vierra 115 kV Line	P6	N-1/N-1	0.8981	0.9358	0.9367						Explore potential mitigation
CYVL-V-332	SPICAMIN 115 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	0.3117	0.3141	0.2866						Explore potential mitigation
CYVL-V-333	STAGG-D 230 kV	P1-2:A11:14:_Stagg 230/60 kV Transformer No. 1 and P1-2:A11:11:_Eight Mile - Stagg 230 kV Line	P6	N-1/N-1	>0.9	>0.9	0.8781						Explore potential mitigation
CYVL-V-334	STAGG-F 230 kV	P1-2:A11:14:_Stagg 230/60 kV Transformer No. 1 and P1-2:A11:11:_Eight Mile - Stagg 230 kV Line	P6	N-1/N-1	>0.9	>0.9	0.8773						Explore potential mitigation
CYVL-V-335	STAGG-H 230 kV	P1-2:A11:14:_Stagg 230/60 kV Transformer No. 1 and P1-2:A11:11:_Eight Mile - Stagg 230 kV Line	P6	N-1/N-1	>0.9	>0.9	0.8769						Explore potential mitigation
CYVL-V-336	STANISLS 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8915	>0.9	>0.9						Explore potential mitigation
CYVL-V-337	SUMMIT 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8646	>0.9						Explore potential mitigation
CYVL-V-338	TAMARACK 60 kV	P1-3:A5:6:_Goldhill #2 230/115 kV Transformer and P1-3:A5:5:_Goldhill #1 230/115 kV Transformer	P6	N-1/N-1	>0.9	0.8522	0.8952						Explore potential mitigation

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-339	TBLE MTN 60 kV	P1-3:A5:9:_Pease #2 115/60 kV Transformer and P1-3:A5:41:_New Pease #5 115/60 kV Transformer	P6	N-1/N-1	0.8054	>0.9	>0.9						Explore potential mitigation
CYVL-V-340	TESLAMTR 115 kV	P1-2:A11:49:_Vierra - Tracy - Kasson 115 kV Line and P1-2:A11:5:_Tesla - Vierra 115 kV Line	P6	N-1/N-1	0.8981	>0.9	>0.9						Explore potential mitigation
CYVL-V-341	TRACY 115 kV	P1-2:A11:5:_Tesla - Vierra 115 kV Line and P1-2:A11:55:_Tesla - Tracy 115 kV Line	P6	N-1/N-1	0.896	>0.9	>0.9						Explore potential mitigation
CYVL-V-342	UCD_TP2 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8847	>0.9	>0.9						Explore potential mitigation
CYVL-V-343	UCDAVSJ1 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8847	>0.9	>0.9						Explore potential mitigation
CYVL-V-344	ULTR-RCK 115 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8985	>0.9	>0.9						Explore potential mitigation
CYVL-V-345	VALLY HM 115 kV	P1-2:A11:7:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P6	N-1/N-1	>0.9	0.8846	>0.9						Explore potential mitigation
CYVL-V-346	VALLY HM 115 kV	P1-2:A11:7:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8726	>0.9	>0.9						Explore potential mitigation
CYVL-V-347	VIERATP1 115 kV	P1-2:A11:49:_Vierra - Tracy - Kasson 115 kV Line and P1-2:A11:5:_Tesla - Vierra 115 kV Line	P6	N-1/N-1	0.8987	0.9364	0.9374						Explore potential mitigation
CYVL-V-348	VIERRA 115 kV	P1-2:A11:49:_Vierra - Tracy - Kasson 115 kV Line and P1-2:A11:5:_Tesla - Vierra 115 kV Line	P6	N-1/N-1	0.8996	>0.9	>0.9						Explore potential mitigation
CYVL-V-349	VLYHMTP1 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A11:46:_Ripon - Manteca 115 kV Line	P6	N-1/N-1	>0.9	0.8847	>0.9						Explore potential mitigation
CYVL-V-350	VLYHMTP1 115 kV	P1-2:A11:65:_Bellota-Riverbank-Melones 115 kV Line and P1-2:A12:10:_Donnells - Curtis 115 kV Line	P6	N-1/N-1	0.8727	>0.9	>0.9						Explore potential mitigation
CYVL-V-351	W.SCRMNO 115 kV	P1-2:4:3:_Brighton - Bellota 230 kV Line and P1-2:A5:13:_Rio Oso - Brighton 230 kV Line	P6	N-1/N-1	0.8878	>0.9	>0.9						Explore potential mitigation
CYVL-V-352	WADHMJCT 60 kV	P1-2:A3:9:_Delevan-Cortina 230 kV Line and P1-2:A4:17:_Cortina - Vaca 230 kV Line	P6	N-1/N-1	>0.9	0.7779	>0.9						Explore potential mitigation
CYVL-V-353	WEMR SWS 60 kV	P1-3:A5:5:_Goldhill #1 230/115 kV Transformer and P1-3:A5:6:_Goldhill #2 230/115 kV Transformer	P6	N-1/N-1	0.8856	0.7438	0.774						Explore potential mitigation
CYVL-V-354	WESTLEY 60 kV	P1-3:A11:19:_Tesla 230/115 kV Transformer No. 3 and P1-2:A11:57:_Tesla - Trust 115 kV Line	P6	N-1/N-1	0.8889	>0.9	>0.9						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-355	WESTLEY 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	>0.9	0.8643	0.8594						Explore potential mitigation
CYVL-V-356	WILLIAMS 60 kV	P1-2:A4:17:_Cortina - Vaca 230 kV Line and P1-2:A3:9:_Delevan-Cortina 230 kV Line	P6	N-1/N-1	>0.9	0.7648	0.8964						Explore potential mitigation
CYVL-V-357	WILSONAV 60 kV	P1-2:A3:5:_Delevan-Cortina 230 kV Line and P1-3:A4:17:_Cortina #5 115/60 kV Transformer	P6	N-1/N-1	0.8328	>0.9	>0.9						Explore potential mitigation
CYVL-V-358	WSID 60 kV	P1-3:A11:19:_Tesla 230/115 kV Transformer No. 3 and P1-2:A11:57:_Tesla - Trust 115 kV Line	P6	N-1/N-1	0.8891	>0.9	>0.9						Explore potential mitigation
CYVL-V-359	WSID 60 kV	P1-3:A11:21:_Manteca 115/60 kV Transformer No. 3 and P1-2:A11:59:_Schulte - Lammers 115 kV Line	P6	N-1/N-1	>0.9	0.8645	0.8598						Explore potential mitigation
CYVL-V-360	YBA CTYJ 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.1667	>0.9	>0.9						Explore potential mitigation
CYVL-V-361	YUBACITY 60 kV	P1-3:A5:41:_New Pease #5 115/60 kV Transformer and P1-3:A5:9:_Pease #2 115/60 kV Transformer	P6	N-1/N-1	0.1535	>0.9	>0.9						Explore potential mitigation
CYVL-V-362	E.NICOLS 115 kV	P7-1:A5:12_Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	>0.9	0.8701	0.8676						Explore potential mitigation
CYVL-V-363	GWFRACY 115 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8986	>0.9	>0.9						Explore potential mitigation
CYVL-V-364	LAMMERS 115 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8982	>0.9	>0.9						Explore potential mitigation
CYVL-V-365	OI GLASS 115 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8978	>0.9	>0.9						Explore potential mitigation
CYVL-V-366	PEAS RG 60 kV	P7-1:A5:10_Palermo-Pease 115 kV Line & Palermo-Wyandotte 115 kV Line	P7	DCTL	0.8926	>0.9	>0.9						Explore potential mitigation
CYVL-V-367	PLAINFLD 60 kV	P7-1:A4:12_Lambie Sw Sta-Birds Landing Sw Sta 230 kV Line & Peabody-Birds Landing Sw Sta 230 kV Line	P7	DCTL	0.8596	>0.9	>0.9						Explore potential mitigation
CYVL-V-368	PLFLDICT 60 kV	P7-1:A4:12_Lambie Sw Sta-Birds Landing Sw Sta 230 kV Line & Peabody-Birds Landing Sw Sta 230 kV Line	P7	DCTL	0.8727	>0.9	>0.9						Explore potential mitigation
CYVL-V-369	SCHULTE 115 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8987	>0.9	>0.9						Explore potential mitigation
CYVL-V-370	WESTLEY 60 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8924	>0.9	>0.9						Explore potential mitigation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AEE	N/A	N/A		N/A	N/A	N/A
CYVL-V-371	WHEATLND 60 kV	P7-1:A5:12_Rio Oso-Nicolaus 115 kV Line & Bogue-Rio Oso 115 kV Line	P7	DCTL	>0.9	0.8925	0.8939						Explore potential mitigation
CYVL-V-372	WSID 60 kV	P7-1:A12:19:_Tesla-Schulte 115 kV Line No. 1 & Tesla-Schulte 115 kV Line No. 2	P7	DCTL	0.8927	>0.9	>0.9						Explore potential mitigation



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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-1	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #2 (AY-2) 115kV Cable	P1	N-1	96.09	99.16	101.58	75.98	61.78	105.24	104.32	105.52	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-2	Newark-Dixon Landing 115kV Line	Piercy-Metcalf 115 kV	P1	N-1	112.83	72.00	60.00	59.75	30.00	41.53	31.00	22.00	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-3	Piercy-Metcalf 115 kV Line	Newark-Dixon Landing 115kV Line	P1	N-1	104.41	64.53	66.27	54.07	20.82	55.98	38.09	37.54	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-4	Moraga-Oakland J 115kV Line	SN LNDRO-DMTARSL #1 115 kV	P2-1	Line section w/o fault	125.17	58.33	55.88	82.40	27.20	126.42	49.77	50.55	Short Term: Moraga-Oakland J SPS Long Term: Reconductor Moraga-Oakland J 115 kV Line
GBA-T-5	Oleum-Christie 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	101.14	56.99	58.18	80.79	51.27	66.21	36.73	36.37	Short Term : Action Plan ; Long Term : North Tower 115 kV Looping Project
GBA-T-6	Sobrante-El Cerrito STA G #2 115kV Line	BUS 1 FAULT AT 33010 SOBRANTE 115.00	P2	Bus	103.59	94.70	93.60	64.83	50.32	71.21	62.84	62.55	Short Term : Action Plan; Long Term : North Tower 115 kV Looping Project
GBA-T-7	Oakland D - Oakland L 115kV Cable	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	59.42	92.81	128.82	88.04	66.64	136.52	133.46	68.29	Existing Oakland D-L SPS
GBA-T-8	Oakland C - Oakland X #2 115kV Cable	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	27.94	89.63	111.58	75.92	61.54	118.51	116.16	35.70	Existing Oakland C-X SPS
GBA-T-9	Martinez-Oleum 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	256.30	218.08	219.47	174.53	142.53	171.27	143.11	140.14	SPS or system upgrade
GBA-T-10	Oleum-Martinez 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	237.63	202.19	203.48	161.81	132.13	190.24	158.97	155.67	SPS or system upgrade
GBA-T-11	Moraga-Claremont #1 115kV Line	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	67.43	107.62	129.40	68.62	58.05	89.19	96.88	59.23	Increase generation in the Oakland Area
GBA-T-12	Moraga-Claremont #2 115kV Line	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	67.53	107.78	129.59	68.72	58.13	89.32	97.02	59.32	Increase generation in the Oakland Area
GBA-T-13	Moraga-Oakland J 115kV Line	BUS D FAULT AT 35101 SN LNDRO 115.00	P2	Bus	124.96	61.82	59.04	82.37	29.00	126.24	51.84	52.44	Short Term: Moraga-Oakland J SPS Long Term: Reconductor Moraga-Oakland J 115 kV Line
GBA-T-14	Sobrante-Moraga 115kV Line	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	101.27	85.14	88.25	83.39	50.32	114.63	69.42	48.34	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-15	Moraga-Station X 115 kV #1 Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	39.42	91.49	109.91	75.15	60.14	117.98	115.20	45.70	Increase generation in the Oakland Area
GBA-T-16	Moraga-Oakland X #2 115kV Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	39.42	91.49	109.91	75.15	60.14	117.98	115.20	45.70	Increase generation in the Oakland Area

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-17	Moraga-Station X 115 kV #3 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	39.42	133.96	157.68	75.15	60.14	117.98	145.57	55.02	Increase generation in the Oakland Area
GBA-T-18	Moraga-Station X 115 kV #4 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	39.42	133.96	157.68	75.15	60.14	117.98	145.57	55.02	Increase generation in the Oakland Area
GBA-T-19	Moraga-San Leandro #1 115kV Line	BUS 2E FAULT AT 33020 MORAGA 115.00	P2	Bus	120.59	72.23	69.73	74.18	36.24	103.68	54.62	54.04	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-20	Moraga-San Leandro #2 115kV Line	BUS 1E FAULT AT 33020 MORAGA 115.00	P2	Bus	142.63	89.19	85.89	86.78	46.22	118.81	66.32	66.68	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-21	Piercy-Metcalf 115 kV Line	BUS-TIE BREAKER 730 AT 35120 NEWARK D 115.00	P2	Bus-tie breaker	104.72	76.12	78.13	54.16	21.85	66.70	39.95	38.39	Action Plan before Evergreen-Mabury Voltage Conversion
GBA-T-22	Pittsburg 230/115kV Transformer #13	BUS 2D FAULT AT 30526 PITSBG D 230.00	P2	Bus	112.69	67.43	68.04	68.80	72.45	50.66	53.60	50.78	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-23	Martinez-Sobrante 115kV Line	BUS-TIE BREAKER FAULT AT 30526 PITSBG D 230.00	P2	Bus-tie breaker	127.42	31.15	33.24	74.47	70.91	29.44	38.02	39.22	Reduce generation in Pittsburg 115 kV
GBA-T-24	Moraga-San Leandro #3 115kV Line	BUS 2E FAULT AT 33020 MORAGA 115.00	P2	Bus	103.72	62.11	59.96	63.81	31.05	89.93	47.36	46.86	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-25	Loyola-Monta Vista 60 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	112.49	79.46	75.40	49.43	17.56	58.81	32.50	30.17	Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-26	Potrero-Larkin #2 (AY-2) 115kV Cable	BUS-TIE BREAKER 102 FAULT AT 33204 POTRERO 115.00	P2	Bus-tie breaker	116.12	118.23	120.05	94.33	74.87	124.02	123.08	124.59	Short Term: Action Plan Long Term: Potrero 115 kV BAAH Conversion
GBA-T-27	Potrero-Mission (AX) 115kV Cable	NON-BUS-TIE BREAKER CBXX5 FAILURE AT POTRERO 115 kV	P2	Bus-tie breaker	99.19	100.56	102.02	79.47	64.59	106.37	105.56	106.53	Short Term: Action Plan Long Term: Potrero 115 kV BAAH Conversion
GBA-T-28	San Mateo-Belmont 115kV Line	BUS FAULT AT 33321 RVNSWD D 115.00	P2	Bus	105.91	99.17	98.46	66.02	66.97	84.25	82.65	79.82	Short Term: Action Plan Long Term: South of San Mateo Capacity Increase Project
GBA-T-29	Ravenswood-San Mateo #1 115kV Line	BUS-TIE BREAKER 112 FAULT AT 30700 SANMATEO 230.00	P2	Bus-tie breaker	89.43	48.29	47.06	61.74	14.91	100.01	51.59	48.65	Short Term: Action Plan Long Term: South of San Mateo Capacity Increase Project
GBA-T-30	Cooley Landing-Palo Alto 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	112.30	112.89	114.62	47.34	26.66	69.68	70.04	70.74	Palo Alto interim SPS
GBA-T-31	Ravenswood-Cooley Landing #1 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	162.96	124.90	125.77	79.66	37.37	117.40	96.68	94.06	Palo Alto interim SPS
GBA-T-32	San Mateo-Bair 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	134.27	130.99	57.61	80.27	62.65	104.56	100.07	41.27	Breaker is normally open. Invalid contingency
GBA-T-33	Bair 115/60kV Transformer #1	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	157.72	157.45	157.07	103.08	62.52	143.77	138.16	129.27	Breaker is normally open. Invalid contingency

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-34	Bair-Cooley Landing #1 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	130.04	129.38	126.54	79.32	44.75	105.23	100.64	92.07	Breaker is normally open. Invalid contingency
GBA-T-35	Bair-Cooley Landing #2 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	126.65	125.78	122.58	78.14	50.69	83.85	80.42	73.27	Breaker is normally open. Invalid contingency
GBA-T-36	Eastshore 230/115kV Transformer #2	NON-BUS-TIE BREAKER CB2222 FAILURE AT EAST SHORE 230 kV	P2	Bus-tie breaker	103.33	104.22	103.80	20.34	88.77	43.93	93.89	95.48	Action Plan - reduce RCEC generation
GBA-T-37	Newark-Lawrence 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	323.12	324.89	320.60	148.46	113.31	137.56	137.46	133.26	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completed
GBA-T-38	Newark-Applied Materials 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	255.06	215.60	210.73	116.65	74.92	119.42	112.54	107.73	Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-39	Newark-Dixon Landing 115kV Line	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	113.51	107.63	107.67	60.07	40.32	66.68	65.99	64.42	SPS or rerate
GBA-T-40	Lawrence - Monta Vista 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	224.99	220.44	212.89	100.23	64.58	93.93	90.98	85.80	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completed
GBA-T-41	Britton-Monta Vista 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	140.68	139.08	135.35	62.72	39.71	70.59	69.26	66.08	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completed
GBA-T-42	Applied Materials-Britton 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	193.87	191.95	187.01	91.07	59.62	101.94	99.99	95.34	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completed
GBA-T-43	Metcalf 230/115 kV Trans No. 1	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	98.52	108.75	93.65	65.97	43.72	97.66	72.55	60.83	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-44	Metcalf-Llagas 115 kV Line	BUS FAULT AT 35648 LLAGAS F 115.00	P2	Bus	90.72	85.72	126.42	18.26	10.63	5.38	6.64	5.78	Reduce Gilroy generation
GBA-T-45	Metcalf 230/115 kV Trans No. 3	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	97.92	108.13	93.78	65.13	43.15	96.78	71.68	60.46	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-46	Potrero-Mission (AX) 115kV Cable	DEC CTG1 18.00 Generator ID 1 & Potrero-Larkin #2 (AY-2) 115kV Cable	P3	G-1/N-1	<90	102.33	104.31	<90	<90	107.43	107.63	108.56	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-47	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-EI Cerrito STA G #1 115kV Line & Sobrante-EI Cerrito STA G #2 115kV Line	P6	N-1/N-1	128.31	117.17	116.29	<90	<90	94.10	<90	<90	Action plan or explore potential mitigation
GBA-T-48	San Leandro - Oakland J #1 115kV Line	Moraga-Oakland J 115kV Line & Oakland C - Alameda 115kV Cable	P6	N-1/N-1	104.18	<90	<90	<90	<90	100.84	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-49	Pittsburg 230/115kV Transformer #13	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #12	P6	N-1/N-1	137.87	139.52	<90	<90	<90	99.67	99.51	<90	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-50	Martinez-Oleum 115kV Line	Sobrante-EI Cerrito STA G #2 115kV Line & Sobrante-EI Cerrito STA G #1 115kV Line	P6	N-1/N-1	108.09	<90	92.35	<90	<90	<90	<90	<90	Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-51	Moraga-Claremont #1 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	<90	99.36	107.06	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-52	Moraga-Claremont #1 115kV Line	Moraga-Claremont #2 115kV Line & Oakland C Oakland L #1 115kV Cable	P6	N-1/N-1	<90	102.82	107.84	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-53	Moraga-Claremont #2 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	<90	99.50	107.21	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-54	Moraga-Claremont #2 115kV Line	Moraga-Claremont #1 115kV Line & Oakland C Oakland L #1 115kV Cable	P6	N-1/N-1	<90	103.00	107.90	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-55	Moraga-San Leandro #1 115kV Line	Moraga-San Leandro #3 115kV Line & Moraga-San Leandro #2 115kV Line	P6	N-1/N-1	142.05	93.03	<90	<90	<90	118.55	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-56	Moraga-San Leandro #2 115kV Line	Moraga-San Leandro #3 115kV Line & Moraga-San Leandro #1 115kV Line	P6	N-1/N-1	142.49	93.47	90.32	<90	<90	118.93	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-57	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Potrero-Larkin #2 (AY-2) 115kV Cable	P6	N-1/N-1	118.86	122.59	125.15	93.40	<90	130.28	129.37	130.64	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-58	Martin-Larkin (HY-1) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	149.34	149.97	150.49	94.67	<90	177.18	177.40	177.83	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-59	San Mateo-Belmont 115kV Line	Ravenswood 230/115kV Transformer #1 & Ravenswood 230/115kV Transformer #2	P6	N-1/N-1	118.48	109.29	108.73	<90	<90	<90	<90	<90	Action plan or explore potential mitigation
GBA-T-60	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto #2 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	138.09	98.00	98.35	<90	<90	92.64	<90	<90	Palo Alto interim SPS
GBA-T-61	Millbrae-Sneath Lane 60kV Line	Martin-Sneath Lane 60kV Line & Hillsdale JCT - Half Moon Bay 60kV Line	P6	N-1/N-1	104.80	109.52	114.42	<90	<90	124.56	128.99	133.67	Action plan or explore potential mitigation
GBA-T-62	San Mateo-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	202.79	201.54	197.40	122.52	101.75	203.83	196.42	183.56	Review Stanford 60 kV system configuration
GBA-T-63	San Mateo-Bair 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	134.34	130.15	<90	<90	<90	104.61	100.12	<90	San Mateo-Bair 60 kV Line Reconductor Project
GBA-T-64	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	231.74	230.56	226.30	139.74	97.77	198.41	191.55	179.62	Review Stanford 60 kV system configuration
GBA-T-65	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	222.01	221.19	217.41	133.76	93.42	227.11	219.63	206.48	Review Stanford 60 kV system configuration

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-66	Jefferson-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	172.67	171.11	167.53	110.81	<90	167.38	160.14	149.24	Review Stanford 60 kV system configuration
GBA-T-67	Bair-Cooley Landing #1 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	130.11	129.45	126.59	<90	<90	105.28	100.69	92.12	Review Stanford 60 kV system configuration
GBA-T-68	Grant-Eastshore #1 115kV Line	Grant-Eastshore #2 115kV Line & San Leandro Oakland J #1 115kV Line	P6	N-1/N-1	103.01	<90	<90	<90	<90	<90	<90	<90	Short Term : Action Plan Long Term :East shore-Oakland J project
GBA-T-69	Grant-Eastshore #2 115kV Line	Grant-Eastshore #1 115kV Line & San Leandro Oakland J #1 115kV Line	P6	N-1/N-1	103.01	<90	<90	<90	<90	<90	<90	<90	Short Term : Action Plan Long Term :East shore-Oakland J project
GBA-T-70	Newark-Dixon Landing 115kV Line	Piercy-Metcalf 115 kV & Evergreen-Mabury 115 kV	P6	N-1/N-1	NA	122.06	123.66	<90	<90	<90	<90	<90	Action plan or rerate
GBA-T-71	Newark-Milpitas #1 115kV Line	Newark-Milpitas #2 115kV Line & Swift-Metcalf 115 kV	P6	N-1/N-1	131.63	133.30	134.63	<90	<90	<90	<90	<90	Action plan or explore potential mitigation
GBA-T-72	Metcalf-Llagas 115 kV Line	Metcalf-Morgan Hill 115 kV & Llagas-Gilroy Foods 115 kV	P6	N-1/N-1	115.75	131.14	98.77	<90	<90	<90	<90	<90	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-73	Oakland D - Oakland L 115kV Cable	Oakland C - Oakland X #3 115kV Cable & Oakland C - Oakland X #2 115kV Cable	P6	N-1/N-1	<90	82.06	95.90	<90	<90	136.87	120.77	<90	Increase generation in the Oakland Area
GBA-T-74	Pittsburg 230/115kV Transformer #12	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #13	P6	N-1/N-1	118.89	120.31	0.00	<90	<90	<90	<90	<90	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-75	Moraga-Station X 115 kV #1 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-76	Moraga-Oakland X #2 115kV Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-77	Moraga-Station X 115 kV #3 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-78	Moraga-Station X 115 kV #4 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-79	Contra Costa-Balfour 60kV Line	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	<90	<90	<90	100.45	<90	<90	<90	<90	Reduce Contra Costa generation
GBA-T-80	Potrero-Larkin #1 (AY-1) 115kV Cable	Martin-Larkin (HY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	151.63	151.91	152.23	96.55	<90	163.28	163.50	163.83	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-81	Ravenswood-Palo Alto #1 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	113.49	106.39	106.89	<90	<90	<90	<90	<90	Palo Alto interim SPS

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-82	Ravenswood-Palo Alto #2 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	113.37	106.26	106.75	<90	<90	<90	<90	<90	Palo Alto interim SPS
GBA-T-83	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	110.26	110.93	112.49	<90	<90	<90	<90	<90	Palo Alto interim SPS
GBA-T-84	San Mateo 115/60kV Transformer #8	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	109.95	106.46	104.20	0.00	<90	109.95	106.06	100.33	Stanford switching issue
GBA-T-85	Bair 115/60kV Transformer #1	Cooley Landing 115/60kV Transformer #1 & Ravenswood-Cooley Landing #2 115kV Line	P6	N-1/N-1	157.80	157.99	157.12	103.16	<90	143.81	138.21	129.30	Stanford switching issue
GBA-T-86	Bair-Cooley Landing #2 60kV Line	Cooley Landing 115/60kV Transformer #1 & Ravenswood-Cooley Landing #2 115kV Line	P6	N-1/N-1	126.70	125.84	122.61	<90	<90	<90	<90	<90	Stanford switching issue
GBA-T-87	Jefferson-Stanford #1 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	104.72	105.18	104.77	<90	<90	113.01	110.83	107.77	Stanford switching issue
GBA-T-88	Newark-Milpitas #2 115kV Line	Swift-Metcalf 115 kV & Newark-Milpitas #1 115kV Line	P6	N-1/N-1	109.62	111.00	112.10	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-89	Dixon Landing-McKee 115 kV Line	Newark-Dixon Landing 115kV Line & Piercy-Metcalf 115 kV	P6	N-1/N-1	<90	118.61	121.27	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-90	Mabury-Jennings J. 115 kV Line	Piercy-Metcalf 115 kV & Newark-Dixon Landing 115kV Line	P6	N-1/N-1	<90	138.79	141.86	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-91	Metcalf-Morgan Hill 115 kV Line	Llagas-Gilroy Foods 115 kV & Metcalf-Llagas 115 kV	P6	N-1/N-1	99.86	111.03	<90	<90	<90	<90	<90	<90	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-92	Oleum-Christie 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	96.40	103.32	100.40	79.53	39.92	65.30	64.55	64.22	SPS or system upgrade
GBA-T-93	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	132.15	118.20	116.72	82.84	64.10	94.10	80.28	79.33	SPS or system upgrade
GBA-T-94	Martinez-Oleum 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	104.78	87.80	91.68	87.61	73.39	83.97	71.87	70.79	Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-95	Moraga-San Leandro #1 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	126.40	74.64	72.04	77.59	37.42	108.65	56.40	55.85	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-96	Moraga-San Leandro #2 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	127.68	75.39	72.76	78.37	37.79	109.74	56.97	56.41	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-97	Moraga-San Leandro #3 115kV Line	Moraga-San Leandro Nos. 1 & 2 115 kV lines	P7	DCTL	114.12	75.87	73.37	69.53	38.26	96.09	56.86	56.08	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-98	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	110.26	110.93	112.49	46.83	26.58	68.65	68.78	69.53	Palo Alto interim SPS

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-T-99	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	138.09	98.00	98.35	64.98	38.70	92.64	75.66	73.85	Palo Alto interim SPS
GBA-T-100	San Mateo 115/60kV Transformer #8	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	109.73	105.69	103.90	66.44	55.82	109.74	106.32	100.47	Review Stanford 60 kV system configuration
GBA-T-101	San Mateo-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	208.44	206.07	202.39	122.70	103.21	209.58	201.34	187.30	Review Stanford 60 kV system configuration
GBA-T-102	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	238.44	235.94	232.22	139.98	99.26	204.16	196.48	183.35	Review Stanford 60 kV system configuration
GBA-T-103	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	228.67	226.55	223.31	134.03	94.92	233.87	225.44	210.87	Review Stanford 60 kV system configuration
GBA-T-104	Jefferson-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	178.27	175.70	172.41	111.69	83.53	173.08	165.04	153.08	Review Stanford 60 kV system configuration
GBA-T-105	Jefferson-Stanford #1 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	108.10	107.79	107.95	74.78	73.00	116.53	113.92	110.01	Review Stanford 60 kV system configuration
GBA-T-106	Newark-Lawrence 115kV Line	Newark-Applied Materials & Lawrence-Monta Vista 115 kV Lines	P7	DCTL	104.00	109.95	114.11	56.32	63.15	50.84	53.55	54.99	SPS or system upgrade
GBA-T-107	Newark-Dixon Landing 115kV Line	Swift - Metcalf & Piercy - Metcalf 115 kV Lines	P7	DCTL	113.23	63.83	64.73	59.96	28.04	37.07	44.98	45.19	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-108	Trimble-San Jose 'B' 115 kV Line	Metcalf - El Patio No. 1 & 2 115 kV Lines	P7	DCTL	100.08	97.18	94.90	40.02	23.80	38.54	70.01	68.78	SPS or system upgrade
GBA-T-109	Piercy-Metcalf 115 kV Line	Newark - Dixon Landing & Newark - Milpitas #1 115 kV Lines	P7	DCTL	104.50	64.45	66.19	54.08	20.77	55.91	37.99	37.43	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project



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 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak		
GBA-VD-1	DIXON LD 115 kV	Newark-Dixon Landing 115kV Line	P1	N-1	6.22	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	Evergreen-Mabury Voltage Conversion	
GBA-VD-2	EDES 115 kV	Oakland J - Grant 115kV Line	P1	N-1	<5.0	5.04	5.18	<5.0	<5.0	<5.0	<5.0	<5.0	Flip flop scheme. Not instanteneous	
GBA-VD-3	HLF MNBY 60 kV	Hillsdale JCT - Half Moon Bay 60kV Line	P1	N-1	<5.0	<5.0	<5.0	<5.0	<5.0	6.18	7.12	7.37	Flip flop scheme. Not instanteneous	
GBA-VD-4	ALHAMBRA 115 kV	MARTNZ D-ALHAMTP1 #1 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	5.09	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation	
GBA-VD-5	DMTAR_SL 115 kV	SN LNDRO-DMTARSL #1 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	<5.0	6.15	<5.0	<5.0	Mitigation under investigation	
GBA-VD-6	EDES 115 kV	EDS GRNT-GRANT #1 115 kV	P2-1	Line section w/o fault	<5.0	5.44	5.55	<5.0	<5.0	<5.0	5.32	5.21	Mitigation under investigation	
GBA-VD-7	LOCKHD 1 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	<5.0	5.24	5.61	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation	
GBA-VD-8	MOFT.FLD 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	<5.0	5.23	5.60	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation	
GBA-VD-9	DIXON LD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	6.51	5.25	4.83	1.62	0.82	1.83	1.59	1.60	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd	
GBA-VD-10	LOCKHD 1 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	17.22	17.17	16.38	5.17	3.10	6.03	6.28	5.51	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd	
GBA-VD-11	MOFT.FLD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	17.18	17.13	16.35	5.17	3.09	6.02	6.27	5.51	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd	

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-1	A.M.D 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-2	Agnew 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-3	Agnew 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.02	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-4	ALMADEN 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-5	ALTAMONT 60kV	Basecase	P0	N-0	1.04	1.05	1.04	1.08	1.10	1.05	1.07	1.05	Mitigation under investigation
GBA-V-6	AMES DST 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-7	ANTIOCH 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.08	1.08	1.07	Mitigation under investigation
GBA-V-8	APP MAT 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-9	BAIR 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-10	BAIR 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.03	1.03	1.02	Mitigation under investigation
GBA-V-11	BALFOUR 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-12	BAY MDWS 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-13	BAYSHOR1 115kV	Basecase	P0	N-0	1.05	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-14	BELMONT 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-15	BERESFRD 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-16	BIXLER 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.06	1.10	1.04	1.06	1.04	Mitigation under investigation
GBA-V-17	BRIONES 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-18	BRITTN 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-19	Brokaw 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-20	BURLNGME 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.03	1.08	1.03	1.03	1.02	Mitigation under investigation
GBA-V-21	CAL MEC 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-22	CALEVRAS 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-23	CALMAT60 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-24	CAROLD1 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-25	CAROLD2 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-26	CAROLNDS 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-27	CC SUB 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.08	1.08	1.07	Mitigation under investigation
GBA-V-28	CC SUB 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-29	CCA 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-30	Central 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-31	CHRISTIE 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-32	CLAYTN 115kV	Basecase	P0	N-0	1.02	1.01	1.02	1.03	1.05	1.02	1.03	1.03	Mitigation under investigation
GBA-V-33	CLMBA_ST 115kV	Basecase	P0	N-0	1.03	1.02	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-34	CLY LND 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.04	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-35	CP LECEF 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.03	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-36	CROWN Z 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-37	CRYOGEN 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-38	CRYSTLSG 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-39	CYTE PMP 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-40	DALY CTY 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-41	DIXON LD 115kV	Basecase	P0	N-0	1.01	1.02	1.01	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-42	DLY CTYP 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-43	DOMTAR 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-44	DU PONT 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.07	1.08	1.07	Mitigation under investigation
GBA-V-45	Duane 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-46	DYERWND 60kV	Basecase	P0	N-0	1.04	1.05	1.05	1.08	1.10	1.05	1.07	1.05	Mitigation under investigation
GBA-V-47	E DUBLIN 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-48	EDENVALE 115kV	Basecase	P0	N-0	1.03	1.04	1.03	1.06	1.09	1.05	1.05	1.04	Mitigation under investigation
GBA-V-49	EL PATIO 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.02	1.03	1.03	Mitigation under investigation
GBA-V-50	EMBRCDRD 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-51	EMBRCDRE 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-52	EMRLD LE 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-53	EST GRND 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-54	EVERGREN 60kV	Basecase	P0	N-0	1.02	1.03	1.02	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-55	EVRGRN 1 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-56	FairView 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-57	Fibergla 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-58	FMC 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-59	FRANKLIN 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-60	FREMNT 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-61	FRICKWND 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-62	FRKLNALT 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-63	Gia12 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-64	Gia32 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-65	GILROY 115kV	Basecase	P0	N-0	0.00	1.03	1.03	0.00	1.09	0.00	1.03	1.03	Mitigation under investigation
GBA-V-66	GWF#2 HS 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-67	HICKS 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-68	HILDAL47 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-69	HILDAL49 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.02	Mitigation under investigation
GBA-V-70	HILLSBLE 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-71	HLF MNBV 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.06	1.03	1.03	1.02	Mitigation under investigation
GBA-V-72	HNTRS PT 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-73	Homestea 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-74	HPH1_1 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-75	HPH2_2 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-76	IBM-BALY 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-77	IBM-HRRS 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.04	Mitigation under investigation
GBA-V-78	INTAKE 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-79	IUKA 60kV	Basecase	P0	N-0	1.01	1.00	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-80	JARVIS 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-81	JEFFERSN 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-82	JEFRSN_D 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-83	JENING J 115kV	Basecase	P0	N-0	0.00	1.01	1.01	0.00	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-84	JENNINGS 115kV	Basecase	P0	N-0	0.00	1.01	1.01	0.00	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-85	JMDAMCX1 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-86	JMDAMCX2 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-87	Juliette 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-88	JV BART 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-89	Kenneth 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-90	KIRKER 115kV	Basecase	P0	N-0	1.03	1.02	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-91	KPH1_9 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-92	KPH2_10 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-93	KPH3_11 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-94	KRS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-95	KRS 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-96	Laf T1 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-97	Laf T2 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-98	Laf T3 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-99	LARKIN D 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-100	LARKIN E 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-101	LARKIN F 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-102	LAS PLGS 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.07	1.01	1.02	1.02	Mitigation under investigation

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-103	LAWRENCE 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-104	LIVERMRE 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-105	LIVRMR_2 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-106	LLAGAS 115kV	Basecase	P0	N-0	0.00	1.03	1.02	0.00	1.09	0.00	1.03	1.02	Mitigation under investigation
GBA-V-107	LMEC 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-108	LOCKHD 1 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-109	LONESTAR 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-110	LOS ALTS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.05	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-111	LOS GATS 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.05	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-112	LOYOLA 60kV	Basecase	P0	N-0	1.01	1.02	1.01	1.05	1.08	1.03	1.04	1.04	Mitigation under investigation
GBA-V-113	LPOSTAS 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-114	LS ESTRS 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.03	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-115	LS ESTRS 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-116	MABURY 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.02	1.03	1.03	Mitigation under investigation
GBA-V-117	MARKHAM 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-118	MARSH 60kV	Basecase	P0	N-0	1.05	1.06	1.06	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-119	MARTIN 60kV	Basecase	P0	N-0	1.15	1.05	1.05	1.14	1.19	1.05	1.05	1.05	Mitigation under investigation
GBA-V-120	MARTIN C 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-121	MARTIN C 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-122	Mathew 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-123	MCKEE 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-124	METCALF 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-125	MILLBRAE 60kV	Basecase	P0	N-0	1.06	1.03	1.03	1.06	1.10	1.03	1.03	1.03	Mitigation under investigation
GBA-V-126	MILLBRAE 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.04	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-127	MILPITAS 115kV	Basecase	P0	N-0	1.01	1.02	1.01	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-128	Mission 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-129	MISSON 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-130	MNTA VSA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.06	1.08	1.05	1.05	1.04	Mitigation under investigation
GBA-V-131	MNTA VSA 115kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-132	MOCCASIN 115kV	Basecase	P0	N-0	1.04	1.04	1.04	1.05	1.06	1.04	1.05	1.05	Mitigation under investigation
GBA-V-133	MOFT.FLD 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-134	MONTAGUE 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-135	MONTAVIS 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-136	MRGN HIL 115kV	Basecase	P0	N-0	1.03	1.03	1.01	1.05	1.09	1.04	1.04	1.02	Mitigation under investigation
GBA-V-137	MRT RCTR 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-138	MT VIEW 115kV	Basecase	P0	N-0	1.00	1.00	0.99	1.03	1.05	1.01	1.02	1.01	Mitigation under investigation
GBA-V-139	MTCALF D 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-140	MTCALF E 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-141	NAJ 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-142	NEWARK 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-143	NEWARK D 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-144	NORTECH 115kV	Basecase	P0	N-0	1.02	1.03	1.02	1.03	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-145	Northwes 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-146	NRS 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-147	NRS 300 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-148	NRS 400 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-149	NRS 500 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-150	NRS 600 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-151	NRSrser 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-152	NUMMI 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-153	NWRK 2 M 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.06	1.03	1.03	1.03	Mitigation under investigation

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 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-154	ORACLE60 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-155	OX_MTN60 60kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-156	PACIFICA 60kV	Basecase	P0	N-0	1.08	1.03	1.02	1.08	1.13	1.02	1.02	1.02	Mitigation under investigation
GBA-V-157	Palm 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-158	PARKS 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-159	PCBRICK 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-160	PERMNTE 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.06	1.07	1.04	1.05	1.04	Mitigation under investigation
GBA-V-161	PHILLIPS 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-162	PIERCY 115kV	Basecase	P0	N-0	1.02	1.03	1.02	1.05	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-163	PITTSBURG 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-164	PITTSBRG 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-165	POT_SVC 115kV	Basecase	P0	N-0	1.05	1.03	1.04	1.04	1.09	1.03	1.03	1.04	Mitigation under investigation
GBA-V-166	POTRERO 115kV	Basecase	P0	N-0	1.05	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-167	POTRERO 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-168	PRAXAIR 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-169	PRT CSTA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-170	Q687 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-171	RADUM 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-172	RALSTON 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-173	RAVENSWD 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.02	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-174	REDWOOD 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-175	RIVRBANK 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-176	RLSTN35 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-177	RLSTN45 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-178	RVEC 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-179	RVNSWD D 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.05	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-180	S.L.A.C. 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-181	SAN CRLS 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-182	SAN MATO 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-183	SAN RAMN 60kV	Basecase	P0	N-0	1.02	1.01	1.00	1.03	1.06	1.01	1.03	1.02	Mitigation under investigation
GBA-V-184	SANMATEO 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-185	SANMATEO 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.02	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-186	SANPAULA 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.04	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-187	SARATOGA 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-188	SEAWEST 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-189	SEQUOIA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-190	Serra 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-191	SERRMTE 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-192	SFASWSTA 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-193	SFIA 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.03	1.08	1.03	1.03	1.02	Mitigation under investigation
GBA-V-194	SFIA-MA 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-195	SFPP CNC 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-196	SHAWROAD 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-197	SHLL CHM 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-198	SHLLCHMT 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-199	SHREDDER 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-200	SJB DG 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-201	SJB EF 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-202	SMATEO3M 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-203	SN BRNOT 60kV	Basecase	P0	N-0	1.08	1.03	1.03	1.08	1.13	1.03	1.02	1.03	Mitigation under investigation
GBA-V-204	SN JSE A 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-205	SNANDRES 60kV	Basecase	P0	N-0	1.07	1.03	1.03	1.07	1.12	1.03	1.02	1.03	Mitigation under investigation
GBA-V-206	SNTH LNE 60kV	Basecase	P0	N-0	1.08	1.03	1.03	1.08	1.13	1.03	1.02	1.03	Mitigation under investigation
GBA-V-207	SRS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-208	SRS 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-209	SSS 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-210	STAUFFER 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-211	STELLING 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-212	STONE 115kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-213	SUNOL 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-214	SWIFT 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-215	TRAN230A 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-216	TRAN230B 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-217	TRAN-60 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-218	TRIMBLE 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-219	UAL COGN 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-220	UNIN CHM 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-221	Uranium 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-222	URICH 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-223	VALLECTS 60kV	Basecase	P0	N-0	1.01	1.00	1.00	1.03	1.06	1.01	1.02	1.01	Mitigation under investigation
GBA-V-224	VASCO 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-225	VASONA 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-226	VINEYARD 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-227	Walsh 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-228	WARNERVL 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-229	WATRSHEd 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-230	WESTRN_D 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-231	WHISMAN 115kV	Basecase	P0	N-0	1.00	1.00	0.99	1.03	1.05	1.01	1.02	1.01	Mitigation under investigation
GBA-V-232	WLLW PSS 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-233	WND MSTR 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.00	Mitigation under investigation
GBA-V-234	WOLFE 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-235	WOODSIDE 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-236	WRNRVLE 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-237	ZANKER 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-238	Zeno 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-239	ZONDWD 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-240	EDES 115kV	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	0.89	0.94	0.94	0.96	1.02	0.89	0.95	0.95	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-V-241	LOCKHD 1 115kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.83	0.83	0.83	0.98	1.03	0.96	0.96	0.96	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-242	MOFT.FLD 115kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.83	0.83	0.84	0.98	1.03	0.96	0.96	0.96	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-243	CAROLNDS 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.89	0.89	0.89	0.97	0.00	0.87	0.87	0.88	Review Stanford 60 kV system configuration
GBA-V-244	CRYSTLSG 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.78	0.78	0.91	0.99	0.75	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-245	EMRLD LE 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.79	0.79	0.91	0.99	0.76	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-246	LAS PLGS 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.78	0.77	0.77	0.90	0.99	0.74	0.76	0.78	Review Stanford 60 kV system configuration

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak		2025 Winter Peak
GBA-V-247	RALSTON 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.78	0.78	0.91	0.99	0.75	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-248	STANFORD 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.74	0.74	0.74	0.88	0.96	0.71	0.72	0.74	Review Stanford 60 kV system configuration
GBA-V-249	WATRSLED 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.84	0.83	0.83	0.94	1.01	0.81	0.82	0.83	Review Stanford 60 kV system configuration
GBA-V-250	WOODSIDE 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.78	0.78	0.78	0.90	0.99	0.75	0.76	0.78	Review Stanford 60 kV system configuration
GBA-V-251	HLF MNBY 60kV	Jefferson 230/60kV Transformer #2 & Jefferson 230/60kV Transformer #1	P6	N-1/N-1	0.91	0.90	0.90	0.99	1.05	0.88	0.88	0.89	Review Stanford 60 kV system configuration
GBA-V-252	CAROLNDS 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.88	0.88	0.87	0.97	1.02	0.85	0.86	0.88	Review Stanford 60 kV system configuration
GBA-V-253	CRYSTLSG 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.76	0.91	0.98	0.73	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-254	EMRLD LE 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.77	0.91	0.98	0.74	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-255	HLF MNBY 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.89	0.89	0.89	0.99	1.03	0.86	0.87	0.88	Review Stanford 60 kV system configuration
GBA-V-256	LAS PLGS 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.76	0.76	0.76	0.90	0.98	0.72	0.74	0.76	Review Stanford 60 kV system configuration
GBA-V-257	RALSTON 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.77	0.91	0.98	0.73	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-258	STANFORD 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.72	0.72	0.72	0.88	0.95	0.68	0.70	0.72	Review Stanford 60 kV system configuration
GBA-V-259	WATRSLED 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.82	0.82	0.82	0.94	1.00	0.79	0.80	0.82	Review Stanford 60 kV system configuration
GBA-V-260	WOODSIDE 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.76	0.76	0.76	0.90	0.98	0.73	0.74	0.76	Review Stanford 60 kV system configuration

ID	Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions			
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	N/A	N/A		N/A	N/A	N/A
GBA-SP-TS-1	BUS 1E FAULT30527PITSBG E 230.00	P5	Delayed fault clearing (Bus)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles						Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-2	BUS FAULT AT 30630 NEWARK 1D 230.00	P2	Normal clearing (Bus)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%						Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-3	BUS-TIE BREAKER FAULT AT 35648 LLAGAS 115.00	P4	Stuck breaker (Non bus-tie)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles						Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-4	Pittsburg-Tesla 1 230kV Line	P5	Delayed fault clearing (Line)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%						Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-5	Pittsburg-San Ramon and San Ramon-Moraga 230 kV Lines	P6	Normal clearing (N-1/N-1)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles						Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-6	Monta Vista-Jefferson Nos. 1 & 2 230 kV Lines	P7	Normal clearing (DCTL)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%						Reassess with actual fault clearing times and SLG fault impedances where applicable.



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-SP-SLD-1												

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



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-SP-SS-1	Kirker 115 kV	109	111	114	34	28	68	68	69	Loop the Kirker 115 kV substation.

