

Study Area: PG&E Humboldt  
Thermal Overloads



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 Winter Peak	2024 Winter Peak	2029 Winter Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	2021 SP Heavy Renewable & Min Gas Gen	2029 Retirement of QF Generations	
31110 BRDGVILLE 60.0 31120 FRUTLDJT 60.0 1 1	BRIDGEVILLE-COTTONWOOD 115kV	P1	N-1	85	94	95	15	16	49	52	69	92	14	101	95	sensitivity only
	BLUELKPP 12.47kV Gen Unit 1 & BRIDGEVILLE-COTTONWOOD 115kV	P3	G-1/N-1	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	100	<100	sensitivity only

Study Area: PG&E Humboldt

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)				ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Winter Peak	2024 Winter Peak	2029 Winter Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	2021 SP Heavy Renewable & Min Gas Gen	2029 Retirement of QF Generations	
HOOPA 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	0.86	0.85	0.86	0.96	0.95	0.79	0.79	0.83	0.84	0.96	0.86	0.86	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
MPLE CRK 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	0.90	0.90	0.90	0.99	0.98	0.85	0.85	0.89	0.89	0.99	0.91	0.90	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
NEWBURG 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	0.97	0.96	0.95	0.99	0.98	0.89	0.93	1.01	0.96	0.98	0.98	0.95	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
RDGE CBN 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	0.94	0.93	0.93	1.01	1.00	0.89	0.90	0.92	0.93	1.00	0.94	0.93	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
RIO DELL 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	0.98	0.97	0.95	0.99	0.98	0.90	0.94	1.03	0.97	0.98	0.99	0.95	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
RUSS RCH 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	0.90	0.89	0.90	0.98	0.98	0.84	0.84	0.88	0.88	0.98	0.90	0.90	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
WILLWCRK 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	0.87	0.86	0.87	0.97	0.96	0.81	0.81	0.85	0.85	0.96	0.87	0.87	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
BRDGVILLE 115 kV	HMBOBAYPPA 13.80kV Gen Unit 1 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.12	>0.9,<1.10	Sensitivity Only
BRDGVILLE 115 kV	HMBOBAYPPB 13.80kV Gen Unit 7 & HUMBOLDT SVD=v	P3	G-1/N-1	1.12	1.12	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.12	>0.9,<1.10	1.12	>0.9,<1.10	Load power factor correction and voltage support if needed
FRT SWRD 60 kV	HMBOBAYPPA 13.80kV Gen Unit 1 & GRBRVILLE SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	Load power factor correction and voltage support if needed
FRT SWRD 60 kV	HMBOBAYPPB 13.80kV Gen Unit 5 & GRBRVILLE SVD=v	P3	G-1/N-1	1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.10	>0.9,<1.10	Load power factor correction and voltage support if needed

