



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load	N/A	N/A	
HUMB-T-01	HUMBOLDT-BRDGVLE 115 kV # 1 1	P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] &	P1-2	T-line	<100	<100	100.08	<100	<100	<100	<100	99.78			Monitor line loading due to long lead time
HUMB-T-02	HUMBOLDT-HMBLT JT 60 kV 1 1	P1-2:A1:13:_HUMBOLDT BAY-HUMBOLDT #2 60kV [7090] &	P1-2	T-line	99.19	<100	108.91	<100	<100	<100	106.95	110.3			Possibly gen dispatch
HUMB-T-03	HMBLT BY-EEL RIVR 60 kV 1 1	P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810] &	P1-2	T-line	<100	<100	112.83	<100	<100	103.17	<100	99.99			Possibly gen dispatch
HUMB-T-04	CARLOTTA-RIODLLTP 60 kV 1 1	P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810] &	P1-2	T-line	98.09	99.36	121.94	<100	<100	<100	103.79	118.62			Existing action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-05	CARLOTTA-SWNS FLT 60 kV 1 1	P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810] &	P1-2	T-line	<100	96.19	118.72	<100	<100	<100	100.93	115.57			Existing Action Plan .Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-06	SWNS FLT-BRDGVLE 60 kV 1 1	P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810] &	P1-2	T-line	<100	<100	118.31	<100	<100	<100	100.55	115.18			Existing Action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-07	FRUTLDJT-FTSWRDJT 60 kV 1 1	P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110] &	P1-2	T-line	100.48	99.86	<100	<100	<100	<100	<100	<100			Existing Action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-08	HUMBOLDT-BRDGVLE 115 kV 1 1	P2-1:A1:1:_HUMBOLDT-TRINITY 115kV [1820] (HUMBOLDT-TRINITY) &	P2-1	Open-ended line	72.76	76.73	100.08	72.53	72.71	87.14	81.68	99.78			Monitor line loading due to long lead time
HUMB-T-09	CARLOTTA-RIODLLTP 60 kV 1 1	P2-2:A1:1:_HUMBOLDT 115kV Section MA &	P2-2	Bus	<100	<100	105.78	<100	<100	<100	108.77	116.36			Interim: Gen redispatch. Bus upgrade/Monitor loading
HUMB-T-10	CARLOTTA-SWNS FLT 60 kV 1 1	P2-2:A1:1:_HUMBOLDT 115kV Section MA &	P2-2	Bus	74.86	63.61	102.62	<100	<100	<100	105.92	113.35			Interim: Gen redispatch. Bus upgrade/Monitor
HUMB-T-11	SWNS FLT-BRDGVLE 60 kV 1 1	P2-2:A1:1:_HUMBOLDT 115kV Section MA &	P2-2	Bus	74.47	63.24	102.23	<100	<100	<100	105.54	112.95			Interim: Gen redispatch. Monitor line loading due to long lead time
HUMB-T-12	FRUTLDJT-FTSWRDJT 60 kV 1 1	P2-2:A1:3:_LOW GAP1 115kV Section 1D &	P2-2	Bus	100.48	99.87	22.61	<100	<100	<100	86.01	79.69			Approved Bridgeville-Gabreville 115 kV Line project
HUMB-T-13	HUMBOLDT-HMBLT JT 60 kV 1 1	P2-3:A1:13:_HMBLT BY 60kV - Middle Breaker Bay 3 &	P2-3	Circuit breaker	110.51	89.54	117.69	<100	<100	<100	110.43	114.77			Interim: Gen redispatch at Humboldt Bay. Upgrade and increase capacity of the approved Humboldt Bay-Humboldt #1 60 kV reconductor project to.
HUMB-T-14	HMBLT BY-EEL RIVR 60 kV 1 1	P2-3:A1:21:_BRDGVLE 115kV - Ring R1 & R3 &	P2-3	Circuit breaker	85.09	81.85	<100	86.78	87.84	89.68	<100	<100			Interim: Gen redispatch. Monitor line loading due to long lead time