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-1	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #2 (AY-2) 115kV Cable	P1	N-1	101.2	101.4	101.3	101.9					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-2	Jefferson-Stanford #1 60kV Line	Jefferson-Las Pulgas 60kV Line (Jefferson-Woodside)	P1	N-1	96.5	94.0	94.0	100.1					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-3	Metcalf-Llagas 115 kV Line	Metcalf-Morgan Hill 115 kV	P1	N-1	109.6	98.9	98.8	96.1					Reduce Gilroy generation
GBA-SP-SEN-T-4	Bair-Cooley Landing #1 60kV Line	BLHVNTP1-CLY LNDG #1 60 kV	P2-1	Line section w/o fault	99.0	97.0	97.0	108.8					Mitigation under investigation
GBA-SP-SEN-T-5	Bair-Cooley Landing #2 60kV Line	BAIR-REDWDTP2 #2 60 kV	P2-1	Line section w/o fault	98.1	95.1	94.9	106.7					Mitigation under investigation
GBA-SP-SEN-T-6	Birds Landing - Contra Costa Sub 230 kV Line	BUS 2D FAULT AT 30525 C.COSTA 230.00	P2	Bus	102.4	40.2	39.4	47.7					Reduce Contra Costa area generation
GBA-SP-SEN-T-7	Cayetano-Lone Tree (USWP-Cayetano) 230kV Line	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	101.1	92.7	88.2	97.6					Reduce Contra Costa area generation
GBA-SP-SEN-T-8	Oleum-Christie 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	69.1	157.1	58.2	65.7					SPS or system upgrade
GBA-SP-SEN-T-9	Oleum-El Cerrito STA G #1 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	94.7	173.8	85.0	93.8					SPS or system upgrade
GBA-SP-SEN-T-10	Oleum-El Cerrito STA G #2 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	73.4	133.9	65.7	72.1					SPS or system upgrade
GBA-SP-SEN-T-11	Sobrante-El Cerrito STA G #1 115kV Lin	BUS-TIE BREAKER FAULT AT 32950 PITTSBURG 115.00	P2	Bus-tie breaker	78.7	101.9	76.8	83.9					SPS or system upgrade
GBA-SP-SEN-T-12	Christie-Sobrante (Oleum-Sobrante) 115kV Line	BUS-TIE BREAKER FAULT AT 32950 PITTSBURG 115.00	P2	Bus-tie breaker	78.7	101.9	76.8	83.9					SPS or system upgrade
GBA-SP-SEN-T-13	Oakland D - Oakland L 115kV Cable	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	131.3	62.8	132.4	137.4					SPS or system upgrade
GBA-SP-SEN-T-14	Oakland C - Oakland L #1 115kV Cable	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	99.2	97.9	99.6	105.7					SPS or system upgrade
GBA-SP-SEN-T-15	Oakland C - Oakland X #2 115kV Cable	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	113.3	52.3	113.9	120.3					SPS or system upgrade
GBA-SP-SEN-T-16	Oakland C - Oakland L #1 115kV Cable	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	42.8	105.8	32.3	33.3					SPS or system upgrade
GBA-SP-SEN-T-17	Grant-Oakland J 115 kV Line	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	103.7	89.2	100.5	109.4					SPS or system upgrade
GBA-SP-SEN-T-18	Christie-Franklin #2 60kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	65.2	111.9	58.7	68.6					SPS or system upgrade
GBA-SP-SEN-T-19	Pittsburg-Martinez #2 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	83.2	149.6	76.8	84.3					SPS or system upgrade
GBA-SP-SEN-T-20	Pittsburg-Martinez #1 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	85.8	148.3	80.8	88.3					SPS or system upgrade

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-21	Martinez-Oleum 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	262.7	586.8	219.6	242.8					SPS or system upgrade
GBA-SP-SEN-T-22	Oleum-Martinez 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	243.7	544.1	203.6	225.1					SPS or system upgrade
GBA-SP-SEN-T-23	Moraga-Clairemont #1 115kV Line	BUS 2D FAULT AT 33020 MORAGA 115.00	P2	Bus	125.3	109.9	112.4	120.7					Increase generation in the Oakland Area
GBA-SP-SEN-T-24	Moraga-Clairemont #2 115kV Line	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	135.0	88.4	127.7	136.5					Increase generation in the Oakland Area
GBA-SP-SEN-T-25	Sobrante-Moraga 115kV Line	BUS-TIE BREAKER FAULT AT 30540 SOBRANTE 230.00	P2	Bus-tie breaker	97.6	111.2	96.5	106.1					SPS or system upgrade
GBA-SP-SEN-T-26	Moraga-Station X 115 kV #1 Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	112.1	64.1	111.9	119.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-27	Moraga-Oakland X #2 115kV Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	112.1	59.3	111.9	119.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-28	Moraga-Station X 115 kV #3 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	165.9	117.1	154.2	165.9					Increase generation in the Oakland Area
GBA-SP-SEN-T-29	Moraga-Station X 115 kV #4 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	165.9	117.1	154.2	165.9					Increase generation in the Oakland Area
GBA-SP-SEN-T-30	Potrero-Larkin #2 (AY-2) 115kV Cable	BUS-TIE BREAKER 102 FAULT AT 33204 POTRERO 115.00	P2	Bus-tie breaker	122.1	119.7	119.7	119.2					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-31	Potrero-Mission (AX) 115kV Cable	NON-BUS-TIE BREAKER CBXX5 FAILURE AT POTRERO 115 kV	P2	Bus-tie breaker	102.7	102.0	102.0	103.8					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-32	San Mateo-Belmont 115kV Line	BUS FAULT AT 33321 RVNSWD D 115.00	P2	Bus	99.9	99.0	98.2	107.6					SPS or system upgrade
GBA-SP-SEN-T-33	Cooley Landing-Palo Alto 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	113.8	114.4	114.2	115.4					Palo Alto interim SPS
GBA-SP-SEN-T-34	Ravenswood-Cooley Landing #1 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	127.0	127.3	125.4	134.0					Palo Alto interim SPS
GBA-SP-SEN-T-35	San Mateo-Bair 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	131.9	59.5	57.4	65.9					increase peninsula area generation
GBA-SP-SEN-T-36	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	109.8	93.4	93.7	108.0					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-37	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	102.4	86.5	86.9	100.2					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-38	Bair 115/60kV Transformer #1	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	157.7	162.5	157.1	178.1					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-39	Bair-Cooley Landing #1 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	130.8	132.5	126.1	145.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-40	Bair-Cooley Landing #2 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	127.1	126.8	122.2	139.8					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-41	Eastshore 230/115kV Transformer #2	NON-BUS-TIE BREAKER CB2222 FAILURE AT EAST SHORE 230 kV	P2	Non Bus-tie breaker	105.9	104.3	104.7	109.1					Action Plan - reduce RCEC generation

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-42	Newark-Lawrence 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	442.1	328.3	334.2	458.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-43	Newark-Applied Materials 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	297.6	216.0	220.0	307.1					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-44	Newark-Dixon Landing 115kV Line	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	113.8	107.9	107.2	116.8					SPS or system upgrade
GBA-SP-SEN-T-45	Mountain View-Monta Vista 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	116.3	57.4	57.4	73.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-46	Lawrence - Monta Vista 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	314.8	219.1	223.9	320.5					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-47	Britton-Monta Vista 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	196.4	139.3	142.3	199.6					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-48	Applied Materials-Britton 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	267.7	191.8	195.6	275.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-49	Monta Vista-Permanente 60 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	124.0	99.4	101.9	120.1					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-T-50	San Jose Sta 'A'-B' 115 kV Line	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	84.3	95.3	98.6	109.3					SPS or system upgrade
GBA-SP-SEN-T-51	El Patio-San Jose Sta. 'A' 115 kV Line	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	87.3	96.3	99.1	109.5					SPS or system upgrade
GBA-SP-SEN-T-52	Markham No. 1 115 kV Tap	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	94.5	97.7	98.1	106.6					SPS or system upgrade
GBA-SP-SEN-T-53	Metcalf 230/115 kV Trans No. 1	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	127.4	94.4	95.5	105.1					SPS or system upgrade
GBA-SP-SEN-T-54	Metcalf 230/115 kV Trans No. 4	BUS-TIE BREAKER 312 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	118.2	87.4	88.2	96.3					Increase Metcalf area generation
GBA-SP-SEN-T-55	Metcalf-Llagas 115 kV Line	BUS FAULT AT 35648 LLAGAS F 115.00	P2	Bus	15.5	126.6	126.5	123.9					Reduce Gilroy generation
GBA-SP-SEN-T-56	Metcalf 230/115 kV Trans No. 2	BUS-TIE BREAKER 312 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	117.1	87.6	88.4	96.5					Increase Metcalf area generation
GBA-SP-SEN-T-57	Metcalf 230/115 kV Trans No. 3	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	126.1	94.5	95.7	105.2					SPS or system upgrade
GBA-SP-SEN-T-58	Oakland C - Oakland X #2 115kV Cable	DEC CTG1 18.00 Generator ID 1 & Oakland C - Oakland X #3 115kV Cable	P3	G-1/N-1	102.2	<90	93.0	99.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-59	Moraga-Claremont #1 115kV Line	DEC STG1 24.00 Generator ID 1 & Moraga-Claremont #2 115kV Line	P3	G-1/N-1	119.0	99.6	99.6	110.1					Increase generation in the Oakland Area
GBA-SP-SEN-T-60	Moraga-Claremont #2 115kV Line	DEC STG1 24.00 Generator ID 1 & Moraga-Claremont #1 115kV Line	P3	G-1/N-1	119.1	99.7	99.6	110.2					Increase generation in the Oakland Area
GBA-SP-SEN-T-61	Birds Landing - Contra Costa Sub 230 kV Line	Contra Costa-Gateway 230kV Line & Birds Landing-Contra Costa PP 230kV Line	P6	N-1/N-1	113.6	<90	<90	<90					Reduce Contra Costa area generation
GBA-SP-SEN-T-62	Birds Landing - Contra Costa PP 230 kV Line	Birds Landing-CC Sub 230kV Line & Gateway GSU Transformer #1	P6	N-1/N-1	115.5	<90	<90	<90					Reduce Contra Costa area generation

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-63	Cayetano-Lone Tree (USWP-Cayetano) 230kV Line	Contra Costa-Las Positas 230kV Line & Tesla-Newark #1 230kV Line	P6	N-1/N-1	102.8	99.5	99.5	99.5					Reduce Contra Costa area generation
GBA-SP-SEN-T-64	Metcalf 500/230 kV Trans No. 11	Metcalf 500/230 kV Transformer #13 & Metcalf 500/230 kV Transformer #12	P6	N-1/N-1	119.4	102.9	104.9	117.1					Increase Metcalf area generation
GBA-SP-SEN-T-65	Metcalf 500/230 kV Trans No. 12	Metcalf 500/230 kV Transformer #13 & Metcalf 500/230 kV Transformer #11	P6	N-1/N-1	122.5	105.4	107.5	120.0					Increase Metcalf area generation
GBA-SP-SEN-T-66	Metcalf 500/230 kV Trans No. 13	Metcalf 500/230 kV Transformer #12 & Metcalf 500/230 kV Transformer #11	P6	N-1/N-1	124.6	107.3	109.4	122.3					Increase Metcalf area generation
GBA-SP-SEN-T-67	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-EI Cerrito STA G #1 115kV Line & Sobrante-EI Cerrito STA G #2 115kV Line	P6	N-1/N-1	121.1	154.1	115.9	128.0					SPS or system upgrade
GBA-SP-SEN-T-68	Sobrante-EI Cerrito STA G #1 115kV Lin	Sobrante-EI Cerrito STA G #2 115kV Line & Christie-Sobrante (Oleum-Sobrante) 115kV Line	P6	N-1/N-1	95.9	116.7	92.9	101.7					SPS or system upgrade
GBA-SP-SEN-T-69	Sobrante-EI Cerrito STA G #2 115kV Line	Sobrante-EI Cerrito STA G #1 115kV Line & Christie-Sobrante (Oleum-Sobrante) 115kV Line	P6	N-1/N-1	95.9	116.6	92.9	101.9					SPS or system upgrade
GBA-SP-SEN-T-70	Oakland D - Oakland L 115kV Cable	Oakland C - Oakland X #3 115kV Cable & Oakland C - Oakland X #2 115kV Cable	P6	N-1/N-1	131.8	<90	133.3	138.5					Increase generation in the Oakland Area
GBA-SP-SEN-T-71	Oakland C - Oakland L #1 115kV Cable	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	99.6	98.2	99.9	106.0					SPS or system upgrade
GBA-SP-SEN-T-72	Oakland C - Oakland X #2 115kV Cable	Oakland D - Oakland L 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	130.8	99.5	132.7	137.9					Increase generation in the Oakland Area
GBA-SP-SEN-T-73	San Leandro - Oakland J #1 115kV Line	Moraga-Oakland J 115kV Line & Oakland C - Alameda 115kV Cable	P6	N-1/N-1	95.1	93.9	94.3	101.7					SPS or system upgrade
GBA-SP-SEN-T-74	Pittsburg 230/115kV Transformer #12	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #13	P6	N-1/N-1	125.7	<90	<90	<90					Increase Pittsburg area generation
GBA-SP-SEN-T-75	Pittsburg 230/115kV Transformer #13	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #12	P6	N-1/N-1	145.8	<90	<90	<90					Increase Pittsburg area generation
GBA-SP-SEN-T-76	Martinez-Oleum 115kV Line	Sobrante-EI Cerrito STA G #2 115kV Line & Sobrante-EI Cerrito STA G #1 115kV Line	P6	N-1/N-1	107.2	130.6	96.5	106.9					SPS or system upgrade
GBA-SP-SEN-T-77	Oleum-Martinez 115kV Line	Sobrante-EI Cerrito STA G #1 115kV Line & Sobrante-EI Cerrito STA G #2 115kV Line	P6	N-1/N-1	99.7	121.3	<90	99.3					SPS or system upgrade
GBA-SP-SEN-T-78	Moraga-Claremont #1 115kV Line	Moraga-Claremont #2 115kV Line & Oakland C - Oakland L #1 115kV Cable	P6	N-1/N-1	120.0	123.9	96.8	102.0					Increase generation in the Oakland Area
GBA-SP-SEN-T-79	Moraga-Claremont #1 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	132.1	<90	120.4	123.7					Increase generation in the Oakland Area
GBA-SP-SEN-T-80	Moraga-Claremont #2 115kV Line	Moraga-Claremont #1 115kV Line & Oakland C - Oakland L #1 115kV Cable	P6	N-1/N-1	120.1	124.0	96.7	102.0					Increase generation in the Oakland Area

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-81	Moraga-Claremont #2 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	132.3	<90	120.6	123.8					Increase generation in the Oakland Area
GBA-SP-SEN-T-82	Sobrante-Moraga 115kV Line	Sobrante 230/115kV Transformer #1 & Sobrante 230/115kV Transformer #2	P6	N-1/N-1	96.6	107.2	93.1	98.7					SPS or system upgrade
GBA-SP-SEN-T-83	Moraga-Station X 115 kV #1 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	112.5	<90	112.2	119.6					Increase generation in the Oakland Area
GBA-SP-SEN-T-84	Moraga-Oakland X #2 115kV Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	112.5	<90	112.2	119.6					Increase generation in the Oakland Area
GBA-SP-SEN-T-85	Moraga-Station X 115 kV #3 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	112.5	<90	112.2	119.6					Increase generation in the Oakland Area
GBA-SP-SEN-T-86	Moraga-Station X 115 kV #4 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	112.5	<90	112.2	119.6					Increase generation in the Oakland Area
GBA-SP-SEN-T-87	Moraga-San Leandro #2 115kV Line	Moraga-San Leandro #3 115kV Line & Moraga-San Leandro #1 115kV Line	P6	N-1/N-1	97.8	94.3	<90	100.0					Action plan or rerate
GBA-SP-SEN-T-88	Contra Costa-Balfour 60kV Line	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	256.3	<90	<90	<90					increase peninsula area generation
GBA-SP-SEN-T-89	Balfour-MDLRVRJT 60 kV	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	271.2	<90	<90	<90					increase peninsula area generation
GBA-SP-SEN-T-90	Herdlyn - Balfour 60 kV Line	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	289.9	<90	<90	<90					increase peninsula area generation
GBA-SP-SEN-T-91	Potrero-Larkin #1 (AY-1) 115kV Cable	Martin-Larkin (HY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	153.3	152.2	152.2	152.3					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-92	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Potrero-Larkin #2 (AY-2) 115kV Cable	P6	N-1/N-1	124.4	125.0	124.8	125.5					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-93	Martin-Larkin (HY-1) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	150.3	150.5	150.4	150.6					Modifying TBC DC Runback Scheme
GBA-SP-SEN-T-94	San Mateo-Belmont 115kV Line	Ravenswood 230/115kV Transformer #1 & Ravenswood 230/115kV Transformer #2	P6	N-1/N-1	114.5	107.6	107.2	113.8					SPS or system upgrade
GBA-SP-SEN-T-95	Ravenswood-Palo Alto #1 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	107.0	107.6	106.6	111.1					Palo Alto interim SPS
GBA-SP-SEN-T-96	Ravenswood-Palo Alto #2 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	106.9	107.5	106.5	110.9					Palo Alto interim SPS
GBA-SP-SEN-T-97	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	111.6	112.2	112.2	112.9					Palo Alto interim SPS

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-98	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto #2 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	98.6	99.1	98.1	102.6					Palo Alto interim SPS
GBA-SP-SEN-T-99	Millbrae-Sneath Lane 60kV Line	Martin-Sneath Lane 60kV Line & Hillsdale JCT - Half Moon Bay 60kV Line	P6	N-1/N-1	109.9	114.3	114.3	123.8					Action plan or explore potential mitigation
GBA-SP-SEN-T-100	San Mateo 115/60kV Transformer #8	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	125.2	104.0	103.7	121.1					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-101	San Mateo-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	243.9	195.9	195.9	232.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-102	San Mateo-Bair 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	132.0	<90	<90	<90					increase peninsula area generation
GBA-SP-SEN-T-103	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	280.9	224.5	224.5	265.8					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-104	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	271.4	215.6	215.6	255.3					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-105	Jefferson-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	185.6	166.3	166.4	192.6					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-106	Bair 115/60kV Transformer #1	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	157.8	162.6	157.1	178.1					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-107	Bair-Cooley Landing #1 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	130.8	132.6	126.2	145.3					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-108	Bair-Cooley Landing #2 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	127.1	126.8	122.2	139.8					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-109	Jefferson-Stanford #1 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	115.2	103.4	103.4	113.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-110	Grant-Eastshore #1 115kV Line	Grant-Eastshore #2 115kV Line & Eastshore-San Mateo 230kV Line	P6	N-1/N-1	109.8	99.7	100.1	99.8					Action plan or rerate
GBA-SP-SEN-T-111	Grant-Eastshore #2 115kV Line	Grant-Eastshore #1 115kV Line & Eastshore-San Mateo 230kV Line	P6	N-1/N-1	109.8	99.7	100.1	99.8					Action plan or rerate
GBA-SP-SEN-T-112	Eastshore 230/115kV Transformer #1	Grant-Eastshore #2 115kV Line & San Leandro-Oakland J #1 115kV Line	P6	N-1/N-1	106.2	99.5	99.5	99.5					Action Plan - reduce RCEC generation
GBA-SP-SEN-T-113	Eastshore 230/115kV Transformer #2	Eastshore 230/115kV Transformer #1 & Eastshore-San Mateo 230kV Line	P6	N-1/N-1	105.9	99.5	99.5	99.5					Action Plan - reduce RCEC generation
GBA-SP-SEN-T-114	Newark-Dixon Landing 115kV Line	Piercy-Metcalf 115 kV & Evergreen-Mabury 115 kV	P6	N-1/N-1	123.6	123.3	123.4	133.9					Action plan or rerate
GBA-SP-SEN-T-115	Newark-Milpitas #1 115kV Line	Newark-Milpitas #2 115kV Line & Swift-Metcalf 115 kV	P6	N-1/N-1	137.8	134.2	134.3	146.6					Action plan or explore potential mitigation
GBA-SP-SEN-T-116	Newark-Milpitas #2 115kV Line	Swift-Metcalf 115 kV & Newark-Milpitas #1 115kV Line	P6	N-1/N-1	114.7	111.8	111.8	122.0					Action plan or explore potential mitigation

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-117	Wind Farms 60kV Line	Contra Costa-Las Positas 230kV Line & Las Positas-Newark 230kV Line	P6	N-1/N-1	158.3	<90	<90	<90					increase peninsula area generation
GBA-SP-SEN-T-118	Trimble-San Jose 'B' 115 kV Line	Los Esteros-Metcalf 230 kV & Newark-Newark Dist 230kV section	P6	N-1/N-1	118.8	98.5	95.8	110.3					Increase Metcalf area generation
GBA-SP-SEN-T-119	Dixon Landing-McKee 115 kV Line	Newark-Dixon Landing 115kV Line & Piercy-Metcalf 115 kV	P6	N-1/N-1	120.7	120.8	120.9	131.9					Action plan or rerate
GBA-SP-SEN-T-120	Mabury-Jennings J. 115 kV Line	Newark-Dixon Landing 115kV Line & Piercy-Metcalf 115 kV	P6	N-1/N-1	141.3	141.3	141.4	153.8					Action plan or rerate
GBA-SP-SEN-T-121	Metcalf 230/115 kV Trans No. 1	Metcalf 230/115 kV Transformer #2 & Metcalf 230/115 kV Transformer #3	P6	N-1/N-1	120.4	<90	<90	96.0					Increase Metcalf area generation
GBA-SP-SEN-T-122	Metcalf 230/115 kV Trans No. 4	Metcalf 230/115 kV Transformer #2 & Metcalf 230/115 kV Transformer #1	P6	N-1/N-1	117.4	<90	<90	96.4					Increase Metcalf area generation
GBA-SP-SEN-T-123	Metcalf-Morgan Hill 115 kV Line	Llagas-Gilroy Foods 115 kV & Metcalf-Llagas 115 kV	P6	N-1/N-1	119.1	<90	<90	<90					Increase Metcalf area generation
GBA-SP-SEN-T-124	Metcalf-Llagas 115 kV Line	Metcalf-Morgan Hill 115 kV & Llagas-Gilroy Foods 115 kV	P6	N-1/N-1	143.5	99.1	99.0	96.2					Reduce Gilroy generation
GBA-SP-SEN-T-125	Metcalf 230/115 kV Trans No. 2	Metcalf 230/115 kV Transformer #3 & Metcalf 115 kV Sectionalizing Breaker	P6	N-1/N-1	118.6	99.5	99.5	104.7					Increase Metcalf area generation
GBA-SP-SEN-T-126	Metcalf 230/115 kV Trans No. 3	Metcalf 230/115 kV Transformer #2 & Metcalf 115 kV Sectionalizing Breaker	P6	N-1/N-1	116.0	98.4	98.4	103.5					Increase Metcalf area generation
GBA-SP-SEN-T-127	Oleum-Christie 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	99.3	119.0	99.3	108.6					SPS or system upgrade
GBA-SP-SEN-T-128	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	121.1	155.8	116.0	128.4					SPS or system upgrade
GBA-SP-SEN-T-129	Martinez-Oleum 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	107.2	128.6	92.9	97.6					SPS or system upgrade
GBA-SP-SEN-T-130	Oleum-Martinez 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	99.7	119.5	86.3	90.6					SPS or system upgrade
GBA-SP-SEN-T-131	Moraga-Station X 115 kV #1 Line	Moraga-Oakland Nos. 3 & 4 115 kV lines	P7	DCTL	102.5	59.0	99.1	106.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-132	Moraga-Oakland X #2 115kV Line	Moraga-Oakland Nos. 3 & 4 115 kV lines	P7	DCTL	102.5	59.0	99.1	106.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-133	Moraga-Station X 115 kV #3 Line	Moraga-Oakland X Nos. 1 & 2 115 kV lines	P7	DCTL	102.5	59.0	99.1	106.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-134	Moraga-Station X 115 kV #4 Line	Moraga-Oakland X Nos. 1 & 2 115 kV lines	P7	DCTL	102.5	59.0	99.1	106.3					Increase generation in the Oakland Area
GBA-SP-SEN-T-135	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	111.6	112.2	112.2	112.9					Palo Alto interim SPS
GBA-SP-SEN-T-136	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	98.6	99.1	98.1	102.6					Palo Alto interim SPS
GBA-SP-SEN-T-137	San Mateo 115/60kV Transformer #8	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	129.7	103.6	103.1	121.9					Review Stanford 60 kV system configuration

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-T-138	San Mateo-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	264.8	200.6	200.5	240.5					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-139	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	305.5	230.1	230.0	275.6					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-140	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	295.6	221.2	221.1	265.0					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-141	Jefferson-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	204.1	170.8	170.9	200.5					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-142	Jefferson-Stanford #1 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	126.4	106.7	106.3	117.9					Review Stanford 60 kV system configuration
GBA-SP-SEN-T-143	Newark-Lawrence 115kV Line	Newark-Applied Materials & Lawrence-Monta Vista 115 kV Lines	P7	DCTL	110.9	114.0	114.0	119.7					Monta Vista 230 kV Bus Upgrade Project is completed
GBA-SP-SEN-T-144	Trimble-San Jose 'B' 115 kV Line	Newark - Los Esteros & Los Esteros - Metcalf 230 kV Lines	P7	DCTL	112.6	95.1	93.3	108.5					Increase Metcalf area generation



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-VD-1	EDES 115 kV	Grant-Oakland J 115 kV Line	P1	N-1	5.9	5.2	5.5	6.1					SPS or system upgrade
GBA-SP-SEN-VD-2	GILROY F 115 kV	Metcalf-Morgan Hill 115 kV	P1	N-1	8.2	<5.0	<5.0	<5.0					Increase Metcalf area generation
GBA-SP-SEN-VD-3	LLAGAS 115 kV	Metcalf-Morgan Hill 115 kV	P1	N-1	8.2	<5.0	<5.0	<5.0					Increase Metcalf area generation
GBA-SP-SEN-VD-4	OWNBRKWAY 115 kV	Grant-Oakland J 115 kV Line	P1	N-1	5.0	4.4	4.6	5.1					SPS or system upgrade
GBA-SP-SEN-VD-5	PACIFICA 60 kV	Martin 115/60kV Transformer #6	P1	N-1	2.1	6.3	5.1	3.0					increase peninsula area generation
GBA-SP-SEN-VD-6	SN BRNOT 60 kV	Martin 115/60kV Transformer #6	P1	N-1	2.0	6.0	4.9	2.8					increase peninsula area generation
GBA-SP-SEN-VD-7	SNTH LNE 60 kV	Martin 115/60kV Transformer #6	P1	N-1	2.0	6.3	5.1	3.0					increase peninsula area generation
GBA-SP-SEN-VD-8	STATIN J 115 kV	Grant-Oakland J 115 kV Line	P1	N-1	5.0	4.4	4.6	5.1					SPS or system upgrade
GBA-SP-SEN-VD-9	ALHAMBRA 115 kV	MARTNZ D-ALHAMTP1 #1 115 kV	P2-1	Line section w/o fault	5.0	4.7	5.2	5.4					Mitigation under investigation
GBA-SP-SEN-VD-10	EDES 115 kV	EDS GRNT-GRANT #1 115 kV	P2-1	Line section w/o fault	6.3	5.6	5.9	6.6					Mitigation under investigation
GBA-SP-SEN-VD-11	LOCKHD 1 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	5.4	5.4	5.5	5.7					Mitigation under investigation
GBA-SP-SEN-VD-12	MOFT.FLD 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	5.4	5.4	5.5	5.6					Mitigation under investigation
GBA-SP-SEN-VD-13	OWNBRKWAY 115 kV	EDS GRNT-GRANT #1 115 kV	P2-1	Line section w/o fault	5.1	4.5	4.7	5.4					Mitigation under investigation
GBA-SP-SEN-VD-14	STATIN J 115 kV	EDS GRNT-GRANT #1 115 kV	P2-1	Line section w/o fault	5.1	4.5	4.7	5.4					Mitigation under investigation
GBA-SP-SEN-VD-15	A.M.D 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	43.8	23.8	24.8	44.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-16	ALHAMBRA 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	9.8	27.0	8.6	9.2					SPS or system upgrade
GBA-SP-SEN-VD-17	AMES BS1 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	11.1	5.0	5.3	10.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-18	AMES BS2 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	11.1	5.0	5.3	10.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-19	AMES DST 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	11.1	5.0	5.3	10.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-20	APP MAT 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	45.9	25.0	26.0	46.8					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-21	BOLLMAN 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	11.3	20.4	9.9	10.6					SPS or system upgrade



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-VD-22	BRITTN 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	47.3	25.8	26.8	48.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-23	CON25 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	13.3	54.7	6.8	7.6					SPS or system upgrade
GBA-SP-SEN-VD-24	DIXON LD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	12.1	5.7	6.1	11.8					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-25	EL CRRTO 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	15.7	60.5	7.3	9.3					SPS or system upgrade
GBA-SP-SEN-VD-26	FRANKLIN 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	15.8	68.3	5.5	7.4					SPS or system upgrade
GBA-SP-SEN-VD-27	FREMNT 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	13.5	6.3	6.7	13.2					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-28	GLENWOOD 60 kV	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	9.6	9.6	8.7	10.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-VD-29	GRANT 115 kV	BUS-TIE BREAKER FAULT AT 35105 EASTSHRE 115.00	P2	Bus-tie breaker	10.9	9.8	10.2	11.5					SPS or system upgrade
GBA-SP-SEN-VD-30	LAWRENCE 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	41.2	22.4	23.3	42.0					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-31	LOCKHD 1 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	33.1	17.7	18.5	33.5					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-32	LOCKHD 2 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	35.8	19.2	20.0	36.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-33	LOS ALTS 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	70.1	39.3	40.8	71.5					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-34	LOS GATS 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	71.3	40.1	41.7	72.7					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-35	LOYOLA 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	69.6	39.0	40.5	71.0					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-36	MARTNZ D 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	10.2	27.0	8.9	9.6					SPS or system upgrade
GBA-SP-SEN-VD-37	MENLO 60 kV	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	9.6	9.6	8.8	10.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-VD-38	MENLO G 60 kV	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	9.6	9.6	8.8	10.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-VD-39	MILPITAS 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	12.6	6.0	6.4	12.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-40	MOFT.FLD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	33.0	17.7	18.5	33.4					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-41	MT EDEN 115 kV	BUS-TIE BREAKER FAULT AT 30560 E. SHORE 230.00	P2	Bus-tie breaker	10.2	9.6	9.8	11.2					SPS or system upgrade
GBA-SP-SEN-VD-42	MT VIEW 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	62.5	34.6	35.9	64.0					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-43	NRTHGRUM 60 kV	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	9.6	9.6	8.8	10.2					Review Stanford 60 kV system configuration
GBA-SP-SEN-VD-44	NUMMI 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	13.9	6.6	7.0	13.6					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-45	PERMNTE 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	69.0	38.8	40.2	70.4					Monta Vista 230 kV Bus Upgrade Project



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AAEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-VD-46	PHILLIPS 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	43.7	23.8	24.8	44.5					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-47	PRT CSTA 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	15.7	68.0	5.5	7.4					SPS or system upgrade
GBA-SP-SEN-VD-48	SFPP CNC 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	16.0	69.3	5.6	7.5					SPS or system upgrade
GBA-SP-SEN-VD-49	STELLING 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	61.8	34.4	35.7	63.3					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-50	URICH 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	16.0	69.0	5.6	7.5					SPS or system upgrade
GBA-SP-SEN-VD-51	VALLY VW 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	15.0	59.0	6.8	8.8					SPS or system upgrade
GBA-SP-SEN-VD-52	WESTRN_D 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	13.9	6.6	7.0	13.6					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-53	WHISMAN 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	62.5	34.6	35.9	64.0					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-VD-54	WOLFE 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	61.9	34.4	35.7	63.3					Monta Vista 230 kV Bus Upgrade Project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AEEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-V-1	A.M.D 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.56	0.76	0.75	0.55					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-2	ALHAMBRA 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.89	0.72	0.92	0.91					SPS or system upgrade
GBA-SP-SEN-V-3	APP MAT 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.53	0.75	0.74	0.53					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-4	BOLLMAN 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.89	0.80	0.91	0.90					SPS or system upgrade
GBA-SP-SEN-V-5	BRITTN 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.52	0.74	0.73	0.51					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-6	Brokaw 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.96	0.96	0.91					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-7	CON25 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.83	0.42	0.92	0.90					SPS or system upgrade
GBA-SP-SEN-V-8	DCJ 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.96	0.96	0.91					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-9	DIXON LD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.96	0.95	0.89					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-10	EL CRRTO 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.80	0.36	0.90	0.88					SPS or system upgrade
GBA-SP-SEN-V-11	FRANKLIN 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.85	0.32	0.97	0.94					SPS or system upgrade
GBA-SP-SEN-V-12	FREMNT 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.88	0.96	0.95	0.88					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-13	Homestea 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.95	0.95	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-14	LAWRENCE 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.58	0.77	0.76	0.57					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-15	LOCKHD 1 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.66	0.82	0.81	0.66					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-16	LOCKHD 2 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.64	0.81	0.80	0.64					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-17	LOS ALTS 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.30	0.62	0.60	0.29					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-18	LOS GATS 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.28	0.60	0.58	0.27					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-19	LOYOLA 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.31	0.62	0.61	0.30					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-20	MARTNZ D 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.90	0.73	0.92	0.91					SPS or system upgrade
GBA-SP-SEN-V-21	Mathew 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.96	0.96	0.91					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-22	MILPITAS 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.88	0.95	0.95	0.89					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-23	MOFT.FLD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.67	0.82	0.82	0.66					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-24	MT VIEW 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.36	0.65	0.64	0.35					Monta Vista 230 kV Bus Upgrade Project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AEEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-V-25	Northwes 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.95	0.95	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-26	NUMMI 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.87	0.95	0.95	0.88					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-27	PERMNTE 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.32	0.63	0.61	0.31					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-28	PHILLIPS 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.56	0.76	0.75	0.55					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-29	PRT CSTA 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.85	0.32	0.97	0.94					SPS or system upgrade
GBA-SP-SEN-V-30	Serra 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.95	0.95	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-31	SFPP CNC 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.83	0.29	0.95	0.93					SPS or system upgrade
GBA-SP-SEN-V-32	STELLING 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.37	0.66	0.64	0.36					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-33	Uranium 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.95	0.95	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-34	URICH 60 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.84	0.30	0.96	0.93					SPS or system upgrade
GBA-SP-SEN-V-35	VALLY VW 115 kV	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	0.81	0.37	0.91	0.88					SPS or system upgrade
GBA-SP-SEN-V-36	Walsh 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.96	0.96	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-37	WESTRN_D 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.87	0.95	0.95	0.88					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-38	WHISMAN 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.36	0.65	0.64	0.35					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-39	WOLFE 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.37	0.66	0.64	0.36					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-40	Zeno 60 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.89	0.95	0.95	0.90					Monta Vista 230 kV Bus Upgrade Project
GBA-SP-SEN-V-41	GILROY F 115 kV	GLRY COG 13.80 Generator ID 2 & Metcalf-Morgan Hill 115 kV	P3	G-1/N-1	0.87	>0.9	>0.9	>0.9					Increase Metcalf area generation
GBA-SP-SEN-V-42	LLAGAS 115 kV	GLRY COG 13.80 Generator ID 2 & Metcalf-Morgan Hill 115 kV	P3	G-1/N-1	0.87	>0.9	>0.9	>0.9					Increase Metcalf area generation
GBA-SP-SEN-V-43	MRGN HIL 115 kV	GLRY COG 13.80 Generator ID 2 & Metcalf-Morgan Hill 115 kV	P3	G-1/N-1	0.84	>0.9	>0.9	>0.9					Increase Metcalf area generation
GBA-SP-SEN-V-44	BIXLER 60 kV	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	0.73	>0.9	>0.9	>0.9					increase peninsula area generation
GBA-SP-SEN-V-45	CAROLNDS 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.84	0.89	0.89	0.85					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-46	CRYSTLSG 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.72	0.79	0.79	0.73					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-47	EMRLD LE 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.73	0.79	0.79	0.74					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-48	HILLSDLE 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.89	0.93	0.93	0.90					Review Stanford 60 kV system configuration

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP Zero East Bay Generation	2025 SP No AEEE	N/A	N/A	N/A	N/A	
GBA-SP-SEN-V-49	HLF MNBY 60 kV	Jefferson 230/60kV Transformer #2 & _Jefferson 230/60kV Transformer #1	P6	N-1/N-1	0.84	0.91	0.91	0.87					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-50	LAS PLGS 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.71	0.78	0.78	0.72					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-51	LLAGAS 115 kV	Metcalfe-Morgan Hill 115 kV & GLRY COG 13.80 Generator ID 2	P6	N-1/N-1	0.87	>0.9	>0.9	>0.9					Increase Metcalf area generation
GBA-SP-SEN-V-52	MRGN HIL 115 kV	Metcalfe-Morgan Hill 115 kV & _Llagas-Gilroy Foods 115 kV	P6	N-1/N-1	0.84	>0.9	>0.9	>0.9					Increase Metcalf area generation
GBA-SP-SEN-V-53	RALSTON 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.73	0.79	0.79	0.73					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-54	STANFORD 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.68	0.75	0.75	0.69					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-55	WATRSLED 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.78	0.84	0.84	0.79					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-56	WOODSIDE 60 kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.72	0.78	0.78	0.72					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-57	CAROLNDS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.80	0.88	0.88	0.84					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-58	CRYSTLGS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.67	0.77	0.77	0.71					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-59	EMRLD LE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.67	0.78	0.78	0.71					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-60	HILLSDLE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.86	0.92	0.92	0.89					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-61	HLF MNBY 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.80	0.90	0.90	0.85					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-62	LAS PLGS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.66	0.76	0.76	0.70					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-63	RALSTON 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.67	0.77	0.77	0.71					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-64	STANFORD 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.61	0.73	0.73	0.66					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-65	WATRSLED 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.73	0.82	0.82	0.77					Review Stanford 60 kV system configuration
GBA-SP-SEN-V-66	WOODSIDE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.66	0.77	0.77	0.70					Review Stanford 60 kV system configuration

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
Fresno-T-1	34103 CHWCGNJT 115 34109 CHWCGN 115 1	Base Case	P0	Basecase	100.35	100.29	100.29	99.21	39.49	N/A	N/A	N/A	Reconductor/Remove limiting elemets, Undeer Review
Fresno-T-2	34159 PANOCH EJ 115 34160 HAMMONDS 115 1	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	<100%	100.05	99.84	<100%	<100%	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-3	34169 TORNDO J 70.0 34574 COLNGA 1 70.0 1	P1-2:A20:35:_Paso Robles-Templeton 70 kV	P1	Single Contingency	NConv	<100%	<100%	157.84	<100%	N/A	N/A	N/A	Paso Robles UVLS. Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-4	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A20:35:_Paso Robles-Templeton 70 kV	P1	Single Contingency	NConv	<100%	<100%	229.81	<100%	N/A	N/A	N/A	Paso Robles UVLS. Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-5	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-3:A13:22:_Merced 115/70 kV Transformer No. 2	P1	Single Contingency	99.89	100.34	100.33	99.01	17.48	N/A	N/A	N/A	Under Review
Fresno-T-6	34169 TORNDO J 70.0 34574 COLNGA 1 70.0 1	P1-3:A20:1:_Templeton 230/70 kV Transformer	P1	Single Contingency	NConv	44.07	43.56	157.85	23.90	N/A	N/A	N/A	Paso Robles UVLS. Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-7	34159 PANOCH EJ 115 34160 HAMMONDS 115 1	P2-1:A13:178:_PANOCHET-MENDOTA #1 115 kV	P2	Single Contingency	<100%	102.78	103.03	<100%	<100%	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-8	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-1:A13:195:_CHEVPIPE-LOS BANS #1 70 kV	P2	Single Contingency	123.15	<100%	<100%	16.14	<100%	N/A	N/A	N/A	Action Plan . Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-9	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P2-1:A13:195:_CHEVPIPE-LOS BANS #1 70 kV	P2	Single Contingency	113.94	<100%	<100%	40.60	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-10	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-1:A14:271:_HERNDON-PNDLJ2 #1 115 kV	P2	Single Contingency	96.05	104.70	116.75	32.50	24.47	N/A	N/A	N/A	Under Review
Fresno-T-11	34409 PNDLJ2 115 34416 BULLARD 115 1	P2-1:A14:272:_HERNDON-PNDLJ1 #1 115 kV	P2	Single Contingency	118.82	127.65	140.07	40.04	32.09	N/A	N/A	N/A	Under Review
Fresno-T-12	34169 TORNDO J 70.0 34574 COLNGA 1 70.0 1	P2-1:A14:340:_GATES-GATS2_TP #1 70 kV	P2	Single Contingency	113.96	94.98	90.85	42.30	46.33	N/A	N/A	N/A	Congestion Management. Estrella substation Project mitigates future years. Propose operating solution in the interim

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
Fresno-T-13	34144 MERCED 115 34146 MERCED M 115 2	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	133.81	130.88	130.28	133.85	23.86	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-14	34202 MERCED 70.0 34146 MERCED M 115 2	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	121.41	121.78	121.55	122.36	23.93	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-15	34202 MERCED 70.0 34230 MRCDFLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	151.37	146.19	146.28	149.60	27.73	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-16	34321 MCSWAINJ 70.0 34230 MRCDFLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	163.85	162.51	163.92	148.20	23.42	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-17	34321 MCSWAINJ 70.0 34232 EXCHEQR 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	192.98	191.59	193.34	172.59	31.29	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-18	34136 WILSON B 115 34144 MERCED 115 2	P2-2:A13:18:_BUS FAULT AT 34134 WILSON A 115.00	P2	Single Contingency	110.51	67.43	76.46	17.63	29.62	N/A	N/A	N/A	Action Plan.Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim. mitigates future years. Propose operating solution in the interim.
Fresno-T-19	34134 WILSON A 115 34144 MERCED 115 1	P2-2:A13:19:_BUS FAULT AT 34136 WILSON B 115.00	P2	Single Contingency	112.36	58.38	65.74	23.72	24.56	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim. mitigates future years. Propose operating solution in the interim.
Fresno-T-20	34112 EXCHEQR 115 34116 LE GRAND 115 1	P2-2:A13:20:_BUS FAULT AT 34144 MERCED 115.00	P2	Single Contingency	99.93	100.41	100.40	99.03	17.48	N/A	N/A	N/A	Under Review
Fresno-T-21	34159 PANOHEJ 115 34160 HAMMONDS 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	142.81	70.88	71.53	41.65	25.53	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-T-22	34160 HAMMONDS 115 34161 DFSTP 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	135.00	62.86	63.22	39.00	23.93	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-23	34161 DFSTP 115 34162 ORO LOMA 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	132.12	60.52	60.80	37.66	22.74	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-24	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	322.77	48.43	51.01	56.30	5.19	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-25	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	145.07	55.86	60.50	28.64	7.88	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-26	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	120.20	18.72	22.35	10.12	15.15	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-27	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	108.39	24.89	24.65	18.96	1.87	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-28	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	115.14	35.92	38.42	34.09	9.82	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-29	34252 MADERA 70.0 34256 BORDEN 70.0 2	P2-2:A13:29:_BUS D FAULT AT 34256 BORDEN 70.00	P2	Single Contingency	111.54	113.97	116.53	40.70	40.17	N/A	N/A	N/A	Madera SPS
Fresno-T-30	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	95.75	104.26	116.22	32.60	24.46	N/A	N/A	N/A	Under Review

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
Fresno-T-31	34409 PNDLJ2 115 34416 BULLARD 115 1	P2-2:A14:36:_BUS 1 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	118.60	127.90	140.00	<100	<100	N/A	N/A	N/A	Under Review
Fresno-T-32	34159 PANOCHEJ 115 34160 HAMMONDS 115 1	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	77.76	104.84	105.36	25.74	39.90	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-33	34159 PANOCHEJ 115 34160 HAMMONDS 115 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	71.12	71.28	24.87	26.34	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-34	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	4.54	14.51	NConv	14.21	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-35	34105 CERTANJ1 115 34121 SHARON T 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	4.20	12.54	NConv	12.64	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-36	34110 ATWATR J 115 34144 MERCED 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	16.57	20.14	NConv	10.65	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-37	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	56.82	57.74	NConv	17.53	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-38	34112 EXCHEQUR 115 34232 EXCHEQUR 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	21.98	21.70	NConv	6.07	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.

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
Fresno-T-39	34121 SHARON T 115 34128 OAKH_JCT 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	7.99	16.72	NConv	10.73	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-40	34144 MERCED 115 34146 MERCED M 115 2	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	59.52	58.95	NConv	3.77	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-41	34157 PANOCHET 115 34155 PANOCH1 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	44.23	47.25	NConv	21.51	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-42	34157 PANOCHET 115 34156 MENDOTA 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	46.89	50.09	NConv	22.79	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-43	34202 MERCED 70.0 34146 MERCED M 115 2	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	61.10	61.11	NConv	3.75	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-44	34202 MERCED 70.0 34230 MRCDLFLS 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	51.47	50.42	NConv	6.93	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-45	34321 MCSWAINJ 70.0 34230 MRCDLFLS 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	67.82	67.85	NConv	7.81	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.

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
Fresno-T-46	34321 MCSWAINJ 70.0 34232 EXCHEQR 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	67.00	66.89	NConv	10.96	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-47	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	36.24	130.40	132.27	56.24	79.86	N/A	N/A	N/A	Under Review
Fresno-T-48	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	73.29	110.98	117.04	47.58	54.01	N/A	N/A	N/A	Under Review
Fresno-T-49	34559 HURONJ 70.0 34560 CALFLAX 70.0 1	P2-4:A13:4:_BUS-TIE BREAKER 202 FAULT AT 30790 PANOCHÉ 230.00	P2	Single Contingency	124.60	89.84	113.34	77.63	75.59	N/A	N/A	N/A	Increase Panoche Star Gate unit dispatch
Fresno-T-50	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	103.48	9.60	10.80	8.60	27.90	N/A	N/A	N/A	Action Plan. Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-51	34366 SANGER 115 34359 AIRWAYJ2 115 1	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	103.81	91.38	98.27	34.25	23.68	N/A	N/A	N/A	Action Plan. Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-52	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	107.00	23.40	14.14	83.69	34.40	N/A	N/A	N/A	Action Plan. Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-53	34408 BARTON 115 34412 HERNDON 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	111.74	81.04	93.77	12.06	33.61	N/A	N/A	N/A	Action Plan. Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.

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
Fresno-T-54	34410 MANCHSTR 115 34412 HERNDON 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	112.74	84.55	96.29	14.37	32.22	N/A	N/A	N/A	Action Plan. Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-55	34418 KINGSBRG 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	117.45	104.51	101.22	98.24	47.84	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-56	34429 GWF_HEP 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	121.53	108.51	105.26	100.39	50.64	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-57	30805 BORDEN 230 30810 GREGG 230 1	P1-2:A13:79:_Warnerville - Wilson 230 kV Line and P1-2:A13:7:_(New) Borden - Gregg #2 230 kV Line	P6	Multiple Contingency	<100%	<100%	118.80	<100%	<100%	N/A	N/A	N/A	HELMS RAS Model and Congestion Management
Fresno-T-58	30805 BORDEN 230 30810 GREGG 230 2	P1-2:A13:86:_Borden - Gregg 230 kV Line and P1-2:A13:77:_Warnerville - Wilson 230 kV Line	P6	Multiple Contingency	<100%	100.16	<100%	<100%	<100%	N/A	N/A	N/A	HELMS RAS Model and Congestion Management
Fresno-T-59	34116 LE GRAND 115 34134 WILSON A 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-60	34104 ATWATER 115 34110 ATWATR J 115 1	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	150.40	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-61	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-62	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Wilson 115 kV Area Reinforcement

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	
Fresno-T-63	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-64	34116 LE GRAND 115 34134 WILSON A 115 1	P1-1:A13:59:_EXCHQUER 13.80 Generator ID 1 and P1-2:A13:106:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	121.77	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Voltage Conversion project
Fresno-T-65	34116 LE GRAND 115 34134 WILSON A 115 1	P1-2:A14:30:_Kerckhoff - Clovis - Sanger #1 115 kV Line (Woodward-Shepherd) and P1-2:A14:125:_Kerckhoff-Clovis-Sanger No. 2 115 kV Line	P6	Multiple Contingency	<100%	<100%	<100%	100.10	<100%	<100%	N/A	N/A	N/A	Kerckhoff SPS
Fresno-T-66	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct- Canal 70 kV Line	P6	Multiple Contingency	298.00	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-67	34118 LE GRNDJ 115 34136 WILSON B 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Long term mitigation is the Wilson 115 kV Area Reinforcement
Fresno-T-68	34118 LE GRNDJ 115 34168 EL NIDO 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Long term mitigation should be the Wilson 115 kV Area Reinforcement
Fresno-T-69	34121 SHARON T 115 34128 OAKH_JCT 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Long term mitigation is Oro Loma-Mendota 115 kV Voltage Conversion project.
Fresno-T-70	34134 WILSON A 115 30800 WILSON 230 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	112.33	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Long term mitigation is Oro Loma-Mendota 115 kV Voltage Conversion project.

