

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)							Loading % (Sensitivity Scenarios)			ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off- Peak	2024 Spring Off- Peak	2029 Spring Off- Peak	2029 Winter Off- Peak	2021 SP Heavy Renewable & Min Gas Gen	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
500 kV LINES														
ROUND MTN –TABLE MTN #1 or #2 500 kV	Rnd Mtn –Table Mtn #2 or # 1 500 kV	P1	L-1	105.1%	99.6%	102.7%	<95%	<95%	<95%	<95%	<95%	98.9%	<95%	Reduce COI flow according to seasonal nomogram or bypass series capacitors on the remaining Round Mtn-Table Mtn 500 kV line if overload
ROUND MTN-TABLE MTN # 2 or # 1 500 kV	Round Mtn-Table Mtn # 1 or # 2 and Table Mtn 500/230 kV	P6	L-1/T-1	105.3%	100.2%	102.0%	<95%	<95%	<95%	<95%	<95%	99.5%	<95%	
ROUND MTN-TABLE MTN # 1 500 kV	Round Mtn-Table Mtn # 2 and Table Mtn 500/230 kV	P2	BRK	105.3%	99.9%	101.9%	<95%	<95%	<95%	<95%	<95%	99.5%	<95%	
ROUND MTN-TABLE MTN # 1 or # 2 500 kV	Round Mtn-Table Mtn # 2 or # 1 500 KV and Diablo unit	P3	G-1/L-1	119.4%	111.0%	N/A	<95%	<95%	<95%	<95%	<95%	110.2%	<95%	
CAPTAIN JACK-OLINDA 500 kV	Round Mtn-Table Mtn 500 kV #1 and #2 500 kV	P7	L-2	100.0%	98.2%	99.6%	<95%	<95%	<95%	<95%	<95%	98.4%	<95%	Reduce COI flow according to seasonal nomogram
MIDWAY-VINCENT # 1 500 kV	Midway-Vincent # 2 and Midway-Whirlwind	P6	L-1/L-1	102.3%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	99.8%	Existing Path 26 procedure under review.
MIDWAY-VINCENT # 2 500 kV	Midway-Vincent # 1 and Midway-Whirlwind 500 kV	P6	L-1/L-1	102.2%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	100.0%	
500/230 kV TRANSFORMERS														
OLINDA 500/230 kV x-former	Round Mtn 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	103.4%	103.7%	107.3%	<95%	<95%	<95%	<95%	Reduce COI flow according to the nomogram
	Round Mtn 500 kV stuck BRK- line to Table Mtn # 2 & x-former	P2/P6	BRK	<95%	<95%	<95%	106.1%	106.5%	110.3%	<95%	<95%	<95%	<95%	
	Round Mtn 500 kV stuck BRK- line to Table Mtn # 1 & x-former	P2/P6	BRK	<95%	<95%	<95%	105.2%	106.0%	109.7%	<95%	<95%	<95%	<95%	
	Round Mtn 500/230 and Diablo unit	P3	G-1/T-1	<95%	<95%	N/A	104.1%	103.0%	N/A	N/A	<95%	<95%	<95%	
	Malin- Round Mtn #1 and #2 500 kV	P7	L-2	<95%	<95%	<95%	117.1%	120.6%	121.8%	<95%	<95%	<95%	105.6%	
ROUND MTN 500/230 kV x-former	Olinda 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	101.9%	100.9%	104.0%	<95%	<95%	<95%	<95%	Reduce COI flow according to the nomogram
	Round Mtn-Table Mtn #1 and #2 500 kV	P7	L-2	<95%	<95%	<95%	102.2%	111.1%	112.9%	<95%	<95%	<95%	<95%	
	Diablo -unit	P1	G-1	<95%	<95%	<95%	100.0%	<P0	N/A	N/A	<95%	<95%	<P0	
	Table Mtn-Vaca Dix 500 kV	P1	L-1	<95%	<95%	<95%	100.0%	102.0%	102.1%	<95%	<95%	<95%	101.1%	
	Table Mtn-Tesla 500 kV	P1	L-1	<95%	<95%	<95%	<P0	101.9%	101.1%	<95%	<95%	<95%	<P0	
	Capt Jack-Olinda 500 kV	P1	L-1	<95%	<95%	<95%	101.6%	103.9%	103.7%	<95%	<95%	<95%	103.0%	
	Olinda-Tracy 500 kV	P1	L-1	<95%	<95%	<95%	99.8%	101.6%	101.2%	<95%	<95%	<95%	100.9%	