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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load	N/A	N/A	
HUMB-T-15	HMBLT BY-EEL RIVR 60 kV 1 1	P1-1:A1:2:_PAC.LUMB 14kV Gen Unit 1 or 2 & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P3	L-/G-1	99.35	98.6	99.19	99.89	99.98	99.68	<100	100.38			Gen redispatch at Humboldt Bay
HUMB-T-16	CARLOTTA-RIODLLTP 60 kV 1 1	P1-1:A1:10:_HUMB_G2 14kV Gen Unit 5 or 3 & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P3	L-/G-1	<100	<100	100.04	<100	<100	<100	<100	100.69			Gen redispatch at Humboldt Bay. Monitor
HUMB-T-17	HMBLT BY-EEL RIVR 60 kV 1 1	P1-1:A1:2:_PAC.LUMB 14kV Gen Unit 1 & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P3	L-/G-1	99.35	98.6	99.19	101.44	102.65	112.88	95.29	100.38			Interim: Gen Redispatch. Reconductor
HUMB-T-18	EUREKA-HMBLT BY 60 kV 1 1	P1-2:A1:13:_HUMBOLDT BAY-HUMBOLDT #2 60kV [7090] & P1-2:A1:12:_HUMBOLDT BAY-HUMBOLDT #1 60kV [7080]	P6	N-1-1	102.16	100.95	102.16	129.19	122.34	138.5	102.45	98.61			Action Plan: SPS/Redispatch Humboldt Bay generation..
HUMB-T-19	HMBLT BY-EEL RIVR 60 kV 1 1	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60kV [7130] MOAS OPENED on HUMBOLDT_MPLE CRK & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	<100	<100	104.85	102.23	103.37	114.55	<100	<100			SPS/Reconductor
HUMB-T-20	HMBLT BY-EEL RIVR 60 kV 1 1	P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	<100	<100	<100	150.32	152.1	172.47	<100	<100			SPS/Reconductor
HUMB-T-21	NEWBURG-RIODLLTP 60 kV 1 1	P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	<100	<100	<100	<100	<100	107.93	<100	<100			Action Plan: Redispatch Humboldt Bay generation/SPS.
HUMB-T-22	CARLOTTA-RIODLLTP 60 kV 1 1	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60kV [7130] MOAS OPENED on HUMBOLDT_MPLE CRK & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	100.15	100.31	113.42	122.06	122.52	140.79	101.19	109.14			Action Plan. Gen redispatch/Reduce gen at Humboldt Bay/SPS
HUMB-T-23	CARLOTTA-SWNS FLT 60 kV 1 1	P1-2:A1:17:_TRINITY-MAPLE CREEK 60kV [8170] MOAS OPENED on TRINITY_TAP 65 & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	95.95	96.95	113.43	118.32	118.97	137.41	97.7	107.63			Existing Action Plan. Gen redispatch - Reduce gen at Humboldt Bay/SPS