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
Fresno-T-71	34134 WILSON A 115 34104 ATWATER 115 1	P1-2:A13:90:_Atwater - Merced 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	106.33	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-72	34134 WILSON A 115 34144 MERCED 115 1	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	128.24	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Atwater SPS. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-73	34136 WILSON B 115 34144 MERCED 115 2	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	122.61	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Atwater SPS. Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-74	34159 PANOCHAJ 115 34160 HAMMONDS 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	122.16	134.52	<100%	<100%	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-75	34159 PANOCHAJ 115 34160 HAMMONDS 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-76	34159 PANOCHAJ 115 34160 HAMMONDS 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-77	34159 PANOCHAJ 115 34160 HAMMONDS 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	124.93	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-78	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	114.14	126.26	<100%	<100%	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-79	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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	
Fresno-T-80	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-81	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	117.87	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-82	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	111.33	123.39	<100%	<100%	<100%	N/A	N/A	N/A	Reconductor/Under Review
Fresno-T-83	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-84	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-85	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	114.84	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-86	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	280.00	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-88	34113 ARBURU T 70.0 34108 WRIGHT T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	111.05	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-89	34214 LOS BANS 70.0 34231 PCHCOWND 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	134.90	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-T-90	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	112.80	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-91	34222 MRCYSPRS 70.0 34258 MRCYSPRNGSS 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	132.85	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-92	34231 PCHCOWND 70.0 34108 WRIGHT T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	117.79	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-93	34258 MRCYSPRNGSS 70.0 34113 ARBURU T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	124.61	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-94	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:118:_Borden - Glass 70 kV Line and P1-2:A13:119:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	112.26	114.25	116.08	<100%	<100%	N/A	N/A	N/A	Madera SPS
Fresno-T-95	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:119:_Borden - Madera #2 70 kV Line and P1-2:A13:120:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	112.91	116.06	118.00	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS
Fresno-T-96	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:119:_Borden - Madera #2 70 kV Line and P1-2:A13:120:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	105.69	109.06	112.00	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS
Fresno-T-97	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	Not Solved	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-98	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:125:_Borden - Glass 70 kV Line and P1-2:A13:126:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	112.26	115.36	117.20	<100%	<100%	N/A	N/A	N/A	Madera SPS
Fresno-T-99	34237 CANANDGA 70.0 34255 TRIGO J 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	96.09	99.36	102.00	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS

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
Fresno-T-100	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	105.70	109.06	112.00	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS
Fresno-T-101	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:129:_Borden - Madera #2 70 kV Line and P1-2:A13:130:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	112.91	116.06	117.98	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS
Fresno-T-102	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:130:_Borden - Madera #1 70 kV Line and P1-2:A13:129:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	113.00	116.00	117.98	<100%	<100%	N/A	N/A	N/A	Action Plan/ Expand SPS
Fresno-T-103	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:29:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.07	<100%	N/A	N/A	N/A	Action Plan
Fresno-T-104	34206 CANAL 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	<100%	103.28	<100%	<100%	N/A	N/A	N/A	Action Plan
Fresno-T-105	34169 TORND0 J 70.0 34174 PENZIR J 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	109.06	N/A	N/A	N/A	Action Plan
Fresno-T-106	34169 TORND0 J 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	139.42	N/A	N/A	N/A	Action Plan
Fresno-T-107	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	237.91	N/A	N/A	N/A	Action Plan
Fresno-T-108	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	297.16	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-109	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	339.10	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-T-110	34206 CANAL 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	161.53	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-111	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	280.98	91.31	104.21	<100%	<100%	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-112	34208 CHEVPIPE 70.0 34210 SNTA NLA 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	184.70	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-113	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	291.55	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan. Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-114	34404 WST FRSO 115 34370 MC CALL 115 1	P1-2:A14:146:_McCall-California Ave. 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P6	Multiple Contingency	<100%	<100%	107.52	<100%	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-115	34366 SANGER 115 34389 RAINBWTP 115 1	P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke) and P1-2:A14:33:_Pomegranate Wonderful Jct - Pomegranate Wonderful 115 kV Tap/Line	P6	Multiple Contingency	107.86	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-116	34380 REEDLEY 115 34394 PIEDRA 1 115 1	P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke) and P1-2:A14:33:_Pomegranate Wonderful Jct - Pomegranate Wonderful 115 kV Tap/Line	P6	Multiple Contingency	139.51	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-117	34390 DANISHCM 115 34370 MC CALL 115 1	P1-2:A14:148:_California Ave.-Sanger 115 kV Line and P1-2:A14:150:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	107.50	120.56	<100%	<100%	N/A	N/A	N/A	Action Plan Under Review

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
Fresno-T-118	34559 HURONJ 70.0 34560 CALFLAX 70.0 1	P1-2:A14:22:_Q526 70 kV Tap (Schindler - Colinga) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.07	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-119	34402 CAL AVE 115 34366 SANGER 115 1	P1-2:A14:143:_McCall-California Ave. 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	103.23	111.52	<100%	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-120	34402 CAL AVE 115 34390 DANISHCM 115 1	P1-2:A14:145:_California Ave.-Sanger 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	104.87	117.82	<100%	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-121	34566 PLSNTVLY 70.0 34570 COLNGA 2 70.0 1	P1-2:A14:25:_Schindler - Gates - Huron 70 kV Line(Q532SS - CALFLAX) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.31	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-122	34169 TORND0 J 70.0 34174 PENZIR J 70.0 1	P1-2:A14:53:_Westlands Solar Station - Gates 70 kV Line and P1-2:A20:174:_Coalinga No. 1-San Miguel 70 kV Line	P6	Multiple Contingency	<100%	<100%	<100%	100.97	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-123	34214 LOS BANS 70.0 30765 LOSBANOS 230 3	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	101.99	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-124	34487 SNGRJCT 115 34367 POMWDFLJT 115 1	P1-2:A14:130:_Kingsriver - Sanger - Reedley 115 kV Line and P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke)	P6	Multiple Contingency	108.57	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-125	34231 PCHCOWND 70.0 34108 WRIGHT T 70.0 1	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	116.84	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-126	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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	
Fresno-T-127	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-128	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-129	34492 REEDLEY 70.0 34526 ORSI JCT 70.0 1	P1-4:A14:2:_DINUBA 70.00 SVD ID v and P1-2:A14:161:_Reedley - Dinuba 70 kV Line	P6	Multiple Contingency	102.93	<100%	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Reedley 70 kV reinforcement project mitigates future years. Propose interim operating solution.
Fresno-T-130	30795 STOREY 2 230 30805 BORDEN 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	83.75	18.08	16.97	120.86	21.05		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-131	30800 WILSON 230 30795 STOREY 2 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	94.67	<100%	<100%	124.88	22.57		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-132	30805 BORDEN 230 30810 GREGG 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	62.74	<100%	<100%	130.54	30.62		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-133	34357 AIRWAYJ1 115 34366 SANGER 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	83.85	<100%	<100%	108.18	19.08		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-134	34357 AIRWAYJ1 115 34368 LASPALMS 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	74.17	<100%	<100%	104.66	17.56		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-135	34359 AIRWAYJ2 115 34408 BARTON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	82.15	<100%	<100%	112.27	18.49		N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.

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
Fresno-T-136	34366 SANGER 115 34359 AIRWAYJ2 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	95.10	69.19	52.30	117.63	23.87	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-137	34408 BARTON 115 34412 HERNDON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	46.67	<100%	<100%	111.77	12.65	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-138	34410 MANCHSTR 115 34368 LASPALMS 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	68.17	<100%	<100%	100.78	17.57	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-139	34410 MANCHSTR 115 34412 HERNDON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	36.75	<100%	<100%	100.25	10.46	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-140	34402 CAL AVE 115 34366 SANGER 115 1	P7-1:A14:12:_McCall-California Ave. & McCall-West Fresno 115 kV Lines	P7	Multiple Contingency (common structure)	95.77	103.23	111.52	32.65	24.73	N/A	N/A	N/A	Action Plan Under Review
Fresno-T-141	30830 KEARNEY 230 30835 HERNDON 230 1	P7-1:A14:18:_Gates - Gregg 230 kV Line & Gates - McCall 230 kV Lines	P7	Multiple Contingency (common structure)	86.66	60.71	36.33	105.59	52.23	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-142	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P7-1:A14:6:_Kerckhoff-Clovis-Sanger No. 1 & 2 115 kV Lines	P7	Multiple Contingency (common structure)	100.02	65.03	12.07	98.25	17.35	N/A	N/A	N/A	Kerckhoff SPS. Northern Fresno Area reinforcement project will mitigate future years. Propose interim operating solution.
Fresno-T-143	34116 LE GRAND 115 34134 WILSON A 115 1	P7-1:A14:6:_Kerckhoff-Clovis-Sanger No. 1 & 2 115 kV Lines	P7	Multiple Contingency (common structure)	69.92	61.32	9.16	113.77	22.65	N/A	N/A	N/A	Back off Chowchilla/ Kerckhoff units for the off-peak overload. (Kerckhoff SPS)
Fresno-T-144	34169 TORND0 J 70.0 34574 COLNGA 1 70.0 1	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	Multiple Contingency (common structure)	NConv	44.09	43.59	157.84	23.90	N/A	N/A	N/A	Action Plan . Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-145	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	Multiple Contingency (common structure)	NConv	5.66	4.47	229.81	14.21	N/A	N/A	N/A	Action Plan. Estrella substation Project mitigates future years. Propose operating solution in the interim

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
Fresno-VD-1	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	<5%	<5%	11.795	<5%	<5%	N/A	N/A	N/A	Action Plan
Fresno-VD-2	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P1	Single Contingency	6.722	<5%	<5%	1.083	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-3	GILLRAN 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.662	<5%	<5%	1.969	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-4	MADERAPR 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.375	<5%	<5%	1.92	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-5	MENDOTA 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.034	<5%	<5%	2.657	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-6	NEWHALL 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	10.424	<5%	<5%	1.694	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-7	PMTFMPP 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.642	<5%	<5%	1.968	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-8	Q607 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.034	<5%	<5%	2.541	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-9	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.35	4.917	8.953	5.368	6.694	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-10	FIREBAGH 70 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	6.334	<5%	<5%	1.207	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-11	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.007	3.475	4.162	1.864	-0.259	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement

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
Fresno-VD-12	KAMM 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	13.521	5.79	10.035	5.898	7.391	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-13	MADERAPR 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.72	3.388	4.053	1.816	-0.259	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-14	MENDOTA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.334	4.644	5.629	2.526	-0.187	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-15	NEWHALL 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	10.776	2.99	3.588	1.595	-0.341	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-16	PMTFMPP 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.987	3.469	4.156	1.862	-0.258	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-17	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.335	4.44	5.381	2.416	-0.187	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-18	WESTLNDS 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.803	4.52	8.45	5.128	6.378	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-19	CANAL 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	25.949	2.882	3.043	3.39	1.509	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-20	CANTUA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.35	4.917	8.953	5.368	6.694	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-21	CHEVPIPE 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	29.486	5.572	5.864	4.398	2.773	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-VD-22	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	<5%	11.633	11.795	<5%	5.532	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-VD-23	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	15.37	1.073	1.122	1.255	0.619	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-24	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	13.496			0.862		N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-25	FIREBAGH 70 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	6.334	<5%	<5%	1.207	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-26	GILLRAN 115 kV	P2-1:A13:160:_PANOCHÉ-PANOCHÉ1 #1 115 kV	P2	Single Contingency	11.486	<5%	<5%	1.884	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-27	GILLRAN 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.772	3.717	4.14	3.925	0.074	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-28	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.007	3.475	4.162	1.864	-0.259	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-29	KAMM 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	13.521	5.79	10.035	5.898	7.391	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-30	LIVNGSTN 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	27.397	3.248	3.396	3.539	1.668	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-31	MADERAPR 115 kV	P2-1:A13:160:_PANOCHÉ-PANOCHÉ1 #1 115 kV	P2	Single Contingency	11.203	<5%	<5%	1.836	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-32	MADERAPR 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.482	3.615	4.021	3.827	0.069	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement

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
Fresno-VD-33	MADERAPR 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	11.72	3.388	4.053	1.816	-0.259	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-34	MANCHSTR 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	22.72	12.657	13.471	-0.522	0.885	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-35	MENDOTA 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	14.804	<5%	<5%	2.542	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-36	MENDOTA 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	15.178	5.09	5.751	5.26	0.186	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-37	MENDOTA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	15.334	4.644	5.629	2.526	-0.187	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-38	MRCYSPRS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	21.397	1.699	1.809	2.333	1.008	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-39	NEWHALL 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	10.264	<5%	<5%	1.616	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-40	NEWHALL 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	10.525	3.233	3.587	3.466	0.006	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-41	NEWHALL 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	10.776	2.99	3.588	1.595	-0.341	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-42	ORO LOMA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	12.63	0.7	0.728	0.847	0.442	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-43	ORTIGA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	23.017	2.238	2.375	2.685	1.225	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-VD-44	PCHCOWND 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	23.373	3.591	3.858	2.891	2.752	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-45	PMTFMPP 115 kV	P2-1:A13:160:_PANOCHET-PANOCHÉ1 #1 115 kV	P2	Single Contingency	11.466	<5%	<5%	1.882	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-46	PMTFMPP 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.753	3.711	4.134	3.921	0.074	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-47	PMTFMPP 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.987	3.469	4.156	1.862	-0.258	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-48	Q548 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	21.4	1.768	1.885	2.319	1.101	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-49	Q607 115 kV	P2-1:A13:160:_PANOCHET-PANOCHÉ1 #1 115 kV	P2	Single Contingency	14.804	<5%	<5%	2.431	<5%	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-50	Q607 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.335	4.44	5.381	2.416	-0.187	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcemen
Fresno-VD-51	SNTA NLA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	29.43	5.528	5.818	4.382	2.752	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-52	SNTA RTA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	17.976	1.483	1.557	1.746	0.808	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-53	WESTLNDS 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.803	4.52	8.45	5.128	6.378	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Area Reinforcement
Fresno-VD-54	WRGHT PP 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	22.933	3.156	3.388	2.752	2.351	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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
Fresno-V-1	BER VLLY 70 kV	Base Case	P0	No Contingency	1.0604	1.0613	1.0598	1.0842	1.0706	N/A	N/A	N/A	Under Review with PTO
Fresno-V-2	BOWLES 70 kV	Base Case	P0	No Contingency	1.0336	1.0725	1.0685	1.0434	1.0998	N/A	N/A	N/A	Under Review with PTO
Fresno-V-3	BRCEBG J 70 kV	Base Case	P0	No Contingency	1.0557	1.0565	1.0551	1.0824	1.0679	N/A	N/A	N/A	Under Review with PTO
Fresno-V-4	CARUTHRS 70 kV	Base Case	P0	No Contingency	1.0275	1.0665	1.0618	1.0416	1.0987	N/A	N/A	N/A	Under Review with PTO
Fresno-V-5	EXCHEQUR 70 kV	Base Case	P0	No Contingency	1.0699	1.0707	1.0691	1.0874	1.0743	N/A	N/A	N/A	Under Review with PTO
Fresno-V-6	EXCHEQUR 115 kV	Base Case	P0	No Contingency	1.0521	1.0526	1.0514	1.0668	1.0491	N/A	N/A	N/A	Under Review with PTO
Fresno-V-7	FRESNOWW 70 kV	Base Case	P0	No Contingency	1.0459	1.0849	1.0817	1.0479	1.0998	N/A	N/A	N/A	Under Review with PTO
Fresno-V-8	FRWWTAP 70 kV	Base Case	P0	No Contingency	1.046	1.085	1.0818	1.0479	1.1	N/A	N/A	N/A	Under Review with PTO
Fresno-V-9	KEARNEY 70 kV	Base Case	P0	No Contingency	1.046	1.085	1.0818	1.0477	1.1001	N/A	N/A	N/A	Under Review with PTO
Fresno-V-10	MC SWAIN 70 kV	Base Case	P0	No Contingency	1.0557	1.0554	1.0536	1.0751	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-11	MCSWAINJ 70 kV	Base Case	P0	No Contingency	1.0551	1.0548	1.053	1.0745	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-12	MRCDFLLS 70 kV	Base Case	P0	No Contingency	1.055	1.0548	1.053	1.0745	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-13	SAXONCRK 70 kV	Base Case	P0	No Contingency	1.0548	1.0557	1.0543	1.0821	1.0674	N/A	N/A	N/A	Under Review with PTO
Fresno-V-14	BOWLES 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1025	1.098	<1.10	1.1339	N/A	N/A	N/A	Under Review
Fresno-V-15	CARUTHRS 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.0967	1.0916	<1.10	1.1329	N/A	N/A	N/A	Under Review
Fresno-V-16	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	>0.90	>0.90	0.8993	>0.90	>0.90	N/A	N/A	N/A	Under Review
Fresno-V-17	EXCHEQUR 70 kV	P1-2:A13:123:_Merced Falls-Exchequer 70 kV Line	P1	Single Contingency	1.085	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Under Review
Fresno-V-18	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P1	Single Contingency	0.8945	>0.90	>0.90	1.019	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-19	FRESNOWW 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1145	1.1109	<1.10	1.1339	N/A	N/A	N/A	Under Review

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
Fresno-V-20	GILLRAN 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8757	>0.90	>0.90	1.01	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-21	KEARNEY 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1146	1.111	<1.10	1.1341	N/A	N/A	N/A	Under review
Fresno-V-22	MADERAPR 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8827	>0.90	>0.90	1.0129	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-23	MENDOTA 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.859	>0.90	>0.90	1.0091	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-24	NEWHALL 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8916	>0.90	>0.90	1.0156	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-25	PMTFMPP 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8771	>0.90	>0.90	1.0107	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-26	Q607 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8591	>0.90	>0.90	1.0102	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-27	ARBURUA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7961	1.0032	1.0021	1.0245	1.0483	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-28	BOWLES 70 kV	P2-2:A14:8:_BUS 1 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0263	1.0505	1.0465	1.0429	1.1121	N/A	N/A	N/A	Under review
Fresno-V-29	BOWLES 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.102	1.0975	<1.10	1.1322	N/A	N/A	N/A	Under review
Fresno-V-30	BOWLES 70 kV	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0251	1.0485	1.044	1.0416	1.1119	N/A	N/A	N/A	Under review

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
Fresno-V-31	CANAL 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7441	0.9898	0.988	1.0136	1.0503	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-32	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCH 115.00	P2	Single Contingency	0.8946	0.9777	0.9388	0.9847	0.9583	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-33	CARUTHRS 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.0962	1.091	<1.10	1.1312	N/A	N/A	N/A	Under review
Fresno-V-34	CHEVPIPE 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-35	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	>0.90	0.9032	0.8993	<0.90	0.9959	N/A	N/A	N/A	Under review
Fresno-V-36	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8473	0.9995	0.9973	1.03	1.0481	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-37	EXCHEQUR 70 kV	P2-1:A13:225:_MCSWAINJ-EXCHEQUR #1 70 kV	P2	Single Contingency	1.0851	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Under review
Fresno-V-38	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8268	>0.90	>0.90	1.0212	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-39	FRESNOWW 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.114	1.1104	>1.10	1.1322	N/A	N/A	N/A	Under review
Fresno-V-40	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCH 115.00	P2	Single Contingency	0.8722	0.9603	0.9539	1.011	1.0284	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-41	KAMM 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCH 115.00	P2	Single Contingency	0.893	0.9763	0.9373	0.984	0.9569	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-42	KEARNEY 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.1142	1.1105	>1.10	1.1325	N/A	N/A	N/A	Under Review
Fresno-V-43	LIVNGSTN 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7084	0.9747	0.9811	1.0063	1.0459	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion

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
Fresno-V-44	MADERAPR 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8792	0.9652	0.9589	1.0139	1.0329	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-45	MC SWAIN 70 kV	P2-2:A13:28:_ BUS FAULT AT 34230 MRCDLFS 70.00	P2	Single Contingency	1.0879	1.0885	1.0873	1.104	1.0767	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-46	MENDOTA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.856	0.9673	0.9601	1.0104	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-47	MRCYSPRS 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8007	1.0073	1.0064	1.026	1.0516	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-48	NEWHALL 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8881	0.9681	0.962	1.0166	1.0355	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-49	ORO LOMA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8839	1.0122	1.0114	1.0361	1.049	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-50	ORTIGA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7789	0.9978	0.9963	1.0213	1.051	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-51	PANOCHET 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8562	0.9675	0.9603	1.0107	1.0339	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-52	PCHCOWND 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7974	1.0044	1.0028	1.0271	1.0509	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-53	PMTFMPP 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8737	0.9616	0.9552	1.0117	1.0296	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion

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
Fresno-V-54	Q548 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8018	1.0076	1.0066	1.0264	1.0515	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-55	Q607 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8561	0.9706	0.9636	1.0114	1.0337	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-56	SNTA NLA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-57	SNTA RTA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8183	0.9934	0.991	1.0254	1.0482	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-58	WESTLND5 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8974	0.9797	0.9416	0.9856	0.9594	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-59	WRGHT PP 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7962	1.0033	1.0017	1.027	1.0507	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-60	ARBURUA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7961	1.0032	1.0021	1.0245	1.0483	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-61	BOWLES 70 kV	P2-2:A14:8:_BUS 1 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0263	1.0505	1.0465	1.0429	1.1121	N/A	N/A	N/A	Under review
Fresno-V-62	BOWLES 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.102	1.0975	<1.10	1.1322	N/A	N/A	N/A	Under Review
Fresno-V-63	BOWLES 70 kV	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0251	1.0485	1.044	1.0416	1.1119	N/A	N/A	N/A	Check T/F Tap settings
Fresno-V-64	CANAL 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7441	0.9898	0.988	1.0136	1.0503	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-65	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8946	0.9777	0.9388	0.9847	0.9583	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion

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
Fresno-V-66	CARUTHRS 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.0962	1.091	<1.10	1.1312	N/A	N/A	N/A	Under review
Fresno-V-67	CHEVPIPE 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-68	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	>0.90	0.9032	0.8993	<0.90	0.9959	N/A	N/A	N/A	Under review
Fresno-V-69	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8473	0.9995	0.9973	1.03	1.0481	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-70	EXCHEQUR 70 kV	P2-1:A13:225:_MCSWAINJ-EXCHEQUR #1 70 kV	P2	Single Contingency	1.0851	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Under review
Fresno-V-71	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8268	>0.90	>0.90	1.0212	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-72	FRESNOWW 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.114	1.1104	>1.10	1.1322	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-73	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8722	0.9603	0.9539	1.011	1.0284	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-74	KAMM 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.893	0.9763	0.9373	0.984	0.9569	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-75	KEARNEY 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.1142	1.1105	>1.10	1.1325	N/A	N/A	N/A	Under Review
Fresno-V-76	LIVNGSTN 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7084	0.9747	0.9811	1.0063	1.0459	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-77	MADERAPR 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8792	0.9652	0.9589	1.0139	1.0329	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion

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
Fresno-V-78	MC SWAIN 70 kV	P2-2:A13:28:_BUS FAULT AT 34230 MRCDLFS 70.00	P2	Single Contingency	1.0879	1.0885	1.0873	1.104	1.0767	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-79	MENDOTA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.856	0.9673	0.9601	1.0104	1.0337	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-80	MRCYSPRS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8007	1.0073	1.0064	1.026	1.0516	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-81	NEWHALL 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8881	0.9681	0.962	1.0166	1.0355	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-82	ORO LOMA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8839	1.0122	1.0114	1.0361	1.049	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-83	ORTIGA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7789	0.9978	0.9963	1.0213	1.051	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-84	PANOCHET 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8562	0.9675	0.9603	1.0107	1.0339	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-85	PCHCOWND 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7974	1.0044	1.0028	1.0271	1.0509	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-86	PMTFMPP 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8737	0.9616	0.9552	1.0117	1.0296	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-87	Q548 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8018	1.0076	1.0066	1.0264	1.0515	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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
Fresno-V-88	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8561	0.9706	0.9636	1.0114	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-89	SNTA NLA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-90	SNTA RTA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8183	0.9934	0.991	1.0254	1.0482	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-91	WESTLND5 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8974	0.9797	0.9416	0.9856	0.9594	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-92	WRGHT PP 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7962	1.0033	1.0017	1.027	1.0507	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-93	GILLRAN 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8465	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-94	MADERAPR 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8538	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-95	NEWHALL 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.863	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-96	PMTFMPP 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.848	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion
Fresno-V-97	MENDOTA 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8293	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oro Loma-Mendota 115 kV Conversion

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
Fresno-V-98	AVENAL 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2083	N/A	N/A	N/A	Under Review
Fresno-V-99	BORDEN 230 kV	P1-2:A13:64:_Warnerville - Wilson 230 kV Line and P1-2:A13:75:_Borden - Gregg 230 kV Line	P6	Multiple Contingency	0.8983	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	BORDEN 230 kV voltage support project mitigates later years. Propose interim operating solutions.
Fresno-V-100	CAL AVE 115 kV	P1-2:A14:140:_California Ave.-Sanger 115 kV Line and P1-2:A14:142:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8678	0.8406	0.8406	>0.90	>0.90	N/A	N/A	N/A	Under Review
Fresno-V-101	CALFLAX 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2022	N/A	N/A	N/A	Under Review
Fresno-V-102	CANAL 70 kV	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.2045	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-103	COLNGA 1 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.269	N/A	N/A	N/A	Under Review
Fresno-V-104	DAIRYLND 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line and P1-2:A13:45:_Q644 115 kV Tap (Le Grand - Dairyland)	P6	Multiple Contingency	>0.90	0.781	0.7275	>0.90	>0.90	N/A	N/A	N/A	Under Review
Fresno-V-105	DANISHCM 115 kV	P1-2:A14:140:_California Ave.-Sanger 115 kV Line and P1-2:A14:142:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8763	0.85	0.8144	>0.90	>0.90	N/A	N/A	N/A	Under Review
Fresno-V-106	DERRICK 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2126	N/A	N/A	N/A	Under Review
Fresno-V-107	DOS PALS 70 kV	P1-2:A13:47:_Mercy Springs SS - Canal-Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.2654	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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	
Fresno-V-108	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.1425	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-109	GATES 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2118	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-110	HENRIETA 230 kV	P1-2:A14:11:_Henrietta - Gregg 230 kV Line (HENTAP1 - MUSTANGSS) and P1-2:A14:9:_Henrietta - Mc Call 230 kV Line (HENTAP2 - MUSTANGSS)	P6	Multiple Contingency	0.8881	0.884	>0.90	0.8614	>0.90	>0.90	N/A	N/A	N/A	Henrietta SPS
Fresno-V-111	HURON 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2055	N/A	N/A	N/A	Under Review
Fresno-V-112	JACALITO 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2353	N/A	N/A	N/A	Under Review
Fresno-V-113	KETTLEMN 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2084	N/A	N/A	N/A	Under Review
Fresno-V-114	LIVNGSTN 70 kV	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.7285	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-115	MRCYSPRS 70 kV	P1-2:A13:46:_Los Banos - Mercy Springs Sw Sta 70 kV Line (MERCYSPRNGSS - ARBURU Tap) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8406	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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	
Fresno-V-116	ORO LOMA 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.2188	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-117	ORTIGA 70 kV	P1-2:A13:46:_Los Banos - Mercy Springs Sw Sta 70 kV Line (MERCYSPRNGSS - ARBURU Tap) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8505	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-118	PENNZIER 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2134	N/A	N/A	N/A	Under Review
Fresno-V-119	PLSNTVLY 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1926	N/A	N/A	N/A	Under Review
Fresno-V-120	Q526 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1967	N/A	N/A	N/A	Under Review
Fresno-V-121	Q548 70 kV	P1-2:A13:114:_Los Banos-Livingston Jct- Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8955	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-122	Q607 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P6	Multiple Contingency	0.8294	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-123	SCHLNDLR 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1976	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-124	WST FRSO 115 kV	P1-2:A14:140:_California Ave.-Sanger 115 kV Line and P1-2:A14:142:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8572	0.8286	0.79	>0.90	>0.90	>0.90	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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
Fresno-V-125	YOSEMITE 70 kV	P1-2:A13:75:_Borden - Gregg 230 kV Line and P1-2:A13:92:_Exchequer - Le Grand 115 kV Line	P6	Multiple Contingency	0.8987	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Mariposa UVLS. Wilson 115 kV reinforcement project mitigates later years
Fresno-V-126	CARUTHRS 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0203	1.0446	1.0395	1.0404	1.1108	N/A	N/A	N/A	Under review
Fresno-V-127	FRESNOWW 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0388	1.0634	1.06	1.0467	1.1118	N/A	N/A	N/A	Under review
Fresno-V-128	KEARNEY 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.039	1.0636	1.0601	1.0465	1.1121	N/A	N/A	N/A	Under review
Fresno-V-129	BOWLES 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0264	1.0508	1.0464	1.0422	1.1118	N/A	N/A	N/A	Under review

ID	Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions			
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	N/A	N/A		N/A	N/A	N/A
Fresno-SP-TS-1	Templeton 230/70 kV Transformer	P1-3	Multiple Contingency	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 20 Cycles	Estrella Mitigates	Estrella Mitigates						Paso Robles UVLS. Estrella substation Project mitigates future years
Fresno-SP-TS-2	BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2-4	Single Contingency	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles						Under review



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-SP-SLD-1												

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

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-SP-SS-1										

No single source substation with more than 100 MW Load

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-1	34103 CHWCGNJT 115 34109 CHWCGN 115 1	Base Case	P0	Basecase	<100%	101.82	99.68	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-2	34276 ADAMS_E TP 70.0 34271 WSTLDJCT 70.0 1	Base Case	P0	Basecase	107.31	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Congestion management/SPS
Fresno-T-3	34115 AVENAL T 70.0 34117 KETLMN T 70.0 1	Base Case	P0	Basecase	101.93	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Congestion management/Reconductor
Fresno-T-4	34159 PANOCHEJ 115 34160 HAMMONDS 115 1	P1-2:A13:118:_Panoche - Mendota 115 kV Line	P1	Single Contingency	<100%	100.22	100.03	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-5	30805 BORDEN 230 30810 GREGG 230 2	P2-3:A13:12:_NON-BUS-TIE BREAKER CB322 FAULT AT 30805 BORDEN 230.00	P2	Single Contingency	104.43	94.63	92.30	N/A	N/A	N/A	N/A	N/A	HELMS RAS Model will mitigate the overload
Fresno-T-6	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P2-2:A13:20:_BUS FAULT AT 34144 MERCED 115.00	P2	Single Contingency	114.07	105.40	102.09	N/A	N/A	N/A	N/A	N/A	Short term rating/ Upgrade/expand SPS
Fresno-T-7	34144 MERCED 115 34146 MERCED M 115 2	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	155.36	137.93	133.57	N/A	N/A	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-8	34159 PANOCHEJ 115 34160 HAMMONDS 115 1	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	98.56	115.91	120.86	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-9	34160 HAMMONDS 115 34161 DFSTP 115 1	P2-1:A13:176:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	<100%	102.74	107.08	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-T-10	34161 DFSTP 115 34162 ORO LOMA 115 1	P2-1:A13:176:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	<100%	100.37	104.68	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-T-11	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	99.72	133.38	137.66	N/A	N/A	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-12	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	92.58	117.69	121.85	N/A	N/A	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.
Fresno-T-13	34202 MERCED 70.0 34230 MRCDFLLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	141.74	149.20	143.39	N/A	N/A	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-14	34252 MADERA 70.0 34256 BORDEN 70.0 2	P2-2:A13:29:_BUS D FAULT AT 34256 BORDEN 70.00	P2	Single Contingency	114.51	116.64	122.08	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-15	34321 MCSWAINJ 70.0 34230 MRCDFLLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	158.15	164.18	159.17	N/A	N/A	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-16	34321 MCSWAINJ 70.0 34232 EXCHEQUR 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	191.59	193.67	187.00	N/A	N/A	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-17	34359 AIRWAYJ2 115 34408 BARTON 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	233.51	NConv	NConv	N/A	N/A	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-18	34366 SANGER 115 34359 AIRWAYJ2 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	247.97	NConv	NConv	N/A	N/A	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-19	34408 BARTON 115 34412 HERNDON 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	222.49	NConv	NConv	N/A	N/A	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-20	34409 PNDLJ2 115 34416 BULLARD 115 1	P2-1:A14:282:_HERNDON-PNDLJ1 #1 115 kV	P2	Single Contingency	<100%	140.27	151.82	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-21	34410 MANCHSTR 115 34412 HERNDON 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	91.09	103.73	102.84	N/A	N/A	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years.Explore operating solution/Transmission upgrades for sensitivity scenarios.
Fresno-T-22	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-1:A14:281:_HERNDON-PNDLJ2 #1 115 kV	P2	Single Contingency	<100%	116.93	126.73	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-23	34418 KINGSBRG 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	91.32	108.60	106.96	N/A	N/A	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-24	34429 GWF_HEP 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	95.31	112.67	111.07	N/A	N/A	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-25	30805 BORDEN 230 30810 GREGG 230 1	P1-2:A13:79:_Warnerville - Wilson 230 kV Line and P1-2:A13:7:_ (New) Borden - Gregg #2 230 kV Line	P6	Multiple Contingency	125.08	121.19	121.22	N/A	N/A	N/A	N/A	N/A	HELMS RAS Model and propose modification as required

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-26	30805 BORDEN 230 30810 GREGG 230 1	P1-1:A13:9:_Q723 0.31 Generator ID 1 and P1-2:A13:5:_ (New) Borden - Gregg #2 230 kV Line	P3	Multiple Contingency	123.58	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Model Helms RAS and propose modification as required
Fresno-T-27	30805 BORDEN 230 30810 GREGG 230 2	P1-2:A13:88:_Borden - Gregg 230 kV Line and P1-2:A13:79:_Warnerville - Wilson 230 kV Line	P6	Multiple Contingency	101.27	100.05	99.97	N/A	N/A	N/A	N/A	N/A	HELMS RAS Model will mitigate the overload
Fresno-T-28	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P1-2:A14:8:_Northern Fresno (E2) - Kerchoff No. 2 115 kV Line and P1-2:A14:9:_Northern Fresno (E2) - Kerchoff No. 1 115 kV Line	P6	Multiple Contingency	<100%	<100%	101.01	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-29	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-2:A13:84:_Panoche Energy Center 230 kV Tap and P1-3:A13:22:_Merced 115/70 kV Transformer No. 2	P6	Multiple Contingency	<100%	100.45	<100%	N/A	N/A	N/A	N/A	N/A	Short term rating/ Upgrade/expand SPS Congestion management(/Dec Exchequer Gen)
Fresno-T-30	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-2:A14:161:_Coppermine-Friant 70 kV Line and P1-3:A13:22:_Merced 115/70 kV Transformer No. 2	P6	Multiple Contingency	<100%	99.92	100.01	N/A	N/A	N/A	N/A	N/A	Short term rating/ Upgrade/expand SPS / Congestion management(/Dec Exchequer Gen)
Fresno-T-31	34159 PANOCHEJ 115 34160 HAMMONDS 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	134.34	139.33	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elements, if any.
Fresno-T-32	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	126.09	131.00	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elements, if any.
Fresno-T-33	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	277.12	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.
Fresno-T-34	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:119:_Panoche - Oro Loma 115 kV Line and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	105.58	103.00	N/A	N/A	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-35	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	<100%	283.74	286.17	N/A	N/A	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.
Fresno-T-36	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	357.72	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios.
Fresno-T-37	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	<100%	365.66	369.40	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios.
Fresno-T-38	34206 CANAL 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	103.34	108.75	N/A	N/A	N/A	N/A	N/A	SPS/Summer Setup/Reconductor
Fresno-T-39	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	296.75	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-40	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	<100%	298.03	298.87	N/A	N/A	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-41	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	114.75	119.30	N/A	N/A	N/A	N/A	N/A	SPS/Summer Setup/Reconductor

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-42	34208 CHEVPIPE 70.0 34210 SNTA NLA 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:16:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	109.75	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup
Fresno-T-43	34208 CHEVPIPE 70.0 34210 SNTA NLA 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	119.56	125.53	N/A	N/A	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup
Fresno-T-44	34208 CHEVPIPE 70.0 34214 LOS BANS 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:16:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	110.69	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup
Fresno-T-45	34208 CHEVPIPE 70.0 34214 LOS BANS 70.0 1	P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota) and P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	<100%	120.04	127.47	N/A	N/A	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup
Fresno-T-46	34210 SNTA NLA 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	106.05	111.59	N/A	N/A	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup
Fresno-T-47	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	306.77	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-48	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	<100%	308.29	311.34	N/A	N/A	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-49	34237 CANANDGA 70.0 34255 TRIGO J 70.0 1	P1-2:A13:130:_Borden - Madera #1 70 kV Line and P1-2:A13:129:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	<100%	101.93	106.10	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-50	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	109.24	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS

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					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-51	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:129:_Borden - Madera #2 70 kV Line and P1-2:A13:130:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	<100%	111.58	115.88	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-52	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	116.25	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-53	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:129:_Borden - Madera #2 70 kV Line and P1-2:A13:130:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	<100%	117.90	123.61	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-54	34252 MADERA 70.0 34256 BORDEN 70.0 2	P1-2:A13:125:_Borden - Glass 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	114.43	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-55	34252 MADERA 70.0 34256 BORDEN 70.0 2	P1-2:A13:128:_Borden - Glass 70 kV Line and P1-2:A13:130:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	<100%	116.00	121.51	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-56	34256 BORDEN 70.0 30805 BORDEN 230 1	P1-3:A13:9:_Borden 230/70 kV Transformer No. 2 and P1-3:A14:39:_Wishon 70/2.3 kV GSU	P6	Multiple Contingency	<100%	101.80	90.39	N/A	N/A	N/A	N/A	N/A	Congestion management
Fresno-T-57	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:125:_Borden - Glass 70 kV Line and P1-2:A13:126:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	115.55	<100%	<100%	N/A	N/A	N/A	N/A	N/A	propose SPS/ Summer setup
Fresno-T-58	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:129:_Borden - Madera #2 70 kV Line and P1-2:A13:128:_Borden - Glass 70 kV Line	P6	Multiple Contingency	<100%	117.16	122.79	N/A	N/A	N/A	N/A	N/A	propose SPS/ Summer setup
Fresno-T-59	34390 DANISHCM 115 34370 MC CALL 115 1	P1-2:A14:145:_California Ave.-Sanger 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	108.95	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-60	34390 DANISHCM 115 34370 MC CALL 115 1	P1-2:A14:150:_McCall-West Fresno 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P6	Multiple Contingency	<100%	120.84	132.22	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-61	34402 CAL AVE 115 34366 SANGER 115 1	P1-2:A14:143:_McCall-California Ave. 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	103.73	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-62	34402 CAL AVE 115 34366 SANGER 115 1	P1-2:A14:146:_McCall-California Ave. 115 kV Line and P1-2:A14:150:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	111.67	118.15	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-63	34402 CAL AVE 115 34390 DANISHCM 115 1	P1-2:A14:145:_California Ave.-Sanger 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	106.30	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-64	34402 CAL AVE 115 34390 DANISHCM 115 1	P1-2:A14:148:_California Ave.-Sanger 115 kV Line and P1-2:A14:150:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	118.02	129.22	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-65	34404 WST FRSO 115 34370 MC CALL 115 1	P1-2:A14:146:_McCall-California Ave. 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P6	Multiple Contingency	<100%	107.77	115.49	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-66	34417 KINGS J2 115 34418 KINGSBRG 115 1	P1-2:A14:157:_GWF - Kingsburg 115 kV Line and P1-2:A14:156:_McCall - Kingsburg #2 115 kV Line	P6	Multiple Contingency	<100%	102.43	103.23	N/A	N/A	N/A	N/A	N/A	Congestion management/reconductor/SPS
Fresno-T-67	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-3:A14:18:_Gates 230/70 kV Bank #5 and P1-2:A13:48:_Panoche - Schindler #2 115 kV Line (Q612 Tap)	P6	Multiple Contingency	121.21	114.23	101.89	N/A	N/A	N/A	N/A	N/A	Congestion management/reconductor/SPS
Fresno-T-68	34123 K1-JCT 115 34358 KERCKHF2 115 2	P1-2:A14:6:_Northern Fresno (E2) - Kerchoff No. 2 115 kV Line and P1-2:A14:7:_Northern Fresno (E2) - Kerchoff No. 1 115 kV Line	P6	Multiple Contingency	105.37	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Congestion management/ Back off Kerckhoff units as needed.
Fresno-T-69	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P7-1:A14:6:_Kerckhoff-Clovis-Sanger No. 1 & 2 115 kV Lines	P7	Multiple Contingency (common structure)	167.05	167.67	<100%	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-70	34105 CERTANJ1 115 34121 SHARON T 115 1	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	138.08	134.19	<100%	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-71	34121 SHARON T 115 34128 OAKH_JCT 115 1	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	141.66	137.81	<100%	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-72	34123 K1-JCT 115 34358 KERCKHF2 115 2	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	102.78	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-73	34128 OAKH_JCT 115 34123 K1-JCT 115 1	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	102.78	<100%	<100%	N/A	N/A	N/A	N/A	N/A	Congestion Management/SPS(Kerchoff Gen)/setup
Fresno-T-74	34162 ORO LOMA 115 34168 EL NIDO 115 1	P7-1:A13:43:_(New) Borden-Gregg #1 & #2 230 kV Lines	P7	Multiple Contingency (common structure)	<100%	102.38	96.01	N/A	N/A	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-75	34402 CAL AVE 115 34366 SANGER 115 1	P7-1:A14:12:_McCall-California Ave. & McCall-West Fresno 115 kV Lines	P7	Multiple Contingency (common structure)	103.44	111.71	118.16	N/A	N/A	N/A	N/A	N/A	Reconductor/SPS/Operating Solution

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A	N/A	N/A		N/A
Fresno-T-76	34998 E2_PGE 115 34997 E1_PGE 230 1	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	131.11	131.11	99.90	N/A	N/A	N/A	N/A	N/A	Model Helms RAS and propose modification as required
Fresno-T-77	34348 SHEPHERD 115 34998 E2_PGE 115 1	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	107.93	104.97	<100%	N/A	N/A	N/A	N/A	N/A	Model Helms RAS and propose modification as required
Fresno-T-78	34998 E2_PGE 115 34997 E1_PGE 230 2	P7-1:A13:49:_(New) Gregg-E1 #1 & #2 230 kV Line	P7	Multiple Contingency (common structure)	131.11	131.11	99.90	N/A	N/A	N/A	N/A	N/A	Model Helms RAS and propose modification as required



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
Fresno-VD-1	CERTANJ1 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	<5%	<5%	11.699	N/A	N/A	N/A	N/A	N/A	Modify Exchequer SPS/Explore reactive power support options (Exchequer 70 kV pocket)
Fresno-VD-2	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	<5%	<5%	11.743	N/A	N/A	N/A	N/A	N/A	Modify Exchequer SPS/Explore reactive power support options (Exchequer 70 kV pocket)
Fresno-VD-3	GILLRAN 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.769	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-4	MADERAPR 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.479	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-5	MENDOTA 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.184	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-6	NEWHALL 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	10.52	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-7	PMTFMPP 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.75	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-8	PMTFMPPJT 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.75	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-9	Q607 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.185	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-VD-10	AIRWAYJ1 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	11.549	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-11	AIRWAYS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	26.497	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-12	BARTON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	32.844	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-13	BULLARD 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	78.37	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-14	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	<5%	<5%	11.731	N/A	N/A	N/A	N/A	N/A	Modify Exchequer SPS/Explore reactive power support options (Exchequer 70 kV pocket)
Fresno-VD-15	HERNDON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	59.796	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-16	LASPALMS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	11.556	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAEE	N/A	N/A		N/A	N/A	N/A
Fresno-VD-17	MANCHSTR 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	12.922	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-18	PNEDLE 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	80.204	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-19	SESWTF 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	26.475	<5%	<5%	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAE	N/A	N/A		N/A	N/A	N/A
Fresno-V-1	CERTANJ1 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	>0.9	>0.9	0.8974	N/A	N/A	N/A	N/A	N/A	Explore Reactive support options.
Fresno-V-2	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	>0.9	>0.9	0.897	N/A	N/A	N/A	N/A	N/A	Explore Reactive support options.
Fresno-V-3	FRESNOWW 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1087	1.1077	N/A	N/A	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-4	GILLRAN 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8768	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-V-5	KEARNEY 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.109	1.1079	N/A	N/A	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-6	MADERAPR 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8839	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-V-7	PMTFMPPJT 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8783	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-V-8	Q607 115 kV	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8603	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Explore operating solution/Transmission upgrades for sensitivity scenarios
Fresno-V-9	AIRWAYJ1 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.8953	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-10	AIRWAYS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.7485	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-11	BARTON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6871	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-12	BULLARD 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.2285	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Case Diverged explore mitigation options
Fresno-V-13	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	>0.9	>0.9	0.897	N/A	N/A	N/A	N/A	N/A	Modify Exchequer SPS/Explore reactive power support options (Exchequer 70 kV pocket)
Fresno-V-14	FRESNOWW 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	1.1116	1.1078	1.1065	N/A	N/A	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-15	HERNDON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.4345	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-16	KEARNEY 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	1.1118	1.1081	1.1066	N/A	N/A	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-17	LASPALMS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.8952	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)					Potential Mitigation Solutions			
					2020 SP Heavy Renewable & Min Gas Gen	2025 Retirement of QF Generations	2025 SP No AAE	N/A	N/A		N/A	N/A	N/A
Fresno-V-18	MANCHSTR 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.8819	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-19	PNEDLE 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.2126	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-20	SESWTF 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.7494	>0.9	>0.9	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-21	CAL AVE 115 kV	P1-2:A14:146:_McCall-California Ave. 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P2	Single Contingency	>0.9	0.8662	0.8521	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-22	CANAL 70 kV	P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P2	Single Contingency	>0.9	0.1807	0.1737	N/A	N/A	N/A	N/A	N/A	Case Diverged explore mitigation options
Fresno-V-23	CHWCHLLA 115 kV	P1-1:A14:61:_KERCKHOF 13.80 Generator ID 1 and P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P3	Multiple Contingency	>0.9	0.8806	0.8767	N/A	N/A	N/A	N/A	N/A	Explore Reactive support options.
Fresno-V-24	DAIRYLND 115 kV	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	>0.9	0.7277	0.713	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Exchequer/Legrand pocket)
Fresno-V-25	DANISHCM 115 kV	P1-2:A14:148:_California Ave.-Sanger 115 kV Line and P1-2:A14:150:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	>0.9	0.8123	0.785	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-26	DOS PALS 70 kV	P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota) and P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	>0.9	0.788	0.7675	N/A	N/A	N/A	N/A	N/A	Explore Reactive support options.
Fresno-V-27	MARIPOS2 70 kV	P1-2:A13:113:_Wilson - Merced #2 115 kV Line and P1-2:A13:103:_Exchequer - Le Grand 115 kV Line	P6	Multiple Contingency	>0.9	>0.9	0.8976	N/A	N/A	N/A	N/A	N/A	Explore Reactive support options.
Fresno-V-28	SNTA RTA 70 kV	P1-2:A13:124:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	>0.9	0.5956	0.5902	N/A	N/A	N/A	N/A	N/A	Case Diverged explore mitigation options
Fresno-V-29	WST FRSO 115 kV	P1-2:A14:150:_McCall-West Fresno 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P6	Multiple Contingency	>0.9	0.7879	0.7581	N/A	N/A	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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 Summer Light Load	N/A	N/A		N/A
KRN-T-1	34716 LRDO JCT 115 34718 KERN OIL 115 1	P1-1:A15:25:_MT POSO 13.80 Generator ID 1 and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P3	L-1/G-1	102.95	107.03	<100	<100	<100				East Kern 115 kV Voltage Conversion Project
KRN-T-2	34724 KRN OL J 115 34798 KERNWATR 115 1	P1-1:A15:17:_DEXEL + 13.80 Generator ID 1 and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P3	L-1/G-1	100.39	<100	<100	<100	<100				Short term: Action Plan Long term: Wheeler Ridge Junction Station Project/East Kern 115 kV Voltage Conversion Project
KRN-T-3	34724 KRN OL J 115 34798 KERNWATR 115 1	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P3	L-1/G-1	108.84	<100	<100	<100	<100				Short term: Action Plan Long term: Wheeler Ridge Junction Station Project/East Kern 115 kV Voltage Conversion Project
KRN-T-4	34728 LIVE OAK 115 34752 KERN PWR 115 1	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:47:_Kern Oil-Witco 115 kV Line	P3	L-1/G-1	114.59	121.47	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-5	34752 KERN PWR 115 34798 KERNWATR 115 1	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P3	L-1/G-1	112.03	<100	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-6	34918 KERN PW2 70.0 34914 KERN PW1 70.0 1	P1-1:A15:11:_KERN CNYN 11.00 Generator ID 1 and P1-3:A15:25:_Kern PP 115/70 kV Transformer #2	P3	L-1/G-1	102.52	110.40	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-7	38605 BUENAVJ2 230 30970 MIDWAY 230 1	P1-1:A15:55:_ELKHIL2G 18.00 Generator ID 1 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P3	L-1/G-1	104.51	<100	<100	<100	<100				East Kern 115 kV Voltage Conversion Project
KRN-T-8	30970 MIDWAY 230 30942 STCKDLJ1 230 1	P1-2:A15:16:_Midway-Kern #3 230 kV Line and P1-2:A15:17:_Midway-Kern #4 230 kV Line	P6	N-1-1	127.89	<100	<100	<100	<100				Short term: Action Plan Long term: Mitigated by the approved Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-9	34704 SEMITROPIC_D 115 34705 WSCOPRSN 115 1	P1-2:A15:101:_Semitropic-Wasco 115 kV Line and P1-2:A15:28:_Kern-Kern Oil-Famoso 115 kV Line	P6	N-1-1	<100	<100	122.08	<100	<100				East Kern 115 kV Conversion Project