Study Area: PG&E Humboldt

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)				ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Winter Peak	2024 Winter Peak	2029 Winter Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	2021 SP Heavy Renewable & Min Gas Gen	2029 Retirement of QF Generations	
FRT SWRD 60 kV	HMBOBAYPPB 13.80kV Gen Unit 7 & GRBRVLLS SVD=v	P3	G-1/N-1	1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	Load power factor correction and voltage support if needed
GRBRVLLS 60 kV	FAIRHAVN 13.80kV Gen Unit 1 & GRBRVLLS SVD=v	P3	G-1/N-1	1.12	1.11	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	1.11	>0.9,<1.10	Load power factor correction and voltage support if needed
GRBRVLLS 60 kV	HMBOBAYPPA 13.80kV Gen Unit 3 & GRBRVLLS SVD=v	P3	G-1/N-1	1.12	1.12	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	1.12	>0.9,<1.10	1.11	>0.9,<1.10	Load power factor correction and voltage support if needed
GRBRVLLS 60 kV	HMBOBAYPPB 13.80kV Gen Unit 4 & GRBRVLLS SVD=v	P3	G-1/N-1	1.12	1.12	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.13	1.11	>0.9,<1.10	1.12	>0.9,<1.10	1.12	>0.9,<1.10	Load power factor correction and voltage support if needed
HMBOBAYPPB 115 kV	HMBOBAYPPA 13.80kV Gen Unit 1 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Sensitivity Only
HMBOBAYPPB 115 kV	HMBOBAYPPB 13.80kV Gen Unit 4 & HUMBOLDT SVD=v	P3	G-1/N-1	1.16	1.16	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	1.12	>0.9,<1.10	1.16	>0.9,<1.10	1.16	>0.9,<1.10	Load power factor correction and voltage support if needed
HMBOBAYPPB 115 kV	HMBOBAYPPC 13.80kV Gen Unit 9 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Sensitivity Only
HOOPA 60 kV	BLUELKPP 12.47kV Gen Unit 1 & HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.75	>0.9,<1.10	>0.9,<1.10	0.86	>0.9,<1.10	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
HOOPA 60 kV	FAIRHAVN 13.80kV Gen Unit 1 & HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.83	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
HUMBOLDT 115 kV	HMBOBAYPPA 13.80kV Gen Unit 2 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Sensitivity Only
HUMBOLDT 115 kV	HMBOBAYPPA 13.80kV Gen Unit 3 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Sensitivity Only
HUMBOLDT 115 kV	HMBOBAYPPB 13.80kV Gen Unit 4 & HUMBOLDT SVD=v	P3	G-1/N-1	1.16	1.16	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	1.12	>0.9,<1.10	1.16	>0.9,<1.10	1.16	>0.9,<1.10	Load power factor correction and voltage support if needed
HUMBOLDT 115 kV	HMBOBAYPPB 13.80kV Gen Unit 7 & HUMBOLDT SVD=v	P3	G-1/N-1	1.15	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	1.12	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Load power factor correction and voltage support if needed
HUMBOLDT 115 kV	HMBOBAYPPC 13.80kV Gen Unit 9 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.16	>0.9,<1.10	Sensitivity Only
KEKAWAKA 60 kV	FAIRHAVN 13.80kV Gen Unit 1 & GRBRVLLS SVD=v	P3	G-1/N-1	1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	Load power factor correction and voltage support if needed
KEKAWAKA 60 kV	HMBOBAYPPB 13.80kV Gen Unit 7 & GRBRVLLS SVD=v	P3	G-1/N-1	1.11	1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.12	1.10	>0.9,<1.10	1.10	>0.9,<1.10	1.10	>0.9,<1.10	Load power factor correction and voltage support if needed
LOW GAP1 115 kV	HMBOBAYPPB 13.80kV Gen Unit 4 & HUMBOLDT SVD=v	P3	G-1/N-1	1.10	1.11	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.10	>0.9,<1.10	1.11	>0.9,<1.10	Load power factor correction and voltage support if needed
LOW GAP1 115 kV	HMBOBAYPPB 13.80kV Gen Unit 7 & HUMBOLDT SVD=v	P3	G-1/N-1	1.10	1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	Load power factor correction and voltage support if needed
LOW GAP1 115 kV	HMBOBAYPPC 13.80kV Gen Unit 10 & HUMBOLDT SVD=v	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	1.11	>0.9,<1.10	Sensitivity Only