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load	N/A	N/A	
HUMB-T-24	SWNS FLT-BRDGVILLE 60 kV 1 1	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60kV [7130] MOAS OPENED on HUMBOLDT_MPLE CRK & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	96.22	96.76	109.86	116.89	117.6	136.03	97.96	105.77			Action Plan. Gen redispatch -Reduce gen at Humboldt Bay/SPS
HUMB-T-25	BRDGVILLE-FRUTLDJT 60 kV 1 1	P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110] & P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820]	P6	N-1-1	100.53	100.29	<100	107.51	108.26	<100	99.03	<100			Approved Bridgeville-Gabreville 115 kV project
HUMB-T-26	GRBRVILLE-KEKAWAKA 60 kV 1 1	P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] & P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110]	P6	N-1-1	<100	<100	101.08	<100	<100	104.79	<100	<100			Approved Bridgeville-Gabreville 115 kV project
HUMB-T-27	KEKAWAKA-LYTNVILLE 60 kV 1 1	P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110] & P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820]	P6	N-1-1	<100	<100	100.97	<100	<100	119.66	<100	<100			Bridgeville-Gabreville 115 kV project
HUMB-T-28	FRUTLDJT-FTSWRDJT 60 kV 1 1	P1-2:A1:25:_BRDGVILLE-GRBRVILLE #2 115kV [0] & P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110]	P6	N-1-1	<100	<100	100.43	<100	<100	<100	<100	<100			Bridgeville-Gabreville 115 kV project
HUMB-T-29	FRUTLDJT-FTSWRDJT 60 kV 1 1	P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110] & P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820]	P6	N-1-1	101.1	101.19	<100	<100	<100	<100	101.48	<100			Bridgeville-Gabreville 115 kV project
HUMB-T-30	FTSWRDJT-GRBRVILLE 60 kV 1 1	P1-2:A1:4:_BRIDGEVILLE-COTTONWOOD 115kV [1110] & P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820]	P6	N-1-1	99.1	99.29	<100	<100	<100	<100	99.84	<100			Bridgeville-Gabreville 115 kV project
HUMB-T-31	HUMBOLDT-HMBLT JT 60 kV 1 1	P7-1:A1:7:_HUMBOLDT BAY-HUMBOLDT #2 & HUMBOLDT BAY-HUMBOLDT #2 Lines & 32.2	P7	N-2 (DCTL)	105.31	<100	116.12	<100	<100	<100	112.32	119.56			Interim: Gen redispatch at Humboldt Bay. Upgrade and increase capacity of the approved Humboldt Bay-Humboldt #1 60 kV reconductor project.

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ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	
HUMB-V-01	FRUITLND 60 kV	P1-2:A1:22:_BRIDGEVILLE-GARBERVILLE 60	P1-2	Gen	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.8933			Monitor
HUMB-V-02	BRDGVILLE 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v &	P1-4	Transformer	1.1167	1.1003	<1.10	1.123	1.1101	<1.10	1.131	<1.10			Under review
HUMB-V-03	HUMBOLDT 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v &	P1-4	Transformer	1.1544	1.1393	1.1155	1.158	1.1466	1.107	1.1684	<1.10			Under review
HUMB-V-04	FRT SWRD 60 kV	P2-1:A1:34:_BRIDGEVILLE-GARBERVILLE 60	P2-1	Open-ended line	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.90			Corrective Action Plan
HUMB-V-05	FRUITLND 60 kV	P2-1:A1:34:_BRIDGEVILLE-GARBERVILLE 60	P2-1	Open-ended line	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.893			Corrective Action Plan
HUMB-V-06	FRT SWRD 60 kV	P2-2:A1:8:_GRBRVILLE 60kV Section 1E &	P2-2	Bus	1.1171	1.1136		1.1199	1.1176	<1.10	1.1361	<1.10			Under review
HUMB-V-07	BRDGVILLE 115 kV	P2-3:A1:21:_BRDGVILLE 115kV - Ring R1 & P	P2-3	Circuit Breaker	0.8891	0.8915	0.8706	0.889	0.8879	0.8807	0.9121	0.8434			Corrective Action Plan
HUMB-V-08	FRUITLND 60 kV	P2-3:A1:15:_BRDGVILLE - MA 60kV & RIO DELL	P2-3	Circuit Breaker	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.8933			Corrective Action Plan
HUMB-V-09	GRBRVILLE 60 kV	P2-3:A1:19:_BRDGVILLE 115kV - Ring R3 & P	P2-3	Circuit Breaker	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.8959			Corrective Action Plan
HUMB-V-10	BRDGVILLE 115 kV	P3: P1-1:A1:6:_HUMB_G1 14kV Gen Unit 1 &	P3	L-1/G-1	1.1206	1.1124	<1.10	1.125	1.1175	<1.10	<1.10	<1.10			Under review
HUMB-V-11	HUMBOLDT 115 kV	P3: P1-1:A1:6:_HUMB_G1 14kV Gen Unit 1 &	P3	L-1/G-1	1.1582	1.1543	1.1232	<1.10	1.1557	1.1159	<1.10	<1.10			Under review
HUMB-V-12	BRDGVILLE 115 kV	P6: P1-2:A1:3:_HUMBOLDT-TRINITY 115kV	P6	N-1-1	1.1245	1.1172	<1.10	<1.10	<1.10	<1.10	1.1425	<1.10			Under review
HUMB-V-13	BRDGVILLE 115 kV	P6: P1-4:A1:4:_GRBRVILLE SVD=v & P1-4:A	P6	N-1-1	1.1208	1.1084	1.1302	<1.10	<1.10	<1.10	1.143	<1.10			Under review
HUMB-V-14	FRT SWRD 60 kV	P1-4:A1:4:_GRBRVILLE SVD=v & P1-2:A1:23	P6	N-1-1	1.1122	1.1136	<1.10	<1.10	<1.10	<1.10	1.1362	<1.10			Under review
HUMB-V-15	FRUITLND 60 kV	P1-2:A1:21:_RIO DELL JCT-BRIDGEVILLE 60	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.891			Corrective Action Plan
HUMB-V-16	FRUITLND 60 kV	P1-2:A1:22:_BRIDGEVILLE-GARBERVILLE 60	P6	N-1-1	1.0751	1.0781	1.0781	<1.10	<1.10	<1.10	1.1899	<1.10			Under review
HUMB-V-17	GRBRVILLE 60 kV	P1-2:A1:24:_BRIDGEVILLE-GARBERVILLE 60	P6	N-1-1	1.1933	1.1992	1.0941	<1.10	<1.10	<1.10	1.262	<1.10			Under review
HUMB-V-18	GRBRVILLE 60 kV	P1-4:A1:4:_GRBRVILLE SVD=v & P1-4:A1:6:_	P6	N-1-1	<1.10	<1.10	1.145	<1.10	<1.10	<1.10	1.1235	<1.10			Monitor
HUMB-V-19	HOOPA 60 kV	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60	P6	N-1-1	0.8331	0.829	0.8297	>0.90	>0.90	>0.90	0.9184	0.9274			Corrective Action Plan