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 Summer Light Load	N/A		N/A	N/A
KRN-T-10	34704 SEMITROPIC_D 115 34743 SEMITROPIC_E 115 1	P1-2:A15:38:_Smyrna-Semitropic-Midway 115 kV Line and P1-2:A15:28:_Kern-Kern Oil-Famoso 115 kV Line	P6	N-1-1	<100	<100	126.90	<100	<100				East Kern 115 kV Conversion Project
KRN-T-11	34705 WSCOPRSN 115 34710 CHARKA 115 1	P1-2:A15:101:_Semitropic-Wasco 115 kV Line and P1-2:A15:28:_Kern-Kern Oil-Famoso 115 kV Line	P6	N-1-1	<100	<100	112.07	<100	<100				East Kern 115 kV Conversion Project
KRN-T-12	34706 WESTPARK 115 34752 KERN PWR 115 1	P1-2:A15:34:_Kern PP-Westpark #2 115 kV Line and P1-2:A15:42:_Kern-Magunden-Witco 115 kV Line	P6	N-1-1	118.57	<100	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-13	34706 WESTPARK 115 34752 KERN PWR 115 2	P1-2:A15:33:_Kern PP-Westpark #1 115 kV Line and P1-2:A15:42:_Kern-Magunden-Witco 115 kV Line	P6	N-1-1	118.57	<100	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-14	34716 LRDO JCT 115 34718 KERN OIL 115 1	P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line and P1-1:A15:25:_MT POSO 13.80 Generator ID 1	P6	N-1-1	102.97	107.03	<100	<100	<100				East Kern 115 kV Conversion Project
KRN-T-15	34724 KRN OL J 115 34798 KERNWATR 115 1	P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P6	N-1-1	113.94	<100	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project/ Wheeler Ridge Junction Station Project
KRN-T-16	34726 PTRL JCT 115 34719 POSOMTJT 115 1	P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line and P1-2:A15:40:_Kern Oil-Witco 115 kV Line	P6	N-1-1	114.92	122.65	<100	<100	<100				East Kern 115 kV Conversion Project
KRN-T-17	34726 PTRL JCT 115 34728 LIVE OAK 115 1	P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line and P1-2:A15:40:_Kern Oil-Witco 115 kV Line	P6	N-1-1	114.91	122.64	<100	<100	<100				East Kern 115 kV Conversion Project

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 Summer Light Load	N/A	N/A		N/A
KRN-T-18	34728 LIVE OAK 115 34752 KERN PWR 115 1	P1-2:A15:42:_Kern PP-Seventh Standard 115 kV Line and P1-2:A15:47:_Kern Oil-Witco 115 kV Line	P6	N-1-1	132.24	144.91	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project/East Kern 115 kV Voltage Conversion Project
KRN-T-19	34752 KERN PWR 115 30945 KERN PP 230 3	P1-3:A15:22:_Kern PP 230/115 kV Transformer #5 and P1-3:A15:21:_Kern PP 230/115 kV Transformer #4	P6	N-1-1	177.72	139.31	136.19	<100	<100				Replace terminal limiting equipment to benefit from the full 420MVA transformer rating as part of the Kern PP 230kV Area Reinforcement Project.
KRN-T-20	34752 KERN PWR 115 30945 KERN PP 230 4	P1-3:A15:20:_Kern PP 230/115 kV Transformer #3 and P1-3:A15:22:_Kern PP 230/115 kV Transformer #5	P6	N-1-1	145.87	106.21	104.07	<100	<100				Short term: Action Plan (Install SPS as part of the approved Kern PP 230 kV Area Reinforcement Project) Long term: Kern PP 230 kV Area Reinforcement Project
KRN-T-21	34752 KERN PWR 115 30945 KERN PP 230 5	P1-3:A15:21:_Kern PP 230/115 kV Transformer #3 and P1-3:A15:22:_Kern PP 230/115 kV Transformer #4	P6	N-1-1	127.23	100.28	<100	<100	<100				TBD/East Kern 115 kV Conversion Project
KRN-T-22	34752 KERN PWR 115 34798 KERNWATR 115 1	P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P6	N-1-1	117.02	<100	<100	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-23	34752 KERN PWR 115 34798 KERNWATR 115 1	P1-2:A15:39:_Westpark-Magunden 115 kV Line and P1-2:A15:53:_Magunden-Wheeler Ridge Jct 115 kV Line	P6	N-1-1	<100	102.47		<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-24	34860 TAFT A 70.0 34919 TX_BV_HL 70.0 1	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	<100	<100	101.17	<100	<100				Short term: Action Plan Long term: Wheeler Ridge Junction Station Project
KRN-T-25	34872 LAKEVIEW 70.0 34882 SAN EMDO 70.0 1	P1-3:A15:18:_Wheeler Ridge 230/70 kV Transformer #4 and P1-3:A15:19:_Wheeler Ridge 230/70 kV Transformer #5	P6	N-1-1	<100	<100	<100	118.76	Diverged				Short term: Action Plan Long term: Wheeler Ridge Junction Station Project
KRN-T-26	34904 OLD RIVR 70.0 34975 OLD_RVR1_TP 70.0 1	P1-3:A15:25:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:96:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	Diverged	Diverged	<100	<100	<100				Short term: Action Plan Long term: Wheeler Ridge Junction Station Project



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 Summer Light Load	N/A	N/A		N/A
KRN-T-27	34918 KERN PW2 70.0 34914 KERN PW1 70.0 1	P1-3:A15:24:_Kern PP 115/70 kV Transformer #1 and P1-2:A15:28:_Kern-Old River #2 (Kern-Panama) 70 kV Line	P6	N-1-1	117.78	129.41	140.51	<100	<100				Short term: Action Plan (summer setup). Long term: Mitigated by the approved Kern PP 115 kV Area Reinforcement Project
KRN-T-28	34926 FAMOSO 70.0 34131 CAWLOB T 70.0 1	P1-2:A15:14:_Midway-LaPaloma #1 230 kV Line and P1-2:A15:29:_Smyrna-Semitropic-Midway 115 kV Line	P6	N-1-1	<100	<100	<100	100.07	<100				East Kern 115 kV Conversion Project
KRN-T-29	34975 OLD_RVR1_TP 70.0 34903 PANMJCT1 70.0 1	P1-3:A15:25:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:85:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	Diverged	NConv	<100	<100	<100				Short term: Action Plan Long term: Mitigated by the approved Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-30	38605 BUENAVJ2 230 30970 MIDWAY 230 1	P1-2:A15:26:_Kern-Kern Front (PSE) 115 kV Line and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P6	N-1-1	104.26	<100	<100	<100	<100				Short term: Action Plan Long term: Mitigated by the approved Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-31	38605 BUENAVJ2 230 30970 MIDWAY 230 1	P1-2:A15:26:_Wheeler Ridge Jct-Wheeler Ridge 230 kV Line and P1-2:A15:101:_Midway-Wheeler Ridge #1 230 kV Line	P6	N-1-1	<100	102.32	102.93	<100	<100				Short term: Action Plan Long term: Mitigated by the approved Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project

Study Area: **PG&E Kern**

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 Summer Light Load	N/A	N/A		N/A

No voltage deviations identified.

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 Summer Light Load	N/A	N/A		N/A
KRN-V-1	COPUS_D 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P3	L-1/G-1	>0.9	>0.9	0.8914	>0.9	>0.9				Monitor voltage
KRN-V-2	COPUS_E 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P3	L-1/G-1	>0.9	>0.9	0.8914	>0.9	>0.9				Monitor voltage
KRN-V-3	WHEELER 230 kV	P1-1:A15:58:_ORION 0.44 Generator ID 1 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P3	L-1/G-1	0.8913	>0.9	>0.9	>0.9	>0.9				Action Plan
KRN-V-4	BAKRSFLD 70 kV	P1-3:A15:24:_Kern PP 115/70 kV Transformer #1 and P1-2:A15:85:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	>0.9	>0.9	0.8553	1.1022	>0.9				Mitigation under investigation
KRN-V-5	CARNATIO 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8627	>0.9	>0.9				Monitor voltage
KRN-V-6	COPUS_D 70 kV	P1-2:A15:82:_Kern-Old River #1 70 kV Line and P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.8601	0.842	0.8375	>0.9	>0.9				Action Plan
KRN-V-7	EISEN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8444	>0.9	>0.9				Monitor voltage
KRN-V-8	GRMWY_SM 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8098	>0.9	>0.9				Monitor voltage
KRN-V-9	KERN PW2 70 kV	P1-2:A15:85:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #1	P6	N-1-1	>0.9	1.1038	1.1001	1.1089	>0.9				Mitigation under investigation
KRN-V-10	KERN PW2 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8614	>0.9	>0.9				Monitor voltage
KRN-V-11	KRN CNYN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8645	>0.9	>0.9				Monitor voltage
KRN-V-12	MAGUNDEN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8567	>0.9	>0.9				Monitor voltage
KRN-V-13	OLD RIVR 70 kV	P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P6	N-1-1	>0.9	0.8984	0.8954	>0.9	>0.9				Monitor voltage
KRN-V-14	PANAMA 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8713	>0.9	>0.9				Monitor voltage
KRN-V-15	RIOBRVQF 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.8621	>0.9	>0.9				Monitor 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 Summer Light Load	N/A	N/A		N/A
KRN-V-16	SEMITRPC 70 kV	P1-3:A15:25:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:29:_Smyrna-Semitropic-Midway 115 kV Line	P6	N-1-1	>0.9	>0.9	>0.90	0.90	>0.9				Action Plan
KRN-V-17	WEEDPATCH_SF 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.83	>0.9	>0.9				Monitor voltage
KRN-V-18	WELLFILD 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	>0.9	>0.9	0.81	>0.9	>0.9				Monitor voltage
KRN-V-19	WHEELER 230 kV	P1-2:A15:26:_Wheeler Ridge Jct-Wheeler Ridge 230 kV Line and P1-2:A15:102:_Midway-Wheeler Ridge #2 230 kV Line	P6	N-1-1	>0.9	1.1415	1.13	>0.9	>0.9				Mitigation under investigation
KRN-V-20	WHEELER 230 kV	P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line and P1-3:A15:18:_Wheeler Ridge 230/70 kV Transformer #4	P6	N-1-1	0.89	>0.9	>0.9	>0.9	>0.9				Action Plan
KRN-V-21	WHEELER 230 kV	P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line and P1-2:A15:90:_Midway-Wheeler Ridge #2 230 kV Line	P6	N-1-1	>0.9	>0.9	>0.9	0.84	>0.9				Action Plan

Study Area: **PG&E Kern**

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	N/A	N/A		N/A
X-TS-1												

Study Area: **PG&E Kern**



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.

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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-T-01	LRDO JCT-KERN OIL 115 kV #1 Line	P1-1:A15:25:_MT POSO 13.80 Generator ID 1 and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P3	N-1/G-1	107.03	107.24	N/A	N/A	N/A				Action Plan. North East Kern Voltage Conversion Project
KRN-T-02	PTRL JCT-POSOMTJT 115 kV #1 Line	P1-1:A15:25:_MT POSO 13.80 Generator ID 1 and P1-2:A15:40:_Kern Oil-Witco 115 kV Line	P3	N-1/G-1	99.82	100.05	N/A	N/A	N/A				Action Plan. North East Kern Voltage Conversion Project
KRN-T-03	PTRL JCT-LIVE OAK 115 kV #1 Line	P1-1:A15:25:_MT POSO 13.80 Generator ID 1 and P1-2:A15:40:_Kern Oil-Witco 115 kV Line	P3	N-1/G-1	99.81	100.03	N/A	N/A	N/A				Action Plan. North East Kern Voltage Conversion Project
KRN-T-04	WESTPARK-KERN PWR 115 kV #1 Line	P1-1:A15:45:_PSE-BEAR 13.80 Generator ID 1 and P1-2:A15:34:_Kern PP-Westpark #2 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan (Summer setup). Kern PP 115 kV Area Reinforcement Project
KRN-T-05	WESTPARK-KERN PWR 115 kV #2 Line	P1-1:A15:45:_PSE-BEAR 13.80 Generator ID 1 and P1-2:A15:33:_Kern PP-Westpark #1 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan (Summer setup). Kern PP 115 kV Area Reinforcement Project
KRN-T-06	KRN OL J-KERNWATR 115 kV #1 Line	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Jct Station Project/Kern PP 115 kV Area Reinforcement Project
KRN-T-07	LIVE OAK-KERN PWR 115 kV #1 Line	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:40:_Kern Oil-Witco 115 kV Line	P3	N-1/G-1	121.47	121.98	N/A	N/A	N/A				Action Plan (Summer setup). Kern PP 115 kV Area Reinforcement Project
KRN-T-08	COLUMBUS-MAGUDN J 115 kV #1 Line	P1-1:A15:45:_PSE-BEAR 13.80 Generator ID 1 and P1-2:A15:42:_Kern-Magunden-Witco 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Junction Station Project
KRN-T-09	KERN PWR 115/230 kV #3 Bank	P1-1:A15:18:_KERNFRNT 9.11 Generator ID 1 and P1-3:A15:21:_Kern PP 230/115 kV Transformer #4	P3	N-1/G-1	83.22	N/A	83.98	88.30	92.01				Replace terminal limiting equipment to benefit from the full 420MVA transformer rating as part of the Kern PP 230kV Area Reinforcement Project.
KRN-T-10	KERN PWR-KERNWATR 115 kV #1 Line	P1-1:A15:39:_PSE-LVOK 9.11 Generator ID 1 and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P3	N-1/G-1		N/A	N/A	N/A	N/A				Action Plan (summer setup). Kern PP 115 kV Area Reinforcement Project
KRN-T-11	KERN PW2-KERN PW1 70 kV #1 Line	P1-1:A15:11:_KERNCNYN 11.00 Generator ID 1 and P1-3:A15:25:_Kern PP 115/70 kV Transformer #2	P3	N-1/G-1	110.40	98.83	N/A	N/A	N/A				Action Plan (summer setup). Kern PP 115 kV Area Reinforcement Project
KRN-T-12	BUENAVJ2-MIDWAY 230 kV #1 Line	P1-1:A15:58:_ORION 0.44 Generator ID 1 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-13	BUENAVJ2-WHLR RJ2 230 kV #1 Line	P1-1:A15:58:_ORION 0.44 Generator ID 1 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-T-14	34716 LRDO JCT 115 34718 KERN OIL 115 1	P1-1:A15:25:_MT POSO 13.80 Generator ID 1 and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	107.03	107.24	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project
KRN-T-15	PTRL JCT-POSOMTJT 115 kV #1 Line	P1-2:A15:40:_Kern Oil-Witco 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project
KRN-T-16	PTRL JCT-LIVE OAK 115 kV #1 Line	P1-2:A15:40:_Kern Oil-Witco 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	122.65	122.90	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project
KRN-T-17	34709 7STNDRD 115 34752 KERN PWR 115 1	P1-2:A15:40:_Kern Oil-Witco 115 kV Line and P1-2:A15:44:_Kern-Live Oak 115 kV Line	P6	N-1-1	94.13	94.31	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project
KRN-T-18	LIVE OAK-KERN PWR 115 kV #1 Line	P1-2:A15:40:_Kern Oil-Witco 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	105.48	105.83	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project/Kern PP 115 kV Area Reinforcement
KRN-T-19	KERN OIL-DSCVRYTP 115 kV #1 Line	P1-2:A15:44:_Kern-Live Oak 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project/Wheeler Ridge Jct Station Project
KRN-T-20	KRN OL J-KERNWATR 115 kV #1 Line	P1-2:A15:44:_Kern-Live Oak 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. North East Kern 115 kV Voltage Conversion Project/Wheeler Ridge Jct Station Project
KRN-T-21	KERN PWR-KERNWATR 115 kV #1 Line	P1-2:A15:42:_Westpark-Magunden 115 kV Line and P1-2:A15:56:_Magunden-Wheeler Ridge Jct 115 kV Line	P6	N-1-1	102.49	102.44	86.14	90.60	96.26				Kern PP 115 kV Area Reinforcement Project
KRN-T-22	DSCVRYTP-GODN_BER 115 kV #1 Line	P1-2:A15:44:_Kern-Live Oak 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
KRN-T-23	KERN PP-STCKDLJ1 230 kV #1 Line	P1-2:A15:16:_Midway-Kern #3 230 kV Line and P1-2:A15:17:_Midway-Kern #4 230 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Jct Substation Project/Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-24	SEMITROPIC_D-SEMITROPIC_E 115 kV #1 Line	P1-2:A15:28:_Kern-Kern Oil-Famoso 115 kV Line and P1-2:A15:38:_Smyrna-Semitropic-Midway 115 kV Line	P6	N-1-1	N/A	N/A	126.99	130.06	127.50				Mitigation under review
KRN-T-25	MIDWAY-STCKDLJ1 230 kV #1 Line	P1-2:A15:16:_Midway-Kern #3 230 kV Line and P1-2:A15:17:_Midway-Kern #4 230 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Jct Substation Project/Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project

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					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-T-26	30970 MIDWAY 230 30944 BKRSFDJ2 230 1	P1-2:A15:16:_Midway-Kern #3 230 kV Line and P1-2:A15:15:_Midway-Kern #1 230 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Jct Substation Project/Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-27	BUENAVJ2-MIDWAY 230 kV #1 Line	P1-3:A15:18:_Wheeler Ridge 230/70 kV Transformer #4 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-28	WSCOPRSN-CHARKA 115 kV #1 Line	P1-2:A15:28:_Kern-Kern Oil-Famoso 115 kV Line and P1-2:A15:101:_Semitropic-Wasco 115 kV Line	P6	N-1-1	N/A	N/A	112.12	114.61	112.46				Mitigation under review
KRN-T-29	WESTPARK-KERN PWR 115 kV #2 Line	P1-2:A15:42:_Kern-Magunden-Witco 115 kV Line and P1-2:A15:33:_Kern PP-Westpark #1 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Kern PP 115 kV Area Reinforcement Project
KRN-T-30	KERN PWR 115/230 kV #3 Bank	P1-3:A15:22:_Kern PP 230/115 kV Transformer #4 and P1-3:A15:23:_Kern PP 230/115 kV Transformer #5	P6	N-1-1	139.31	123.73	136.19	143.82	150.68				Action Plan. Kern PP 230 kV Area Reinforcement Project. Install SPS as part of the Project
KRN-T-31	KERN PWR 115/230 kV #4 Bank	P1-3:A15:20:_Kern PP 230/115 kV Transformer #3 and P1-3:A15:22:_Kern PP 230/115 kV Transformer #5	P6	N-1-1	106.21	95.16	104.07	109.90	115.12				Action Plan. Kern PP 230 kV Area Reinforcement Project. Install SPS as part of the Project
KRN-T-32	KERN PWR 115/230 kV #5 Bank	P1-3:A15:21:_Kern PP 230/115 kV Transformer #3 and P1-3:A15:22:_Kern PP 230/115 kV Transformer #4	P6	N-1-1	100.28	89.85	98.26	103.76	108.69				Action Plan. Kern PP 230 kV Area Reinforcement Project. Install SPS as part of the Project
KRN-T-33	KERN PWR-TEVISJ2 115 kV #1 Line	P1-2:A15:66:_Lamont-Q744 115 kV Line and P1-2:A15:50:_Kern-Tevis-Stockdale 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Wheeler Ridge Jct Substation Project
KRN-T-34	KERN PW2-KERN PW1 70 kV #1 Line	P1-2:A15:21:_Kern-Old River #2 (Kern-Panama) 70 kV Line and P1-3:A15:24:_Kern PP 115/70 kV Transformer #1	P6	N-1-1	N/A		140.77	144.53	140.67				Action Plan. Kern PP 115 kV Area Reinforcement Project
KRN-T-35	KERN PWR-KERNWATR 115 #1 Line	P1-2:A15:44:_Kern-Live Oak 115 kV Line and P1-2:A15:35:_Kern PP-Seventh Standard 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Kern PP 115 kV Area Reinforcement Project
KRN-T-36	MIDWAY 115/230 kV #1 Bank	P1-3:A15:16:_Midway 230/115 kV Transformer #2 and P1-3:A15:17:_Midway 230/115 kV Transformer #3	P6	N-1-1	89.80	N/A	98.98	106.37	119.11				Mitigation under review
KRN-T-37	MIDWAY 115/230 kV #2 Bank	P1-3:A15:15:_Midway 230/115 kV Transformer #1 and P1-3:A15:17:_Midway 230/115 kV Transformer #3	P6	N-1-1	89.80	N/A	98.98	106.37	119.11				Mitigation under review

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-T-38	MIDWAY 115/230 kV #3 Bank	P1-3:A15:15:_Midway 230/115 kV Transformer #1 and P1-3:A15:16:_Midway 230/115 kV Transformer #2	P6	N-1-1	88.26	N/A	95.99	103.34	116.13				Mitigation under review
KRN-T-39	MIDWAY-CYMRIC 115 kV #1 Line	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	94.42	110.60	156.26				Mitigation under review
KRN-T-40	MIDWAY-OXYBVHTP 115 kV #1 Line	P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line and P1-2:A15:71:_Midsun-Midway 115 kV Line	P6	N-1-1	N/A	N/A	99.54	116.59	158.29				Mitigation under review
KRN-T-41	TAFT A-TX_BV_HL 70 kV #1 Line	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	101.17	104.40	112.87				Mitigation under review
KRN-T-42	OLD RIVR-OLD_RVR1_TP 70 kV #1 Line	P1-3:A15:25:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:85:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	Diverged	Diverged		N/A	N/A				Action Plan. Wheeler Ridge Jct Subatation Project
KRN-T-43	OLD_RVR1_TP-PANMJCT1 70 kV #1 Line	P1-3:A15:25:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:85:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	Diverged		86.85	89.69	86.80				Action Plan. Wheeler Ridge Jct Subatation Project/Midway-Kern PP #1, #3 & #4 230 kV Line Capacity Increase Project
KRN-T-44	OXYBVHTP-TAFT 115 kV #1 Line	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	80.93	120.02				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-VD-01	CARNERAS 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	7.796				Mitigation under review
KRN-VD-02	CELERON 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	7.703				Mitigation under review
KRN-VD-03	COPUS_D 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:82:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	8.799	8.434	8.774				Mitigation under review
KRN-VD-04	COPUS_E 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	8.8	8.434	8.774				Mitigation under review
KRN-VD-05	KERNRDGE 115 kV	P1-1:A15:28:_KERNRDGE 9.11 Generator ID 1 and P1-2:A15:23:_Midway-Temblor 115 kV Line	P3	N-1/G-1	11.316	11.21	12.19	12.19	11.961				Mitigation under review
KRN-VD-06	KNG_ELIS 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	7.699				Mitigation under review
KRN-VD-07	S_KERN 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:82:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
KRN-VD-08	TEMBLOR 115 kV	P1-1:A15:28:_KERNRDGE 9.11 Generator ID 1 and P1-2:A15:23:_Midway-Temblor 115 kV Line	P3	N-1/G-1	11.435	11.327	12.316	12.316	12.084				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-V-01	CARNERAS 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8766				Mitigation under review
KRN-V-02	CELERON 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8878				Mitigation under review
KRN-V-03	COPUS_D 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	0.8914	0.8935	0.8922				Mitigation under review
KRN-V-04	COPUS_E 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:97:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	0.8914	0.8935	0.8922				Mitigation under review
KRN-V-05	KERNRDGE 115 kV	P1-1:A15:28:_KERNRDGE 9.11 Generator ID 1 and P1-2:A15:23:_Midway-Temblor 115 kV Line	P3	N-1/G-1	0.9231	0.9222	0.911	0.9103	0.9101				Mitigation under review
KRN-V-06	KNG_ELIS 70 kV	P1-1:A15:27:_CHLKCLF+ 9.11 Generator ID 1 and P1-2:A15:72:_Midway-Taft 115 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8883				Mitigation under review
KRN-V-07	S_KERN 70 kV	P1-1:A15:60:_S_KERN 0.36 Generator ID 1 and P1-2:A15:82:_Kern-Old River #1 70 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
KRN-V-08	WHEELER 230 kV	P1-1:A15:58:_ORION 0.44 Generator ID 1 and P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line	P3	N-1/G-1	N/A	N/A	N/A	N/A	N/A				Wheeler Ridge Jct Station Project
KRN-V-09	BAKRSFLD 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8547	0.8462	0.8553				Mitigation under review
KRN-V-10	BAKRSFLD 70 kV	P1-3:A15:24:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	N/A	N/A	0.8553	0.8471	0.8561				Mitigation under review. Bus reconfiguration
KRN-V-11	BPFFD 115 kV	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8811				Mitigation under review
KRN-V-12	CARNAT T 70 kV	P1-3:A15:24:_Kern PP 115/70 kV Transformer #2 and P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker	P6	N-1-1	N/A	N/A	0.8643	0.8565	0.8651				Mitigation under review
KRN-V-13	CARNATIO 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8627	0.8546	0.8633				Mitigation under review
KRN-V-14	CARNERAS 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8328				Mitigation under review
KRN-V-15	CELERON 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8445				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-V-16	COPUS_D 70 kV	P1-2:A15:93:_Kern-Old River #1 70 kV Line and P1-3:A15:34:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.842	0.8464	0.8375	0.8317	0.8379				
KRN-V-17	COPUS_E 70 kV	P1-2:A15:97:_Kern-Old River #1 70 kV Line and P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.842	0.8464	0.8375	0.8317	0.8379				
KRN-V-18	CUYAMA2 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8789				Mitigation under review
KRN-V-19	EISEN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8444	0.8358	0.845				Mitigation under review
KRN-V-20	ELK HLLS 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8641				Mitigation under review
KRN-V-21	FELLOWSG 115 kV	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8915				Mitigation under review
KRN-V-22	GRMWHY_SM 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8098	0.8004	0.8104				Mitigation under review. Bus reconfiguration
KRN-V-23	KERN PW2 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:23:_Kern PP 115/70 kV Transformer #1	P6	N-1-1	1.1038	1.1096	1.1001	N/A	N/A				Mitigation under review. Bus reconfiguration
KRN-V-24	KERN PW2 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	1.1038	1.1085	0.8614	0.8532	0.862				Mitigation under review. Bus reconfiguration
KRN-V-25	KNG_ELIS 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8451				Mitigation under review
KRN-V-26	KRN CNYN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8645	0.8558	0.8651				Mitigation under review. Bus reconfiguration
KRN-V-27	MAGUNDEN 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8567	0.848	0.8573				Mitigation under review. Bus reconfiguration
KRN-V-28	MCKTTRCK 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.888				Mitigation under review
KRN-V-29	MDWY_P_S 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8886				Mitigation under review
KRN-V-30	MIDSET 115 kV	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8949				Mitigation under review
KRN-V-31	MIDSUN 115 kV	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8837				Mitigation under review

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					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
KRN-V-32	MORGAN 115 kV	P1-2:A15:71:_Midsun-Midway 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8927				Mitigation under review
KRN-V-33	NORTHMWY 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8883				Mitigation under review
KRN-V-34	OLD RIVR 70 kV	P1-2:A15:82:_Kern-Old River #1 70 kV Line and P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.8982	0.9021	0.8951	0.8902	0.8955				Action Plan. Wheeler Ridge Jct Substation Project
KRN-V-35	PANAMA 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8713	0.8634	0.8718				Mitigation under review. Bus reconfiguration
KRN-V-36	RIOBRVQF 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8621	0.8534	0.8627				Mitigation under review. Bus reconfiguration
KRN-V-37	S_KERN 70 kV	P1-2:A15:82:_Kern-Old River #1 70 kV Line and P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.8522	0.8564	0.8479	0.8422	0.8483				Action Plan. Mitigation under review
KRN-V-38	SAN EMDO 70 kV	P1-2:A15:82:_Kern-Old River #1 70 kV Line and P1-3:A15:33:_South Kern Solar 70/34.5 kv GSU	P6	N-1-1	0.8741	0.8781	0.8704	0.8651	0.8708				Action Plan. Mitigation under review
KRN-V-39	TAFT 115 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8745				Mitigation under review
KRN-V-40	TEMBLOR 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8665				Mitigation under review
KRN-V-41	TX_BV_HL 70 kV	P1-2:A15:72:_Midway-Taft 115 kV Line and P1-2:A15:73:_Taft-Chalk Cliff 115 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	0.8838				Mitigation under review
KRN-V-42	WEEDPATCH_SF 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8256	0.8165	0.8262				Mitigation under review. Bus reconfiguration
KRN-V-43	WELLFILD 70 kV	P1-2:A15:100:_Kern PP 70 kV Bus Tie Breaker and P1-3:A15:24:_Kern PP 115/70 kV Transformer #2	P6	N-1-1	N/A	N/A	0.8075	0.7982	0.8082				Mitigation under review. Bus reconfiguration
KRN-V-44	WHEELER 230 kV	P1-2:A15:26:_Wheeler Ridge Jct-Wheeler Ridge 230 kV Line and P1-2:A15:102:_Midway-Wheeler Ridge #2 230 kV Line	P6	N-1-1	1.1415	1.1434	1.1219	1.1199	1.1187				Mitigation under review
KRN-V-45	WHEELER 230 kV	P1-2:A15:89:_Midway-Wheeler Ridge #1 230 kV Line and P1-2:A15:14:_Midway-LaPaloma #1 230 kV Line	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Wheeler Ridge Jct Substation Project

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load		
CC-T-1	CRZY HRS-NTVD SW2 115 kV #1 Line	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	146.57	<100	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-2	CRZY HRS-NTVD SW1 115 kV #1 Line	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	146.57	N/A	N/A	<100	N/A	N/A	81.73	N/A	N/A	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-3	PRNDL J1-MOSLND D 115 kV #1 Line	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	<100	103.65	108.18	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-4	PRNDL J2-MOSLND D 115 kV #1 Line	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	<100	<100	104.27	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-5	MOSLND D 115/230 kV #2 Bank	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	<100	101.77	104.05	<100	<100	<100	<100	<100	<100	Moss Landing Bank upgrade still needed
CC-T-6	B.VSTA J-FIRESTNE 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Open-Line w/ No Fault	142.59	142.18	148.74	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-7	FIRESTNE-SPNCE J2 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Open-Line w/ No Fault	142.31	141.85	148.15	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-8	SPNCE J1-SPENCE 60 kV #1 Line	P2-1:A19:52:_SALINAS1-FREXP JT #1 60 kV	P2-1	Open-Line w/ No Fault	190.15	189.35	197.55	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-9	SPNCE J2-SPENCE 60 kV #1 Line	P2-1:A19:52:_SALINAS1-FREXP JT #1 60 kV	P2-1	Open-Line w/ No Fault	151.29	150.79	157.50	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-10	COBURN J-KING CTY 60 kV #1 Line	P2-1:A19:83:_ORCHRD J-COBURN #1 60 kV	P2-1	Open-Line w/ No Fault	154.08	153.33	155.96	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-11	SPNCE J1-SNBRN JT 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Open-Line w/ No Fault	164.77	164.08	171.19	<100	<100	<100	<100	<100	<100	Mitigation under review
CC-T-12	COBURN 230/60 kV #2 Bank	P1-2:A19:55:_King City-Coburn #1 60 kV and P1-3:A19:11:_Coburn 230/60 kV Transformer #1	P6	N-1-1	<100	<100	<100	112.44	113.52	113.35	100.80	<100	<100	Coburn SPS
CC-T-13	CRZY HRS-NTVD SW2 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-14	NTVD SW2-SALINAS 115 kV #1 Line	P1-2:A19:27:_Moss Landing-Salinas #1 115 kV and P1-2:A19:28:_Moss Landing-Salinas #2 115 kV	P6	N-1-1	118.66	<100	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-T-15	MOSLND D 115/230 kV #2 Bank	P1-3:A19:2:_Moss Landing 230/115 kV Transformer #10 and P1-3:A19:3:_Moss Landing 230/115 kV Transformer #8	P6	N-1-1	104.80	108.07	110.02	<100	100.93	<100	<100	<100	Moss Landing Bank upgrade still needed
CC-T-16	MOSLND D 115/230 kV #1 Bank	P1-3:A19:2:_Moss Landing 230/115 kV Transformer #10 and P1-3:A19:3:_Moss Landing 230/115 kV Transformer #8	P6	N-1-1	105.09	107.94	109.85	<100	100.87	<100	<100	<100	Moss Landing Bank upgrade still needed
CC-T-17	GREN VLY 60/115 kV #1 Bank	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-18	GRN VLY1-ERTA JCT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-19	CIC JCT-ERTA JCT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-20	CIC JCT-AGRILINK 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-21	WTSNVLE-GRANT JT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-22	BRIGTANO-LGNSTAP 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-23	LGNSTAP-SALINAS2 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville Voltage Conversion
CC-T-24	SALINAS2-SALINAS1 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1	Diverged	<100	<100	Diverged	<100	<100	<100	<100	Watsonville Voltage Conversion
CC-T-25	GREN VLY 60/115 kV #1 Bank	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-26	GRN VLY1-ERTA JCT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-27	CIC JCT-ERTA JCT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-28	CIC JCT-AGRILINK 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-29	WTSNVLE-AGRILINK 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-30	WTSNVLE-GRANT JT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-T-31	BRIGTANO-GRANT JT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-32	BRIGTANO-LGNSTAP 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	N/A	N/A	Diverged	N/A	N/A	Diverged	N/A	Watsonville 115 kV Voltage Conversion Project
CC-T-33	LGNSTAP-SALINAS2 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-34	SALINAS2-SALINAS1 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	Diverged	<100	<100	Diverged	<100	<100	Diverged	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-35	GRANT JT-BRIGTANO 115 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL		<100	<100	<100	<100	<100	<100	<100	Watsonville 115 kV Voltage Conversion Project
CC-T-36	CRZY_HRS-NTVD SW2 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	135.95	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-37	NTVD SW2-SALINAS 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	118.66	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-38	CRZY_HRS-NTVD SW1 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	135.95	N/A	N/A	<100	N/A	N/A	<100	N/A	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections
CC-T-39	NTVD SW1-SALINAS 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	118.66	<100	<100	<100	<100	<100	<100	<100	Nativdad Distribution Sub Interconnection Project reconductoring Crazy horse-Salinas 115 kV Line sections



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-VD-1	AGRILINK 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	17.4	<5.0	<5.0	18.2	<5.0	<5.0	12.4	<5.0	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-2	BRIGTANO 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	11.9	<5.0	<5.0	12.4	<5.0	<5.0	8.3	<5.0	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-3	ERTA 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	18.4	<5.0	<5.0	19.2	<5.0	<5.0	13.1	<5.0	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-4	GRANT RK 60 kV	P1-2:A19:35:_Green Valley-Watsonville 60 kV	P1	N-1	11.2	<5.0	<5.0	11.7	<5.0	<5.0	8.0	<5.0	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-5	GREN VLY 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	19.0	N/A	N/A	19.9	N/A	N/A	13.6	N/A	Action Plan
CC-VD-6	WTSNVLL 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	17.3	<5.0	<5.0	18.1	<5.0	<5.0	12.2	<5.0	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-7	GREN VLY 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	18.9	N/A	N/A	20.1	N/A	N/A	13.6	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-8	ERTA 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	18.3	N/A	N/A	19.4	N/A	N/A	13.1	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-9	GRANT RK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	12.0	<5.0	<5.0	12.9	<5.0	<5.0	8.4	<5.0	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-10	AGRILINK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	17.3	<5.0	<5.0	18.5	<5.0	<5.0	12.3	<5.0	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-11	BRIGTANO 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	11.8	<5.0	<5.0	12.6	<5.0	<5.0	8.2	<5.0	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-12	WTSNVLL 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Bus/Circuit Breaker	17.1	<5.0	<5.0	18.3	<5.0	<5.0	12.2	<5.0	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-VD-13	CAMPHORA 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	7.8	8.61	9.46	5.8	5.812	5.811	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-14	CRZY_HRS 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	6.0	6.222	6.872	<5.0	<5.0	<5.0	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-15	CSTRVLL 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Bus/Circuit Breaker	8.3	9.479	10.532	10.5	10.968	11.609	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-16	DEL MNTE 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Bus/Circuit Breaker	6.1	7.143	8.021	7.6	8.125	8.587	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-17	DOLAN RD 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	11.2	12.729	13.725	8.4	8.932	8.961	5.7	<5.0	Action Plan. Shunt Capacitor
CC-VD-18	GONZALES 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	7.9	8.712	9.584	5.9	5.85	5.855	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-19	HOLLISTR 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	6.1	6.349	7.03	<5.0	<5.0	<5.0	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-20	HOLST D 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Bus/Circuit Breaker	<5.0	5.574	6.307	<5.0	<5.0	<5.0	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-21	NATIVDAD 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Bus/Circuit Breaker	<5.0	5.595	6.291	<5.0	<5.0	<5.0	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-22	PRUNEDLE 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Bus/Circuit Breaker	5.3	6.248	6.99	<5.0	5.231	5.307	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-23	SALINAS 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	8.8	10.116	11	6.6	6.965	6.971	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-24	SOLEDAD 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	7.7	8.557	9.401	5.8	5.787	5.787	<5.0	<5.0	Action Plan. Shunt Capacitor
CC-VD-25	SOLEDAD 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Bus/Circuit Breaker	7.7	8.547	9.389	5.8	5.783	5.783	<5.0	<5.0	Action Plan. Shunt Capacitor



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-VD-26	TEXACO 60 kV	P2-2:A19:12:_Oilfields 60 kV Bus	P2	Bus/Circuit Breaker	8.7	8.204	8.83	8.4	7.856	7.875	7.1	6.784	Action Plan. Shunt Capacitor
CC-VD-27	ERTA 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	18.4	N/A	N/A	19.3	N/A	N/A	13.1	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-28	AGRILINK 60 kV	P2-1:A19:40:_CIC JCT-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	16.3	N/A	N/A	17.0	N/A	N/A	11.8	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-29	GRANT RK 60 kV	P2-1:A19:39:_CIC JCT-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	11.3	N/A	N/A	11.8	N/A	N/A	8.1	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-30	WTSNVLE 60 kV	P2-1:A19:40:_CIC JCT-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	16.2	N/A	N/A	16.8	N/A	N/A	11.7	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-31	BRIGTANO 60 kV	P2-1:A19:42:_WTSNVLE-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	10.9	N/A	N/A	11.4	N/A	N/A	7.8	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-VD-32	PAUL SWT 115 kV	P2-1:A19:6:_PAUL SWT-M #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	5.5	6.031	7.109	6.7	6.056	6.319	1.4	-1.852	Action Plan. Paul Sweet Statcom
CC-VD-33	CMP EVRS 115 kV	P2-1:A19:6:_PAUL SWT-M #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	5.0	5.408	6.376	6.0	5.434	5.674	1.3	-1.651	Action Plan. Paul Sweet Statcom
CC-VD-34	FIRESTNE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	11.6	11.73	12.382	7.8	7.688	7.848	6.2	3.191	Action Plan. Install shunt capacitor
CC-VD-35	FRSHXPRS 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	15.0	15.034	15.833	10.1	9.982	10.208	8.1	4.223	Action Plan. Install shunt capacitor



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-VD-36	SPENCE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	10.0	10.125	10.703	6.6	6.584	6.719	5.3	2.704	Action Plan. Install shunt capacitor
CC-VD-37	BNA VSTA 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	14.8	14.828	15.619	10.0	9.825	10.049	8.0	4.15	Action Plan. Install shunt capacitor
CC-VD-38	CSTRVLE 115 kV	P2-1:A19:22:_MOSLND E-CSTRVLJ1 #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	5.7	6.02	6.502	7.5	7.594	8.087	2.9	1.721	Action Plan. Install shunt capacitor
CC-VD-39	TEXACO 60 kV	P2-1:A19:90:_TEXCO J1-OILFLDS #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	9.1	8.76	9.215	9.6	8.975	9.014	7.7	6.741	Action Plan. Install shunt capacitor
CC-VD-40	BRIGTANO 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	<5.0	<5.0	<5.0	<5.0	7.65	6.238	<5.0	<5.0	Monitor voltage deviation
CC-VD-41	CAMPHORA 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	<5.0	5.443	6.021	<5.0	<5.0	<5.0	<5.0	<5.0	Monitor voltage deviation
CC-VD-42	CMP EVRS 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	<5.0	<5.0	<5.0	<5.0	9.984	7.504	<5.0	<5.0	Monitor voltage deviation
CC-VD-43	GONZALES 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	<5.0	5.505	6.098	<5.0	<5.0	<5.0	<5.0	<5.0	Monitor voltage deviation
CC-VD-44	GRANT RK 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	<5.0	<5.0	<5.0	<5.0	7.756	6.316	<5.0	<5.0	Monitor voltage deviation
CC-VD-45	NATIVDAD 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	N/A	5.253	5.787	N/A	<5.0	<5.0	N/A	<5.0	Monitor voltage deviation
CC-VD-46	PAUL SWT 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	<5.0	<5.0	<5.0	<5.0	9.912	7.438	<5.0	<5.0	Monitor voltage deviation
CC-VD-47	ROB ROY 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	<5.0	<5.0	<5.0	<5.0	9.885	7.446	<5.0	<5.0	Monitor voltage deviation
CC-VD-48	SALINAS 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	5.7	6.943	7.562	<5.0	<5.0	<5.0	<5.0	<5.0	Monitor voltage deviation
CC-VD-49	SOLEDAD 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	<5.0	5.41	5.985	<5.0	<5.0	<5.0	<5.0	<5.0	Monitor voltage deviation
CC-VD-50	SOLEDAD 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	<5.0	5.404	5.978	<5.0	<5.0	<5.0	<5.0	<5.0	Monitor voltage deviation
CC-VD-51	WTSNVLE 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	<5.0	<5.0	N/A	9.44	7.405	N/A	<5.0	Monitor voltage deviation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load		
CC-V-1	BIG BASN 60 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.0587	1.07	Mitigation under investigation
CC-V-2	BURNS 60 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.0576	1.07	Mitigation under investigation
CC-V-3	COBURN 230 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	1.05	Mitigation under investigation
CC-V-4	CRUSHER 60 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.056	1.07	Mitigation under investigation
CC-V-5	CRZY_HRS 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	Mitigation under investigation
CC-V-6	CSTRVLE 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-7	DEL MNTE 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-8	DOLAN RD 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-9	ERTA 60 kV	Base Case	P0	N-0	<1.05	<1.05	>0.90	<1.05	>0.90	>0.90	>0.90	1.0551	>0.90	Mitigation under investigation
CC-V-10	GONZALES 60 kV	Base Case	P0	N-0	<1.05	<1.05	>0.90	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	Mitigation under investigation
CC-V-11	GREN VLY 60 kV	Base Case	P0	N-0	<1.05	<1.05	>0.90	<1.05	>0.90	>0.90	>0.90	1.06	>0.90	Mitigation under investigation
CC-V-12	HOLLISTR 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	Mitigation under investigation
CC-V-13	HOLST D 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	Mitigation under investigation
CC-V-14	LONE STR 60 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.0567	1.07	Mitigation under investigation
CC-V-15	MOSLND D 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-16	MOSLND E 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-17	NATIVDAD 115 kV	Base Case	P0	N-0	>0.90	<1.05	<1.05	>0.90	<1.05	<1.05	>0.90	>0.90	1.05	Mitigation under investigation
CC-V-18	PRUNEDLE 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.06	Mitigation under investigation
CC-V-19	SALINAS 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	Mitigation under investigation
CC-V-20	SNBENITO 115 kV	Base Case	P0	N-0	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05	1.05	Mitigation under investigation
CC-V-21	AGRILINK 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.85	>0.90	>0.90	0.84	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-22	BRIGTANO 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.88	>0.90	>0.90	0.88	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-23	ERTA 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.85	>0.90	>0.90	0.84	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-24	GRANT RK 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.87	>0.90	>0.90	0.87	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-25	GREN VLY 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.85	N/A	N/A	0.84	N/A	N/A	>0.90	N/A	N/A	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-26	WTSNVLE 60 kV	P1-3:A19:4_Green Valley 115/60 Transformer #1	P1	N-1	0.85	>0.90	>0.90	0.84	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-27	AGRILINK 60 kV	P2-4:A19:1_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.86	>0.90	>0.90	0.84	>0.90	>0.90	0.92	>0.90	>0.90	Action Plan. Activate Watsonville UVLS. Watsonville 115 kV Conversion Project
CC-V-28	BRIGTANO 60 kV	P2-4:A19:1_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.88	>0.90	>0.90	0.88	>0.90	>0.90	0.94	>0.90	>0.90	Action Plan. Activate Watsonville UVLS. Watsonville 115 kV Conversion Project
CC-V-29	CAMPHORA 60 kV	P2-4:A19:4_MOSS LANDING 115 kV CB 500	P2	Cbus/Circuit Breaker	0.90	0.88	0.8646	0.94	0.94	0.93	0.98	1.00	1.00	Mitigation under review
CC-V-30	DOLAN RD 115 kV	P2-4:A19:4_MOSS LANDING 115 kV CB 500	P2	Cbus/Circuit Breaker	0.92	0.89	0.8762	0.95	0.94	0.94	0.98	1.01	1.01	Mitigation under review
CC-V-31	ERTA 60 kV	P2-4:A19:1_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.85	N/A	N/A	0.84	N/A	N/A	0.92	N/A	N/A	Action Plan. Activate Watsonville UVLS. Watsonville 115 kV Conversion Project
CC-V-32	GONZALES 60 kV	P2-4:A19:4_MOSS LANDING 115 kV CB 500	P2	Cbus/Circuit Breaker	0.89	0.87	0.85	0.93	0.93	0.92	0.97	1.01	1.01	Action Plan. Install Shunt Capacitors
CC-V-33	GRANT RK 60 kV	P2-4:A19:1_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.87	>0.90	>0.90	0.87	>0.90	>0.90	0.93	>0.90	>0.90	Action Plan. Activate Watsonville UVLS. Watsonville 115 kV Conversion Project
CC-V-34	GREN VLY 60 kV	P2-4:A19:1_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.85	N/A	N/A	0.84	N/A	N/A	0.92	N/A	N/A	Action Plan. Watsonville 115 kV Conversion Project
CC-V-35	SALINAS 115 kV	P2-4:A19:4_MOSS LANDING 115 kV CB 500	P2	Cbus/Circuit Breaker	0.92	0.897	0.879	0.95	0.942	0.938	0.98	1.01	1.01	Mitigation under review