Study Area: PG&E Humboldt

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)								Voltage PU (Sensitivity Scenarios)				ISO Approved Projects & Potential Mitigation Solutions
				2021 Summer Peak	2024 Summer Peak	2029 Summer Peak	2021 Winter Peak	2024 Winter Peak	2029 Winter Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	2021 SP Heavy Renewable & Min Gas Gen	2029 Retirement of QF Generations	
MPLE CRK 60 kV	BLUELKPP 12.47kV Gen Unit 1 & HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.82	>0.9,<1.10	>0.9,<1.10	0.90	>0.9,<1.10	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
WILLWCRK 60 kV	BLUELKPP 12.47kV Gen Unit 1 & HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P3	G-1/N-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.76	>0.9,<1.10	>0.9,<1.10	0.87	>0.9,<1.10	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified low voltages
BRDGVILLE 115 kV	HMBLT BY-HARRIS 60kV 0 MOAS OPENED on HARRIS-HARRISST & HUMBOLDT SVD=v	P6	N-1-1	1.12	1.12	>0.9,<1.10	1.13	1.13	1.10	1.11	>0.9,<1.10	1.12	1.13	1.12	>0.9,<1.10	Load power factor correction and voltage support if needed
HMBOBAYPPB 115 kV	HUMBOLDT SHUNT=7h & BRIDGEVILLE-COTTONWOOD 115kV	P6	N-1-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.88	0.87	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.86	>0.9,<1.10	>0.9,<1.10	Voltage support, UVLS and/ or SPS
HMBOBAYPPB 115 kV	HUMBOLDT SVD=v & HUMBOLDT-BRIDGEVILLE 115kV	P6	N-1-1	1.17	1.18	1.12	1.18	1.18	1.16	1.16	>0.9,<1.10	1.18	1.19	1.18	1.12	Load power factor correction and voltage support if needed
HUMBOLDT 115 kV	HUMBOLDT SHUNT=7h & BRIDGEVILLE-COTTONWOOD 115kV	P6	N-1-1	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.88	0.87	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	>0.9,<1.10	0.86	>0.9,<1.10	>0.9,<1.10	Voltage support, UVLS and/ or SPS
HUMBOLDT 115 kV	HUMBOLDT-BRIDGEVILLE 115kV & HUMBOLDT SVD=v	P6	N-1-1	1.18	1.19	1.12	1.17	1.18	1.16	1.16	>0.9,<1.10	1.19	1.18	1.22	1.12	Load power factor correction and voltage support if needed
LOW GAP1 115 kV	BRDGVILLE 115/60kV TB 1 & HUMBOLDT SVD=v	P6	N-1-1	1.12	1.12	>0.9,<1.10	1.13	1.12	>0.9,<1.10	1.10	>0.9,<1.10	1.12	1.13	1.12	>0.9,<1.10	Load power factor correction and voltage support if needed

Study Area: PG&E Humboldt

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 Winter Peak	2024 Winter Peak	2029 Winter Peak	2021 Spring Off-Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	2021 SP Heavy Renewable & Min Gas Gen	2029 Retirement of QF Generations	
CARLOTTA 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	9	6	1	4	3	3	5	Load power factor correction and voltage support if needed
HMBOBAYPPB 115 kV	HUMBOLDT SHUNT=7h	P1	N-1	1	1	1	8	8	1	1	1	1	8	1	1	Load power factor correction and voltage support if needed
HOOPA 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	12	12	12	4	5	17	18	13	13	4	12	12	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified voltage issues
HUMBOLDT 115 kV	HUMBOLDT SHUNT=7h	P1	N-1	1	1	2	8	8	1	1	1	1	8	2	2	Load power factor correction and voltage support if needed
MPLE CRK 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	11	12	11	4	5	16	16	13	12	4	11	11	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified voltage issues
NEWBURG 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	5	5	6	3	4	11	7	1	5	3	4	6	Load power factor correction and voltage support if needed
PCLUMBER 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	9	6	1	4	3	3	5	Load power factor correction and voltage support if needed
RDGE CBN 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	9	9	9	3	4	13	13	10	10	3	9	9	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified voltage issues
RIO DELL 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	10	6	0	4	3	3	5	Load power factor correction and voltage support if needed
RIODLLTP 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	10	6	1	4	3	3	5	Load power factor correction and voltage support if needed
RUSS RCH 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	11	12	11	4	5	16	17	13	13	4	11	11	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified voltage issues
SCOTIATP 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	10	6	0	4	3	3	5	Load power factor correction and voltage support if needed
SCTIATP2 60 kV	HUMBOLDT BAY-RIO DELL JCT 60kV MOAS OPENED on EEL RIVR-NEWBURG	P1	N-1	4	4	5	2	3	10	6	0	4	3	3	5	Load power factor correction and voltage support if needed
WILLWCRK 60 kV	HUMBOLDT-MAPLE CREEK 60kV MOAS OPENED on HUMBOLDT-MPLE CRK	P1	N-1	12	12	12	4	5	17	17	13	13	4	12	12	Project: Maple Creek Reactive Support In Service Date: July 2022 Short term: Action Plan Project mitigates all identified voltage issues