TABLE MTN 500/230 kV x-former	Vaca Dix-Tesla 500 kV	P1	L-1	<95%	<95%	<95%	100.2%	102.5%	<P0	<95%	<95%	<95%	<P0	Reduce COI flow according to the nomogram, upgrade if economic
	Tesla-Los Banos 500 kV	P1	L-1	<95%	<95%	<95%	<P0	101.3%	<P0	<95%	<95%	<95%	<P0	
	Round Mtn 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	102.2%	103.0%	102.9%	<95%	<95%	<95%	102.4%	
	Tesla 500/230 kV x-former	P1	T-1	<95%	<95%	<95%	<P0	101.2%	101.5%	<95%	<95%	<95%	101.8%	
	Los Banos 500 kV stuck BRK-lines to Gates & Tesla	P2/P6	BRK	<95%	<95%	<95%	99.8%	101.5%	100.7%	<95%	<95%	<95%	<P1	
	Tesla 500 kV stuck BRK- lines to Vaca Dix & Los Banos	P2/P6	BRK	<95%	<95%	<95%	100.9%	103.6%	101.2%	<95%	<95%	<95%	<P1	
	Round Mtn 500 kV stuck BRK- line to Table Mtn # 2 & x-former	P2/P6	BRK	<95%	<95%	<95%	100.8%	101.1%	101.0%	<95%	<95%	<95%	101.3%	
	Round Mtn 500 kV stuck BRK- line to Table Mtn # 1 & x-former	P2/P6	BRK	<95%	<95%	<95%	100.3%	101.5%	101.5%	<95%	<95%	<95%	<P1	
	Capt Jack-Olinda 500 kV & Diablo unit	P3	G-1/L-1	<95%	<95%	<95%	102.2%	<P1	N/A	<95%	<95%	<95%	<P1	
	Olinda-Tracy 500 kV & Diablo unit	P3	G-1/L-1	<95%	<95%	<95%	100.5%	<P1	N/A	<95%	<95%	<95%	<P1	
	Olinda 500/230 kV and Diablo unit	P3	G-1/T-1	<95%	<95%	<95%	100.2%	<P1	N/A	<95%	<95%	<95%	<P1	
	Round Mtn 500/230 and Diablo unit	P3	G-1/T-1	<95%	<95%	<95%	103.4%	<P1	N/A	<95%	<95%	<95%	<P1	
	Tracy-Los Banos and Tesla-Los Banos 500 kV	P7	L-2	<95%	<95%	<95%	101.8%	104.5%	102.2%	<95%	<95%	<95%	101.8%	
	Table Mtn-Vaca Dix and Table Mtn-Tesla 500 kV	P7	L-2	<95%	<95%	<95%	105.4%	111.0%	110.1%	<95%	<95%	<95%	105.6%	
	Tracy-Los Banos and Tesla-Los Banos 500 kV	P7	L-2	<95%	<95%	<95%	101.8%	104.5%	102.2%	<95%	<95%	<95%	101.8%	
	Table Mtn-Tesla and Vaca Dix-Tesla 500 kV	P7	L-2	<95%	<95%	<95%	104.3%	109.6%	104.5%	<95%	<95%	<95%	102.7%	
	Bi-pole PDCI outage	P7	DC	<95%	<95%	<95%	<P0	<P0	102.6%	<95%	<95%	<95%	<P0	
METCALF 500/230 kV x-former #11, 12 or 13	Metcalf 500/230 kV Tranformers #11 & #12 or #13	P6	T-1/T-1	<95%	101.5%	110.5%	<95%	<95%	<95%	<95%	123.0%	112.3%	<95%	- For baseline scenarios increase generation in the area after 1st contingency, - Under sensitivity scenario with minimum gas generation, load tripping might be required to address the P6 overload.
GATES 500/230 kV # 1 or 2 x-former	Gates 500/230 kV # 1 or 2 x-former and Diablo unit	P3	G-1/T-1	<95%	<95%	<95%	<95%	<95%	N/A	N/A	<95%	<95%	104.1%	Sensitivity only
230 kV LINES														
COTTONWD E-ROUND MTN 230kV #3	Table Mtn-Vaca Dix and Table Mtn-Tesla 500 kV	P7	L-2	101.6%	107.4%	102.8%	<95%	<95%	<95%	<95%	96.6%	108.4%	<95%	Reduce COI flow according to seasonal nomogram, or upgrade the line if economic.
TABLE MTN-RIO OSO 230 kV	Tbl Mtn-Vaca Dix 500 kV and Table Mtn-Palermo 230 kV	P6	L-1/L-1	106.2%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	Project: Rio Oso 230 kV BAAH Bus Upgrade Project ICN: Dec 2022