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-V-36	SOLEDAD 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Cbus/Circuit Breaker	0.9124	0.8917	0.8716	0.9461	0.9404	0.9355	0.9808	1.01	Mitigation under review
CC-V-37	WTSNVLE 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Cbus/Circuit Breaker	0.8552	>0.90	>0.90	0.8415	>0.90	>0.90	0.9248	>0.90	Action Plan. Activate Watsonville UVLS. Watsonville 115 kV Conversion Project
CC-V-38	ERTA 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.853	N/A	N/A	0.8427	N/A	N/A	>0.9	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-39	GRANT RK 60 kV	P2-1:A19:39:_CIC JCT-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8804	N/A	N/A	0.8768	N/A	N/A	>0.9	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-40	AGRILINK 60 kV	P2-1:A19:40:_CIC JCT-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.865	N/A	N/A	0.8562	N/A	N/A	>0.9	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-41	WTSNVLE 60 kV	P2-1:A19:40:_CIC JCT-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.865	N/A	N/A	0.8563	N/A	N/A	>0.9	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-42	BRIGTANO 60 kV	P2-1:A19:42:_WTSNVLE-AGRILINK #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8904	N/A	N/A	0.887	N/A	N/A	>0.9	N/A	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-43	FIRESTNE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8709	0.8748	0.8579	N/A	>0.9	>0.9	>0.9	>0.9	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-44	FRSHXPRS 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8412	0.8451	0.8269	>0.9	>0.9	0.8949	>0.9	>0.9	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-45	BNA VSTA 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8424	0.8463	0.8281	>0.9	>0.9	0.896	>0.9	>0.9	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-46	SPENCE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8867	0.8905	0.8744	>0.9	>0.9	>0.9	>0.9	>0.9	Action Plan. Watsonville UVLS/Watsonville 115 kV Voltage Conversion Project
CC-V-47	GONZALES 60 kV	P1-1:A19:4:_BAF COG2 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	L-1/G-1	>0.90	>0.90	0.8914	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-48	OILFLDS 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	L-1/G-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.90	Monitor voltage
CC-V-49	SALN RVR 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	L-1/G-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.90	Monitor voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load		
CC-V-50	SARG CYN 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	L-1/G-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.90	Monitor voltage
CC-V-51	TEXACO 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	L-1/G-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.89	Monitor voltage
CC-V-52	MOSLND D 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1	>0.90	>0.90	0.89	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-53	MOSLND E 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-54	MOSLND1 230 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.88	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-55	MOSLND2 230 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.88	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-56	GREN VLY 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.844	>0.90	>0.90	0.83	>0.90	>0.90	>0.90	0.89	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-57	ERTA 60 kV	P1-2:A19:21:_Paul Sweet Statcom and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.85	>0.90	>0.90	0.83	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-58	AGRILINK 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.84	>0.90	>0.90	0.83	>0.90	>0.90	>0.90	0.89	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-59	WTSNVLE 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.84	>0.90	>0.90	0.83	>0.90	>0.90	>0.90	0.89	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-60	GRANT RK 60 kV	P1-2:A19:28:_Moss Landing-Salinas #2 115 kV and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.87	>0.90	>0.90	0.85	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-61	BRIGTANO 60 kV	P1-2:A19:28:_Moss Landing-Salinas #2 115 kV and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1	0.87	>0.90	>0.90	0.862	>0.90	>0.90	>0.90	>0.90	>0.90	Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-62	CRZY_HRS 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.8711	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-63	HOLLISTR 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1	>0.90	0.89	0.86	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-64	HOLST D 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1	>0.90	0.89	0.86	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-65	NATIVDAD 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	0.8995	0.8741	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-V-66	SALINAS 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	0.8972	0.8717	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-67	SALINAS2 60 kV	P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker and P1-3:A19:5:_Salinas 115/60 kV Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.88	>0.90	Monitor voltage
CC-V-68	SOLEDAD 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1	>0.90	0.87	0.84	>0.90	0.89	0.90	>0.90	>0.90	Monitor voltage
CC-V-69	GONZALES 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1	>0.90	0.86	0.83	>0.90	0.88	0.89	>0.90	>0.90	Monitor voltage
CC-V-70	CAMPHORA 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1	>0.90	0.87	0.85	>0.90	0.89	0.89	>0.90	>0.90	Monitor voltage
CC-V-71	CSTRVLE 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.89	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-72	CMP EVRS 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-73	PAUL SWT 115 kV	P1-2:A19:21:_Paul Sweet Statcom and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-74	ROB ROY 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.89	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-75	PRUNEDLE 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.88	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-76	SNBENITO 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	0.8964	0.87	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-77	RSVTN RD 60 kV	P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker and P1-3:A19:5:_Salinas 115/60 kV Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.87	>0.90	Monitor voltage
CC-V-78	GABILAN 60 kV	P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker and P1-3:A19:5:_Salinas 115/60 kV Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.87	>0.90	Monitor voltage
CC-V-79	BORONDA 60 kV	P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker and P1-3:A19:5:_Salinas 115/60 kV Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.8791	>0.90	Monitor voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load	
CC-V-80	DEL MNTE 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.88	>0.90	0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-81	DOLAN RD 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-82	LAURELES 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1	>0.90	>0.90	0.89	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-83	LAURELES 60 kV	P1-3:A19:5:_Salinas 115/60 kV Transformer #2 and P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.86	>0.90	Monitor voltage
CC-V-84	OILFLDS 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV and P1-1:A19:2:_SALNR GN 13.80 Generator ID 1	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.90	Monitor voltage
CC-V-85	OTTER 60 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1	>0.90	>0.90	0.88	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-86	OTTER 60 kV	P1-2:A19:38:_Salinas 60 kV Bus Sectionalizing Breaker and P1-3:A19:5:_Salinas 115/60 kV Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.86	>0.90	Monitor voltage
CC-V-87	CAMPHORA 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage
CC-V-88	GONZALES 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	>0.90	>0.90	0.89	>0.90	>0.90	>0.90	>0.90	>0.90	Monitor voltage

ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	2017 Spring Off-Peak	2020 Summer Light Load		
CC-SP-TS-1	Moss Landing-Coburn 230 kV	P1-2	Delayed Clearing (Line)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 22 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%							Reassess with actual fault clearing times and SLG fault impedances where applicable.
CC-SP-TS-2	Moss Landing 115 kV Bus Section 1D	P2-2	Normal Clearing (Bus)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%							Reassess with actual fault clearing times and SLG fault impedances where applicable.
CC-SP-TS-3	Moss Landing 115 kV CB 110	P2-4	Stuck breaker (Non bus-tie)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%							Reassess with actual fault clearing times and SLG fault impedances where applicable.
CC-SP-TS-4	DUKMOSS1 18.00 Generator ID 1 and Mos	P3-2	Normal clearing (N-1/N-1)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 22 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 22 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 22 Cycles							Reassess with actual fault clearing times and SLG fault impedances where applicable.



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.



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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-T-01	COBURN 230/60 kV #2 Bank	P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P1	N-1	98.90	101.66	98.19	98.22	45.60				Congestion Managent. Reduce renewable output
CC-T-02	CRZY HRS-NTVD SW2 115 kV #1 Line	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	23.98	24.23	25.65	27.44	25.86				Nativdad Project still needed. Rating increased from 80.9MVA in 2017 to 228MVA after 2020.
CC-T-03	CRZY HRS-NTVD SW1 115 kV #1 Line	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	<100	<100	<100	<100	<100				Nativdad Project still needed based on 2025 load levels
CC-T-04	NTVD SW2-SALINAS 115 kV #1 Line	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	<100	<100	<100	<100	<100				Nativdad Project still needed based on 2025 load levels
CC-T-05	PRNDL J1-MOSLND D 115 kV #1 Line	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	103.65	104.73	108.18	118.43	109.04				Mitigation under review
CC-T-06	PRNDL J2-MOSLND D 115 kV #1 Line	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	99.91	100.93	104.27	113.91	105.09				Mitigation under review
CC-T-07	MOSLND E 115/230 kV #8 Bank	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	90.34	90.47	92.03	100.40	92.14				Mitigation under review
CC-T-08	MOSLND D 115/230 kV #2 Bank	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	101.77	102.08	104.05	114.81	104.31				Moss Landing Bank Upgrade Project still needed
CC-T-09	MOSLND D 115230 kV #1 Bank	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	95.58	95.84	97.56	107.48	97.77				Mitigation under review
CC-T-10	B.VSTA J-FIRESTNE 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	142.18	143.49	148.74	153.81	149.51				Mitigation under review
CC-T-11	FIRESTNE-SPNCE J2 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	141.85	143.18	148.15	153.26	149.04				Mitigation under review
CC-T-12	SPNCE J1-SPENCE 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	189.35	191.09	197.55	204.59	198.79				Mitigation under review
CC-T-13	SPNCE J1-SNBRN JT 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	164.08	165.60	171.19	177.38	172.33				Mitigation under review
CC-T-14	SPNCE J2-SPENCE 60 kV #1 Line	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	150.79	152.23	157.50	163.07	158.57				Mitigation under review

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-T-15	COBURN J-KING CTY 60 kV #1 Line	P2-1:A19:76:_ORCHRD J-COBURN #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	153.33	153.67	155.96	163.43	156.76				Mitigation under review
CC-T-16	COBURN-S ARDOJ2 60 kV #1 Line	P2-1:A19:88:_S ARDOJ1-TEXCO J1 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	31.11	31.06	28.79	26.91	101.56				Mitigation under review
CC-T-17	COBURN-S ARDOJ1 60 kV #1 Line	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	31.11	31.11	28.89	27.02	105.56				Mitigation under review
CC-T-18	ARDOJ2-TEXCO J2 60 kV #1 Line	P2-1:A19:88:_S ARDOJ1-TEXCO J1 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	50.09	50.07	47.73	45.92	101.44				Mitigation under review
CC-T-19	ARDOJ1-TEXCO J1 60 kV #1 Line	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	36.37	36.33	33.76	31.57	122.88				Mitigation under review
CC-T-20	TEXCO J2-OILFLDS 60 kV #1 Line	P2-1:A19:88:_S ARDOJ1-TEXCO J1 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	50.09	50.12	47.72	45.91	101.17				Mitigation under review
CC-T-21	COBURN 230/60 kV #2 Bank	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P3	T-1/G-1	N/A	N/A	N/A	N/A	102.46				QF needed
CC-T-22	GREN VLY 60/115 kV #1 Bank	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-23	GRN VLY1-ERTA JCT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-24	CIC JCT-ERTA JCT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-25	CIC JCT-AGRILINK 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-26	WTSNVLL-AGRILINK 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-T-27	WTSNVILLE-GRANT JT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-28	BRIGTANO-GRANT JT 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-29	BRIGTANO-LGNSTAP 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-30	LGNSTAP-SALINAS2 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-31	SALINAS2-SALINAS1 60 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-32	CRZY_HRS-NTVD SW2 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-33	CRZY_HRS-NTVD SW1 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-T-34	GRANT JT-BRIGTANO 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	97.72	98.50	95.93	118.18	96.76				Mitigation under review
CC-T-35	CRZY_HRS-BRIGTANO 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	98.51	99.30	96.72	119.32	97.57				Mitigation under review
CC-T-36	NTVD SW2-SALINAS 115 kV #1 Line	P1-2:A19:28:_Moss Landing-Salinas #2 115 kV and P1-2:A19:27:_Moss Landing-Salinas #1 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Nativdad Project still needed
CC-T-37	NTVD SW1-SALINAS 115 kV #1 Line	P1-2:A19:27:_Moss Landing-Salinas #1 115 kV and P1-2:A19:28:_Moss Landing-Salinas #2 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Nativdad Project still needed
CC-T-38	GRN VLY1-GRN VL&1 115 kV #1 Line	P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	85.37	85.84	83.09	102.36	83.58				Mitigation under review
CC-T-39	GRN VLY1-ROB ROY 115 kV #1 Line	P1-2:A19:15:_Green Valley 115 kV Bus Tie Breaker and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	88.76	89.68	87.55	101.58	88.66				Mitigation under review
CC-T-40	GRN VLY2-CMP EVRS 115 kV #1 Line	P1-2:A19:15:_Green Valley 115 kV Bus Tie Breaker and P1-2:A19:17:_Moss Landing-Green Valley #1 115 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Mitigation under review

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-T-41	PAUL SWT-ROB ROY 115 kV #1 Line	P1-2:A19:15:_Green Valley 115 kV Bus Tie Breaker and P1-2:A19:19:_Moss Landing-Green Valley #2 115 kV	P6	N-1-1 (Two overlapping singles)	81.56	82.55	80.84	93.59	82.04				Mitigation under review
CC-T-42	PRNDL J1-MOSLND D 115 kV #1 Line	P1-2:A19:28:_Moss Landing-Salinas #1 115 kV and P1-2:A19:29:_Moss Landing-Salinas #2 115 kV	P6	N-1-1 (Two overlapping singles)	91.33	91.75	95.29	102.68	95.99				Mitigation under review
CC-T-43	COBURN 230/60 kV #1 Bank	P1-2:A19:56:_Coburn-Basic Energy 60 kV and P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	101.31				Existing Coburn Bank SPS
CC-T-44	MOSLND D 115/230 kV #2 Bank	P1-3:A19:3:_Moss Landing 230/115 kV Transformer #8 and P1-3:A19:2:_Moss Landing 230/115 kV Transformer #10	P6	N-1-1 (Two overlapping singles)	108.07	108.16	110.02	119.77	110.16				Moss Landing Bank Upgrade Project still needed
CC-T-45	MOSLND D 115/230 kV #1 Bank	P1-3:A19:3:_Moss Landing 230/115 kV Transformer #8 and P1-3:A19:2:_Moss Landing 230/115 kV Transformer #10	P6	N-1-1 (Two overlapping singles)	107.94	108.00	109.84	119.71	109.92				Moss Landing Bank Upgrade Project still needed
CC-T-46	GREN VLY 60/115 kV #1 Bank	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-47	GRN VLY1-ERTA JCT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-48	CIC JCT-ERTA JCT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-49	CIC JCT-AGRILINK 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-50	WTSNVLL-AGRILINK 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-51	WTSNVLL-GRANT JT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-52	BRIGHTANO-GRANT JT 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-53	BRIGHTANO-LGNSTAP 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-54	LGNSTAP-SALINAS2 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.30	0.30	0.30	0.30	0.30				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-T-55	SALINAS2-SALINAS1 60 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	13.38	13.43	13.60	13.12	13.62				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-56	GRANT JT-BRIGTANO 115 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	97.74	98.89	95.93	118.16	96.75				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-57	CRZY_HRS 115-BRIGTANO 115 kV #1 Line	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	98.54	99.71	96.72	119.29	97.57				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-T-58	CRZY_HRS-NTVD SW1 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Nativdad Project
CC-T-59	NTVD SW1-SALINAS 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Nativdad Project
CC-T-60	NTVD SW2-SALINAS 115 kV #1 Line	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	N/A	N/A	N/A	N/A	N/A				Nativdad Project

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-01	WTSNVLL 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conersion Project
CC-VD-02	GRANT RK 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conersion Project
CC-VD-03	BRIGTANO 60 kV	P1-2:A19:35:_Green Valley-Watsonville 60 kV	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conersion Project
CC-VD-04	GRN VLY1 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.188	4.699	4.935	6.036	5.882				Mitigation under review
CC-VD-05	GRN VLY2 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.187	4.698	4.935	6.035	5.881				Mitigation under review
CC-VD-06	WTSNVLL 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.353	4.788	5.003	5.999	5.895				Mitigation under review
CC-VD-07	GRANT RK 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.505	4.857	5.048	5.926	5.876				Mitigation under review
CC-VD-08	BRIGTANO 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.502	4.85	5.04	5.912	5.863				Mitigation under review
CC-VD-09	SALINAS 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.654	4.904	5.064	5.792	5.807				Mitigation under review
CC-VD-10	CMP EVRS 115 kV	P1-2:A19:21:_Paul Sweet Statcom	P1	N-1	5.408	6.142	6.376	7.339	6.889				Mitigation under review
CC-VD-11	PAUL SWT 115 kV	P1-2:A19:21:_Paul Sweet Statcom	P1	N-1	6.031	6.848	7.109	8.176	7.679				Mitigation under review
CC-VD-12	ROB ROY 115 kV	P1-2:A19:21:_Paul Sweet Statcom	P1	N-1	4.415	5.016	5.208	5.997	5.629				Mitigation under review
CC-VD-13	CAMPHORA 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.818	5.09	5.276	6.068	6.066				Mitigation under review
CC-VD-14	GONZALES 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.872	5.149	5.342	6.146	6.143				Mitigation under review
CC-VD-15	OILFLDS 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	-0.318	-0.354	-0.372	-0.377	9.882				Mitigation under review
CC-VD-16	SALN RVR 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	-0.282	-0.314	-0.33	-0.334	9.884				Mitigation under review
CC-VD-17	SARG CYN 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	-0.272	-0.304	-0.319	-0.323	9.884				Mitigation under review
CC-VD-18	SOLEDAD 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.789	5.06	5.245	6.028	6.029				Mitigation under review
CC-VD-19	TEXACO 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	-0.306	-0.343	-0.361	-0.366	9.861				Mitigation under review
CC-VD-20	CRZY_HRS 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.608	4.875	5.041	5.794	5.798				Mitigation under review
CC-VD-21	CSTRVLL 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.525	4.75	4.892	5.56	5.595				Mitigation under review
CC-VD-22	DEL MNTE 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.629	4.861	5.009	5.708	5.732				Mitigation under review
CC-VD-23	DOLAN RD 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.513	4.738	4.879	5.546	5.581				Mitigation under review
CC-VD-24	HOLLISTR 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.702	4.975	5.155	5.931	5.93				Mitigation under review
CC-VD-25	NATIVDAD 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.635	4.893	5.056	5.796	5.806				Mitigation under review
CC-VD-26	PRUNEDLE 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.573	4.825	4.982	5.703	5.718				Mitigation under review
CC-VD-27	SNBENITO 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.662	4.933	5.106	5.872	5.873				Mitigation under review
CC-VD-28	MOSLND D 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.492	4.717	4.857	5.521	5.556				Mitigation under review

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					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-29	MOSLND E 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.498	4.721	4.861	5.522	5.559				Mitigation under review
CC-VD-30	MOSSLND1 230 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.385	4.549	4.664	5.217	5.292				Mitigation under review
CC-VD-31	MOSSLND2 230 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	4.375	4.54	4.653	5.204	5.278				Mitigation under review
CC-VD-32	GREN VLY 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-33	ERTA 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-34	AGRILINK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-35	WTSNVLL 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-36	GRANT RK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-37	BRIGTANO 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project still needed
CC-VD-38	WTSNVLL 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	4.342	4.882	5.232	7.06	5.639				Mitigation under review
CC-VD-39	GRANT RK 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	4.939	5.388	5.738	7.371	6.081				Mitigation under review
CC-VD-40	BRIGTANO 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	4.951	5.396	5.744	7.367	6.085				Mitigation under review
CC-VD-41	SALINAS 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	10.116	10.442	11	12.397	11.264				Mitigation under review. Bus reconfiguration
CC-VD-42	NATIVDAD 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	5.595	5.94	6.291	7.679	6.561				Mitigation under review
CC-VD-43	HOLLISTR 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	6.349	6.638	7.03	8.112	7.262				Mitigation under review.
CC-VD-44	CMP EVRS 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	3.882	4.883	5.415	8.149	6.132				Mitigation under review
CC-VD-45	PAUL SWT 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	3.698	4.79	5.353	8.215	6.134				Mitigation under review
CC-VD-46	ROB ROY 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	4.1	4.951	5.43	7.927	6.043				Mitigation under review
CC-VD-47	GRN VLY1 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	4.422	5.065	5.47	7.638	5.938				Mitigation under review
CC-VD-48	GRN VLY2 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	4.389	5.031	5.436	7.597	5.903				Mitigation under review
CC-VD-49	CAMPHORA 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	8.61	8.936	9.46	10.797	9.725				Mitigation under review
CC-VD-50	SOLEDAD 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	8.557	8.88	9.401	10.722	9.663				Mitigation under review
CC-VD-51	TEXACO 60 kV	P2-2:A19:12:_Oilfields 60 kV Bus	P2	Bus	8.204	8.63	8.83	8.835	-3.496				Mitigation under review
CC-VD-52	CRZY_HRS 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	6.222	6.502	6.872	7.92	7.098				Mitigation under review
CC-VD-53	GONZALES 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	8.712	9.044	9.584	10.944	9.855				Mitigation under review

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					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-54	PRUNEDLE 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	6.248	6.601	6.99	8.46	7.267				Mitigation under review
CC-VD-55	CSTRVLE 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	9.479	9.835	10.532	12.224	10.804				Mitigation under review
CC-VD-56	DEL MNTE 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	7.143	7.477	8.021	9.548	8.276				Mitigation under review
CC-VD-57	DOLAN RD 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	9.006	9.371	9.88	11.547	10.158				Mitigation under review
CC-VD-58	SAN ARDO 60 kV	P2-2:A19:12:_Oilfields 60 kV Bus	P2	Circuit Breaker	2.152	2.477	2.678	2.691	-5.824				Mitigation under review
CC-VD-59	SNBENITO 115 kV	P2-4:A19:3:_MOSS LANDING 115 kV CB 120	P2	Circuit Breaker	5.526	5.886	6.246	7.687	6.528				Mitigation under review
CC-VD-60	ERTA 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-VD-61	AGRILINK 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-VD-62	WTSNVLE 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-VD-63	GRANT RK 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-VD-64	BRIGTANO 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-VD-65	CSTRVLE 115 kV	P2-1:A19:23:_MOSLND E-CSTRVLJ1 #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	6.02	6.085	6.502	7.144	6.557				Mitigation under review
CC-VD-66	NTVD SW2 115 kV	P2-1:A19:11:_CRZY_HRS-NTVD SW2 #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	5.505	5.573	6.093	6.447	6.147				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-67	OILFLDS 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	-0.139	-0.172	-0.189	-0.185	17.117				Mitigation under review
CC-VD-68	SALN RVR 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	-0.123	-0.152	-0.168	-0.164	17.121				Mitigation under review
CC-VD-69	SAN ARDO 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	-0.708	-0.821	-0.832	-0.792	20.513				Mitigation under review
CC-VD-70	SARG CYN 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	-0.119	-0.147	-0.162	-0.159	17.122				Mitigation under review
CC-VD-71	TEXACO 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	-0.134	-0.167	-0.184	-0.18	17.094				Mitigation under review
CC-VD-72	BNA VSTA 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	14.828	15.007	15.619	16.308	15.737				Mitigation under review
CC-VD-73	SPENCE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	10.125	10.26	10.703	11.243	10.796				Mitigation under review
CC-VD-74	FIRESTNE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	11.73	11.88	12.382	12.977	12.485				Mitigation under review
CC-VD-75	FRSHXPRS 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	15.034	15.215	15.833	16.526	15.952				Mitigation under review
CC-VD-76	OILFLDS 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:59:_Oil Fields-Sargent Canyon 60 kV	P3	N-1/G-1	10.051	10.423	10.497	10.659	N/A				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-77	OILFLDS 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	10.401				Mitigation under review
CC-VD-78	SALN RVR 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:59:_Oil Fields-Sargent Canyon 60 kV	P3	N-1/G-1	10.052	10.424	10.498	10.66	N/A				Mitigation under review
CC-VD-79	SALN RVR 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	10.403				Mitigation under review
CC-VD-80	SARG CYN 60 kV	P1-1:A19:1:_SARGCN G 13.80 Generator ID 1 and P1-2:A19:60:_Oil Fields-Salinas River 60 kV	P3	N-1/G-1	7.606	7.97	8.015	8.186	N/A				Mitigation under review
CC-VD-81	SARG CYN 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	10.404				Mitigation under review
CC-VD-82	TEXACO 60 kV	P1-1:A19:2:_SALNR GN 13.80 Generator ID 1 and P1-2:A19:59:_Oil Fields-Sargent Canyon 60 kV	P3	N-1/G-1	10.03	10.401	10.474	10.636	N/A				Mitigation under review
CC-VD-83	TEXACO 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	10.382				Mitigation under review
CC-VD-84	CAMPHORA 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	5.443	5.63	6.021	6.959	6.269				Mitigation under review
CC-VD-85	GONZALES 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	5.505	5.696	6.098	7.05	6.35				Mitigation under review
CC-VD-86	SOLEDAD 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	5.41	5.596	5.985	6.913	6.231				Mitigation under review
CC-VD-87	WTSNVLL 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	3.76	4.777	4.36	12.712	5.099				Watsonville 115 kV Voltage Conversion Project
CC-VD-88	GRANT RK 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	3.914	4.65	4.335	10.312	4.872				Watsonville 115 kV Voltage Conversion Project
CC-VD-89	BRIGTANO 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	3.889	4.613	4.303	10.169	4.831				Watsonville 115 kV Voltage Conversion Project
CC-VD-90	SALINAS 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	6.943	7.13	7.562	8.565	7.809				
CC-VD-91	CRZY_HRS 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.789	3.2	3.063	6.004	3.364				Watsonville 115 kV Voltage Conversion Project
CC-VD-92	HOLLISTR 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.844	3.265	3.13	6.145	3.439				Watsonville 115 kV Voltage Conversion Project
CC-VD-93	SOLEDAD 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	5.404	5.59	5.978	6.904	6.223				Mitigation under review
CC-VD-94	CMP EVRS 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.13	3.769	3.394	14.497	4.573				Mitigation under review
CC-VD-95	ROB ROY 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.376	3.848	3.445	14.057	4.508				Mitigation under review
CC-VD-96	PAUL SWT 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	1.925	3.66	3.309	14.603	4.556				Mitigation under review
CC-VD-97	GRN VLY1 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.747	3.989	3.544	13.506	4.446				Green Valley Sub Project

Study Area: **PG&E Central Coast**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-VD-98	GRN VLY2 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	2.776	4.019	3.573	13.548	4.475				Green Valley Sub Project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-01	GONZALES 60 kV	Base Case	P0	N-0	0.9611	0.955	0.9486	0.9431	0.9441				Mitigation under review
CC-V-02	OILFLDS 60 kV	Base Case	P0	N-0	1.0235	1.0225	1.0213	1.0212	0.9165				Mitigation under review
CC-V-03	SALN RVR 60 kV	Base Case	P0	N-0	1.0246	1.0237	1.0227	1.0226	0.9163				Mitigation under review
CC-V-04	SAN ARDO 60 kV	Base Case	P0	N-0	1.0106	1.0089	1.0075	1.0077	0.9403				Mitigation under review
CC-V-05	SARG CYN 60 kV	Base Case	P0	N-0	1.0315	1.0306	1.0297	1.0296	0.9163				Mitigation under review
CC-V-06	TEXACO 60 kV	Base Case	P0	N-0	1.0219	1.0209	1.0197	1.0197	0.9153				Mitigation under review
CC-V-07	GREN VLY 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-08	ERTA 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-09	AGRILINK 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-10	WTSNVLL 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-11	GRANT RK 60 kV	P1-2:A19:35:_Green Valley-Watsonville 60 kV	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-12	BRIGTANO 60 kV	P1-3:A19:4:_Green Valley 115/60 Transformer #1	P1	N-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion Project
CC-V-13	GONZALES 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	0.9124	0.9035	0.8952	0.8817	0.8827				Mitigation under review
CC-V-14	CAMPHORA 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	0.9227	0.9139	0.9065	0.8931	0.8941				Mitigation under review
CC-V-15	SOLEDAD 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P1	N-1	0.9282	0.9195	0.9119	0.8991	0.8996				Mitigation under review
CC-V-16	OILFLDS 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	1.0267	1.026	1.0251	1.025	0.8177				Mitigation under review
CC-V-17	SALN RVR 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	1.0275	1.0269	1.026	1.026	0.8175				Mitigation under review
CC-V-18	SARG CYN 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	1.0343	1.0337	1.0328	1.0328	0.8174				Mitigation under review
CC-V-19	TEXACO 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P1	N-1	1.025	1.0243	1.0234	1.0233	0.8167				Mitigation under review
CC-V-20	GREN VLY 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-21	ERTA 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-22	AGRILINK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-23	WTSNVLL 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-24	GRANT RK 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-25	BRIGTANO 60 kV	P2-4:A19:1:_GREEN VALLEY 115 kV CB 102	P2	Circuit Breaker	N/A	N/A	N/A	N/A	N/A				Action Plan. Watsonville 115 kV Voltage Conversion still needed
CC-V-26	GONZALES 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.874	0.8645	0.8528	0.8337	0.8456				Action Plan. Install shunt caps
CC-V-27	CAMPHORA 60 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.8848	0.8755	0.8646	0.8458	0.8575				Mitigation under review
CC-V-28	CSTRVLL 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	0.9255	0.9161	0.9064	0.8867	0.8994				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-29	DEL MNTE 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	0.9318	0.9224	0.9138	0.8945	0.9069				Mitigation under review
CC-V-30	DOLAN RD 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.8946	0.8854	0.8762	0.858	0.8692				Mitigation under review
CC-V-31	SALINAS 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.8969	0.8877	0.8786	0.8606	0.8716				Mitigation under review
CC-V-32	NTVD SW1 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.8965	0.8873	0.878	0.86	0.871				Mitigation under review
CC-V-33	HOLLISTR 115 kV	P2-4:A19:2:_Moss Landing 115 kV CB 110	P2	Circuit Breaker	0.9335	0.9238	0.9144	0.8938	0.9072				Mitigation under review
CC-V-34	SOLEDAD 115 kV	P2-4:A19:4:_MOSS LANDING 115 kV CB 500	P2	Circuit Breaker	0.8917	0.8824	0.8716	0.8534	0.8645				Mitigation under review
CC-V-35	ERTA 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-V-36	AGRILINK 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-V-37	WTSNVLE 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-V-38	GRANT RK 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-V-39	BRIGTANO 60 kV	P2-1:A19:37:_GREN VLY-ERTA JCT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	N/A	N/A	N/A	N/A	N/A				Mitigation under review
CC-V-40	SALN RVR 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	1.0259	1.0252	1.0244	1.0243	0.7451				Mitigation under review
CC-V-41	SAN ARDO 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	1.0177	1.0171	1.0159	1.0156	0.7351				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-42	SARG CYN 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	1.0327	1.0321	1.0313	1.0312	0.745				Mitigation under review
CC-V-43	TEXACO 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	1.0233	1.0226	1.0216	1.0215	0.7443				Mitigation under review
CC-V-44	OILFLDS 60 kV	P2-1:A19:83:_COBURN-S ARDOJ2 #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	1.0249	1.0242	1.0232	1.0231	0.7454				Mitigation under review
CC-V-45	SPENCE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8905	0.883	0.8744	0.8645	0.869				Mitigation under review
CC-V-46	BNA VSTA 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8463	0.8384	0.8281	0.8168	0.8225				Mitigation under review
CC-V-47	FIRESTNE 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8748	0.8671	0.8579	0.8475	0.8524				Mitigation under review
CC-V-48	FRSHXPRS 60 kV	P2-1:A19:45:_SALINAS1-FREXP JT #1 60 kV	P2-1	Var device/Open ended Line w/No Fault	0.8451	0.8372	0.8269	0.8156	0.8213				Mitigation under review
CC-V-49	GONZALES 60 kV	P2-1:A19:13:_NTVD SW2-SOLEDAD #1 115 kV	P2-1	Var device/Open ended Line w/No Fault	0.9233	0.9164	0.907	0.8992	0.9021				Mitigation under review
CC-V-50	CAMPHORA 60 kV	P1-1:A19:4:_BAF COG2 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	0.9182	0.91	0.9027	0.8884	N/A				Mitigation under review
CC-V-51	CAMPHORA 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8889				Mitigation under review
CC-V-52	GONZALES 60 kV	P1-1:A19:4:_BAF COG2 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	0.9078	0.8995	0.8914	0.8769	N/A				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-53	GONZALES 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8774				Mitigation under review
CC-V-54	OILFLDS 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:5:_Coburn-LASAGUILASS 230	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8885				Mitigation under review
CC-V-55	OILFLDS 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8037				Mitigation under review
CC-V-56	OILFLDS 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:58:_Coburn-Oil Fields #2 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8908				Mitigation under review
CC-V-57	OILFLDS 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.883				Mitigation under review
CC-V-58	SALN RVR 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8035				Mitigation under review
CC-V-59	SARG CYN 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8034				Mitigation under review
CC-V-60	SOLEDAD 60 kV	P1-1:A19:4:_BAF COG2 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	0.9237	0.9156	0.9081	0.8944	N/A				Mitigation under review
CC-V-61	SOLEDAD 115 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8956				Mitigation under review
CC-V-62	TEXACO 60 kV	P1-1:A19:5:_KCTYPKER 13.80 Generator ID 1 and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P3	N-1/G-1	N/A	N/A	N/A	N/A	0.8026				Mitigation under review
CC-V-63	GREN VLY 60 kV	P1-3:A19:11:_Coburn 230/60 kV Transformer #1 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-V-64	ERTA 60 kV	P1-3:A19:11:_Coburn 230/60 kV Transformer #1 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-V-65	AGRILINK 60 kV	P1-3:A19:11:_Coburn 230/60 kV Transformer #1 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-V-66	WTSNVLL 60 kV	P1-3:A19:11:_Coburn 230/60 kV Transformer #1 and P1-3:A19:4:_Green Valley 115/60 Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-V-67	GRANT RK 60 kV	P1-2:A19:11:_Moss Landing-Coburn 230 kV and P1-2:A19:35:_Green Valley-Watsonville 60 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed
CC-V-68	BRIGTANO 60 kV	P1-2:A19:11:_Moss Landing-Coburn 230 kV and P1-2:A19:35:_Green Valley-Watsonville 60 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	N/A				Watsonville 115 kV Voltage Conversion Project still needed

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-69	GRANT RK 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1 (Two overlapping singles)	0.9012	0.8766	0.8738	0.8533	0.8623				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-70	WTSNVLE 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8758	0.8498	0.8606				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-71	BRIGTANO 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.9028	0.8935	0.8772	0.864	0.8638				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-72	SALINAS 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.8972	0.8881	0.8717	0.8599	0.8585				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-73	NATIVDAD 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1 (Two overlapping singles)	0.8997	0.8757	0.8725	0.8536	0.8612				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-74	CRZY_HRS 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.9032	0.8941	0.8777	0.8658	0.8646				Watsonville 115 kV Voltage Conversion incl. reactive support Project still needed
CC-V-75	MOSSLND1 230 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	0.8896	0.8882	0.8747	0.8782				Mitigation under review
CC-V-76	MOSSLND2 230 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.884	0.867	0.8712				Mitigation under review
CC-V-77	MOSLND D 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8948	0.8775	0.8833				Mitigation under review
CC-V-78	MOSLND E 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8956	0.8784	0.8842				Mitigation under review
CC-V-79	GRN VLY1 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.9188	0.9094	0.8939	0.8786	0.8803				Mitigation under review
CC-V-80	GRN VLY2 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8872	0.8603	0.8719				Mitigation under review
CC-V-81	CMP EVRS 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9027	0.8711	0.8863				Mitigation under review
CC-V-82	PAUL SWT 115 kV	P1-2:A19:21:_Paul Sweet Statcom and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.9096	0.9043	0.8978	0.8795	0.8849				Mitigation under review
CC-V-83	ROB ROY 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.894	0.8643	0.8781				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-84	SNBENITO 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.8964	0.8872	0.8697	0.8572	0.8563				Mitigation under review
CC-V-85	SOLEDAD 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.8729	0.8634	0.844	0.8304	0.8301				Mitigation under review
CC-V-86	PRUNEDLE 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1 (Two overlapping singles)	0.9108	0.8871	0.8843	0.8664	0.8733				Mitigation under review
CC-V-87	CSTRVLE 115 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8931	0.873	0.8792				Mitigation under review
CC-V-88	DEL MNTE 115 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.9034	0.8944	0.8787	0.8672	0.8659				Mitigation under review
CC-V-89	DOLAN RD 115 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.8927	0.8752	0.8812				Mitigation under review
CC-V-90	CAMPHORA 60 kV	P1-2:A19:27:_Salinas-Soledad 115 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	0.8886	0.8828	0.8676	0.8509	0.8543				Mitigation under review
CC-V-91	FIRESTNE 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9039	0.8809	0.8904				Mitigation under review
CC-V-92	FRSHXPRS 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:1:_Spring-Moss Landing 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9078	0.885	0.8943				Mitigation under review
CC-V-93	GABILAN 60 kV	P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9135	0.8994	0.8989				Mitigation under review
CC-V-94	SPENCE 60 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9065	0.8807	0.8902				Mitigation under review
CC-V-95	RSVTN RD 60 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.9068	0.88	0.8904				Mitigation under review
CC-V-96	LAURELES 60 kV	P1-2:A18:1:_Spring-Moss Landing 230 kV and P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9	P6	N-1-1 (Two overlapping singles)	N/A	N/A	0.89	0.8612	0.8732				Mitigation under review
CC-V-97	OILFLDS 60 kV	P1-2:A19:56:_Coburn-Basic Energy 60 kV and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	0.805				Mitigation under review
CC-V-98	SALN RVR 60 kV	P1-2:A19:29:_Moss Landing-Salinas #2 115 kV and P1-2:A19:57:_Coburn-Oil Fields #1 60 kV	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	0.809				Mitigation under review
CC-V-99	SARG CYN 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV and P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	0.8013				Mitigation under review

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
CC-V-100	TEXACO 60 kV	P1-2:A19:57:_Coburn-Oil Fields #1 60 kV and P1-3:A19:8:_Coburn 230/60 kV Transformer #1	P6	N-1-1 (Two overlapping singles)	N/A	N/A	N/A	N/A	0.8005				Mitigation under review
CC-V-101	OTTER 60 kV	P1-3:A19:1:_Moss Landing 500/230 kV Transformer #9 and P1-2:A18:9:_Metcalf-Moss Landing #1 230 kV	P6	N-1-1 (Two overlapping singles)	N/A	0.8932	0.8881	0.8631	0.8753				Mitigation under review
CC-V-102	GONZALES 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	0.9061	0.898	0.8877	0.8726	0.8806				Mitigation under review
CC-V-103	CAMPHORA 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	0.9165	0.9085	0.899	0.8841	0.8921				Mitigation under review
CC-V-104	SOLEDAD 60 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	0.922	0.9141	0.9045	0.8902	0.8976				Mitigation under review
CC-V-105	WTSNVLE 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.9701	0.9556	0.9575	0.8703	0.9468				Watsonville 115 kV Voltage Conversion Project
CC-V-106	GRANT RK 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.9625	0.95	0.9503	0.8867	0.9411				Watsonville 115 kV Voltage Conversion Project
CC-V-107	BRIGTANO 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.9643	0.952	0.9521	0.8897	0.9431				Watsonville 115 kV Voltage Conversion Project
CC-V-108	SALINAS 115 kV	P7-1:A19:4:_Moss Landing - Salinas #1 and #2 115 kV Lines	P7	DCTL	0.9287	0.9208	0.913	0.899	0.9062				Watsonville 115 kV Voltage Conversion Project
CC-V-109	GRN VLY1 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.9898	0.9737	0.9766	0.8736	0.9648				Mitigation under review
CC-V-110	GRN VLY2 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	0.9896	0.9735	0.9764	0.8733	0.9646				Mitigation under review
CC-V-111	ROB ROY 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	1.0003	0.9836	0.9868	0.8783	0.9746				Mitigation under review
CC-V-112	CMP EVRS 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	1.0119	0.9947	0.9982	0.8855	0.9857				Mitigation under review
CC-V-113	PAUL SWT 115 kV	P7-1:A19:1:_Moss Landing - Green Valley #1 and #2 115 kV Lines	P7	DCTL	1.0157	0.9984	1.0019	0.8882	0.9893				Mitigation under review

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 Summer Light Load	N/A	N/A		N/A	
LP-T-1	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-3:A20:1:_Templeton 230/70 kV Transformer	P1	N-1	Diverged	<100	<100	<100	251.98	<100				Estrella 230 kV Substation Project
LP-T-2	36254 SN LS OB 115 34796 CARRIZO 115 1	P2-4:A20:2:_MORRO BAY 230 kV CB 622	P2	Circuit Breaker	117.82	<100	<100	<100	<100					Mitigation under review. Action Plan/Bus reconfiguration
LP-T-3	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P2-1:A20:36:_TEMPL J-PSA RBLs #1 70 kV	P2-1	Open Line w/ no Fault	Diverged	<100	<100	<100	<100					Estrella 230 kV Substation Project
LP-T-4	36251 FTHILTP2 115 36254 SN LS OB 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-5	36252 MORRO BY 115 30915 MORROBAY 230 6	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Action Plan until Morro Bay Transformer Addition is in service
LP-T-6	36252 MORRO BY 115 36303 GLDTRJC1 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-7	36252 MORRO BY 115 36304 GLDTRJC2 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-8	36253 FTHILTP1 115 36254 SN LS OB 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-9	36254 SN LS OB 115 34796 CARRIZO 115 1	P1-2:A20:17:_Diablo-Mesa 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100					Action Plan. Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019/Estrella 230 kV Substation Project
LP-T-10	36254 SN LS OB 115 36266 SNTA MRA 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	108.33	<100				Mesa and Santa Maria SPS/Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019

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 Summer Light Load	N/A	N/A		N/A
LP-T-11	36254 SN LS OB 115 36278 OCEANO 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Mesa and Santa Maria SPS/Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-12	36256 MESA_PGE 115 36280 UNION OL 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Mesa and Santa Maria SPS/Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-13	36260 SISQUOC 115 36286 PALMR 115 1	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	148.70	<100	<100	<100	<100				Divide and Mesa SPS/ Midway-Andrew 230 kV Project
LP-T-14	36264 S.YNZ JT 115 36288 ZACA 115 1	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	138.58	<100	<100	<100	<100				Divide and Mesa SPS/ Midway-Andrew 230 kV Project
LP-T-15	36278 OCEANO 115 36280 UNION OL 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Estrella 230 kV Substation Project
LP-T-16	36286 PALMR 115 36287 AECCEORTP 115 1	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	140.71	<100	<100	<100	<100				Divide and Mesa SPS/ Midway-Andrew 230 kV Project
LP-T-17	36287 AECCEORTP 115 36288 ZACA 115 1	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	125.56	<100	<100	<100	<100				Divide and Mesa SPS/ Midway-Andrew 230 kV Project
LP-T-18	36303 GLDTRJC1 115 36251 FTHILTP2 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-19	36304 GLDTRJC2 115 36253 FTHILTP1 115 1	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Estrella 230 kV Substation Project/Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019
LP-T-20	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A14:13:_Templeton-Gates 230 kV and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	Diverged	<100	<100	251.93	<100				Estrella 230 kV Substation Project
LP-T-21	36354 SAN MIGL 70.0 36356 PSA RBLS 70.0 1	P1-2:A14:13:_Templeton-Gates 230 kV and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	Diverged	<100	<100	174.27	<100				Estrella 230 kV Substation Project

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 Summer Light Load	N/A	N/A		N/A
LP-T-22	36372 MUSTNG J 70.0 36376 SN LS OB 70.0 1	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	Diverged	<100	<100	<100	<100				Action Plan. Cayucos Capacitor Project (rerate the line section)
LP-T-23	36254 SN LS OB 115 34796 CARRIZO 115 1	P7-1:A20:17:_Morro Bay-Mesa and Diablo-Mesa 230 kV Lines	P7	DCTL	Diverged	<100	<100	<100	<100				Action Plan. Modify Santa Maria SPS/UVLS in the interim until Midway-Andrew 230 kV Project in service in 2019/Estrella 230 kV Substation Project
LP-T-24	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	DCTL	Diverged	<100	<100	252.17	<100				Estrella 230 kV Substation Project

Study Area: **PG&E Los Padres**

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 Summer Light Load	N/A	N/A		N/A
X-VD-1													

No voltage deviations identified.

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 Summer Light Load	N/A	N/A		N/A
LP-V-1	ATASCDRO 70 kV	P1-2:A20:36:_Templeton-Atascadero 70 kV and P1-2:A20:41:_Atascadero-San Luis Obispo 70 kV	P6	N-1-1	0.89	>0.90	>0.90	>0.90	>0.90				Action Plan. Estrella 230 kV Project/ Cayucos Project
LP-V-2	BUELLTON 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.90	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-3	CABRILLO 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.86	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-4	DIVIDE 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.87	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-5	DIVIDE 70 kV	P1-4:A20:2:_DIABLOCN 230.00 SVD ID v2 and P1-3:A20:7:_Divide 115/70 Transformer #2	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	1.10				Mitigation under investigation
LP-V-6	ESTRELLA 70 kV	P1-3:A20:13:_Estrella 230/70 kV Transformer and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	0.82				Monitor voltage. Midway-Andrew 230 kV Project
LP-V-7	MANVILLE 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.81	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-8	OCEANO 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	0.89	>0.90	>0.90	>0.90	>0.90				Action Plan. Estrella 230 kV Project/ Cayucos Project
LP-V-9	PSA RBL5 70 kV	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	>0.90	>0.90	>0.90	0.88	>0.90				Action Plan. Estrella 230 kV Project/ Cayucos Project
LP-V-10	PSA RBL5 70 kV	P1-3:A20:13:_Estrella 230/70 kV Transformer and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	0.822				Monitor voltage. Estrella 230 kV Project/ Cayucos Project
LP-V-11	PURISIMA 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.82	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-12	SAN MIGL 70 kV	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	>0.90	>0.90	>0.90	0.89	>0.90				Action Plan. Estrella 230 kV Project/ Cayucos Project
LP-V-13	SAN MIGL 70 kV	P1-3:A20:13:_Estrella 230/70 kV Transformer and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	0.83				Monitor voltage. Estrella 230 kV Project/ Cayucos Project
LP-V-14	SNTA YNZ 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.89	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-15	SURF 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.85	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-16	TEMPLETN 230 kV	P1-2:A14:18:_Templeton-Gates 230 kV and P1-2:A20:19:_Morro Bay-Templeton 230 kV	P6	N-1-1	>0.90	0.81	0.81	0.75	>0.90				Mitigation under review. Estrella 230 kV Project/ Cayucos Project

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 Summer Light Load	N/A		N/A	N/A
LP-V-17	UNION OL 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	0.885	>0.90	>0.90	>0.90	>0.90				Action Plan. Estrella 230 kV Project/ Cayucos Project
LP-V-18	VAFB SSA 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.8712	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project
LP-V-19	VAFB SSB 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	0.8759	>0.90	>0.90	>0.90	>0.90				Action Plan/Divide SPS. Midway-Andrew 230 kV Project



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	N/A	N/A		N/A
X-TS-1												



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.