Study Area: PG&E Humboldt

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance					Potential Mitigation Solutions
			Baseline Scenarios			Sensitivity Scenarios		
			2024 Summer Peak	2029 Summer Peak	2024 Spring Off-Peak	2024 SP High CEC Forecast	2024 SpOP Hi Renew & Min Gas Gen	
LP SAMOA Unit 1 (Bus #31158)	P1-1	N-1	No issue	No issue	No issue	No issue	No issue	No Violation
HMBLDT B - HUMB_BS1 115 kV Line	P1-2	N-1	WECC criteria not met	No issue	No issue	No issue	No issue	Under Review with PTO
HUMB_BS1/HUMB_G1 115/13.8 kV No.1 Transformer	P1-3	N-1	No issue	No issue	No issue	No issue	No issue	No Violation
Bus Fault at HUMBOLDT 115 kV	P2-2	Bus	No issue	No issue	No issue	No issue	No issue	No Violation
Internal fault at Non-bus-tie-breaker #182 at HUMBOLDT 115 kV	P2-3	Non-Bus-Tie Breaker	No issue	No issue	No issue	No issue	No issue	No Violation
LP SAMOA Unit 1 and HUMB_G1 Unit 1	P3-1	G-1/N-1	No issue	No issue	No issue	No issue	No issue	No Violation
LP SAMOA Unit 1 and HUMBOLDT -HMBLDT B 115 kV No.1 Line	P3-2	G-1/N-1	WECC criteria not met	No issue	No issue	No issue	No issue	Under Review with PTO
LP SAMOA Unit 1 and HUMB_BS1/HUMB_G1 115/13.8 kV No.1 Transformer	P3-3	G-1/N-1	No issue	No issue	No issue	No issue	No issue	No Violation
LP SAMOA Unit 1 and HUMBOLDT 60 kV ID v SVD	P3-4	G-1/N-1	No issue	No issue	No issue	No issue	No issue	No Violation
Breaker stuck for CB #182 protecting HUMBOLDT-BRDGVLLE 115 kV No.1 Line	P4-2	Stuck Breaker	WECC criteria not met	No issue	WECC criteria not met	No issue	No issue	Under Review with PTO
Breaker stuck for CB #322 protecting HUMBOLDT/HUMBOLDT 60/115 kV No.2 Transformer	P4-3	Stuck Breaker	No issue	No issue	No issue	WECC criteria not met	No issue	Under Review with PTO
Breaker stuck for CB #6222 protecting HUMBOLDT 60 kV ID v SVD	P4-4	Stuck Breaker	WECC criteria not met	No issue	No issue	No issue	No issue	Under Review with PTO
Breaker stuck for CB #172 protecting Bus Section HUMBOLDT 115 kV	P4-5	Stuck Breaker	No issue	No issue	No issue	No issue	No issue	No Violation
Breaker stuck for CB #BAE071 protecting HUMB_G1 Unit 1	P4-1	Stuck Breaker	No issue	No issue	No issue	No issue	No issue	No Violation
HUMB_G1 Unit 1	P5-1	Non-Redundant Relay	No issue	No issue	No issue	No issue	No issue	No Violation
HUMBOLDT -HMBLDT B 115 kV No.1 Line	P5-2	Non-Redundant Relay	No issue	No issue	No issue	No issue	No issue	No Violation
HUMBOLDT/HUMBOLDT 115/60 kV No.2 Transformer	P5-3	Non-Redundant Relay	WECC criteria not met	No issue	No issue	WECC criteria not met	No issue	Under Review with PTO
HUMBOLDT 60 kV ID v SVD	P5-5	Non-Redundant Relay	WECC criteria not met	No issue	WECC criteria not met	No issue	No issue	Under Review with PTO
HUMBOLDT -HMBLDT B 115 kV No.1 Line and HUMBOLDT -BRDGVLLE 115 kV No.1 Line	P6-1	N-1-1	WECC criteria not met	No issue	No issue	WECC criteria not met	No issue	Under Review with PTO
HUMBOLDT -HMBLDT B 115 kV No.1 Line and HUMBOLDT/HUMBOLDT 115/60 kV No.2 Transformer	P6-2	N-1-1	No issue	No issue	No issue	No issue	No issue	No Violation

Study Area: PG&E Humboldt



Single Contingency Load Drop

Worst Contingency	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
			Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

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

Study Area: PG&E Humboldt



Single Source Substation with more than 100 MW Load

Substation	Load Served (MW)										Potential Mitigation Solutions
	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

No Single Source Substation with more than 100 MW Load.