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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	
HUMB-V-20	HUMBOLDT 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v & P1-2:A1:2:	P6	N-1-1	1.1795	1.1774	1.1806	<1.10	1.1768	1.1779	1.1861	<1.10			Under review
HUMB-V-21	MPLE CRK 60 kV	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60	P6	N-1-1	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10			Monitor

Study Area: PG&E Humboldt

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance - Number of Voltage and Frequency Violations										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	N/A	N/A	N/A	
HUMB-TS-01	HUMBOLDT 115.00	P2-2	Bus			4								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-02	HUMBOLDT 115.00	P2-2	Bus				6							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-03	HUMBOLDT 115.00	P2-2	Bus		4									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-04	HUMBOLDT 115.00	P2-2	Bus					7						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-05	HUMBOLDT 115.00	P2-2	Bus	6										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-06	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	T-line		12									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-07	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	T-line					8						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-08	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	T-line				8							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-09	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	T-line			12								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-10	Bridgeville - Garberville 60 kV Line (BRDGVLE-FRUTLDJT)	P1-2	T-line	14										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-11	Humboldt 115/60 No.2 Transformer	P1-3	Transformer		1									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-12	Humboldt 115/60 No.2 Transformer	P1-3	Transformer			0								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-13	Humboldt 115/60 No.2 Transformer	P1-3	Transformer				2							Reassess with actual fault clearing times and SLG fault impedances where applicable