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

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
LP-T-01	SAN MIGL-COLNGA 1 70 kV #1 Line	P1-2:A20:35:_Paso Robles-Templeton 70 kV	P1	N-1	N/A	N/A	N/A	N/A	N/A				Estrella 230 kV Project still needed
LP-T-02	SAN MIGL-COLNGA 1 70 kV #1 Line	P1-3:A20:1:_Templeton 230/70 kV Transformer	P1	N-1	18.12	2.43	12.91	12.75	10.17				Estrella 230 kV Project still needed
LP-T-03	SN LS OB-CARRIZO 115 kV #1 Line	P2-4:A20:2:_MORRO BAY 230 kV CB 622	P2	Circuit Breaker	44.32	38.17	50.33	53.38	49.96				Midway-Andrew 230 kV Project
LP-T-04	SAN MIGL-COLNGA 1 70 kV #1 Line	P2-1:A20:34:_TEMPL7-TEMPL J #1 70 kV	P2-1	Var device/Open ended Line w/No Fault	15.88	3.38	13.43	11.70	9.27				Estrella 230 kV Project
LP-T-05	SAN MIGL-COLNGA 1 70 kV #1 Line	P2-1:A20:36:_TEMPL J-PSA RBLS #1 70 kV	P2-1	Var device/Open ended Line w/No Fault	15.88	3.37	13.43	11.70	9.27				Estrella 230 kV Project
LP-T-06	MORRO BY 115/230 kV #6 Bank	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Morro Bay Bank Addition Project
LP-T-07	SAN MIGL-COLNGA 1 70 kV #1 Line	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Estrella 230 kV Project
LP-T-08	SAN MIGL-PSA RBLS 70 kV #1 Line	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:35:_Paso Robles-Templeton 70 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Estrella 230 kV Project
LP-T-09	ATASCDRO-SN LS OB 70 kV #1 Line	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Estrella 230 kV Project
LP-T-10	MUSTNG J-SN LS OB 70 kV #1 Line	P1-2:A14:13:_Templeton-Gates 230 kV and P1-2:A20:14:_Morro Bay-Templeton 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Estrella 230 kV Project
LP-T-11	MUSTNG J-SN LS OB 70 kV #1 Line	P1-2:A20:41:_Atascadero-San Luis Obispo 70 kV and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	N/A	N/A	N/A	81.02	N/A				Action Plan. Estrella 230 kV Project
LP-T-12	S.YNZ JT-ZACA 115 kV #1 Line	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-T-13	SISQUOC-PALMR 115 kV #1 Line	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-T-14	PALMR-AECCEORTP 115 kV #1 Line	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-T-15	AECCEORTP-ZACA 115 kV #1 Line	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AAEE	2025 Retirement of QF Generations	N/A	N/A		N/A
LP-T-16	MESA_PGE-UNION OL 115 kV #1 Line	P1-3:A20:2:_Morro Bay 230/115 Transformer #6 and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-17	OCEANO-UNION OL 115 kV #1 Line	P1-3:A20:2:_Morro Bay 230/115 Transformer #6 and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-18	SN LS OB-OCEANO 115 kV #1 Line	P1-2:A20:17:_Diablo-Mesa 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-19	SN LS OB-CARRIZO 115 kV #1 Line	P1-3:A20:2:_Morro Bay 230/115 Transformer #6 and P1-3:A20:1:_Templeton 230/70 kV Transformer	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-20	SN LS OB-SNTA MRA 115 kV #1 Line	P1-2:A20:17:_Diablo-Mesa 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-21	FTHILTP1-SN LS OB 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-22	FTHILTP2-SN LS OB 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-23	GLDTRJC1-FTHILTP2 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-24	GLDTRJC2-FTHILTP1 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-25	MORRO BY-GLDTRJC1 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-26	MORRO BY-GLDTRJC2 115 kV #1 Line	P1-2:A20:15:_Morro Bay-Diablo 230 kV and P1-2:A20:16:_Morro Bay-Mesa 230 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project. Modify Santa Maria SPS/UVLS.
LP-T-27	SN LS OB-CARRIZO 115 kV #1 Line	P7-1:A20:16:_Morro Bay-Mesa and Morro Bay-Diablo 230 kV Lines	P7	DCTL	37.40	30.18	43.29	46.02	42.88				Action Plan. Estrella 230 kV Project
LP-T-28	SAN MIGL-COLNGA 1 70 kV #1 Line	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	DCTL	16.00	3.45	13.55	11.84	9.39				Action Plan. Estrella 230 kV Project



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	Select..	Select..	2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE		2025 Retirement of QF Generations

No voltage deviations identified.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
LP-V-01	ATASCDRO 70 kV	P1-2:A20:36:_Templeton-Atascadero 70 kV and P1-2:A20:41:_Atascadero-San Luis Obispo 70 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Estrella 230 kV Project
LP-V-02	TEMPLETN 230 kV	P1-2:A14:18:_Templeton-Gates 230 kV and P1-2:A20:19:_Morro Bay-Templeton 230 kV	P6	N-1-1	0.8136	0.8143	0.8127	0.8081	0.8116				Mitigation under review
LP-V-03	MORRO BY 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
LP-V-04	FOOTHILL 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
LP-V-05	GOLDTREE 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
LP-V-06	SN LS OB 115 kV	P1-3:A20:2:_Morro Bay 230/115 Transformer #6 and P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Mitigation under review
LP-V-07	OCEANO 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-08	UNION OL 115 kV	P1-2:A20:27:_Callender Sw. Sta-Mesa 115 kV and P1-3:A20:2:_Morro Bay 230/115 Transformer #6	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-09	VAFB SSA 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-10	VAFB SSB 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-11	DIVIDE 70 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-12	DIVVIDE 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-13	BUELLTON 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-14	CABRILLO 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-15	MANVILLE 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-16	PURISIMA 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2020 Summer Peak	2020 SP Heavy Renewable & Min Gas Gen	2025 Summer Peak	2025 SP No AEE	2025 Retirement of QF Generations	N/A	N/A		N/A
LP-V-17	SNTA YNZ 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-18	SURF 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project
LP-V-19	ZACA 115 kV	P1-2:A20:25:_Mesa-Divide 115 kV #1 and P1-2:A20:26:_Mesa-Divide 115 kV #2	P6	N-1-1	N/A	N/A	N/A	N/A	N/A				Action Plan. Midway-Andrew Project

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	2025 Summer Partial Peak	2020 SP Heavy Renewable & Min Gas Gen	N/A	
Bulk-SP-T-1	Lugo-Victorville 500 kV	Lugo-Eldorado 500 kV	P1	L-1	<100	<100	<100	<100	<100	107.86	<100		Increase line rating or Build new transmission facility
Bulk-SP-T-2	Lugo-Victorville 500 kV	Lugo-Eldorado 500 kV and Eldorado-Mohave/Lugo-Mohave 500 kV lines	P6	L-1/L-1	111.47	113.25	120.03	<100	<100	137.68	99.51		Increase line rating or Build new transmission facility
Bulk-SP-T-3	Midway-Whirlwind 500 kV	N-2 Midway-Vincent 500kV lines with RAS	P7	L-2	109.34	107.49	107.59	<100	<100	108.45	102.86		Reduce transfers on Path 26 within 30 minutes after the contingency.
Bulk-SP-T-4	Otay Mesa-Tijuana 230 kV	Eco-Miguel 500 kV and Ocotillo-Suncrest 500 kV lines	P6	L-1/L-1	<100	124.70	131.70	Diverge	<100	Diverge	Diverge		Systems adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
Bulk-SP-T-5	La Rosita-Imperial Valley 230 kV	Eco-Miguel 500 kV and Ocotillo-Suncrest 500 kV lines	P6	L-1/L-1	116.76	116.34	115.37	Diverge	<100	Diverge	Diverge		Systems adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
Bulk-SP-T-6	Barre-Ellis 230 kV lines #1-4	Eco-Miguel 500 kV and Ocotillo-Suncrest 500 kV lines	P6	L-1/L-1	<100	102.32	<100	<100	<100	Diverge	Diverge		Systems adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
Bulk-SP-T-7	N/A	Eco-Miguel 500 kV and Ocotillo-Suncrest 500 kV lines with Otay-Mesa-Tijuana 230 kV line tripped	P6	L-1/L-1	Diverge	Diverge	Diverge	Diverge	Converge	Diverge	Diverge		Systems adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
Bulk-SP-T-8	N/A	Eco-Miguel 500 kV and Ocotillo-Suncrest 500 kV lines with La Rosita-Imperial Valley 230 kV line tripped	P6	L-1/L-1	Diverge	Diverge	Diverge	Diverge	Converge	Diverge	Diverge		Systems adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
Bulk-SP-T-9	Delaney - Palo Verde 500 kV	Palo Verde - Colorado River 500 kV and N. Gila - Imperial Valley 500 kV	P6	L-1/L-1	<100	<100	<100	<100	<100	110.79	<100		Reduce transfers on WOR/EOR after initial contingency

Study Area: **SCE Bulk**

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 Summer Off-Peak	2020 Spring Light Load	N/A	N/A		N/A
X-VD-1													

No voltage deviations identified.

Study Area: **SCE Bulk**

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 Summer Off-Peak	2020 Spring Light Load	N/A	N/A		N/A
X-V-1													

No high/low voltage violations identified.



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Spring Light Load	2025 Summer Partial Peak	2020 SP Heavy Renewable & Min Gas Gen		N/A
Bulk-TS-1	Palo Verde–Colorado River & Imperial Valley–N.Gila 500 kV lines (without reducing transfers on WOR & EOR after the initial contingency)	P6	L-1/L-1	Did not meet voltage dip requirements								Reduce transfers on WOR/EOR after initial contingency, further evaluation

Study Area: **SCE Bulk**



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.

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

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	2020 Summer Peak with Low Hydro	N/A		N/A
BC&T-T-1	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1	P1	N-1	< 100	< 100	< 100	< 100	< 100	100.00			(a) Thyristor Controlled Series Capacitor. (b) Manage hydro generation to utilize during peak hours. (c) Modify RAS arming for low hydro conditions. (d) Additional new Preferred Resources and Energy Storage.
BC&T-T-2	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and Gen WELLGEN 13.8 Unit ID 1	P3	N-1/G-1	< 100	< 100	< 100	< 100	< 100	109.60			
BC&T-T-3	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and SPRINGVL-BIG CRK4 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	100.30			
BC&T-T-4	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and BIG CRK1-RECTOR 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	102.30			
BC&T-T-5	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and BIG CRK3-RECTOR 230 kV 1 or 2	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	103.20			
BC&T-T-6	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and MAGUNDEN-SPRINGVL 230 kV 2	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	107.20			
BC&T-T-7	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and MAGUNDEN-SPRINGVL 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	109.70			
BC&T-T-8	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 or 1 and SPRINGVL-RECTOR 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	112.20			
BC&T-T-9	MAGUNDEN-VESTAL 230 kV 1 or 2	MAGUNDEN-VESTAL 230 kV 2 and PASTORIA-PSTRIA 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	103.00			
BC&T-T-10	RECTOR-VESTAL 230 kV 1 or 2	RECTOR-VESTAL 230 kV 2 or 1 and SPRINGVL-RECTOR 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	103.00			
BC&T-T-11	RECTOR-VESTAL 230 kV 1 or 2	RECTOR-VESTAL 230 kV 2 or 1 and Gen B CRK2-1 13.8 Unit ID 1 or 2	P3	N-1/G-1	< 100	< 100	< 100	< 100	< 100	101.70			
BC&T-T-12	RECTOR-VESTAL 230 kV 1 or 2	MAGUNDEN-SPRINGVL 230 kV 1 and RECTOR-VESTAL 230 kV 2 or 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	102.60			
BC&T-T-13	RECTOR-VESTAL 230 kV 1 or 2	RECTOR-VESTAL 230 kV 2 or 1 and MAGUNDEN-SPRINGVL 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	124.80			
BC&T-T-14	RECTOR-VESTAL 230 kV 1 or 2	RECTOR-VESTAL 230 kV 2 or 1 and MAGUNDEN-SPRINGVL 230 kV 2	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	121.20			
BC&T-T-15	MAGUNDEN-SPRINGVL 230 kV 2	RECTOR-VESTAL 230 kV 1 or 2 and MAGUNDEN-SPRINGVL 230 kV 1	P6	N-1-1	< 100	< 100	< 100	< 100	< 100	100.70			



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	2020 Summer Peak with Low Hydro	N/A		N/A

No voltage deviation concerns identified.



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	2020 Summer Peak with Low Hydro	N/A		N/A

No high/low voltage concerns identified.



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Low Hydro	N/A		N/A
BC&T-TS-1	Big Creek 1-Big Creek 2 230 kV line	P5	N-1	local area instability	local area instability	local area instability	local area instability	local area instability	local area instability	local area instability		Approved project to Install the second (dual) high speed protection for this line.



Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Low Hydro	N/A		N/A

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



ID	Substation	Load Served (MW)							Potential Mitigation Solutions	
		2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Low Hydro	N/A		N/A

No single source substation with more than 100 MW Load

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SP Heavy Renewable & Min Gas Gen	N/A		N/A
NOL-T-1	24728 INYO 115 24730 INYO PS 115 1	Line CONTROL 115.0 to INYOKERN 115.0 Circuit 1_	P1	N-1	29.07	24.81	21.10	100.82	96.10	25.80			Congestion management
NOL-T-2	24728 INYO 115 24730 INYO PS 115 1	Line CONTROL 115.0 to TAP710 115.0 Circuit 1_	P1	N-1	29.10	25.01	20.98	101.23	96.45	26.05			Congestion management
NOL-T-3	24728 INYO 115 24730 INYO PS 115 1	line CONTROL-COSO-INYOKERN 115 ck 2_	P1	N-1	29.22	25.17	21.01	101.44	96.65	26.23			Congestion management
NOL-T-4	24601 VICTOR 230 24602 VICTOR 115 2	Tran VICTOR 230.00 to VICTOR 115.00 Circuit 3 0.00_ and Tran VICTOR 230.00 to VICTOR 115.00 Circuit 4 0.00_	P6	N-1-1	127.77	130.70	136.86	< 100	< 100	115.37			Bring the hot spare bank in-service
NOL-T-5	24601 VICTOR 230 24602 VICTOR 115 3	Tran VICTOR 230.00 to VICTOR 115.00 Circuit 2 0.00_ and Tran VICTOR 230.00 to VICTOR 115.00 Circuit 4 0.00_	P6	N-1-1	127.37	130.28	136.42	< 100	< 100	115.05			Bring the hot spare bank in-service
NOL-T-6	24601 VICTOR 230 24602 VICTOR 115 4	Tran VICTOR 230.00 to VICTOR 115.00 Circuit 2 0.00_ and Tran VICTOR 230.00 to VICTOR 115.00 Circuit 3 0.00_	P6	N-1-1	127.37	130.28	136.42	< 100	< 100	115.05			Bring the hot spare bank in-service
NOL-T-7	24723 CONTROL 115 24728 INYO 115 1	Line INYOKERN 115.0 to KRAMER 115.0 Circuit 1_ and Line TAP701 115.0 to INYOKERN 115.0 Circuit 1_	P6	N-1-1	Diverged	99.39	< 100	Diverged	Diverged	99.56			Maintain Inyokern area generation-load balance as described in SCE's SOB 209 (Kramer RAS)
NOL-T-8	24728 INYO 115 24730 INYO PS 115 1	Line CONTROL 115.0 to TAP710 115.0 Circuit 1_ and Line KRAMER 230.0 to VICTOR 230.0 Circuit 1_	P6	N-1-1	< 100	< 100	< 100	108.02	98.19	< 100			Redispatch generation North of Control after the first N-1
NOL-T-9	24728 INYO 115 24730 INYO PS 115 1	Line CONTROL 115.0 to TAP710 115.0 Circuit 1_ and Line KRAMER 230.0 to VICTOR 230.0 Circuit 2_	P6	N-1-1	< 100	< 100	< 100	108.02	98.19	< 100			Redispatch generation North of Control after the first N-1
NOL-T-10	24728 INYO 115 24730 INYO PS 115 1	Line CONTROL 115.0 to TAP710 115.0 Circuit 1_ and line KRAMER-INYOKERN-RANDBS 115 ck 1_	P6	N-1-1	< 100	< 100	< 100	107.62	103.22	< 100			Redispatch generation North of Control after the first N-1
NOL-T-11	24728 INYO 115 24730 INYO PS 115 1	Line KRAMER 230.0 to VICTOR 230.0 Circuit 2_ and line CONTROL-COSO-INYOKERN 115 ck 2_	P6	N-1-1	< 100	< 100	< 100	108.20	98.39	< 100			Redispatch generation North of Control after the first N-1
NOL-T-12	24728 INYO 115 24730 INYO PS 115 1	line KRAMER-INYOKERN-RANDBS 115 ck 1_ and Line CONTROL 115.0 to TAP710 115.0 Circuit 1_	P6	N-1-1	< 100	< 100	< 100	107.61	103.22	< 100			Redispatch generation North of Control after the first N-1
NOL-T-13	Case Divergence	Lugo 500/230 kV AA Bank 1 and 2 (with HDPP RAS and Mohave Desert RAS)	P6	N-1-1	Diverged	Diverged	Diverged	Diverged	Diverged	Diverged			Reduction in total generation drop for the the loss of both transformer banks
NOL-T-14	24648 IVANPAH 115 24778 MTN PASS 115 1	Lugo 500/230 kV AA Bank 1 and 2 (with HDPP RAS)	P6	N-1-1	< 100	< 100	109.00	< 100	< 100	< 100			Reduction in total generation drop for the the loss of both transformer banks

Study Area: **SCE North of Lugo**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

No voltage deviation concerns identified.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SP Heavy Renewable & Min Gas Gen	N/A		N/A
NOL-V-1	INYO PS 115 kV	Base Case	P0	N-0	1.0354	1.0299	1.026	1.0361	1.0557	1.0264			Adjust voltage schedule, reactive devices and taps.
NOL-V-2	INYO 115 kV	Line CONTROL 115.0 to INYO 115.0 Circuit 1_	P1	N-1	1.1159	1.077	1.0585	1.1588	1.2027	1.0762			Adjust voltage schedule, reactive devices and taps.
NOL-V-3	INYO 230 kV	Tran INYO 115.00 to INYO PS 115.00 Circuit 1 0.00_	P1	N-1	< 1.1	1.077	1.0585	1.1588	1.2027	1.0762			Not under ISO control. Adjust voltage schedule, reactive devices and taps.
NOL-V-4	INYO PS 115 kV	Line CONTROL 115.0 to INYO 115.0 Circuit 1_	P1	N-1	1.1159	1.077	1.0585	1.1588	1.2027	1.0762			Adjust voltage schedule, reactive devices and taps.
NOL-V-5	INYO PS 115 kV	Tran INYO 115.00 to INYO PS 115.00 Circuit 1 0.00_	P1	N-1	1.1159	1.077	1.0585	1.1588	1.2027	1.0762			Adjust voltage schedule, reactive devices and taps.



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	
None											

No transient stability concerns identified.

Study Area: **SCE North of Lugo**



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.



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

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
EOL-T-1	19012 MEAD S 230 189040 BOB SS 230 1	Tran ELDORDO 500.00 to ELDORDO2 230.00 Circuit 5ELDOR 5T 13.80_	P1	N-1	<90	<90	<90	<90	<90	167.99	164.03		T-1 gen tripping as part of Ivanpah RAS
EOL-T-2	24648 IVANPAH 115 24778 MTN PASS 115 1	Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P1	N-1	58.04	57.36	54.43	100.47	17.05	93.02	93.54		Congestion management or upgrade if cost effective
EOL-T-3	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line ADELANTO 500.0 to RINALDI2 500.0 Circuit 1_	P6	N-1-1	94.77	90.57	<90	101.67	<90	93.91	95.32		Increase the rating of the line or build a new transmission facility.
EOL-T-4	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line ADELANTO 500.0 to TOLUCA 500.0 Circuit 1_	P6	N-1-1	97.44	92.41	<90	102.95	<90	95.76	96.81		Increase the rating of the line or build a new transmission facility.
EOL-T-5	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P6	N-1-1	113.49	106.74	105.38	121.96	<90	110.98	<90		Increase the rating of the line or build a new transmission facility.
EOL-T-6	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line MOHAVE 500.0 to ELDORDO 500.0 Circuit 1_	P6	N-1-1	113.86	107.67	106.55	122.21	<90	111.89	<90		Increase the rating of the line or build a new transmission facility.
EOL-T-7	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line PALOVRDE 500.0 to COLRIVER 500.0 Circuit 1_	P6	N-1-1	110.28	<90	<90	116.42	<90	93.48	93.74		Increase the rating of the line or build a new transmission facility.
EOL-T-8	24086 LUGO 500 26105 VICTORVL 500 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line VICTORVL 500.0 to RINALDI 500.0 Circuit 1_	P6	N-1-1	93.97	<90	<90	100.83	<90	93.10	94.54		Increase the rating of the line or build a new transmission facility.
EOL-T-9	24647 IVANPAH 230 24648 IVANPAH 115 1	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	119.57	<90	115.25	115.49		Congestion management
EOL-T-10	24647 IVANPAH 230 24648 IVANPAH 115 1	Line BAKER 115.0 to MTN PASS 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	120.04	<90	116.05	116.29		Congestion management
EOL-T-11	24647 IVANPAH 230 24648 IVANPAH 115 1	Line COLWATER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	119.51	<90	115.03	115.33		Congestion management
EOL-T-12	24647 IVANPAH 230 24648 IVANPAH 115 1	Line IVANPAH 115.0 to MTN PASS 115.0 Circuit 1_ and Tran IVANPAH 230.00 to IVANPAH 115.00 Circuit 2 0.00_	P6	N-1-1	<90	<90	<90	122.25	<90	119.46	119.64		Congestion management
EOL-T-13	24648 IVANPAH 115 24778 MTN PASS 115 1	Line ELDORDO 500.0 to LUGO 500.0 Circuit 1_ and Line LUGO 500.0 to VICTORVL 500.0 Circuit 1_	P6	N-1-1	<90	<90	<90	110.57	<90	101.59	103.53		Congestion management

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		Select..
EOL-VD-1	LAUGHLIN1 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.836	-6.33	-6.549	-5.46	-5.978	-6.412	-6.416		Dynamic VAR support or exception
EOL-VD-2	LAUGHLIN2 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.836	-6.33	-6.549	-5.46	-5.978	-6.412	-6.416		Dynamic VAR support or exception
EOL-VD-3	MOHAVE 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	-5.835	-6.33	-6.548	-5.46	-5.978	-6.411	-6.416		Dynamic VAR support or exception
EOL-VD-4	PRIMM 230 kV	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P6	N-1-1	<10	<10	<10	11.879	<10	<10	<10		Dynamic VAR support or exception
EOL-VD-5	TC08SC68 230 kV	Line BAKER 115.0 to DUNNSIDE 115.0 Circuit 1_ and Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_	P6	N-1-1	<10	<10	<10	11.998	<10	<10	<10		Dynamic VAR support or exception

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
EOL-V-1	CIMA 230 kV	Base Case	P0	N-0	1.0255	< 1.05	1.0313	1.0139	1.0502	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-2	CIMAT1 230 kV	Base Case	P0	N-0	1.0255	< 1.05	1.0313	1.0139	1.0502	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-3	CIMAT2 230 kV	Base Case	P0	N-0	1.0419	< 1.05	1.045	1.0323	1.053	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-4	DSRTSTLN 230 kV	Base Case	P0	N-0	1.0263	< 1.05	1.0224	0.9869	1.0675	< 1.05	< 1.05		Not under ISO control. Adjust voltage schedules, taps and reactive devices.
EOL-V-5	ELDORDO2 230 kV	Base Case	P0	N-0	1.0185	< 1.05	1.02	0.9844	1.0623	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-6	IVANPAH 230 kV	Base Case	P0	N-0	1.0264	< 1.05	1.0232	0.9871	1.0673	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-7	PISGAH 230 kV	Base Case	P0	N-0	1.0157	< 1.05	1.0242	0.9985	1.0561	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-8	PRIMM 230 kV	Base Case	P0	N-0	1.0245	< 1.05	1.0226	0.9815	1.0666	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices.
EOL-V-9	LAUGHLIN1 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1466	1.1132	1.1438	1.1327	1.13		Adjust voltage schedules, taps and reactive devices.
EOL-V-10	LAUGHLIN2 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1466	1.1132	1.1438	1.1327	1.13		Adjust voltage schedules, taps and reactive devices.
EOL-V-11	MOHAVE 500 kV	Line LUGO 500.0 to MOHAVE 500.0 Circuit 1_	P1	N-1	1.1244	1.1353	1.1467	1.1132	1.1438	1.1327	1.13		Adjust voltage schedules, taps and reactive devices.
EOL-V-12	IVANPAH 230 kV	Line PRIMM 230.0 to ELDORDO2 230.0 Circuit 1_ and Line IVANPAH 115.0 to MTN PASS 115.0 Circuit 1_	P6	N-1-1	> 0.9	> 0.9	> 0.9	0.8569	> 0.9	> 0.9	> 0.9		Adjust scheduled voltages, taps and reactive devices

ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	

No transeint stability issues identified.

Study Area: **SCE East of Lugo**



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: **SCE East of Lugo**



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

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	2020 SP Heavy Renewable & Min Gas Gen	N/A		N/A
EOP-SP-T-1	N/A	N-1-1 Julian - Mirage 230 kV and Eagle Mountain - Iron Mountain 230 kV	P6	L-1/L-1	Diverged	Diverged	Diverged	Converge	Converge	Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-T-2	N/A	N-1-1 Julian - Mirage 230 kV and Camino - Gene - Iron Mountain - Mead 230 kV	P6	L-1/L-1	Diverged	Diverged	Diverged	Converge	Converge	Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-T-3	N/A	N-1-1 Julian - Mirage 230 kV and BlytheSC - Eagle Mountain 161 kV	P6	L-1/L-1	Diverged	Diverged	Diverged	Converge	Converge	Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-T-4	N/A	N-1-1 Julian - Mirage 230 kV and Blythe 161 kV Bus Tie (WALC - SCE)	P6	L-1/L-1	Diverged	Diverged	Diverged	Converge	Converge	Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-T-5	N/A	N-1-1 Julian - Mirage 230 kV and Eagle Mountain 230/161 kV Transformer	P6	L-1/L-1	Diverged	Diverged	Diverged	Converge	Converge	Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-T-6	Eagle Mountain - Iron Mountain 230 kV	N-1-1 Palo Verde - Colorado River 500 kV and Serrano - Valley 500 kV with SPS tripping 3 Blythe units	P6	L-1/L-1	101.09	<100	<100	<100	<100	<100			Colorado River - Delaney 500 kV line in service in 2020, Operation Procedure in the interim
EOP-SP-T-7	Eagle Mountain - Iron Mountain 230 kV	N-1-1 Palo Verde - Colorado River 500 kV and N. Gila-Imperial Valley 500 kV with SPS tripping 3 Blythe units	P6	L-1/L-1	107.28	<100	<100	<100	<100	<100			Colorado River - Delaney 500 kV line in service in 2020, Operation Procedure in the interim



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	2020 SP Heavy Renewable & Min Gas Gen	N/A	N/A	
EOP-SP-VD-1	BUCK230 230 kV	N-1 Blythe CCGT Outage	P1	L-1	<5	<5	<5	5.88	<5	<5			Change the scheduled voltage at BLY1CT1, BLY1CT2 and BLY1ST1 to be 1.04375 to decrease voltage deviation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Spring Light Load	2020 SP Heavy Renewable & Min Gas Gen	N/A		N/A
EOP-SP-V-1	BUCK230 230 kV	N-1 Julian Hinds - Mirage 230 kV	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0719	<1.052			Install shunt reactor
EOP-SP-V-2	J.HINDS 230 kV	N-1 Julian Hinds - Mirage 230 kV	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0628	<1.052			Install shunt reactor
EOP-SP-V-3	EAGLEMTN 230 kV	N-1 Julian Hinds - Mirage 230 kV	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0613	<1.052			Install shunt reactor
EOP-SP-V-4	BUCK230 230 kV	N-1 Julian Hinds Shunt Reactor	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0599	<1.052			Install shunt reactor
EOP-SP-V-5	BUCK230 230 kV	N-1 Julian Hinds MWD - Eagle Mountain 230 kV	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0557	<1.052			Install shunt reactor
EOP-SP-V-6	BUCK230 230 kV	N-1 J Hinds 230 kV Bus Tie (MWD - SCE)	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0555	<1.052			Install shunt reactor
EOP-SP-V-7	EAGLEMTN 230 kV	N-1 Julian Hinds MWD - Eagle Mountain 230 kV	P1	L-1	<1.052	<1.052	<1.052	<1.052	1.0523	<1.052			Install shunt reactor
EOP-SP-V-8	BUCK230 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Julian Hinds 230 kV Reactor	P6	L-1/L-1	<1.052	<1.052	<1.052	<1.052	1.1074	<1.052			Install shunt reactor
EOP-SP-V-9	J.HINDS 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Julian Hinds 230 kV Reactor	P6	L-1/L-1	<1.052	<1.052	<1.052	<1.052	1.098	<1.052			Install shunt reactor
EOP-SP-V-10	EAGLEMTN 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Julian Hinds 230 kV Reactor	P6	L-1/L-1	<1.052	<1.052	<1.052	<1.052	1.0907	<1.052			Install shunt reactor
EOP-SP-V-11	IRON MTN 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and CAMINO - GENE - IRON MTN - MEAD 230 KV OUTAGE	P6	L-1/L-1	<1.052	<1.052	<1.052	<1.052	1.0879	<1.052			Install shunt reactor
EOP-SP-V-12	BUCK230 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Blythe CCGT Outage	P6	L-1/L-1	<1.052	<1.052	<1.052	1.0632	N/A	<1.052			Install shunt reactor
EOP-SP-V-13	J.HINDS 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Blythe CCGT Outage	P6	L-1/L-1	<1.052	<1.052	<1.052	1.0546	N/A	<1.052			Install shunt reactor
EOP-SP-V-14	EAGLEMTN 230 kV	N-1-1 Julian Hinds - Mirage 230 kV and Blythe CCGT Outage	P6	L-1/L-1	<1.052	<1.052	<1.052	1.0534	N/A	<1.052			Install shunt reactor



ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 SOP Heavy Renewable & Min Gas Gen	N/A	N/A		
EOP-SP-TS-1	Julian Hinds–Mirage & Eagle Mountain–Iron Mountain 230 kV lines	P6	L-1/L-1	Diverged	Diverged	Diverged	Diverged			Diverged			System adjustments after initial contingency per ISO OP 7720F.
EOP-SP-TS-2	Julian Hinds–Mirage & Iron Mountain–Camino–Mead–Gene 230 kV lines	P6	L-1/L-1	Diverged	Diverged	Diverged	Diverged			Diverged			System adjustments after initial contingency per ISO OP 7720F.



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-SP-SLD-1												

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



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-SP-SS-1										

No single source substation with more than 100 MW Load

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	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load	N/A	
METRO-T-1	LUGO – VICTORVL 500 KV #1	LUGO – ELDORDO 500 KV #1	P1	L-1	<100	<100	99.80	<100	<100	<100	115.11	Increase the rating of the line or build a new transmission line.	
METRO-T-2		LUGO – ELDORDO 500 KV #1 & MOUNTAIN VIEW CC MODULE	P3	G-1/L-1	<100	<100	100.53	<100	<100	<100	116.29		
METRO-T-3	LAGUBELL – MESA CAL 230 #1	MESA CAL – LITEHIPE 230.0 #1 & MESA CAL – REDONDO 230.0 #1	P6	L-1/L-1	<100	<100	107.66	<100	<100	<100	115.85	Utilize Preferred Resources and Energy Storage. Additional mitigation may be needed if high load growth materializes.	
METRO-T-4		MESA CAL – LITEHIPE 230.0 #1 & MESACALS – LAGUBELL 230.0 #2	P7	L-2	<100	<100	101.99	<100	<100	<100	109.92		
METRO-T-5		MESA 500./230 KV #3 & #4	P6	T-1/T-1	<100	<100	104.66	<100	<100	<100	112.68		
METRO-T-6	LUGO – VICTORVL 500 KV #1	LUGO – ELDORDO 500 KV #1 & MOHAVE – ELDORDO 500 KV #1 OR MOHAVE – LUGO 500 KV #1	P6	L-1/L-1	113.98	111.50	127.47	<100	<100	115.87	148.89	Increase the rating of the line or build a new transmission line.	
METRO-T-7	LCIENEGA – LA FRESA 230KV #1	EL NIDO – LA FRESA 230 KV #3 & #4	P7	L-2	<100	<100	<100	103.00	<100	<100	<100	Increase pre-contingency generation in the El Nido local area.	
METRO-T-8	SERRANO 500/230 KV #1, #2, OR #3	TWO SERRANO 500/230 KV TRAN.	P6	T-1/T-1	100.97	108.46	117.37	125.03	<100	123.19	126.65	Energize available spare single phase transformers. Perform system adjustments after initial or second contingency including dispatching generation and Preferred Resources & Storage until spares can be energized.	
METRO-T-9	MIRALOMA 500/230 KV #4	MIRALOMA – SERRANO 500 KV #2 & LUGO – RANCVST 500 KV #1	P6	L-1/L-1	127.82	122.02	<100	<100	<100	128.12	<100	System adjustments after initial or second contingency including looping-in the Rancho Vista-Serrano line into Mira Loma.	

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	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load		N/A
METRO-T-10	MIRALOMA 500/230 KV #1 OR #2	MIRALOMA 500/230 KV #2 OR #1 & MIRALOMA – SERRANO 500 KV #2	P6	T-1/L-1	107.67	108.08	<100	<100	<100	114.56	<100		System adjustments after first or second contingency including looping-in the Rancho Vista-Serrano line into Mira Loma and energizing the spare Mira Loma 500/230 kV transformer.
METRO-T-11	BARRE – LEWIS 230 KV #1	S.ONOFRE – SERRANO 230 KV # & BARRE – VILLA PK 230 KV #1	P6	L-1/L-1	<100	<100	<100	110.90	<100	<100	<100		Dispatch generation in Orange County after initial contingency .
METRO-T-12	MIRALOMA – SERRANO 500 KV #2	LUGO – RANCHOVST 500 KV #1 & PALOVRDE – COLRIVER 500 KV #1	P6	L-1/L-1	105.65	<100	<100	<100	<100	<100	<100		Dispatch generation in LA Basin or loop-in Rancho Vista-Serrano line into Mira Loma after initial or second contingency.
METRO-T-13	MIDWAY – WIRLWIND 500 KV #3	MIDWAY – VINCENT 500 KV #1 & #2	P7	L-2	111.72	108.60	104.57	<100	<100	108.23	105.65		Reduce transfers on Path 26 within 30 minutes after the contingency.
METRO-T-14	MESA CAL – REDONDO 230KV #1	LAGUBELL – MESA CAL 230 KV #1 & LITEHIPE – MESA CAL 230.0 #1	P6	L-1/L-1	<100	<100	<100	<100	<100	<100	101.18		Utilize available Preferred Resources & Energy Storage.
METRO-T-15	ELLIS – JOHANNA 230 KV #1	ECO – MIGUEL 500 KV #1 & OCOTILLO – SUNCREST 500 #1	P6	L-1/L-1	<100	<100	<100	<100	<100	<100	Diverged		System adjustments after initial contingency including IV phase shifter adjustment and dispatching preferred resources.
METRO-T-16	PARDEE – SYLMAR S 230 KV #1 OR #2	LUGO – VICTORVL 500 KV & PARDEE – SYLMAR S 230 #2 OR #1	P6	L-1/L-1	<100	<100	<100	<100	<100	<100	108.81		System adjustments after initial contingency including reducing transfers on PDCI

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	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load		N/A
METRO-T-17	EAGLROCK – SYLMAR S 230 KV #1	LUGO – VICTORVL 500 KV #1 & SYLMAR S – GOULD 230 KV # 1	P6	L-1/L-1	<100	<100	<100	<100	<100	<100	101.87	<100	System adjustments after initial contingency including reducing transfers on PDCI
METRO-T-18	SERRANO – VILLA PK 230 #1	LEWIS – SERRANO 230.0 #1 OR #2 & SERRANO – VILLA PK #2	P6	L-1/L-1	<100	<100	<100	<100	<100	<100	102.41		Utilize available Preferred Resources & Energy Storage

The Metro area 2020 SP sensitivity scenario “Summer Peak with OTC plants replaced” in Table 4-2 of the Study Plan was changed to a Summer Peak scenario with early OTC retirements (Northwest LA Basin).

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	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load	N/A	
Metro-VD-1	GOLETA 66 KV	S.CLARA – GOLETA #1 OR #2	P1	L-1	<5%	<5%	<5%	<5%	5%	<5%	<5%	<5%	Voltage deviation at limit. Available generators at Goletta can be used to reduce voltage deviation.

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	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load		N/A

No high/low voltage deviations identified.

ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load	N/A	
METRO-TS-1	#1 & SAN BERNARDIO – VISTA #2, 3-PHASE FAULT AT VISTA	P6	L-1/L-1	Utilization of the new WECC Phase 1 composite load model (CMPLDW) resulted in activation of under frequency load shed at San Bernardino								
METRO-TS-2	AGO #1 & ELLIS – JOHANNA #1, 3 PHASE FAULT AT JOHANNA	P6	L-1/L-1	Utilization of the new WECC Phase 1 composite load model (CMPLDW) resulted in activation of under frequency load shed at Ellis								
METRO-TS-3	ECO–MIGUEL 500 KV #1 & OCOTILLO–SUNCREST 500 KV #1, 3-PHASE FAULT AT SUNCREST (With system adjustment after the initial contingency)	P6	L-1/L-1	None	None	None	None	None	None	Up to 40.5% transient voltage dip at 9 buses	Up to 42.7% transient voltage dip at 26 buses	The 2015-16 TPP is the first year in which the new WECC Phase 1 composite load model (CMPLDW) was included in the transient stability assessment. Utilization of this new model resulted in activation of under frequency load shed and transient voltage dip in the simulations. Further investigation is required in the next planning cycle to confirm the parameters in the new WECC Phase 1 composite load model and determine if this system response is valid.



Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load		N/A
X-SP-SLD-1												

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

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)							Potential Mitigation Solutions	
		2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Summer Peak with Early OTC Retirements	2025 SP High CEC Load		N/A
X-SP-SS-1										

No single source substation with more than 100 MW Load

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-T-1	19012 MEAD S 230 189040 BOB SS 230 1	Tran ELDORDO 500.00 to ELDORDO2 230.00 Circuit 5ELDOR 5T 13.80_	P1	N-1	< 90	< 90	< 90	< 90	< 90	< 90	167.99	164.03	Add T-1 gen tripping as part of Ivanpah RAS
VEA-T-2	189000 PAHRUMP 230 189007 PAHRUMP 138 1	P4.3-6_PAHRUMP 138/230kV Tran Bnk. #2 & PAHRUMP-INNOVATION 230	P4	Breaker Failure	< 90	< 90	100.47	< 90	< 90	< 90	< 90	< 90	Short-term emergency rating or rely on future generation in VEA or automatic load transfer SPS
VEA-T-3	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	< 90	115.58	114.10	< 90	< 90	< 90	< 90	115.89	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-4	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	147.42	N/A	N/A	< 90	N/A	N/A	N/A	N/A	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-5	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	113.17	110.87	N/A	< 90	< 90	< 90	113.43	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-6	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	142.34	N/A	N/A	< 90	N/A	N/A	N/A	N/A	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-7	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line PAHRUMP 230.0 to INNOVATION 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	120.95	N/A	N/A	< 90	N/A	N/A	N/A	N/A	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-8	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_ and Line PAHRUMP 230.0 to INNOVATION 230.0 Circuit 1_	P6	N-1-1	120.92	N/A	N/A	< 90	N/A	N/A	N/A	N/A	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-9	18003 AMARGOSA 230 189001 AMARGOSA 138 1	Tran PAHRUMP 230.00 to PAHRUMP 138.00 Circuit 1 0.00_ and Tran PAHRUMP 230.00 to PAHRUMP 138.00 Circuit 2 0.00_	P6	N-1-1	118.62	92.31	< 90	< 90	< 90	< 90	< 90	91.11	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-10	189000 PAHRUMP 230 189007 PAHRUMP 138 1 or 2	Line AMARGOSA 138.0 to SANDY 138.0 Circuit 1_ and Tran PAHRUMP 230.00 to PAHRUMP 138.00 Circuit 2 or 1	P6	N-1-1	100.85	< 90	95.42	< 90	< 90	< 90	< 90	91.32	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-11	189000 PAHRUMP 230 189007 PAHRUMP 138 1 or 2	Line INNOVATION 138.0 to MERCRYSW 138.0 Circuit 1_ and Tran PAHRUMP 230.00 to PAHRUMP 138.00 Circuit 2 or 1	P6	N-1-1	95.44	< 90	105.05	< 90	< 90	< 90	< 90	91.79	Existing UVLS or operational action plan (Switching after N-1)
VEA-T-12	189000 PAHRUMP 230 189007 PAHRUMP 138 1 or 2	Tran INNOVATION 230.00 to INNOVATION 138.00 Circuit 1 0.00_ and Tran PAHRUMP 230.00 to PAHRUMP 138.00 Circuit 2 or 1	P6	N-1-1	95.39	< 90	105.01	< 90	< 90	< 90	< 90	91.77	Existing UVLS or operational action plan (Switching after N-1)

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-T-13	18084 NWEST 138 189101 MERCYSW 138 (several sections)	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	122.88	147.41	N/A	< 90	< 90	123.92		Existing UVLS or operational action plan (Switching after N-1)
VEA-T-14	18084 NWEST 138 189101 MERCYSW 138 (several sections)	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	134.47	N/A	N/A	< 90	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-T-15	18084 NWEST 138 189101 MERCYSW 138 (several sections)	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	119.64	141.22	N/A	< 90	< 90	120.55		Existing UVLS or operational action plan (Switching after N-1)
VEA-T-16	18084 NWEST 138 189101 MERCYSW 138 (several sections)	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	132.53	N/A	N/A	< 90	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-T-17	18084 NWEST 138 189101 MERCYSW 138 (several sections)	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_63 and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	132.53	N/A	N/A	< 90	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-VD-1	CHARLSTN 138 kV	Line GAMEBIRD 138.0 to PAHRUMP 138.0 Circuit 1_	P1	N-1	8.056	< 5	< 5	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-2	DESERT VIEW 230 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_	P1	N-1	< 5	< 5	< 5	< 5	-6.764	< 5	< 5		Dynamic VAR support or exception
VEA-VD-3	GAMEBIRD 138 kV	Line GAMEBIRD 138.0 to PAHRUMP 138.0 Circuit 1_	P1	N-1	7.97	< 5	< 5	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-4	PAHRUMP 230 kV	Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P1	N-1	< 5	< 5	6.895	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-5	PAHRUMP 230 kV	Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P1	N-1	5.072	< 5	< 5	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-6	SANDY 138 kV	Line GAMEBIRD 138.0 to PAHRUMP 138.0 Circuit 1_	P1	N-1	5.677	< 5	< 5	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-7	THSNDAIR 138 kV	Line GAMEBIRD 138.0 to PAHRUMP 138.0 Circuit 1_	P1	N-1	8.018	< 5	< 5	< 5	< 5	< 5	< 5		Dynamic VAR support or exception
VEA-VD-8	BEATTY 138 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.301	19.815	N/A	< 10	< 10	14.158		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-9	BEATTY 138 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.217	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-10	CHARLSTN 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	17.08	22.372	N/A	< 10	< 10	17.159		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-11	CHARLSTN 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	15.515	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-12	DESERT VIEW 230 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	21.087	26.418	N/A	-10.363	13.791	20.62		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-13	DESERT VIEW 230 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	19.984	N/A	N/A	15.085	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-14	FRENCH-FLAT 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.398	20.507	N/A	< 10	< 10	14.32		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-15	FRENCH-FLAT 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.465	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-16	GAMEBIRD 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	16.935	22.076	N/A	< 10	< 10	16.99		Existing UVLS or operational action plan (Swithcing after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-VD-17	GAMEBIRD 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	15.299	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-18	IND SPR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	< 10	11.899	N/A	< 10	< 10	< 10		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-19	JACKASSF 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	15.023	21.134	N/A	< 10	< 10	14.994		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-20	JACKASSF 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	14.04	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-21	JOHNNIE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	16.735	22.259	N/A	< 10	< 10	16.816		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-22	JOHNNIE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	15.642	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-23	LTHRPWLS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	15.464	21.552	N/A	< 10	< 10	15.47		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-24	LTHRPWLS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	14.448	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-25	MERC-DIST 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.084	20.006	N/A	< 10	< 10	13.987		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-26	MERC-DIST 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.175	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-27	PAHRUMP 230 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	22.546	28.695	N/A	-8.273	12.117	21.775		Existing UVLS or operational action plan (Swithcing after N-1)
VEA-VD-28	PAHRUMP 230 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	20.284	N/A	N/A	14.327	N/A	N/A	N/A		Existing UVLS or operational action plan (Swithcing after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-VD-29	RADAR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	< 10	11.44	N/A	< 10	< 10	< 10		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-30	SANDY 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	13.718	17.743	N/A	< 10	< 10	13.755		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-31	SANDY 138 kV	Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_ and Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_	P6	N-1-1	11.207	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-32	STOCK-WASH 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.944	21.058	N/A	< 10	< 10	14.907		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-33	STOCK-WASH 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.967	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-34	THSNDAIR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	15.425	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-35	THSNDAIR 138 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	15.673	20.424	N/A	< 10	< 10	15.383		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-36	TWEEZER 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.507	20.591	N/A	< 10	< 10	14.436		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-37	TWEEZER 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.565	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-38	VALLEY-NTS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	14.635	20.742	N/A	< 10	< 10	14.572		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-39	VALLEY-NTS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	13.682	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-40	VALLEYVE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	15.788	21.852	N/A	< 10	< 10	15.822		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-VD-41	VALLEYVE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	14.744	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-42	VISTA 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	17.027	22.338	N/A	< 10	< 10	17.117		Existing UVLS or operational action plan (Switching after N-1)
VEA-VD-43	VISTA 138 kV	Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_ and Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_	P6	N-1-1	16.193	N/A	N/A	< 10	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-V-1	BOB SS 230 kV	Base Case	P0	N-0	< 1.05	< 1.05	< 1.05	< 1.05	1.0619	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices or seek for an exception
VEA-V-2	PAHRUMP 230 kV	Base Case	P0	N-0	< 1.05	< 1.05	< 1.05	< 1.05	1.059	< 1.05	< 1.05		Adjust voltage schedules, taps and reactive devices or seek for an exception
VEA-V-3	BEATTY 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8579	0.8054	N/A	> 0.9	> 0.9	0.8512		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-4	BEATTY 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.857	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-5	CHARLSTN 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8426	0.7923	N/A	> 0.9	> 0.9	0.8355		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-6	CHARLSTN 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8423	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-7	CHARLSTN 138 kV	Line PAHRUMP 138.0 to GAMEBIRD 138.0 Circuit 1_ and Line VISTA 138.0 to CHARLSTN 138.0 Circuit 1_	P6	N-1-1	> 0.9	> 0.9	0.8162	> 0.9	> 0.9	> 0.9	> 0.9		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-8	DESERT VIEW 230 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.7984	0.7561	N/A	1.1986	0.8972	0.7925		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-9	FRENCH-FLAT 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8656	0.8156	N/A	> 0.9	> 0.9	0.8593		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-10	FRENCH-FLAT 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8635	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-11	GAMEBIRD 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8468	0.7968	N/A	> 0.9	> 0.9	0.8398		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-12	GAMEBIRD 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8523	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-13	GAMEBIRD 138 kV	Line NWEST 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.867	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-V-14	IND SPR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	> 0.9	0.8943	N/A	> 0.9	> 0.9	> 0.9	> 0.9	Existing UVLS or operational action plan (Switching after N-1)
VEA-V-15	INNOVATION 230 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.775	0.7315	N/A	1.1595	0.8902	0.7691		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-16	INNOVATION 230 kV	Line PAHRUMP 230.0 to INNOVATION 230.0 Circuit 1_ and Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_	P6	N-1-1	0.8991	> 0.9	> 0.9	> 0.9	1.1341	> 0.9	> 0.9		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-17	JACKASSF 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.861	0.8102	N/A	> 0.9	> 0.9	0.8545		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-18	JACKASSF 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8594	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-19	JOHNNIE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8483	0.7976	N/A	> 0.9	> 0.9	0.8413		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-20	JOHNNIE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8491	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-21	LTHRPWLS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8582	0.8059	N/A	> 0.9	> 0.9	0.8515		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-22	LTHRPWLS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8573	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-23	MERC-DIST 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8704	0.824	N/A	> 0.9	> 0.9	0.8643		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-24	MERC-DIST 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8684	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-25	PAHRUMP 230 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.7659	0.7212	N/A	1.1597	0.8874	0.7597		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-V-26	PAHRUMP 230 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.7681	N/A	N/A	0.8843	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-27	PAHRUMP 230 kV	Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_ and Line PAHRUMP 230.0 to INNOVATION 230.0 Circuit 1_	P6	N-1-1	N/A	0.7956	0.7927	N/A	> 0.9	0.8713	0.7929		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-28	PAHRUMP 230 kV	Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_ and Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_	P6	N-1-1	0.7681	N/A	N/A	0.887	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-29	RADAR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	> 0.9	0.8987	N/A	> 0.9	> 0.9	> 0.9		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-30	SANDY 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8793	0.832	N/A	> 0.9	> 0.9	0.8727		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-31	SANDY 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8993	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-32	STOCK-WASH 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8616	0.811	N/A	> 0.9	> 0.9	0.8552		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-33	STOCK-WASH 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8599	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-34	THSNDIAIR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8429	0.7925	N/A	> 0.9	> 0.9	0.8359		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-35	THSNDIAIR 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8467	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-36	TWEEZER 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.8642	0.8147	N/A	> 0.9	> 0.9	0.8579		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-37	TWEEZER 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8622	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-38	VALLEY-NTS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.863	0.8133	N/A	> 0.9	> 0.9	0.8567		Existing UVLS or operational action plan (Switching after N-1)

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Summer Light Load	2020 SOP Heavy Renewable & Min Gas Gen	2020 SP Heavy Renewable & Min Gas Gen		N/A
VEA-V-39	VALLEY-NTS 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.861	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-40	VALLEYVE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_	P6	N-1-1	N/A	0.854	0.8007	N/A	> 0.9	> 0.9	0.8472		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-41	VALLEYVE 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8537	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-42	VISTA 138 kV	Line INNOVATION 230.0 to DESERT VIEW 230.0 Circuit 1_ and Line PAHRUMP 230.0 to MEAD S 230.0 Circuit 1_	P6	N-1-1	0.8473	N/A	N/A	> 0.9	N/A	N/A	N/A		Existing UVLS or operational action plan (Switching after N-1)
VEA-V-43	VISTA 138 kV	Line PAHRUMP 230.0 to BOB SS 230.0 Circuit 1_ and Line PAHRUMP 230.0 to INNOVATION 230.0 Circuit 1_	P6	N-1-1	N/A	0.892	0.8906	N/A	> 0.9	> 0.9	0.8893		Existing UVLS or operational action plan (Switching after N-1)



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	
None											



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.