ALL MTN-RO 500 230 kV	Table Mtn-Vaca Dix and Table Mtn-Tesla 500 kV	P7	L-2	100.8%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	ISO: DEC 2022 Short term: COI Nomogram
CAYETANO- LONETREE 230 kV	Tesla 500 kV Stuck breaker (line to Metcalf and x-former # 2)	P2/P6	BRK	97.1%	99.0%	103.0%	<95%	<95%	<95%	<95%	<95%	101.5%	<95%	Reduce generation in the area
NEWARK-LOS ESTEROS 230 kV	Tesla-Metcalf and MossIndg-Los Banos 500 kV	P6	L-1/L-1	<95%	<95%	<95%	<95%	<95%	<95%	<95%	111.4%	<95%	<95%	Sensitivity only
NEWARK-E-F BRK (to LOS ESTEROS) 230 kV	Tesla-Metcalf and MossIndg-Los Banos 500 kV	P6	L-1/L-1	<95%	<95%	<95%	<95%	<95%	<95%	<95%	112.4%	<95%	<95%	
DELEVAN-CORTINA 230 KV	Olinda-Tracy 500 kV	P1	L-1	98.4%	95.5%	101.5%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	Reduce generation in the area
	Table Mtn 500 kV Stuck breaker (lines to Rnd Mtn and Vaca Dix)	P2/P6	BRK	97.6%	96.0%	101.9%	<95%	<95%	<95%	<95%	<95%	95.9%	<95%	
	Table Mtn-Vaca Dix and Diablo unit	P3	G-1/L-1	100.5%	98.1%	N/A	<95%	<95%	<95%	<95%	<95%	97.9%	<95%	
	Olinda-Tracy 500 kV and Diablo unit	P3	G-1/L-1	106.4%	99.8%	N/A	<95%	<95%	<95%	<95%	<95%	100.7%	<95%	
	Round Mtn-Table Mtn 500 kV #1 and #2 500 kV	P7	L-2	106.3%	101.4%	110.0%	<95%	<95%	<95%	<95%	<95%	101.0%	<95%	
	Table Mtn-Vaca Dix and Table Mtn-Tesla 500 kV	P7	L-2	106.4%	104.9%	111.4%	<95%	<95%	<95%	<95%	<95%	104.5%	<95%	
	Table Mtn-Vaca Dix and Vaca Dix -Tesla 500 kV	P7	L-2	<95%	<95%	102.5%	<95%	<95%	<95%	<95%	98.0%	<95%	<95%	
LOS BANOS-PADRE FLAT SS 230 kV (LOS BANOS-PANOCHÉ #1)	Los Banos-Gates # 1 and Los Banos-Midway 500 kV	P7	L-2	<95%	<95%	<95%	109.4%	<95%	<95%	<95%	99.3%	<95%	<95%	Reduce generation in the area
MOSSLANDING-LAS AGUILAS 230 kV	Mosslanding-Los Banos 500 kV	P1	L-1	<95%	<95%	<95%	<95%	102.2%	<95%	<95%	95.7%	<95%	<95%	Turning off generation in the area for P6 will not eliminate overloads without turning on Moss Landing generation in some cases. The most critical P6 contingencies, where increase of Mosslanding generation is needed, are shown prior to re-dispatch.
	Tracy-Los Banos & Mosslanding-Los Banos	P6	L-1/L-1	<95%	<95%	<95%	107.1%	118.5%	97.0%	<95%	101.4%	<95%	<95%	
	Tesla-Los Banos & Mosslanding-Los Banos	P6	L-1/L-1	<95%	<95%	<95%	112.3%	125.4%	100.9%	<95%	104.7%	<95%	<95%	
	Mosslanding-Los Banos 500 kV & Tesla-Metcalf 500 kV	P6	L-1/L-1	<95%	<95%	<95%	128.5%	136.7%	115.2%	<95%	162.7%	<95%	111.8%	
230/115 kV TRANSFORMERS and 230/70 kV														
NEWARK 230/115 kV #11	Tesla-Metcalf and MossIndg-Los Banos 500 kV	P6	L-1/L-1	<95%	98.3%	98.0%	<95%	<95%	<95%	<95%	102.3%	105.0%	<95%	Adjust NRS phase shifter and/or increase generation in the area.
	Tesla-Metcalf 500 kV and Newark -Los Esteros 230 kV kV	P6	L-1/L-1	102.9%	98.5%	99.6%	<95%	<95%	<95%	<95%	<95%	100.6%	<95%	
	Tesla-Metcalf 500 kV and Newark E-F 230 kV kV bus tie (to Los Esteros)	P6	L-1/BRK	108.2%	104.4%	105.4%	<95%	<95%	<95%	<95%	98.4%	106.9%	<95%	
HENRIETTA 230/115 kV	Mustang-Mc Call 230 kV and Diablo unit	P3	L-1/G-1	<95%	<95%	<95%	<95%	<95%	N/A	N/A	<95%	<95%	107.6%	Sensitivity only
115 kV LINES														
DELTA - CASCADE 115 kV	Capt Jack-Olinda 500 kV and Diablo unit	P3	G-1/L-1	97.0%	100.4%	<95%	<95%	<95%	<95%	<95%	<95%	101.7%	<95%	adjust Weed Phase Shifter or limit COI flow within seasonal nomogram
	Malin- Round Mtn #1 and #2 500 kV	P7	L-2	101.1%	112.7%	99.4%	<95%	<95%	<95%	<95%	<95%	113.3%	<95%	