Study Area: PG&E Humboldt

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance - Number of Voltage and Frequency Violations										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	N/A	N/A	N/A	
HUMB-TS-14	Humboldt 115/60 No.2 Transformer	P1-3	Transformer	0										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-15	Humboldt 115/60 No.2 Transformer	P1-3	Transformer					17						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-16	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt device		0									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-17	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt device	1										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-18	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt device				2							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-19	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt device			3								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-20	HUMBOLDT 60.00 SVD ID v	P1-4	Shunt device					17						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-21	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Circuit breaker		11									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-22	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Circuit breaker			11								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-23	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Circuit breaker					29						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-24	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Circuit breaker				11							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-25	NON-BUS-TIE BREAKER CB6622 FAULT AT 31080 HUMBOLDT 60.00	P2-3	Circuit breaker	13										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-26	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Bus tie-breaker			4								Reassess with actual fault clearing times and SLG fault impedances where applicable

Study Area: **PG&E Humboldt**

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance - Number of Voltage and Frequency Violations										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	N/A	N/A	N/A	
HUMB-TS-27	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Bus tie-breaker	6										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-28	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Bus tie-breaker					7						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-29	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Bus tie-breaker		4									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-30	BUS-TIE BREAKER FAULT AT 31000 HUMBOLDT 115.00	P2-4	Bus tie-breaker				6							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-31	FAIRHAVN 13.80	P4-1	Stuck breaker			6								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-32	FAIRHAVN 13.80	P4-1	Stuck breaker					8						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-33	FAIRHAVN 13.80	P4-1	Stuck breaker				8							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-34	FAIRHAVN 13.80	P4-1	Stuck breaker		6									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-35	FAIRHAVN 13.80	P4-1	Stuck breaker	8										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-36	Bridgeville - Garberville 60 kV Line (31110 - 31120)	P4-2	T-line/stuck breaker			12								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-37	Bridgeville - Garberville 60 kV Line (31110 - 31120)	P4-2	T-line/stuck breaker				14							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-38	Bridgeville - Garberville 60 kV Line (31110 - 31120)	P4-2	T-line/stuck breaker					38						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-39	Bridgeville - Garberville 60 kV Line (31110 - 31120)	P4-2	T-line/stuck breaker	14										Reassess with actual fault clearing times and SLG fault impedances where applicable

Study Area: PG&E Humboldt

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance - Number of Voltage and Frequency Violations										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	N/A	N/A	N/A	
HUMB-TS-40	Humboldt 115/60 No.2 Transformer (31000)	P4-3	Transformer/stuck breaker					100						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-41	Humboldt 115/60 No.2 Transformer (31000)	P4-3	Transformer/stuck breaker			140								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-42	Humboldt 115/60 No.2 Transformer (31000)	P4-3	Transformer/stuck breaker		148									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-43	Humboldt 115/60 No.2 Transformer (31000)	P4-3	Transformer/stuck breaker	143										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-44	Humboldt 115/60 No.2 Transformer (31000)	P4-3	Transformer/stuck breaker				101							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-45	Humboldt	P5-1	generator/relay failure					105						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-46	Humboldt	P5-1	generator/relay failure				101							Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-47	Humboldt	P5-1	generator/relay failure			138								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-48	Humboldt	P5-1	generator/relay failure	153										Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-49	Humboldt	P5-1	generator/relay failure		148									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-50	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	Two circuits/common structure			6								Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-51	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	Two circuits/common structure	8										Reassess with actual fault clearing times and SLG fault impedances where applicable

Study Area: PG&E Humboldt

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance - Number of Voltage and Frequency Violations										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	N/A	N/A	N/A	N/A	N/A	
HUMB-TS-52	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	Two circuits/comm on structure	8				15						Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-53	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	Two circuits/comm on structure		6									Reassess with actual fault clearing times and SLG fault impedances where applicable
HUMB-TS-54	Humboldt No.1 60 kV and Arcata - Humboldt 60 kV Lines	P7-1	Two circuits/comm on structure				15							Reassess with actual fault clearing times and SLG fault impedances where applicable

Study Area: **PG&E Humboldt**



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..	Select..	Select..	
X-SLD-1														

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

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

No single source substation with more than 100 MW Load