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

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	2020 Winter Peak	2020 SP with Heavy renewable output		2025 SP with Heavy renewable output
SC-SD-T-1	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1	P1	T-1	101.8	116.4	123.9			112.3	122.2	130.3	Rely on Operating Procedure (OP)/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-2	22464 MIGUEL 230 22468 MIGUEL 500 2	SPS5.7_Miguel BK80 / BK 81 SPS	P1	T-1		107.2	114.1			101.3	111.7	120.7	
SC-SD-T-3	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2	P1	T-1	102.3	115.7	125.1			114.2	122.0	132.3	
SC-SD-T-4	22464 MIGUEL 230 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1								102.4	
SC-SD-T-5	22464 MIGUEL 230 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1								100.6	
SC-SD-T-6	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2	P1	T-1	103.7	118.6	126.2			114.5	124.5	132.8	
SC-SD-T-7	22468 MIGUEL 500 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1								101.9	
SC-SD-T-8	22468 MIGUEL 500 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1								100.2	
SC-SD-T-9	22885 SUNCREST 500 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500	P1	T-1								102.3	Rely on OP, Preferred resources/Energy Storage, modify SWPL/SPL SPS shedding gen, add SPS to open overloaded bank/SNC-SX 230 kV line, increase SPL rating, and/or add 3rd bank along with 3rd 230 kV line out of Suncrest if cost-effective
SC-SD-T-10	22885 SUNCREST 500 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500	P1	T-1								101.6	
SC-SD-T-11	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P1	L-1								100.4	
SC-SD-T-12	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P1	L-1								100.4	
SC-SD-T-13	22886 SUNCREST 230 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500	P1	T-1								102.3	
SC-SD-T-14	22886 SUNCREST 230 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500	P1	T-1								102.5	
SC-SD-T-15	22930 ECO 500 22935 ECO &1 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1			100.1				101.6	107.6	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-16	22930 ECO 500 22935 ECO &1 500 1	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1								105.5	
SC-SD-T-17	22935 ECO &1 500 22468 MIGUEL 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1			100.1				101.6	107.6	
SC-SD-T-18	22935 ECO &1 500 22468 MIGUEL 500 1	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1								105.5	
SC-SD-T-19	22356 IMPRLVLY 230 22361 IV BK80 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		110.4	124.4			118.9	119.9	134.4	
SC-SD-T-20	22356 IMPRLVLY 230 22362 IV BK82 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		108.5	119.7			109.3	117.9	129.4	

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	2020 Winter Peak	2020 SP with Heavy renewable output		2025 SP with Heavy renewable output
SC-SD-T-21	22360 IMPRLVLY 500 22361 IV BK80 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		110.2	124.1			117.5	119.4	133.9	Modify existing IV Bank SPS shedding gen, upgrade IV BK 80, and/or add 4th bank at IV
SC-SD-T-22	22360 IMPRLVLY 500 22362 IV BK82 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker						109.0			
SC-SD-T-23	22360 IMPRLVLY 500 22362 IV BK82 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		104.2	114.7				113.2	123.9	
SC-SD-T-24	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML-2T_MIGUEL 230 kV 2T CB	P2/P4	Breaker Fault/Stuck Breaker	101.5	115.1	124.5			113.6	121.3	131.7	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-25	22464 MIGUEL 230 22472 MIGUELMP 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker								101.7	
SC-SD-T-26	22464 MIGUEL 230 22472 MIGUELMP 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker								101.7	
SC-SD-T-27	22464 MIGUEL 230 22472 MIGUELMP 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker								102.6	
SC-SD-T-28	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML-2T_MIGUEL 230 kV 2T CB	P2/P4	Breaker Fault/Stuck Breaker	102.8	118.0	125.5			113.8	123.9	132.2	
SC-SD-T-29	22468 MIGUEL 500 22472 MIGUELMP 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker								101.2	
SC-SD-T-30	22468 MIGUEL 500 22472 MIGUELMP 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker								101.2	
SC-SD-T-31	22468 MIGUEL 500 22472 MIGUELMP 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker								102.1	
SC-SD-T-32	22771 BAY BLVD 230 22464 MIGUEL 230 1	MS-5T_MISSION 230 kV 5T CB	P2/P4	Breaker Fault/Stuck Breaker		100.1	101.7			103.9	104.7	104.9	

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	2020 Winter Peak	2020 SP with Heavy renewable output		2025 SP with Heavy renewable output	
SC-SD-T-33	22771 BAY BLVD 230 22768 BAY BLVD 69.0 2	BB-1T_BAYBLVD 230 kV 1T CB	P2/P4	Breaker Fault/Stuck Breaker		102.0	103.1					103.8	104.8	Rely on DG, DR, and Energy Storage, add 3rd bank at Bay Blvd, add 2nd Miguel-Bay Blvd 230 kV line, or retain/repower retirement resource
SC-SD-T-34	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	SA-1T_SANLUSRY 230 kV 1T CB	P2/P4	Breaker Fault/Stuck Breaker				111.4						Rely on OP or existing SPS at Talega until the overloaded section is re-conducted
SC-SD-T-35	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	SX-22T_SYCAMORE 230 kV 22T CB	P2/P4	Breaker Fault/Stuck Breaker									102.1	Rely on OP, Preferred resources/Energy Storage, modify SWPL/SPL SPS shedding gen, add SPS to open overloaded bank/SNC-SX 230 kV line, and/or add 3rd bank along with 3rd 230 kV line out of Suncrest if cost-effective
SC-SD-T-36	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	SX-22T_SYCAMORE 230 kV 22T CB	P2/P4	Breaker Fault/Stuck Breaker									103.2	
SC-SD-T-37	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	SX-22T_SYCAMORE 230 kV 22T CB	P2/P4	Breaker Fault/Stuck Breaker									103.2	
SC-SD-T-38	22930 ECO 500 22935 ECO &1 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker								101.0	107.0	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-39	22930 ECO 500 22935 ECO &1 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker								101.0	107.0	
SC-SD-T-40	22930 ECO 500 22935 ECO &1 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker			100.1					101.7	107.6	
SC-SD-T-41	22935 ECO &1 500 22468 MIGUEL 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker								101.0	107.0	
SC-SD-T-42	22935 ECO &1 500 22468 MIGUEL 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker								101.0	107.0	
SC-SD-T-43	22935 ECO &1 500 22468 MIGUEL 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker			100.1					101.7	107.6	
SC-SD-T-44	22771 BAY BLVD 230 22768 BAY BLVD 69.0 1	BB71_BB BK 71 230/69 and TL23026_TL23026 SILVERGT - BAY BLVD ck 1	P6	L-1/T-1		101.3	103.0					103.5	104.7	
SC-SD-T-45	22771 BAY BLVD 230 22768 BAY BLVD 69.0 2	BB70_BB BK 70 230/69 and TL23026_TL23026 SILVERGT - BAY BLVD ck 1	P6	L-1/T-1		101.3	103.0					103.5	104.7	

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	2020 Winter Peak	2020 SP with Heavy renewable output		2025 SP with Heavy renewable output		
SC-SD-T-46	22232 ENCINA 230 22716 SANLUSRY 230 2	TL23001_TL23001 SANLUSRY - MISSION ck 1 and TL23003_TL23003 SANLUSRY - ENCINA ck 1	P6	L-1-1					101.3					OP to curtail northerbound flow via the North of SONGS path	
SC-SD-T-47	22356 IMPRLVLY 230 22361 IV BK80 MP 500 1	IV81_IV BK 81 230/500/12 and IV82_IV BK 82 230/500/12	P6	L-1-1									119.3	Modify existing IV Bank SPS shedding gen, upgrade IV BK 80, and/or add 4th bank at IV	
SC-SD-T-48	22360 IMPRLVLY 500 22361 IV BK80 MP 500 1	IV81_IV BK 81 230/500/12 and IV82_IV BK 82 230/500/12	P6	L-1-1									120.4		
SC-SD-T-49	22464 MIGUEL 230 22468 MIGUEL 500 2	50003_OCOTILLO - SUNCREST ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1	122.0	139.1	148.3				105.3	141.6	152.1		
SC-SD-T-50	22464 MIGUEL 230 22468 MIGUEL 500 2	50005_IMPRLVLY - OCOTILLO ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1	117.8	135.8	144.9				101.8	138.0	148.2		
SC-SD-T-51	22464 MIGUEL 230 22468 MIGUEL 500 2	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									105.9		108.9
SC-SD-T-52	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	118.1	135.4	143.7				102.0	137.8	147.2		
SC-SD-T-53	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1 and 50005_IMPRLVLY - OCOTILLO ck 1	P6	L-1-1	114.4	132.5	140.8					134.6	144.0		
SC-SD-T-54	22464 MIGUEL 230 22468 MIGUEL 500 2	OTAYMESA_OTAY MGP 2x1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									113.5		119.1
SC-SD-T-55	22464 MIGUEL 230 22468 MIGUEL 500 2	PEN_PEN 2x1 18 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									108.5		113.3
SC-SD-T-56	22464 MIGUEL 230 22468 MIGUEL 500 2	SCR80_SUNCREST BK80 230/500 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									105.2		108.2
SC-SD-T-57	22464 MIGUEL 230 22468 MIGUEL 500 2	SCR81_SUNCREST BK81 230/500 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									105.2		108.1
SC-SD-T-58	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									108.7		112.8
SC-SD-T-59	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									108.7		112.8
SC-SD-T-60	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23070_PIOPICO 230 - TRIP ALL UNITS ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									107.5		111.5
SC-SD-T-61	22464 MIGUEL 230 22468 MIGUEL 500 2	TL230WX2_PIOPICO 230 - TRIP 2 UNIT ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									107.5		111.5
SC-SD-T-62	22464 MIGUEL 230 22468 MIGUEL 500 2	TL230WX3_PIOPICO 230 - TRIP 1 UNITS ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1									107.5	111.5	
SC-SD-T-63	22464 MIGUEL 230 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	122.8	139.5	150.9				107.2	142.5	154.7		

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output	
SC-SD-T-64	22464 MIGUEL 230 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLOick 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	119.1	136.1	147.4			103.6	138.6	150.8	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-65	22464 MIGUEL 230 22472 MIGUELMP 500 1	HDW-NG_HDW - NG ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								101.3	
SC-SD-T-66	22464 MIGUEL 230 22472 MIGUELMP 500 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		103.2	107.8				104.7	110.3	
SC-SD-T-67	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	118.9	135.3	146.1			103.8	138.1	149.6	
SC-SD-T-68	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50005_IMPRLVLY - OCOTILLOick 1	P6	L-1-1	115.6	132.4	143.1			100.6	134.8	146.4	
SC-SD-T-69	22464 MIGUEL 230 22472 MIGUELMP 500 1	OTAYMESA_OTAY MGP 2x1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		111.0	117.9				112.8	120.6	
SC-SD-T-70	22464 MIGUEL 230 22472 MIGUELMP 500 1	PEN_PEN 2x1 18 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.5	111.8				107.4	114.5	
SC-SD-T-71	22464 MIGUEL 230 22472 MIGUELMP 500 1	SCR80_SUNCREST BK80 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1			107.0				103.8	109.8	
SC-SD-T-72	22464 MIGUEL 230 22472 MIGUELMP 500 1	SCR81_SUNCREST BK81 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		102.1	106.9				103.9	109.7	
SC-SD-T-73	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23042A_TL23042A BAY BLVD-MIGUEL ckt1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								100.4	
SC-SD-T-74	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.5	111.2				107.3	114.1	
SC-SD-T-75	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.5	111.2				107.3	114.1	
SC-SD-T-76	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23066_IMPRLVLY - DREW 230ick 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								100.6	
SC-SD-T-77	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23070_PIOPICO 230 - TRIP ALL UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.8	110.2				106.5	113.0	
SC-SD-T-78	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL230WX2_PIOPICO 230 - TRIP 2 UNIT ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.8	110.2				106.5	113.0	
SC-SD-T-79	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL230WX3_PIOPICO 230 - TRIP 1 UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.8	110.2				106.5	113.0	
SC-SD-T-80	22468 MIGUEL 500 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	124.0	141.5	150.5			106.9	144.1	154.2	
SC-SD-T-81	22468 MIGUEL 500 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLOick 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	119.7	138.1	147.2			103.2	140.4	150.4	

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output	
SC-SD-T-82	22468 MIGUEL 500 22472 MIGUELMP 500 1	HDW-NG_HDW - NG ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								101.7	
SC-SD-T-83	22468 MIGUEL 500 22472 MIGUELMP 500 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		106.4	108.4					107.9	111.0
SC-SD-T-84	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	120.0	137.7	145.9			103.6	140.2	149.3	
SC-SD-T-85	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50005_IMPRLVLY - OCOTILLO ck 1	P6	L-1-1	116.2	134.8	143.1			100.3	136.9	146.1	
SC-SD-T-86	22468 MIGUEL 500 22472 MIGUELMP 500 1	OTAYMESA_OTAY MGP 2x1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		113.9	118.5				115.6	121.3	
SC-SD-T-87	22468 MIGUEL 500 22472 MIGUELMP 500 1	PEN_PEN 2x1 18 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		108.6	112.6				110.5	115.4	
SC-SD-T-88	22468 MIGUEL 500 22472 MIGUELMP 500 1	SCR80_SUNCREST BK80 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1			107.4				107.1	110.3	
SC-SD-T-89	22468 MIGUEL 500 22472 MIGUELMP 500 1	SCR81_SUNCREST BK81 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.4	107.2				107.1	110.1	
SC-SD-T-90	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23042A_TL23042A BAY BLVD-MIGUEL ckt1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								101.1	
SC-SD-T-91	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		108.9	111.9				110.7	114.9	
SC-SD-T-92	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		108.9	111.9				110.7	114.9	
SC-SD-T-93	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23066_IMPRLVLY - DREW 230 ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								100.9	
SC-SD-T-94	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23070_PIOPICO 230 - TRIP ALL UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		107.9	110.8				109.5	113.7	
SC-SD-T-95	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL230WX2_PIOPICO 230 - TRIP 2 UNIT ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		107.9	110.8				109.5	113.7	
SC-SD-T-96	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL230WX3_PIOPICO 230 - TRIP 1 UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		107.9	110.8				109.5	113.7	
SC-SD-T-97	22588 OCNSDETP 69.0 22808 STUARTTP 69.0 1	TL23007_TL23007 TALEGA - SONGS ck 1 and TL23052_TL23052 CAPSTRNO - S.ONOFRE ck 1	P6	L-1-1		104.8	106.0				104.0	105.3	Modify existing Talega SPS or upgrade the overloaded Oceanside Tap-Stuart Tap 69 kV section along with SDGE's wood-to-steel program

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SC-SD-T-98	22596 OLD TOWN 230 22504 MISSION 230 1	TL23028C_TL23028 SILVERGT-OT-MISSION TAP A and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1			100.0						100.6	Rely on DG, DR, and Energy Storage, upgrade the Old Town-Mission 230 kV line, add 2nd Miguel-Bay Blvd 230 kV line, or retain/repower retirement resource
SC-SD-T-99	22668 POWAY 69.0 22664 POMERADO 69.0 1	TL23014_TL23014 PEN-ESCNDIDO ck 1 and TL23015_TL23015 PEN-ESCNDIDO ck 2	P6	L-1-1	108.2									OP to curtail load service until the 2nd Poway-Pomerado 69 kV line in service
SC-SD-T-100	22716 SANLUSRY 230 22232 ENCINA 230 1	TL23001_TL23001 SANLUSRY - MISSION ck 1 and TL230YY_TL230YY ENCINA - SANLUSRY ck2	P6	L-1-1				101.5						OP to curtail northerbound flow via the North of SONGS path
SC-SD-T-101	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23002_TL23002 SANLUSRY-S.ONOFRE ck 2 and TL23006_TL23006 SANLUSRY - SONGS ck 1	P6	L-1-1				113.7						Rely on OP or existing SPS at Talega until the overloaded section is re-conducted
SC-SD-T-102	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23002_TL23002 SANLUSRY-S.ONOFRE ck 2 and TL23010_TL23010 SANLUSRY - SONGS ck 3	P6	L-1-1				104.7						
SC-SD-T-103	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23006_TL23006 SANLUSRY - SONGS ck 1 and TL23010_TL23010 SANLUSRY - SONGS ck 3	P6	L-1-1				112.8						
SC-SD-T-104	22885 SUNCREST 500 22888 SNCRSMP1 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	108.3	123.0	131.2					126.0	134.6	
SC-SD-T-105	22885 SUNCREST 500 22888 SNCRSMP1 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	106.1	120.6	128.8					123.5	131.7	
SC-SD-T-106	22885 SUNCREST 500 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		114.8	122.3					117.8	125.3	
SC-SD-T-107	22885 SUNCREST 500 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		112.4	120.0					115.3	122.9	
SC-SD-T-108	22885 SUNCREST 500 22889 SNCRSMP2 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	107.9	123.1	131.3					126.1	134.6	
SC-SD-T-109	22885 SUNCREST 500 22889 SNCRSMP2 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	105.7	120.7	128.9					123.5	131.8	
SC-SD-T-110	22885 SUNCREST 500 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		114.8	122.4					117.8	125.3	
SC-SD-T-111	22885 SUNCREST 500 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		112.5	120.1					115.3	122.9	
SC-SD-T-112	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	117.2	134.8	142.8				101.8	138.4	146.7	

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output	
SC-SD-T-113	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	115.0	131.5	139.5				134.5	142.9	Rely on OP, Preferred resources/Energy Storage, modify SWPL/SPL SPS shedding gen, add SPS to open overloaded bank/SNC-SX 230 kV line, and/or add 3rd bank along with 3rd 230 kV line out of Suncrest if cost-effective
SC-SD-T-114	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.7	124.3	130.6				127.0	134.0	
SC-SD-T-115	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	104.9	121.5	127.9				123.9	131.1	
SC-SD-T-116	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	117.2	134.8	142.8			101.8	138.4	146.7	
SC-SD-T-117	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	115.0	131.5	139.5				134.5	142.9	
SC-SD-T-118	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.7	124.3	130.6				127.0	134.0	
SC-SD-T-119	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	104.9	121.5	127.9				123.9	131.1	
SC-SD-T-120	22886 SUNCREST 230 22888 SNCRSMP1 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	108.3	123.0	131.2				126.0	134.6	
SC-SD-T-121	22886 SUNCREST 230 22888 SNCRSMP1 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	106.1	120.6	128.8				123.5	131.7	
SC-SD-T-122	22886 SUNCREST 230 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		114.8	122.3				117.8	125.3	
SC-SD-T-123	22886 SUNCREST 230 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		112.4	120.0				115.3	122.9	
SC-SD-T-124	22886 SUNCREST 230 22889 SNCRSMP2 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	107.9	123.1	131.3				126.1	134.6	
SC-SD-T-125	22886 SUNCREST 230 22889 SNCRSMP2 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	105.7	120.7	128.9				123.5	131.8	
SC-SD-T-126	22886 SUNCREST 230 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		114.8	122.4				117.8	125.3	
SC-SD-T-127	22886 SUNCREST 230 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		112.5	120.1				115.3	122.9	
SC-SD-T-128	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	117.3	134.9	143.0			101.8	138.5	146.8	

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SC-SD-T-129	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	115.1	131.6	139.6					134.6	143.0	
SC-SD-T-130	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.8	124.4	130.8					127.2	134.2	
SC-SD-T-131	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	105.0	121.6	128.0					124.0	131.2	
SC-SD-T-132	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	117.3	134.9	143.0			101.8		138.5	146.8	
SC-SD-T-133	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	115.1	131.6	139.6					134.6	143.0	
SC-SD-T-134	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.8	124.4	130.8					127.2	134.2	
SC-SD-T-135	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	105.0	121.6	128.0					124.0	131.2	
SC-SD-T-136	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	117.3	134.9	143.0			101.8		138.5	146.8	
SC-SD-T-137	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	115.1	131.6	139.6					134.6	143.0	
SC-SD-T-138	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.8	124.4	130.8					127.2	134.2	
SC-SD-T-139	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	105.0	121.6	128.0					124.0	131.2	
SC-SD-T-140	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	117.3	134.9	143.0			101.8		138.5	146.8	
SC-SD-T-141	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	115.1	131.6	139.6					134.6	143.0	
SC-SD-T-142	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	106.8	124.4	130.8					127.2	134.2	

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SC-SD-T-143	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	105.0	121.6	128.0					124.0	131.2	
SC-SD-T-144	22464 MIGUEL 230 22472 MIGUELMP 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure									101.5	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SC-SD-T-145	22468 MIGUEL 500 22472 MIGUELMP 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure									101.1	
SC-SD-T-146	22588 OCNSDETP 69.0 22808 STUARTTP 69.0 1	23007/23052_S.ONOFRE-TA+S.ONOFRE-CAP 230	P7	Common structure		111.0	112.4					110.2	111.7	Modify existing Talega SPS or upgrade the overloaded Oceanside Tap-Stuart Tap 69 kV section along with SDGE's wood-to-steel program
SC-SD-T-147	22668 POWAY 69.0 22664 POMERADO 69.0 1	23014/23015_PEN-ES #1 + #2 230 kV	P7	Common structure	114.3			115.0						OP to curtail load service until the 2nd Poway-Pomerado 69 kV line in service
SC-SD-T-148	22771 BAY BLVD 230 22464 MIGUEL 230 1	23022/23023_ML-MS 230 kV #1	P7	Common structure		101.3	103.0					103.5	104.7	Rely on OP, DG, DR, and Energy Storage, build 2nd 230 kV circuit between Miguel-Bay Blvd, or retain/repower retirement resource
SC-SD-T-149	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	23002/23010_SA-SO 2 + SO-SA 3 230 kV	P7	Common structure				102.2						Rely on OP or existing SPS at Talega until the overloaded section is re-conducted

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SC-SD-T-150	22930 ECO 500 22935 ECO & 1 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure								101.4	107.2	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL
SC-SD-T-151	22935 ECO & 1 500 22468 MIGUEL 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure								101.4	107.2	
SC-SD-T-152	24044 ELLIS 230 24072 JOHANNA 230 1	50001_50001 MIGUEL-ECO ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1			102.7						101.2	Rely on OP, Preferred Resources/Energy Storage, or upgrade the Ellis corridor by replacing terminal equipments and increasing the lines clearance if cost-effective
SC-SD-T-153	24044 ELLIS 230 24072 JOHANNA 230 1	50004_50004 ECO-IMPRLVLY ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1			101.6							
SC-SD-T-154	24044 ELLIS 230 24134 SANTIAGO 230 1	50001_50001 MIGUEL-ECO ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1		100.3	107.4						105.7	
SC-SD-T-155	24044 ELLIS 230 24134 SANTIAGO 230 1	50004_50004 ECO-IMPRLVLY ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1			106.1						104.1	
SC-SD-T-156	24044 ELLIS 230 24134 SANTIAGO 230 1	L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1			100.7							

Regarding Table 4-1 of the Study Plan, the “2025 Winter Peak” Base Case for the SDG&E area was changed to “2019/2020 Winter Peak”

Regarding Table 4-2 of the Study Plan, the “2025 Summer Peak and Summer Off-peak with heavy renewable output and IID southern ties to ISO normally open” sensitivity scenario for the SDG&E area was not performed

Regarding Table 4-2 of the Study Plan, a “2025 Summer Peak with heavy renewable output and minimum gas generation commitment” for the SDGE area was added

For the SDG&E area, power factor for the 2017 base case was modeled using the most recent historical values.

The Metro area 2020 SP sensitivity scenario “Summer Peak with OTC plants replaced” in Table 4-2 of the Study Plan was changed to a Summer Peak scenario with early OTC retirements (Northwest LA Basin)

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SDGE-VD-1	BOULEVRD 138 kV	50003_OCOTILLO - SUNCREST ck 1	P1	L-1								5.126		Maintain dynamic reactive support from the Otay Mesa and Pio Pico plants and synchronous condensers at Miguel
SDGE-VD-2	BOULEVRD 138 kV	50004_50004 ECO-IMPRLVLY ck 1	P1	L-1								-5.001		Maintain dynamic reactive support from the Otay Mesa and Pio Pico plants and synchronous condensers at Miguel
SDGE-VD-3	BOULEVRD 138 kV	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1								5.084		Maintain dynamic reactive support from the Otay Mesa and Pio Pico plants and synchronous condensers at Miguel

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	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
X-V-1	BORREGO 69 kV	SPS5.11_500kV TL50005 GEN DROP SPS			1.103						1.1063			Switch on the shunt reactors at Sycamore Canyon 69 kV substation
X-V-2	BORREGO 69 kV	SPS5.9A_500kV TL50003(OCO-SUC) GEN DROP SPS									1.1054			Switch on the shunt reactors at Sycamore Canyon 69 kV substation

ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 Winter Peak	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		
SDGE-BULK-TS-1	TL50001 ECO-MIGUEL 500 KV line out of service followed by TL50003 OCO-SUNCREST 500 kV line outage , with system adjustment between the two outages	P6	L-1-1	None	None	41.0~30.2 % of transient voltage dips at Valley-S/Johanna/Santiago/Ellis/VillaPK/Orcogen/ViejoSC/LwisANM/Barre/Huntington Beach buses in SCE	None	None	None	None	None	39.9~30.0 % of transient voltage dips at Valley-S/Johanna/Santiago/Ellis/VillaPK/Orcogen/ViejoSC/LwisANM/Barre/Huntington Beach buses in SCE	Further Evaluation
SDGE-BULK-TS-2	TL50003 OCO-SUNCREST 500 KV line out of service followed by TL50001 ECO-MIGUEL 500 kV line outage , with system adjustment between the two outages	P6	L-1-1	None	None	None	None	None	None	None	None	None	Further Evaluation

Study Area: **SDG&E Bulk**



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.

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

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-1	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1	P1	T-1		115.4	113.5			120.8	123.9	119.2	Rely on Operating Procedure (OP)/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SDGE-T-2	22464 MIGUEL 230 22468 MIGUEL 500 2	SPS5.7_Miguel BK80 / BK 81 SPS	P1	T-1		106.0	104.0			110.4	113.2	109.5	
SDGE-T-3	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2	P1	T-1		114.5	114.5			120.3	124.9	119.9	
SDGE-T-4	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2	P1	T-1		117.6	115.6			123.0	126.2	121.5	
SDGE-T-5	22930 ECO 500 22935 ECO &1 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1						101.0	101.2		
SDGE-T-6	22935 ECO &1 500 22468 MIGUEL 500 1	50003_OCOTILLO - SUNCREST ck 1	P1	L-1						101.0	101.2		
SDGE-T-7	22356 IMPRLVLY 230 22361 IV BK80 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		110.4	115.9			120.0	127.6	120.7	Modify existing IV Bank SPS shedding gen, upgrade IV BK 80, and/or add 4th bank at IV
SDGE-T-8	22356 IMPRLVLY 230 22362 IV BK82 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		108.5	111.5			117.9	122.8	116.2	
SDGE-T-9	22360 IMPRLVLY 500 22361 IV BK80 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		110.2	115.9			119.4	127.4	120.7	
SDGE-T-10	22360 IMPRLVLY 500 22362 IV BK82 MP 500 1	IV-8022_IV 8022 50002 & BK81 CB	P2/P4	Breaker Fault/Stuck Breaker		104.2	107.0			113.2	117.7	111.5	
SDGE-T-11	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML-2T_MIGUEL 230 kV 2T CB	P2/P4	Breaker Fault/Stuck Breaker		113.5	113.2			119.3	123.9	118.7	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SDGE-T-12	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML-2T_MIGUEL 230 kV 2T CB	P2/P4	Breaker Fault/Stuck Breaker		116.6	114.4			122.0	125.2	120.3	
SDGE-T-13	22771 BAY BLVD 230 22464 MIGUEL 230 1	MS-5T_MISSION 230 kV 5T CB	P2/P4	Breaker Fault/Stuck Breaker		100.1	101.7			103.9	104.7	104.9	Rely on OP, DG, DR, and Energy Storage, build 2nd 230 kV circuit between Miguel-Bay Blvd, or retain/repower retirement resource
SDGE-T-14	22771 BAY BLVD 230 22768 BAY BLVD 69.0 2	BB-1T_BAYBLVD 230 kV 1T CB	P2/P4	Breaker Fault/Stuck Breaker		109.5	110.7			110.7	111.6	115.9	Rely on DG, DR, and Energy Storage, add 3rd bank at Bay Blvd, add 2nd Miguel-Bay Blvd 230 kV line, or retain/repower retirement resource

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load	
SDGE-T-15	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	SA-1T_SANLUSRY 230 kV 1T CB	P2/P4	Breaker Fault/Stuck Breaker				111.4						Modify existing SPS at Talega until the overloaded section is re-conducted
SDGE-T-16	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	SX-22T_SYCAMORE 230 kV 22T CB	P2/P4	Breaker Fault/Stuck Breaker						100.2	100.5			Rely on OP, Preferred resources/Energy Storage, modify SWPL/SPL SPS shedding gen, add SPS to open overloaded bank/SNC-SX 230 kV line, increase SPL rating, and/or add 3rd bank along with 3rd 230 kV line out of Suncrest if cost-effective
SDGE-T-17	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	SX-22T_SYCAMORE 230 kV 22T CB	P2/P4	Breaker Fault/Stuck Breaker						100.2	100.5			
SDGE-T-18	22930 ECO 500 22935 ECO &1 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker						100.6	100.6			
SDGE-T-19	22930 ECO 500 22935 ECO &1 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker						100.6	100.6			
SDGE-T-20	22930 ECO 500 22935 ECO &1 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker						101.0	101.2			
SDGE-T-21	22935 ECO &1 500 22468 MIGUEL 500 1	OCO-1E_OCO 1E TL50003 & TL50005	P2/P4	Breaker Fault/Stuck Breaker						100.6	100.6			
SDGE-T-22	22935 ECO &1 500 22468 MIGUEL 500 1	OCO-2T_OCO 2T TL50003 & TL50006	P2/P4	Breaker Fault/Stuck Breaker						100.6	100.6			
SDGE-T-23	22935 ECO &1 500 22468 MIGUEL 500 1	SCR-2T_SUNCREST 2T BK81 & TL50003	P2/P4	Breaker Fault/Stuck Breaker						101.0	101.2			
SDGE-T-24	22464 MIGUEL 230 22468 MIGUEL 500 2	OTAYMESA_OTAY MGP 2x1 and ML80_ML BK 80 230/500 ck 1	P3	G-1/T-1		111.4	111.1			112.2	115.8	118.0		
SDGE-T-25	22464 MIGUEL 230 22468 MIGUEL 500 2	PEN_PEN 2x1 18 and ML80_ML BK 80 230/500 ck 1	P3	G-1/T-1		107.3	107.0			107.8	110.1	112.3		
SDGE-T-26	22464 MIGUEL 230 22472 MIGUELMP 500 1	OTAYMESA_OTAY MGP 2x1 and ML81_ML BK 81 230/500 ck 2	P3	G-1/T-1		110.5	112.5			111.3	117.2	119.5		
SDGE-T-27	22464 MIGUEL 230 22472 MIGUELMP 500 1	PEN_PEN 2x1 18 and ML81_ML BK 81 230/500 ck 2	P3	G-1/T-1		106.1	108.1			106.6	111.2	113.3		
SDGE-T-28	22468 MIGUEL 500 22472 MIGUELMP 500 1	OTAYMESA_OTAY MGP 2x1 and ML81_ML BK 81 230/500 ck 2	P3	G-1/T-1		113.4	113.2			114.2	118.0	120.3		

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-29	22468 MIGUEL 500 22472 MIGUELMP 500 1	PEN_PEN 2x1 18 and ML81_ML BK 81 230/500 ck 2	P3	G-1/T-1		109.3	109.0			109.8	112.2	114.4	
SDGE-T-30	22771 BAY BLVD 230 22768 BAY BLVD 69.0 1	BB71_BB BK 71 230/69 and TL23026_TL23026 SILVERGT - BAY BLVD ck 1	P6	T-1/L-1		108.9	109.9			110.5	110.5	114.9	Rely on DG, DR, and Energy Storage, add 3rd bank at Bay Blvd, add 2nd Miguel-Bay Blvd 230 kV line, or retain/repower retirement resource
SDGE-T-31	22771 BAY BLVD 230 22768 BAY BLVD 69.0 2	BB70_BB BK 70 230/69 and TL23026_TL23026 SILVERGT - BAY BLVD ck 1	P6	T-1/L-1		108.9	109.9			110.5	110.5	114.9	
SDGE-T-32	22232 ENCINA 230 22716 SANLUSRY 230 2	TL23001_TL23001 SANLUSRY - MISSION ck 1 and TL23003_TL23003 SANLUSRY - ENCINA ck 1	P6	L-1-1				101.3					
SDGE-T-33	22356 IMPRLVLY 230 22361 IV BK80 MP 500 1	IV81_IV BK 81 230/500/12 and IV82_IV BK 82 230/500/12	P6	L-1-1							115.9	102.6	Modify existing IV Bank SPS shedding gen, upgrade IV BK 80, and/or add 4th bank at IV
SDGE-T-34	22360 IMPRLVLY 500 22361 IV BK80 MP 500 1	IV81_IV BK 81 230/500/12 and IV82_IV BK 82 230/500/12	P6	L-1-1							117.1	103.4	
SDGE-T-35	22464 MIGUEL 230 22468 MIGUEL 500 2	50003_OCOTILLO - SUNCREST ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1	119.1	139.6	141.5			140.6	147.6	151.8	
SDGE-T-36	22464 MIGUEL 230 22468 MIGUEL 500 2	50005_IMPRLVLY - OCOTILLO ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1	114.9	136.3	138.3			137.1	143.9	148.5	
SDGE-T-37	22464 MIGUEL 230 22468 MIGUEL 500 2	L_40084_Line S.ONOFRE 230.0 to SERRANO 230.0 Ckt 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1								107.1	
SDGE-T-38	22464 MIGUEL 230 22468 MIGUEL 500 2	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		104.1	101.3			104.7	105.9	108.9	
SDGE-T-39	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	115.2	135.8	137.7			136.8	143.0	146.6	
SDGE-T-40	22464 MIGUEL 230 22468 MIGUEL 500 2	ML80_ML BK 80 230/500 ck 1 and 50005_IMPRLVLY - OCOTILLO ck 1	P6	L-1-1	111.4	132.8	134.8			133.6	139.9	143.8	
SDGE-T-41	22464 MIGUEL 230 22468 MIGUEL 500 2	SCR80_SUNCREST BK80 230/500 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		103.2	100.2			104.0	104.9	107.2	
SDGE-T-42	22464 MIGUEL 230 22468 MIGUEL 500 2	SCR81_SUNCREST BK81 230/500 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		103.2	100.0			104.1	104.8	107.3	
SDGE-T-43	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		106.6	104.5			107.6	109.4	111.8	
SDGE-T-44	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		106.6	104.5			107.6	109.4	111.8	
SDGE-T-45	22464 MIGUEL 230 22468 MIGUEL 500 2	TL23070_PIOPICO 230 - TRIP ALL UNITS ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		105.5	103.7			106.4	108.3	110.5	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-46	22464 MIGUEL 230 22468 MIGUEL 500 2	TL230WX2_PIOPICO 230 - TRIP 2 UNIT ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		105.5	103.7			106.4	108.3	110.5	Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SDGE-T-47	22464 MIGUEL 230 22468 MIGUEL 500 2	TL230WX3_PIOPICO 230 - TRIP 1 UNITS ck 1 and ML80_ML BK 80 230/500 ck 1	P6	L-1-1		105.5	103.7			106.4	108.3	110.5	
SDGE-T-48	22464 MIGUEL 230 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	119.7	140.0	143.9			141.3	150.1	154.4	
SDGE-T-49	22464 MIGUEL 230 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLO ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	115.9	136.6	140.4			137.5	146.4	151.1	
SDGE-T-50	22464 MIGUEL 230 22472 MIGUELMP 500 1	L_40084_Line S.ONOFRE 230.0 to SERRANO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								108.4	
SDGE-T-51	22464 MIGUEL 230 22472 MIGUELMP 500 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		102.8	102.6			103.4	107.1	110.1	
SDGE-T-52	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	115.7	135.7	139.4			136.9	145.3	149.1	
SDGE-T-53	22464 MIGUEL 230 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50005_IMPRLVLY - OCOTILLO ck 1	P6	L-1-1	112.4	132.7	136.4			133.6	142.1	146.2	
SDGE-T-54	22464 MIGUEL 230 22472 MIGUELMP 500 1	SCR80_SUNCREST BK80 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		101.7	101.5			102.6	106.3	108.7	
SDGE-T-55	22464 MIGUEL 230 22472 MIGUELMP 500 1	SCR81_SUNCREST BK81 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		101.7	101.4			102.6	106.2	108.7	
SDGE-T-56	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.1	105.6			106.1	110.5	112.9	
SDGE-T-57	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.1	105.6			106.1	110.5	112.9	
SDGE-T-58	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL23070_PIOPICO 230 - TRIP ALL UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.3	105.0			105.2	109.6	111.8	
SDGE-T-59	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL230WX2_PIOPICO 230 - TRIP 2 UNIT ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.3	105.0			105.2	109.6	111.8	
SDGE-T-60	22464 MIGUEL 230 22472 MIGUELMP 500 1	TL230WX3_PIOPICO 230 - TRIP 1 UNITS ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		104.3	105.0			105.2	109.6	111.8	
SDGE-T-61	22468 MIGUEL 500 22472 MIGUELMP 500 1	50003_OCOTILLO - SUNCREST ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	121.1	142.0	144.1			143.1	149.8	154.0	
SDGE-T-62	22468 MIGUEL 500 22472 MIGUELMP 500 1	50005_IMPRLVLY - OCOTILLO ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1	116.8	138.7	140.7			139.4	146.1	150.7	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-63	22468 MIGUEL 500 22472 MIGUELMP 500 1	HDW-NG_HDW - NG ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								100.4	
SDGE-T-64	22468 MIGUEL 500 22472 MIGUELMP 500 1	L_40084_Line S.ONOFRE 230.0 to SERRANO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1								109.1	
SDGE-T-65	22468 MIGUEL 500 22472 MIGUELMP 500 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		106.1	103.3			106.7	107.9	111.0	
SDGE-T-66	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1	117.0	138.1	140.1			139.1	145.5	148.8	
SDGE-T-67	22468 MIGUEL 500 22472 MIGUELMP 500 1	ML81_ML BK 81 230/500 ck 2 and 50005_IMPRLVLY - OCOTILLO ck 1	P6	L-1-1	113.2	135.1	137.1			135.9	142.4	146.0	
SDGE-T-68	22468 MIGUEL 500 22472 MIGUELMP 500 1	SCR80_SUNCREST BK80 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.1	102.1			105.9	106.9	109.3	
SDGE-T-69	22468 MIGUEL 500 22472 MIGUELMP 500 1	SCR81_SUNCREST BK81 230/500 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		105.1	101.9			106.0	106.8	109.3	
SDGE-T-70	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		108.5	106.4			109.6	111.5	113.9	
SDGE-T-71	22468 MIGUEL 500 22472 MIGUELMP 500 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and ML81_ML BK 81 230/500 ck 2	P6	L-1-1		108.5	106.4			109.6	111.5	113.9	
SDGE-T-72	22596 OLD TOWN 230 22504 MISSION 230 1	TL23028_TL23028 SILVERGT-OT-MISSION TAP A and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1		103.4	103.8			103.9	106.1	111.1	Rely on DG, DR, and Energy Storage, upgrade the Old Town-Mission 230 kV line, add 2nd Miguel-Bay Blvd 230 kV line, and/or retain/repower retirement resource
SDGE-T-73	22596 OLD TOWN 230 22504 MISSION 230 1	TL23028C_TL23028 SILVERGT-OT-MISSION TAP A and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1		104.3	104.8			104.8	107.1	112.1	
SDGE-T-74	22597 OLDTWNT 230 22504 MISSION 230 1	TL23027_TL23027 OLD TOWN - MISSION ck 1 and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1								104.0	Rely on DG, DR, and Energy Storage, upgrade the Old Town-Mission 230 kV line, add 2nd Miguel-Bay Blvd 230 kV line, or retain/repower retirement
SDGE-T-75	22668 POWAY 69.0 22664 POMERADO 69.0 1	TL23014_TL23014 PEN-ESCNDIDO ck 1 and TL23015_TL23015 PEN-ESCNDIDO ck 2	P6	L-1-1	114.0								OP to curtail load service until the 2nd Poway-Pomerado 69 kV line in service
SDGE-T-76	22716 SANLUSRY 230 22232 ENCINA 230 1	TL23001_TL23001 SANLUSRY - MISSION ck 1 and TL230YY_TL230YY ENCINA - SANLUSRY ck2	P6	L-1-1				101.5					OP to curtail northerbound flow via the North of SONGS path