	Round Mtn-Table Mtn 500 kV #1 and #2 500 kV	P7	L-2	<95%	101.1%	<95%	<95%	<95%	<95%	<95%	<95%	102.4%	<95%	
DRUM-BRUNSWICK -RIO OSO 115 kV	Round Mtn-Table Mtn 500 kV #1 and #2 500 kV	P7	L-2	100.1%	<95%	101.6%	<95%	<95%	<95%	<95%	<95%	<95%	<95%	Reduce Drum generation
NEWARK-NRS 115 kV	Tesla-Metcalf 500 kV and Newark E-F 230 kV bus tie (to Los Esteros)	P6	L-1/BRK	<95%	101.7%	<95%	<95%	<95%	<95%	<95%	<95%	105.2%	<95%	Adjust NRS phase shifter
AMES-MT VIEW 115 kV	Tesla-Metcalf and MossIndg-Los Banos 500 kV	P6	L-1/L-1	<95%	<95%	<95%	<95%	<95%	<95%	<95%	102.0%	<95%	<95%	Sensitivity only
AMES-WHISMAN 115 kV	Tesla-Metcalf and MossIndg-Los Banos 500 kV	P6	L-1/L-1	<95%	<95%	<95%	<95%	<95%	<95%	<95%	101.6%	<95%	<95%	