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load	
SDGE-T-77	22740 SANYSRO 69.0 22616 OTAYLTP 69.0 1	TL23026_TL23026 SILVERGT - BAY BLVD ck 1 and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1		104.2	103.3				102.9		102.1	Modify existing SYS shedding gen in the Border area
SDGE-T-78	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23002_TL23002 SANLUSRY-S.ONOFRE ck 2 and TL23006_TL23006 SANLUSRY - SONGS ck 1	P6	L-1-1					113.7					Rely on OP or existing SPS at Talega until the overloaded section is re-conducted
SDGE-T-79	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23002_TL23002 SANLUSRY-S.ONOFRE ck 2 and TL23010_TL23010 SANLUSRY - SONGS ck 3	P6	L-1-1					104.7					
SDGE-T-80	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL23006_TL23006 SANLUSRY - SONGS ck 1 and TL23010_TL23010 SANLUSRY - SONGS ck 3	P6	L-1-1					112.8					
SDGE-T-81	22828 SYCAMORE 69.0 22756 SCRIPPS 69.0 1	SX-PQ_SX - PQ 230 ck 1 and TL23042A_TL23042A BAY BLVD-MIGUEL ckt1	P6	L-1-1									100.6	Rely on OP, DG, DR, Energy Storage
SDGE-T-82	22885 SUNCREST 500 22888 SNCRSMP1 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	106.3	124.9	126.4				126.2	131.8	138.6	
SDGE-T-83	22885 SUNCREST 500 22888 SNCRSMP1 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	104.2	122.7	123.7				123.6	129.0	136.0	
SDGE-T-84	22885 SUNCREST 500 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		116.7	117.7				117.9	122.9	128.0	
SDGE-T-85	22885 SUNCREST 500 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		114.5	115.3				115.5	120.3	125.8	
SDGE-T-86	22885 SUNCREST 500 22889 SNCRSMP2 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	105.8	125.0	126.5				126.2	131.8	138.6	
SDGE-T-87	22885 SUNCREST 500 22889 SNCRSMP2 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	103.8	122.8	123.8				123.7	129.2	136.1	
SDGE-T-88	22885 SUNCREST 500 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		116.7	117.8				118.0	122.9	128.0	
SDGE-T-89	22885 SUNCREST 500 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		114.6	115.4				115.6	120.4	125.8	
SDGE-T-90	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	114.8	136.6	136.4				138.1	143.2	146.4	
SDGE-T-91	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	112.6	133.2	133.2				134.2	139.4	143.0	
SDGE-T-92	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.6	125.9	125.0				127.2	131.0	134.1	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-93	22886 SUNCREST 230 228860 SUNCREST TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.8	123.0	122.4			124.0	128.0	131.4	Rely on OP, Preferred resources/Energy Storage, modify SWPL/SPL SPS shedding gen, add SPS to open overloaded bank/SNC-SX 230 kV line, increase SPL rating, and/or add 3rd bank along with 3rd 230 kV line out of Suncrest if cost-effective
SDGE-T-94	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	114.8	136.6	136.4			138.1	143.2	146.4	
SDGE-T-95	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	112.6	133.2	133.2			134.2	139.4	143.0	
SDGE-T-96	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.6	125.9	125.0			127.2	131.0	134.1	
SDGE-T-97	22886 SUNCREST 230 228861 SUNCREST TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.8	123.0	122.4			124.0	128.0	131.4	
SDGE-T-98	22886 SUNCREST 230 22888 SNCRSMP1 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	106.3	124.9	126.4			126.2	131.8	138.6	
SDGE-T-99	22886 SUNCREST 230 22888 SNCRSMP1 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR81_SUNCREST BK81 230/500	P6	L-1/T-1	104.2	122.7	123.7			123.6	129.0	136.0	
SDGE-T-100	22886 SUNCREST 230 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		116.7	117.7			117.9	122.9	128.0	
SDGE-T-101	22886 SUNCREST 230 22888 SNCRSMP1 500 1	SCR81_SUNCREST BK81 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		114.5	115.3			115.5	120.3	125.8	
SDGE-T-102	22886 SUNCREST 230 22889 SNCRSMP2 500 1	50001_50001 MIGUEL-ECO ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	105.8	125.0	126.5			126.2	131.8	138.6	
SDGE-T-103	22886 SUNCREST 230 22889 SNCRSMP2 500 1	50004_50004 ECO-IMPRLVLY ck 1 and SCR80_SUNCREST BK80 230/500	P6	L-1/T-1	103.8	122.8	123.8			123.7	129.2	136.1	
SDGE-T-104	22886 SUNCREST 230 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1/T-1		116.7	117.8			118.0	122.9	128.0	
SDGE-T-105	22886 SUNCREST 230 22889 SNCRSMP2 500 1	SCR80_SUNCREST BK80 230/500 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1/T-1		114.6	115.4			115.6	120.4	125.8	
SDGE-T-106	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	114.9	136.8	136.6			138.3	143.3	146.9	
SDGE-T-107	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	112.7	133.3	133.3			134.3	139.6	143.5	
SDGE-T-108	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.7	126.0	125.3			127.3	131.3	134.8	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-109	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 1	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.9	123.1	122.6			124.1	128.2	132.0	
SDGE-T-110	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	114.9	136.8	136.6			138.3	143.3	146.9	
SDGE-T-111	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1	P6	L-1-1	112.7	133.3	133.3			134.3	139.6	143.5	
SDGE-T-112	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.7	126.0	125.3			127.3	131.3	134.8	
SDGE-T-113	228860 SUNCREST TP1 230 228320 SYCAMORE TP1 230 2	TL23054_TL23054 SUNCREST-SYCAMORE 230 ck 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.9	123.1	122.6			124.1	128.2	132.0	
SDGE-T-114	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	114.9	136.8	136.6			138.3	143.3	146.9	
SDGE-T-115	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	112.7	133.3	133.3			134.3	139.6	143.5	
SDGE-T-116	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.7	126.0	125.3			127.3	131.3	134.8	
SDGE-T-117	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 1	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.9	123.1	122.6			124.1	128.2	132.0	
SDGE-T-118	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	50001_50001 MIGUEL-ECO ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	114.9	136.8	136.6			138.3	143.3	146.9	
SDGE-T-119	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	50004_50004 ECO-IMPRLVLY ck 1 and TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2	P6	L-1-1	112.7	133.3	133.3			134.3	139.6	143.5	
SDGE-T-120	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1	104.7	126.0	125.3			127.3	131.3	134.8	
SDGE-T-121	228861 SUNCREST TP2 230 228321 SYCAMORE TP2 230 2	TL23055_TL23055 SUNCREST-SYCAMORE 230 ck 2 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1	102.9	123.1	122.6			124.1	128.2	132.0	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load	
SDGE-T-122	22588 OCNSDETP 69.0 22808 STUARTTP 69.0 1	23007/23052_S.ONOFRE-TA+S.ONOFRE-CAP 230	P7	Common structure		114.4	116.6				113.9	116.3	124.6	Modify existing Talega SPS or upgrade the overloaded Oceanside Tap-Stuart Tap 69 kV section along with SDGE's wood-to-steel program
SDGE-T-123	22668 POWAY 69.0 22664 POMERADO 69.0 1	23014/23015_PEN-ES #1 + #2 230 kV	P7	Common structure	120.8			115.0						OP to curtail load service until the 2nd Poway-Pomerado 69 kV line in service
SDGE-T-124	22771 BAY BLVD 230 22464 MIGUEL 230 1	23022/23023_ML-MS 230 kV #1	P7	Common structure		100.1	101.7				103.9	104.7	104.9	Rely on OP, DG, DR, and Energy Storage, build 2nd 230 kV circuit between Miguel-Bay Blvd, or retain/repower retirement resource
SDGE-T-125	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	23002/23010_SA-SO 2 + SO-SA 3 230 kV	P7	Common structure				102.2						Modify existing SPS at Talega until the overloaded section is re-conducted
SDGE-T-126	22464 MIGUEL 230 22472 MIGUELMP 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure										Rely on OP/ Preferred resources/Energy Storage, modify Miguel Bank SPS and SWPL/SPL
SDGE-T-127	22930 ECO 500 22935 ECO &1 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure							100.9	100.8		SPS shedding gen, add SPS to open overloaded bank, increase SWPL rating, and/or add 3rd bank at Miguel if cost-effective
SDGE-T-128	22935 ECO &1 500 22468 MIGUEL 500 1	23054/23055_SX-SUNCREST ckt 1&2 230kv	P7	Common structure							101.0	100.8		

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output		2025 SP High CEC Load
SDGE-T-129	24044 ELLIS 230 24072 JOHANNA 230 1	50001_50001 MIGUEL-ECO ck 1 and 50003_OCOTILLO - SUNCREST ck 1	P6	L-1-1								100.3	Rely on OP, Preferred Resources/Energy Storage, or upgrade the Ellis corridor by replacing terminal equipments and increasing the lines clearance if cost-effective
SDGE-T-130	24044 ELLIS 230 24072 JOHANNA 230 1	50001_50001 MIGUEL-ECO ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1			103.6				104.7	112.7	
SDGE-T-131	24044 ELLIS 230 24072 JOHANNA 230 1	50002_50002 N.GILA-IMPRLVLY ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1								103.7	
SDGE-T-132	24044 ELLIS 230 24072 JOHANNA 230 1	50003_OCOTILLO - SUNCREST ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1								102.0	
SDGE-T-133	24044 ELLIS 230 24072 JOHANNA 230 1	50004_50004 ECO-IMPRLVLY ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1			102.6				103.5	111.4	
SDGE-T-134	24044 ELLIS 230 24072 JOHANNA 230 1	50005_IMPRLVLY - OCOTILLO ck 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1								100.7	
SDGE-T-135	24044 ELLIS 230 24072 JOHANNA 230 1	L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1								106.5	
SDGE-T-136	24044 ELLIS 230 24072 JOHANNA 230 1	L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1								105.7	
SDGE-T-137	24044 ELLIS 230 24072 JOHANNA 230 1	L_40084_Line S.ONOFRE 230.0 to SERRANO 230.0 Ckt 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1								100.7	
SDGE-T-138	24044 ELLIS 230 24072 JOHANNA 230 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and L_40034_Line ELLIS 230.0 to SANTIAGO 230.0 Ckt 1	P6	L-1-1								101.9	
SDGE-T-139	24044 ELLIS 230 24134 SANTIAGO 230 1	L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1 and 50001_50001 MIGUEL-ECO ck 1	P6	L-1-1			101.9				102.7	110.9	
SDGE-T-140	24044 ELLIS 230 24134 SANTIAGO 230 1	L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1 and 50004_50004 ECO-IMPRLVLY ck 1	P6	L-1-1			101.1				101.7	110.2	
SDGE-T-141	24044 ELLIS 230 24134 SANTIAGO 230 1	L_40084_Line S.ONOFRE 230.0 to SERRANO 230.0 Ckt 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1								105.8	

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	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output	2025 SP High CEC Load		
SDGE-T-142	24044 ELLIS 230 24134 SANTIAGO 230 1	L_40106_Line VIEJOSC 230.0 to CHINO 230.0 Ckt 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1									106.7	
SDGE-T-143	24044 ELLIS 230 24134 SANTIAGO 230 1	50001_50001 MIGUEL-ECO ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1			108.1					109.4	118.0	
SDGE-T-144	24044 ELLIS 230 24134 SANTIAGO 230 1	50002_50002 N.GILA-IMPRLVLY ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1	102.7								108.1	
SDGE-T-145	24044 ELLIS 230 24134 SANTIAGO 230 1	50003_OCOTILLO - SUNCREST ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1									106.2	
SDGE-T-146	24044 ELLIS 230 24134 SANTIAGO 230 1	50004_50004 ECO-IMPRLVLY ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1			106.8					107.8	116.7	
SDGE-T-147	24044 ELLIS 230 24134 SANTIAGO 230 1	50005_IMPRLVLY - OCOTILLO ck 1 and L_40033_Line ELLIS 230.0 to JOHANNA 230.0 Ckt 1	P6	L-1-1									104.8	

Regarding Table 4-1 of the Study Plan, the “2025 Winter Peak” Base Case for the SDG&E area was changed to “2019/2020 Winter Peak”

Regarding Table 4-2 of the Study Plan, the “2025 Summer Peak and Summer Off-peak with heavy renewable output and IID southern ties to ISO normally open” sensitivity scenario for the SDG&E area was not performed

Regarding Table 4-2 of the Study Plan, a “2025 Summer Peak with heavy renewable output and minimum gas generation commitment” for the SDGE area was added

For the SDG&E area, power factor for the 2017 base case was modeled using the most recent historical values.



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	2020 SP Heavy Renewable & Min Gas Gen	2025 SP & SOP Heavy Renewable & IID South Ties Open	2025 SP High CEC Load	
SDGE-VD-1	BOULEVRD 138 kV	50003_OCOTILLO - SUNCREST ck 1	P1	L-1							5.037		Maintain dynamic reactive support from the Otay Mesa and Pio Pico plants and synchronous condensers at Miguel
SDGE-VD-2	BOULEVRD 138 kV	50005_IMPRLVLY - OCOTILLO ck 1	P1	L-1							5.012		Maintain dynamic reactive support from the Otay Mesa and Pio Pico plants and synchronous condensers at Miguel



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	2020 SP Heavy Renewable & Min Gas Gen	2025 SP & SOP Heavy Renewable & IID South Ties Open	2025 SP High CEC Load	
X-V-1													

No high/low voltage concerns identified.

ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2020 SP with Heavy renewable output	2025 SP with Heavy renewable output	2025 SP High CEC Load		
SDGE-TS-1	TL50001 ECO-MIGUEL 500 KV line out of service followed by TL50003 OCO-SUNCREST 500 kV line outage , with system adjustment between the two outages	P6	L-1-1	None	None	39.9%~30.6 % transient voltage dips at Johanna/Santiago/Ellis/Villa PK/Orcogen buses in SCE	None	None	None	None	39.7%~30.3 % transient voltage dips at Johanna/Santiago/Ellis/Villa PK/Orcogen buses in SCE	41.7~31.1 % of transient voltage dips at Johanna/Santiago/Ellis/VillaPK/Orcogen/ViejoSC/LwisANM/Barre/Huntington Beach buses in SCE	Further Evaluation
SDGE-TS-2	TL50003 OCO-SUNCREST 500 KV line out of service followed by TL50001 ECO-MIGUEL 500 kV line outage , with system adjustment between the two outages	P6	L-1-1	None	None	None	None	None	None	None	None	31.5% transient voltage dip at Johanna 66 kV bus in SCE	Further Evaluation

Study Area: **San Diego Area**



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: **San Diego Area**



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

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	2025 SP High CEC Load	N/A	N/A	
SD-SP-T-1	22442 MELRSETP 69.0 22724 SANMRCOS 69.0 1	TL0684 ESCNDIDO-SANMRCOS ck 1	P1	L-1	112.27	<100	<100	<100	<100	<100			Escondido-San Marcos ck 2, as previously approved, Congestion Management in the interim
SD-SP-T-2	22664 POMERADO 69.0 22828 SYCAMORE 69.0 2	TL06915 POMERADO -SYCAMORE ck 1	P1	L-1	<100	<100	<100	<100	<100	102.68			Operation Procedure, and DG/DR/Energy Storage, monitor load growth
SD-SP-T-3	22664 POMERADO 69.0 22828 SYCAMORE 69.0 1	TL06924 POMERADO -SYCAMORE ck 2	P1	L-1	<100	<100	<100	<100	<100	102.68			Operation Procedure, and DG/DR/Energy Storage, monitor load growth
SD-SP-T-4	22046 BASILONE 69.0 22848 TALEGATP 69.0 1	TL0690c OCNSDETP 69-STUARTTP 69 ck 1	P2	L-1	211.47	<100	<100	144.80	<100	<100			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, SPS to trip TL 695 in the interim
SD-SP-T-5	22808 STUARTTP 69.0 22400 LASPULGS 69.0 1	TL0695a TALEGA 69-TALEGATP 69 ck 1	P2	L-1	136.70	<100	<100	<100	<100	<100			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, SPS to trip TL 695 in the interim
SD-SP-T-6	22046 BASILONE 69.0 22368 JAP MESA 69.0 1	TL0690c OCNSDETP 69-STUARTTP 69 ck 1	P2	L-1	133.24	<100	<100	<100	<100	<100			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, SPS to trip TL 695 in the interim
SD-SP-T-7	22768 BAY BLVD 69.0 22516 MONTGMRY 69.0 1	TL0642a BAY BLVD 69-MONTGYTP 69 ck 1	P2	L-1	<100	120.29	118.94	<100	<100	125.10			Operation Procedure, monitor load growth
SD-SP-T-8	22708 SANLUSRY 69.0 22584 OCEANSDE 69.0 1	TL0690b OCNSDETP 69-SANLUSRY 69 ck 1	P2	L-1	120.91	<100	<100	<100	<100	<100			Operation Procedure
SD-SP-T-9	N/A	TL6914NW MIGUEL-LOVELAND ck 1 AND TL0678 LOSCOCHS-ALPINE ck 1	P6	L-1/L-1	Diverge	Diverge	Diverge	Converge	Converge	Diverge			Operation Procedure
SD-SP-T-10	N/A	TL06917 CREELMAN-SYCAMORE ck 1 AND TL0635 CREELMAN - LOSCOCHS ck 1	P6	L-1/L-1	Diverge	Diverge	Diverge	Converge	Converge	Diverge			Operation Procedure
SD-SP-T-11	22884 WARNERS 69.0 22688 RINCON 69.0 1	TL0681 ASH-FELICITA-VALCNTR 69 ck 1 AND TL0683 RINCON-LILAC ck 1	P6	L-1/L-1	142.16	Diverge	Diverge	<100	<100	Diverge			Operation Procedure, Turn on DG at Valley Center
SD-SP-T-12	22884 WARNERS 69.0 22736 SANTYSBL 69.0 1	TL0681 ASH-FELICITA-VALCNTR 69 ck 1 AND TL0683 RINCON-LILAC ck 1	P6	L-1/L-1	113.41	Diverge	Diverge	<100	<100	Diverge			Operation Procedure, Turn on DG at Valley Center
SD-SP-T-13	22272 ESCO 69.0 22876 WARCYNTP 69.0 1	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	147.88	<100	<100	<100	<100	<100			2nd Poway-Pomerado 69 kV line as previously approved, Operation Procedure in the interim

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	2025 SP High CEC Load	N/A		N/A
SD-SP-T-14	22856 TOREYPNS 69.0 22864 UCM 69.0 1	TL06905 GENESEE -PENSQTOS ck 2 AND TL06959 MIRASNT0-PENSQTOS ck 1	P6	L-1/L-1	142.38	136.94	137.18	<100	<100	145.98			Operation Procedure, re-configure systems after 1st contingency
SD-SP-T-15	22372 KEARNY 69.0 22140 CLARMTTP 69.0 1	TL0663 KEARNY -MISSION ck 1 AND TL0676 MESAHGTS-MISSION ck 1	P6	L-1/L-1	134.04	137.86	136.42	<100	<100	145.91			Operation Procedure, re-configure systems after 1st contingency
SD-SP-T-16	22316 GENESEE 69.0 22644 PENSQTOS 69.0 2	TL069 TOREYPNS to UCM ck 1 AND TL06959 MIRASNT0-PENSQTOS ck 1	P6	L-1/L-1	136.79	131.16	131.42	<100	<100	139.97			Operation Procedure, re-configure systems after 1st contingency
SD-SP-T-17	22331 MIRASNT0 69.0 22644 PENSQTOS 69.0 1	TL06905 GENESEE -PENSQTOS ck 2 AND TL069 TOREYPNS to UCM ck 1	P6	L-1/L-1	134.39	130.05	130.31	<100	<100	138.68			Operation Procedure, re-configure systems after 1st contingency
SD-SP-T-18	22420 SILVERGT 69.0 22868 URBAN 69.0 1	TL0602 B-SILVERGT ck 1 AND TL0699 B - SILVERGT ck 2	P6	L-1/L-1	104.50	123.90	129.54	<100	<100	134.76			preferred resources, operation procedure with higher emergency rating,
SD-SP-T-19	22420 SILVERGT 69.0 22548 NATNLCTY 69.0 1	TL0603A SWEETWTR 69-NAVSTMTR 69 ck 1 AND TL0604A OLD TOWN 69-VINE SUB 69 ck 1	P6	L-1/L-1	<100	126.83	127.15	<100	<100	131.56			Operation Procedure
SD-SP-T-20	22548 NATNLCTY 69.0 22820 SWEETWTR 69.0 1	TL0603A SWEETWTR 69-NAVSTMTR 69 ck 1 AND TL0604A OLD TOWN 69-VINE SUB 69 ck 1	P6	L-1/L-1	<100	125.52	125.79	<100	<100	130.14			Operation Procedure
SD-SP-T-21	22112 CAPSTRNO 138 22860 TRABUCO 138 1	TL13831 TALEGA-R.MSNVJO ck 1 AND TL13833 PICO-TRABUCO ck 1	P6	L-1/L-1	129.73	<100	<100	<100	<100	<100			Capistrano-Trabuco line upgrade, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-22	22524 MORHILTP 69.0 22440 MELROSE 69.0 1	TL0698 MONSRATE-AVOCADO-PALA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	128.90	119.64	120.19	<100	<100	126.16			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-23	22708 SANLUSRY 69.0 22582 OCEAN RANCH 69.0 2	TL0680 SANLUSRY-MELROSE-SANMRCOS ck 1 AND TL69XX OCEAN RANCH to SANLUSRY ck 1	P6	L-1/L-1	<100	120.24	119.84	<100	<100	128.63			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-24	22708 SANLUSRY 69.0 22582 OCEAN RANCH 69.0 1	TL0680 SANLUSRY-MELROSE-SANMRCOS ck 1 AND TL69XX OCEAN RANCH to SANLUSRY ck 2	P6	L-1/L-1	<100	120.24	119.84	<100	<100	128.63			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-25	22252 ENCNITAS 69.0 22160 DEL MAR 69.0 1	TL06952 NORTHCTY-PENSQTOS 69 ck 1 AND TL0616 Lkhodges-BERNARDO-RSF ck 1	P6	L-1/L-1	128.50	<100	<100	<100	<100	<100			Del Mar - North City line, as previously approved, in 2018, Operation Procedure in the interim

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	2025 SP High CEC Load	N/A		N/A
SD-SP-T-26	22256 ESCNDIDO 69.0 22272 ESCO 69.0 1	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	127.29	<100	<100	103.57	<100	<100			2nd Poway-Pomerado 69 kV line as previously approved, preferred resources, and/or load shedding in the interim
SD-SP-T-27	22841 LAGNA NL TAP 138 22396 LAGNA NL 138 1	TL13836 TALEGA-PICO ck 1 AND TL13846A PICO - TA TAP33 ck1	P6	L-1/L-1	126.60	<100	<100	<100	<100	<100			SOCRE project as previously approved in transmission plan, Operation Procedure in the interim
SD-SP-T-28	22664 POMERADO 69.0 22828 SYCAMORE 69.0 2	TL06915 POMERADO -SYCAMORE ck 1 AND Artesen 230/69 Transformer #1	P6	L-1/T-1	<100	115.64	120.15	<100	<100	126.41			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-29	22664 POMERADO 69.0 22828 SYCAMORE 69.0 1	TL06924 POMERADO -SYCAMORE ck 2 AND Artesen 230/69 Transformer #1	P6	L-1/T-1	<100	115.64	120.15	<100	<100	126.41			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-30	22692 ROSCYNTP 69.0 22696 ROSE CYN 69.0 1	OLD TOWN 69/230 Transformer #1 AND #2	P6	T-1/T-1	125.04	<100	<100	101.80	<100	<100			RoseCanyon 69 kV Tap Elimination, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-31	22440 MELROSE 69.0 22708 SANLUSRY 69.0 2	SANLUSRY-MELRSETP 69 ck 1 AND TL0684 ESCNDIDO-SANMRCOS ck 1	P6	L-1/L-1	122.85	<100	<100	100.53	<100	<100			Escondido-San Marcos Ck 2, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-32	22416 LOVELAND 69.0 22168 DESCANSO 69.0 1	TL0626 ST-BC-DE ck 1 AND TL06923 BARRETT -CAMERON ck 1	P6	L-1/L-1	<100	<100	<100	<100	119.24	<100			Operation Procedure
SD-SP-T-33	22316 GENESEE 69.0 22864 UCM 69.0 1	TL0662 PENSQTOS -TOREYPNS ck 1 AND TL0666 PQ-DB-DH-TP 69 ck 1	P6	L-1/L-1	119.82	105.01	104.31	<100	<100	111.15			Operation Procedure
SD-SP-T-34	22856 TOREYPNS 69.0 22200 DUNHILTP 69.0 1	TL0662 PENSQTOS -TOREYPNS ck 1 AND TL06907 GENESEE -UCM ck 1	P6	L-1/L-1	121.32	106.16	105.48	<100	<100	112.26			preferred resources, operation procedure with higher emergency rating
SD-SP-T-35	22668 POWAY 69.0 22876 WARCYNTP 69.0 1	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	119.84	<100	<100	<100	<100	<100			2nd Poway-Pomerado 69 kV line as previously approved in transmission plan, Operation Procedure in the interim
SD-SP-T-36	22440 MELROSE 69.0 22442 MELRSETP 69.0 1	TL0680b SANLUSRY 69-MELRSETP 69 ck 1 AND TL0684 ESCNDIDO-SANMRCOS ck 1	P6	L-1/L-1	119.24	<100	<100	<100	<100	<100			Escondido-San Marcos Ck 2, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-37	22160 DEL MAR 69.0 22644 PENSQTOS 69.0 2	TL0610 DEL MAR-PENSQTOS ck 1 AND TL06952 NORTHCTY-PENSQTOS 69 ck 1	P6	L-1/L-1	<100	111.06	111.17	<100	<100	118.32			Operation Procedure

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	2025 SP High CEC Load	N/A		N/A
SD-SP-T-38	22512 MONSRATE 69.0 22524 MORHILTP 69.0 1	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	116.00	110.88	111.54	<100	<100	116.93			Operation Procedure
SD-SP-T-39	22331 MIRASNTO 69.0 22316 GENESEE 69.0 1	TL06905 GENESEE -PENSQTOS ck 2 AND TL069 TOREYPNS to UCM ck 1	P6	L-1/L-1	114.07	108.68	109.15	<100	<100	116.23			Operation Procedure
SD-SP-T-40	22668 POWAY 69.0 22664 POMERADO 69.0 1	TL06920 ARTESN-SYCAMORE ck 1 AND TL0689 ESCNDIDO-FELICITA-BERNARDO ck 1	P6	L-1/L-1	107.08	<100	<100	<100	<100	<100			Artesan 69/230 kV Transformer, as previously approved, Operation Procedure in the interim
SD-SP-T-41	22768 BAY BLVD 69.0 22520 MONTGYTP 69.0 1	TL0641 BAY BLVD - MONTGMRY ck 1 AND TL0644 BAY BLVD - SWEETWTR ck 1	P6	L-1/L-1	<100	111.55	110.33	<100	<100	115.95			Operation Procedure
SD-SP-T-42	22160 DEL MAR 69.0 22644 PENSQTOS 69.0 1	TL0667 DEL MAR-PENSQTOS ck 2 AND TL06952 NORTHCTY-PENSQTOS 69 ck 1	P6	L-1/L-1	<100	108.59	108.67	<100	<100	115.74			Operation Procedure
SD-SP-T-43	22840 TALEGA 138 22842 TAP33 138 1	TALEGA-R.MSNVJO 138 ck 1 AND TALEGA-PICO 138 ck 1	P6	L-1/L-1	111.08	<100	<100	115.05	<100	<100			SOCRE project as previously approved in transmission plan, Operation Procedure in the interim
SD-SP-T-44	22644 PENSQTOS 69.0 22164 DELMARTP 69.0 1	TL06907 GENESEE -UCM ck 1 AND TL0662 PENSQTOS -TOREYPNS ck 1	P6	L-1/L-1	114.79	<100	<100	<100	<100	<100			preferred resources, operation procedure with higher emergency rating
SD-SP-T-45	22644 PENSQTOS 69.0 22856 TOREYPNS 69.0 1	TL0666 PQ-DB-DH-TP 69 ck 1 AND TL06907 GENESEE -UCM ck 1	P6	L-1/L-1	113.08	<100	<100	<100	<100	104.65			Operation Procedure
SD-SP-T-46	22200 DUNHILTP 69.0 22188 DOUBLTTP 69.0 1	TL06907 GENESEE -UCM ck 1 AND TL0662 PENSQTOS -TOREYPNS ck 1	P6	L-1/L-1	113.78	<100	<100	<100	<100	105.02			preferred resources, operation procedure with higher emergency rating
SD-SP-T-47	22188 DOUBLTTP 69.0 22164 DELMARTP 69.0 1	TL0662 PENSQTOS -TOREYPNS ck 1 AND TL06907 GENESEE -UCM ck 1	P6	L-1/L-1	113.77	<100	<100	<100	<100	105.02			preferred resources, operation procedure with higher emergency rating
SD-SP-T-48	22668 POWAY 69.0 22676 R.CARMEL 69.0 1	TL06920 ARTESN-SYCAMORE ck 1 AND TL0689 ESCNDIDO-FELICITA-BERNARDO ck 1	P6	L-1/L-1	112.86	<100	<100	<100	<100	<100			Artesan 69/230 kV Transformer, as previously approved, Operation Procedure in the interim
SD-SP-T-49	22656 PICO 138 22842 TAP33 138 1	TALEGA-R.MSNVJO 138 ck 1 AND TALEGA-PICO 138 ck 1	P6	L-1/L-1	107.97	<100	<100	111.91	<100	<100			SOCRE project as previously approved in transmission plan, Operation Procedure in the interim

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	2025 SP High CEC Load	N/A		N/A
SD-SP-T-50	22840 TALEGA 138 22656 PICO 138 1	PICO-SANMATEO 138 ck 1 AND TALEGA-R.MSNVJO 138 ck 1	P6	L-1/L-1	105.63	<100	<100	109.48	<100	<100			SOCRE project as previously approved in transmission plan, Operation Procedure in the interim
SD-SP-T-51	22592 OLD TOWN 69.0 22380 KETTNER 69.0 1	SILVERGT 230/69 kV Transformer #1 AND #2	P6	T-1/T-1	109.42	<100	<100	<100	<100	<100			Bay Blvd 230/69 kV Transformer, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-52	22700 SAMPSON 69.0 22420 SILVERGT 69.0 1	TL0657 SAMPSON-SILVERGT ck 2 AND TL0603A SWEETWTR 69-NAVSTMTR 69 ck 1	P6	L-1/L-1	<100	104.61	104.73	<100	<100	109.02			Increase power factor at NAVSTMTR, Operation Procedure
SD-SP-T-53	22500 MISSION 138 22496 MISSION 69.0 1	MISSION 230/69 kV Transformer #1 AND #2	P6	T-1/T-1	<100	102.16	101.82	<100	<100	108.63			Operation Procedure
SD-SP-T-54	22592 OLD TOWN 69.0 22871 VINE SUB 69.0 1	SILVERGT 230/69 kV Transformer #1 AND #2	P6	T-1/T-1	<100	<100	<100	<100	<100	106.86			Operation Procedure, and DG/DR/Energy Storage, monitor load growth
SD-SP-T-55	22816 SUNYSIDE 69.0 22636 PARADISE 69.0 1	TL06911 JAMACHA-SPRNGVLY ck 1 AND TL0621 PARADISE-MIGUEL ck 1	P6	L-1/L-1	<100	103.06	101.25	<100	<100	106.82			Operation Procedure
SD-SP-T-56	22112 CAPSTRNO 138 22656 PICO 138 1	TL13831 TALEGA-R.MSNVJO ck 1 AND TL13833 PICO-TRABUCO ck 1	P6	L-1/L-1	106.35	<100	<100	<100	<100	<100			Capistrano-Pico ck 2, as previously approved, Operation Procedure in the interim
SD-SP-T-57	22056 BERNARDO 69.0 22284 FELCTATP 69.0 1	TL0648 POWAY-R.CARMEL ck 1 AND TL06920 ARTESN-SYCAMORE ck 1	P6	L-1/L-1	105.80	<100	<100	<100	<100	<100			Artesen 230kV and 69kV upgrades, as previously approved, in 2019, Operation Procedure
SD-SP-T-58	22380 KETTNER 69.0 22024 B 69.0 1	OLD TOWN 230/69 kV Transformer #1 AND #2	P6	T-1/T-1	<100	100.92	<100	<100	<100	105.78			Operation Procedure
SD-SP-T-59	22336 GRANITE 69.0 22408 LOSCOCHS 69.0 1	TLNEWB LOSCOCHS 69-GRANITE 69 ck 2 AND EL CAJON-GRANITE 69 ck 1	P6	L-1/L-1	105.17	<100	<100	<100	<100	<100			Increase power factor at GRANITE, Operation Procedure
SD-SP-T-60	22720 SANMATEO 138 22841 LAGNA NL TAP 138 1	TL13836 TALEGA-PICO ck 1 AND TL13846C TALEGA- TA TAP33 ck 1	P6	L-1/L-1	104.94	<100	<100	<100	<100	<100			SOCRE project as previously approved in transmission plan, Operation Procedure in the interim
SD-SP-T-61	22336 GRANITE 69.0 22408 LOSCOCHS 69.0 2	TLNEWA LOSCOCHS 69-GRANITE 69 ck 1 AND EL CAJON-GRANITE 69 ck 1	P6	L-1/L-1	104.58	<100	<100	<100	<100	<100			Increase power factor at GRANITE, Operation Procedure
SD-SP-T-62	22024 B 69.0 22420 SILVERGT 69.0 2	TL0602 B-SILVERGT ck 1 AND TL0605 SILVERGT-URBAN ck 1	P6	L-1/L-1	<100	<100	100.90	<100	<100	104.56			Operation Procedure
SD-SP-T-63	22136 CLAIMNT 69.0 22140 CLARMTTP 69.0 1	TL0663 KEARNY -MISSION ck 1 AND TL0676 MESAHGTS-MISSION ck 1	P6	L-1/L-1	<100	<100	<100	<100	<100	103.53			Operation Procedure, and DG/DR/Energy Storage

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	2025 SP High CEC Load	N/A		N/A
SD-SP-T-64	22208 EL CAJON 69.0 22408 LOSCOCHS 69.0 1	TL0620 MURRAY-GARFIELD ck 1 AND LD_GRB_LD_GR OPEN 632 PK JM/EC/GA	P6	L-1/L-1	<100	<100	<100	102.75	<100	<100			Operation Procedure, and DG/DR
SD-SP-T-65	22476 MIGUELTP 69.0 22456 MIGUEL 69.0 1	TL06911 JAMACHA-SPRNGVLY ck 1 AND TL0621 PARADISE-MIGUEL ck 1	P6	L-1/L-1	<100	<100	<100	<100	<100	102.47			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-66	22556 NAVSTMTR 69.0 22820 SWEETWTR 69.0 1	SILVERGT 230/69 kV Transformer #1 AND #2	P6	T-1/T-1	<100	<100	<100	<100	<100	101.09			Operation Procedure, and DG/DR/Energy Storage
SD-SP-T-67	22680 R.SNTAFE 69.0 22685 R.SNTTP1 69.0 1	TL06952 NORTHCTY-PENSQTOS 69 ck 1 AND TL0660 ENCINITAS-DEL MAR ck 1	P6	L-1/L-1	101.04	<100	<100	<100	<100	<100			Del Mar - North City line, as previously approved, in 2018, Operation Procedure in the interim
SD-SP-T-68	22008 ASH 69.0 22012 ASH TP 69.0 1	TL0679 ESCNDIDO-FELICITA ck 1 AND TL0689 ESCNDIDO-FELICITA-BERNARDO ck 1	P7	L-2	<100	<100	<100	<100	<100	100.40			Operation Procedure, Turn on DG at Valley Center
SD-SP-T-69	22306 GARFIELD 69.0 22208 EL CAJON 69.0 1	TL0618 MISSION-MURRAY ck 1 AND TL0619 MISSION-MURRAY ck 2	P7	L-2	119.53	119.59	116.57	<100	<100	124.51			preferred resources, operation procedure with higher emergency rating
SD-SP-T-70	22284 FELCTATP 69.0 22288 FELICITA 69.0 1	TL0696 ESCNDIDO-ASH ck 1 AND TL06596 ESCNDIDO-ASH ck 2	P7	L-2	<100	100.55	101.82	<100	<100	107.82			Operation Procedure, Turn on DG at Valley Center
SD-SP-T-71	22532 MURRAY 69.0 22306 GARFIELD 69.0 1	TL0618 MISSION-MURRAY ck 1 AND TL0619 MISSION-MURRAY ck 2	P7	L-2	103.59	101.93	<100	<100	<100	106.19			preferred resources, operation procedure with higher emergency rating
SD-SP-T-72	22160 DEL MAR 69.0 22164 DELMARTP 69.0 1	TL0610 DEL MAR-PENSQTOS ck 1 AND TL0667 DEL MAR-PENSQTOS ck 2	P7	L-2	115.44	<100	<100	<100	<100	<100			Del Mar - North City line, as previously approved, in 2018, Operation Procedure in the interim



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	2025 SP High CEC Load	N/A		N/A
SD-SP-VD-1	22804 STUART 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	21.10	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-2	22808 STUARTTP 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	21.10	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-3	22400 LASPULGS 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	19.05	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-4	22368 JAP MESA 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	15.81	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-5	22046 BASILONE 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	14.92	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-6	22848 TALEGATP 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	13.26	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-7	22156 CRSTNTS 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	13.25	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-8	22836 TALEGA 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	13.25	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-9	22084 BORREGO 69 kV	TL06960 BORREGO-BR GEN HV ck 1	P1	L-1	9.26	8.66	8.70	9.08	<5	8.91			Turn on Capacitor at BORREGO to compensate for voltage drop
SD-SP-VD-10	22540 NARROWS 69 kV	TL06960 BORREGO-BR GEN HV ck 1	P1	L-1	7.13	6.67	6.71	6.79	<5	6.87			Turn on Capacitor at BORREGO to compensate for voltage drop
SD-SP-VD-11	22083 BR GEN HV 69 kV	BORREGO_SOLAR @ BORREGO	P1	L-1	6.79	6.51	6.51	6.96	<5	6.79			Turn on Capacitor at BORREGO to compensate for voltage drop
SD-SP-VD-12	22724 SANMRCOS 69 kV	TL0684 ESCNDIDO-SANMRCOS ck 1	P1	L-1	6.24	<5	<5	<5	<5	<5			ESCNDIDO-SANMRCOS ck 2, as previously approved, in 2018, Operation Procedure, and DG/DR/Energy Storage in the interim
SD-SP-VD-13	22044 BARRETP 69 kV	TL0625c_LOVELAND 69-BARRETP 69 ck 1	P1	L-1	<5	<5	<5	-5.25	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-14	22324 GLENCLIF 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-5.61	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-15	22328 GLNCLFTP 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-5.61	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-16	22072 CAMERNTTP 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-7.31	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-17	22902 CRESTWD 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-7.33	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-18	22903 KUMEYAAY 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-7.34	<5	<5			Turn on Reactor at KUMEYAAY



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	2025 SP High CEC Load	N/A		N/A
SD-SP-VD-19	22104 CAMERON 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1	<5	<5	<5	-8.57	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-20	22836 TALEGA 69 kV	TL0692 LASPULGS - JAP MESA ck 1	P1	L-1	-9.35	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-21	22848 TALEGATP 69 kV	TL0692 LASPULGS - JAP MESA ck 1	P1	L-1	-9.36	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-22	22156 CRSTNTS 69 kV	TL0692 LASPULGS - JAP MESA ck 1	P1	L-1	-9.36	<5	<5	<5	<5	<5			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-23	22040 BARRETT 69 kV	TL0625_TL0625 BAR - DS - LV ck 1	P1	L-1	<5	<5	<5	-9.58	<5	<5			Turn on Reactor at KUMEYAAY
SD-SP-VD-24	22640 PENDLETN 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	14.33	10.38	10.45	<10	<10	11.19			Operation Procedure
SD-SP-VD-25	22676 R.CARMEL 69 kV	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	12.09	<10	<10	<10	<10	<10			2nd Poway-Pomerado 69 kV line as previously approved, Operation Procedure in the interim
SD-SP-VD-26	22668 POWAY 69 kV	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	11.96	<10	<10	<10	<10	<10			2nd Poway-Pomerado 69 kV line as previously approved, Operation Procedure in the interim
SD-SP-VD-27	22104 CAMERON 69 kV	TL06904 LOVELAND-ALPINE ck 1 AND TL6914NW MIGUEL-LOVELAND ck 1	P6	L-1/L-1	<10	<10	<10	<10	<10	11.12			Turn on Capacitor at KUMEYAAY
SD-SP-VD-28	22040 BARRETT 69 kV	TL06904 LOVELAND-ALPINE ck 1 AND TL6914NW MIGUEL-LOVELAND ck 1	P6	L-1/L-1	<10	<10	<10	<10	<10	11.05			Turn on Capacitor at KUMEYAAY
SD-SP-VD-29	22046 BASILONE 69 kV	LASPULGS-JAP MESA 69 ck1 AND TALEGA-S.ONOFRE 230 ck 2	P7	L-2	-10.31	<10	<10	<10	<10	<10			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-VD-30	22368 JAP MESA 69 kV	LASPULGS-JAP MESA 69 ck1 AND TALEGA-S.ONOFRE 230 ck 2	P7	L-2	-10.67	<10	<10	<10	<10	<10			Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation

For the SDG&E area, power factor for the 2017 base case was modeled using the most recent historical values.

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions		
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Spring Light Load	2025 SP High CEC Load	N/A		N/A	
SD-SP-V-1	22804 STUART 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.79									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-2	22808 STUARTTP 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.79									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-3	22400 LASPULGS 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.79									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-4	22368 JAP MESA 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.83									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-5	22046 BASILONE 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.85									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-6	22848 TALEGATP 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.88									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-7	22156 CRSTNTS 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.88									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-8	22836 TALEGA 69 kV	TL0690d OCNSDETP 69-STUARTTP 69 ck 1	P1	L-1	0.88									Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-9	22540 NARROWS 69 kV	TL0682 WARNERS-RINCON ck 1	P1	L-1	1.11									Turn off capacitor at SANTYSBL and BORREGO
SD-SP-V-10	22084 BORREGO 69 kV	TL0682 WARNERS-RINCON ck 1	P1	L-1	1.12									Turn off capacitor at SANTYSBL and BORREGO
SD-SP-V-11	22083 BR GEN HV 69 kV	TL0682 WARNERS-RINCON ck 1	P1	L-1	1.12									Turn off capacitor at SANTYSBL and BORREGO
SD-SP-V-12	22836 TALEGA 69 kV	TL06971 JAPMESA-BASILONE ck 1	P1	L-1	1.12				1.07					Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-13	22848 TALEGATP 69 kV	TL06971 JAPMESA-BASILONE ck 1	P1	L-1	1.12				1.07					Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions		
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Spring Light Load	2025 SP High CEC Load	N/A		N/A	
SD-SP-V-14	22156 CRSTNTS 69 kV	TL06971 JAPMESA-BASILONE ck 1	P1	L-1	1.12				1.07					Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-15	22046 BASILONE 69 kV	TL06971 JAPMESA-BASILONE ck 1	P1	L-1	1.12				1.07					Reconduct Talega Tap - Stuart Tap 69 kV, as previously approved, in 2018, higher power factor resolves voltage deviation
SD-SP-V-16	22324 GLENCLIF 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.11					Turn on Reactor at KUMEYAAY
SD-SP-V-17	22328 GLNCLFTP 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.11					Turn on Reactor at KUMEYAAY
SD-SP-V-18	22040 BARRETT 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.14					Turn on Reactor at KUMEYAAY
SD-SP-V-19	22104 CAMERON 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.14					Turn on Reactor at KUMEYAAY
SD-SP-V-20	22072 CAMERNT 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.14					Turn on Reactor at KUMEYAAY
SD-SP-V-21	22902 CRESTWD 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.16					Turn on Reactor at KUMEYAAY
SD-SP-V-22	22903 KUMEYAAY 69 kV	TL0625 BARRETT - DESCANSO - LOVELAND ck 1	P1	L-1					1.16					Turn on Reactor at KUMEYAAY
SD-SP-V-23	22328 GLNCLFTP 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1						1.10				Turn on Reactor at KUMEYAAY
SD-SP-V-24	22324 GLENCLIF 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1						1.10				Turn on Reactor at KUMEYAAY
SD-SP-V-25	22040 BARRETT 69 kV	TL06957 LOVELAND-BARRETT ck 1	P1	L-1						1.14				Turn on Reactor at KUMEYAAY
SD-SP-V-26	22104 CAMERON 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1					1.12	1.14				Turn on Reactor at KUMEYAAY
SD-SP-V-27	22072 CAMERNT 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1					1.12	1.14				Turn on Reactor at KUMEYAAY
SD-SP-V-28	22902 CRESTWD 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1					1.14	1.16				Turn on Reactor at KUMEYAAY
SD-SP-V-29	22903 KUMEYAAY 69 kV	TL06923 BARRETT -CAMERON ck 1	P1	L-1					1.14	1.16				Turn on Reactor at KUMEYAAY
SD-SP-V-30	22640 PENDLETN 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	0.84	0.89	0.89				0.88			Operation Procedure, and DG/DR/Energy Storage
SD-SP-V-31	22020 AVOCADO 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	0.84	0.88	0.88				0.87			Operation Procedure, and DG/DR/Energy Storage
SD-SP-V-32	22016 AVCADOTP 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	0.86	0.90	0.90				0.89			Operation Procedure, and DG/DR/Energy Storage
SD-SP-V-33	22512 MONSRATE 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	0.86		0.90				0.89			Operation Procedure, and DG/DR/Energy Storage
SD-SP-V-34	22676 R.CARMEL 69 kV	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	0.87									2nd Poway-Pomerado 69 kV line as previously approved, Operation Procedure in the interim
SD-SP-V-35	22668 POWAY 69 kV	TL0633 BERNARDO-R.CARMEL ck 1 AND TL06913 POWAY-POMERADO ck 1	P6	L-1/L-1	0.88									2nd Poway-Pomerado 69 kV line as previously approved, Operation Procedure in the interim
SD-SP-V-36	22688 RINCON 69 kV	TL0683 RINCON-LILAC ck 1 AND TL06926 RINCON -VALCNTR ck 1	P6	L-1/L-1	1.12									Turn off capacitor at RINCON
SD-SP-V-37	22064 BLDCKRTP 69 kV	TL0637 SANTYSBL - CREELMAN ck 1 AND TL0625 BAR - DS - LV 69 ck 1	P6	L-1/L-1	1.13									Turn on Reactor at KUMEYAAY

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)							Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Summer Off-Peak	2020 Spring Light Load	2025 SP High CEC Load	N/A		N/A
SD-SP-V-38	22068 BOLDRCRK 69 kV	TL0637 SANTYSBL - CREELMAN ck 1 AND TL0625 BAR - DS - LV 69 ck 1	P6	L-1/L-1	1.13								Turn on Reactor at KUMEYAAY
SD-SP-V-39	22168 DESCANSO 69 kV	TL0637 SANTYSBL - CREELMAN ck 1 AND TL0625 BAR - DS - LV 69 ck 1	P6	L-1/L-1	1.13				1.12				Turn on Reactor at KUMEYAAY
SD-SP-V-40	22736 SANTYSBL 69 kV	TL0637 SANTYSBL - CREELMAN ck 1 AND TL0682 WARNERS-RINCON ck 1	P6	L-1/L-1	1.13								Turn on Reactor at KUMEYAAY
SD-SP-V-41	22084 BORREGO 69 kV	TL0685 WARNERS-SANTYSBL ck 1 AND TL06960 BORREGO-BR GEN HV ck 1	P6	L-1/L-1			0.90			0.88			Operation Procedure
SD-SP-V-42	22512 MONSRATE 69 kV	TL0698 MN-AV-PA ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1	0.86		0.90			0.89			Operation Procedure
SD-SP-V-43	22640 PENDLETN 69 kV	TL06912 PENDLETN-SANLUSRY ck 1 AND TL0694 MN-MHTAP-MH-ME 69 ck 1	P6	L-1/L-1				0.88	0.88				Operation Procedure
SD-SP-V-44	22020 AVOCADO 69 kV	TL06912 PENDLETN-SANLUSRY ck 1 AND TL0694 MN-MHTAP-MH-ME 69 ck 1	P6	L-1/L-1				0.88					Operation Procedure
SD-SP-V-45	22016 AVCADOTP 69 kV	TL06912 PENDLETN-SANLUSRY ck 1 AND TL0694 MN-MHTAP-MH-ME 69 ck 1	P6	L-1/L-1				0.89	0.90				Operation Procedure
SD-SP-V-46	22540 NARROWS 69 kV	TL0637 SANTYSBL - CREELMAN ck 1 AND TL0682 WARNERS-RINCON ck 1	P6	L-1/L-1	1.18				1.12				Turn off capacitor at BORREGO
SD-SP-V-47	22168 DESCANSO 69 kV	TL0625 BAR - DS - LV 69 ck 1 AND TL0637 SANTYSBL - CREELMAN ck 1	P6	L-1/L-1	1.13				1.10				Turn on Reactor at KUMEYAAY
SD-SP-V-48	22640 PENDLETN 69 kV	TL0694 MN-MHTAP-MH-ME ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1				0.88	0.88				Operation Procedure
SD-SP-V-49	22016 AVCADOTP 69 kV	TL0694 MN-MHTAP-MH-ME ck 1 AND TL06912 PENDLETN-SANLUSRY ck 1	P6	L-1/L-1				0.89	0.90				Operation Procedure
SD-SP-V-50	22104 CAMERON 69 kV	TL06904 LOVELAND-ALPINE ck 1 AND TL6914NW MIGUEL-LOVELAND ck 1	P6	L-1/L-1					1.11	0.90			Turn on Capacitor/Reactor at KUMEYAAY
SD-SP-V-51	22040 BARRETT 69 kV	TL06904 LOVELAND-ALPINE ck 1 AND TL6914NW MIGUEL-LOVELAND ck 1	P6	L-1/L-1					1.10	0.90			Turn on Capacitor/Reactor at KUMEYAAY
SD-SP-V-52	22884 WARNERS 69 kV	DESCANSO-SANTYSBL-BOLDRCRK 69 + CREELMAN-SANTYSBL 69	P7	L-2	1.10								Turn off capacitor at BORREGO
SD-SP-V-53	22736 SANTYSBL 69 kV	DESCANSO-SANTYSBL-BOLDRCRK 69 + CREELMAN-SANTYSBL 69	P7	L-2	1.12								Turn off capacitor at BORREGO
SD-SP-V-54	22540 NARROWS 69 kV	DESCANSO-SANTYSBL-BOLDRCRK 69 + CREELMAN-SANTYSBL 69	P7	L-2	1.13								Turn off capacitor at BORREGO
SD-SP-V-55	22084 BORREGO 69 kV	DESCANSO-SANTYSBL-BOLDRCRK 69 + CREELMAN-SANTYSBL 69	P7	L-2	1.14				1.11				Turn off capacitor at BORREGO
SD-SP-V-56	22083 BR GEN HV 69 kV	DESCANSO-SANTYSBL-BOLDRCRK 69 + CREELMAN-SANTYSBL 69	P7	L-2	1.14				1.11				Turn off capacitor at BORREGO



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions	
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	2025 SP High CEC Load	N/A		N/A

No transient stability concerns identified.



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-SP-SLD-1												

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



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

No single source substation with more than 100 MW Load