Study Area: PG&E Bulk

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage, PU (Baseline Scenarios)							Post Cont. Voltage, PU (Sensitivity Scenarios)			ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2029 Spring Off-Peak	2029 Winter Off-Peak	2021 SP Heavy Renewable & Min Gas Gen	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
MAXWELL 500 kV	Normal Conditions	P0	normal	1.057	1.054	1.049	within limits				within limits	1.054	within limits	Installation of Round Mountain 500 kV STATCOM (modeled starting from 2024) improves voltage. Maxwell 500 kV voltage is within PG&E limits, but is still below WAPA limit of 495 kV. Operating COI within seasonal nomogram may help to improve voltages
	Round Mtn-Table Mnt #1 and # 2 500 kV	P7	L-2	0.971	0.989	0.980						0.990		
	Malin-Round Mtn # 1 and # 2 500 kV	P7	L-2	0.968	0.990	>0.99						>0.99		
	Table Mtn-Vaca Dix 500 kV and Diablo unit	P3	L-1/G-1	0.973	>0.99	N/A						>0.99		
	Table Mtn-Tesla 500 kV and Diablo unit	P3	L-1/G-1	0.986	>0.99	N/A						>0.99		
	Malin-Round Mtn # 1 or 2 and Diablo unit	P3	L-1/G-1	0.988	>0.99	N/A						>0.99		
	Round Mtn-Table Mtn # 2 & Round Mtn-Malin # 2 or # 1 500 kV	P6	L-1/L-1	0.980	>0.99	0.981						0.990		
METCALF 500 kV	Normal Conditions	P0	normal	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	1.082	sensitivity only
GATES 500 kV	Normal Conditions	P0	normal	1.082	<1.08	<1.08	<1.08	<1.08	<1.08	<1.08	1.084	<1.08	<1.08	install reactive support to absorb VARs on Gates , modeled starting from 2024. Turn on shunt reactors in transformer tertiary prior to that
DIABLO 500 kV	Normal Conditions	P0	normal	<1.08	<1.08	1.082	<1.08	<1.08	1.080	1.082	<1.08	<1.08	<1.08	install reactive support to absorb VARs on Gates, modeled starting from 2024. Reduce scheduled voltage on Gates and /or turn on reactors in the Midway tertiary to bring Diablo voltage within the limits

Study Area: PG&E Bulk

Voltage Deviation



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)							Post Cont. Voltage Deviation % (Sensitivity Scenarios)			ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2029 Spring Off-Peak	2029 Winter Off-Peak	2021 SP Heavy Renewable & Min Gas Gen	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
NONE over 8%														

Study Area: PG&E Bulk

Transient Stability



Transient Stability Performance (Number of voltage and frequency violations)

	Contingency	Category	Category Description	Baseline scenarios				Sensitivity		Potential Mitigation Solutions
Generator/Load				2024 Summer Peak	2029 Summer Peak	2024 Spring Off-Peak	2029 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
Tripped Generation										
renewable generator bus 34683 0.38 kV at Mustang 230 kV bus	1 Phase fault on TESLA 500KV BUS - delayed clearing	P2	bus section	modeled off in the case	modeled off in the case	tripped due to high voltage >1.1 p.u. after 2 sec , 90 MW	not tripped with these contingencies	modeled off in the case	tripped due to high voltage >1.1 p.u. after 2 sec , 102 MW	need to investigate and check relay settings
	1 Phase fault on METCALF 500KV BUS - delayed clearing	P2	bus section	modeled off in the case	modeled off in the case	not tripped with these contingencies	tripped due to high voltage >1.1 p.u. after 2 sec , 103 MW	modeled off in the case	tripped due to high voltage >1.1 p.u. after 2 sec , 102 MW	
	1 Phase fault on MOSSLANDING 500KV BUS - delayed clearing	P2	bus section	modeled off in the case	modeled off in the case	tripped due to high voltage >1.1 p.u. after 2 sec , 90 MW	tripped due to high voltage >1.1 p.u. after 2 sec , 103 MW	modeled off in the case	tripped due to high voltage >1.1 p.u. after 2 sec , 102 MW	
renewable generator bus 33102 COLUMBIA 0.36 (East Bay)	3 Phase Fault TRACY or TESLA, 500 kV	P1, P6-7	any	modeled off in the case	modeled off in the case	not tripped in this case, protection not modeled	tripped due to high voltage >1.1 p.u. after 8 sec , 19 MW	modeled off in the case	not tripped in this case, protection not modeled	High voltages in the base case. Consider installing reactors due to high voltages in the area.
	1 Phase fault on TESLA 500KV BUS - delayed clearing	P2	bus section	modeled off in the case	modeled off in the case	not tripped in this case, protection not modeled	tripped due to high voltage >1.1 p.u. after 3 sec , 19 MW	modeled off in the case	not tripped in this case, protection not modeled	
renewable generator bus 36436 TOPAZ B2 0.69 kV	3 Phase fault MIDWAY 500 kV	P1, P6, P7	L-1, T-1, L-1/L-1	modeled off in the case	modeled off in the case	tripped for low voltage <0.9 p.u after 4 sec, 240 MW	tripped for low voltage <0.9 p.u after 4 sec, 245 MW	modeled off in the case	tripped for low voltage <0.9 p.u after 4 sec, 243 MW	May need additional reactive support, low voltages after contingencies
renewable generator bus 365563 Q885 0.36 kV at S. KERN	3 Phase fault MIDWAY 500 kV, Diabloe Midway # 2 and 3 outage	P7	L-2	modeled off in this case	modeled off in this case	not tripped with these contingencies, protection not modeled	not tripped with these contingencies, protection not modeled	modeled off in this case	tripped for high voltage after 7sec, 10 MW	High voltages in the base case. Consider installing reactors due to high voltages in the area.
	3 phase fault on Diablo generator with delayed clearing, Diablo-Midway out	P4	L-1						tripped for high voltage after 3 sec, 10 MW	
generator 35024 DEXEL 13.8 kV	3 Phase fault on MIDWAY 500 kV, contingencies between Midway and Vincent	P1,P6, P7	L-1, L-1/-1	not tripped with these contingencies	tripped by branch overcurrent relay after 3 sec, 20.3 MW	not tripped with these contingencies	not tripped with these contingencies	not tripped with these contingencies	not tripped with these contingencies	need to investigate and check relay settings
renewable at bus 29273 SKY RIVER_G1	2 Phase Fault on LOS BANOS or GATES 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not modeled in the case	tripped for high voltage with fault, 42 MW	not modeled in the case	tripped for high voltage with fault, 42 MW	not modeled in the case	not modeled in the case	under review
Tripped load, load reduced by composite load model not included										

Study Area: PG&E Bulk

Transient Stability



Transient Stability Performance (Number of voltage and frequency violations)

	Contingency	Category	Category Description	Baseline scenarios				Sensitivity		Potential Mitigation Solutions
Generator/Load				2024 Summer Peak	2029 Summer Peak	2024 Spring Off-Peak	2029 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
45070 BRYANT 69.00	3 phase fault ROUND MTN, MALIN, CAPT JACK 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	Low voltage due to stalling of induction motors.
45016 BELKNAP 69.00	3 phase fault ROUND MTN, MALIN, CAPT JACK 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	
45407 MERLIN 115.00	3 phase fault ROUND MTN, MALIN, CAPT JACK 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	
45389 EASY VLY 115.00	3 phase fault ROUND MTN, MALIN, CAPT JACK 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	
45271 SAGEROAD 115.00	3 phase fault ROUND MTN, MALIN, CAPT JACK 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	
36012 WTSNVILLE 60.00	3 phase fault on METCALF 500 kV, Metcalf-Tesla and Loss Banos-Mosslanding 500 kV outage	P6	L-1/ L-1	not tripped	under-vlt load shedding	not tripped	not tripped	not tripped	not tripped	Low voltage due to stalling of induction motors. Consider installation of dynamic reactive support
36890 Walsh 60.00	3 phase fault on TESLA 500 kV	P1, P6, P7	L-1, T-1, L-1/-1	not tripped with these contingencies	UFLS with fault	not tripped with these contingencies	not tripped	not tripped with these contingencies	not tripped with these contingencies	possible modeling error due to renewale generation in the area. Need to check UFLS relay settings
Criteria Violaions										
NONE										

Study Area: PG&E Bulk



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
			2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off- Peak	2024 Spring Off- Peak	2029 Spring Off- Peak	2029 Winter Off- Peak	2021 SP Heavy Renewable & Min Gas Gen	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
N/A													

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

Study Area: PG&E Bulk

Single Source Substation with more than 100 MW Load



Substation	Load Served (MW)										Potential Mitigation Solutions
	2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Spring Off- Peak	2024 Spring Off- Peak	2029 Spring Off- Peak	2029 Winter Off- Peak	2021 SP Heavy Renewable & Min Gas Gen	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
N/A											

No single source substation with more than 100 MW Load