



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generations	N/A	
HUMB-T-SENS-01	HUMBOLDT-BRDGVLE 115 kV # 1 1	P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] &	P1-2	T-line	<100	<100	100.08	<100	99.78	<100	<100	<100	<100		Monitor line loading due to long lead time
HUMB-T-SENS-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	106.95	110.3	98.42	<100	106.57	<100		Possibly gen dispatch
HUMB-T-SENS-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	99.99	<100	<100	111.6	110.94		Possibly gen dispatch
HUMB-T-SENS-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	103.79	118.62	97.75	98.27	116.35	<100		Existing action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-SENS-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	100.93	115.57	<100	<100	112.89	<100		Existing Action Plan .Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-SENS-06	SWNS FLT-BRDGVLE 60 kV 1 1	P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810] &	P1-2	T-line	<100	<100	118.31	100.55	115.18	<100	<100	112.49	<100		Existing Action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-SENS-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	100.45	100.11	<100	<100		Existing Action Plan. Gen redispatch/Reduce gen at Humboldt Bay
HUMB-T-SENS-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	81.68	99.78	72.7	74.94	95.42	65.47		Monitor line loading due to long lead time
HUMB-T-SENS-09	CARLOTTA-RIODLLTP 60 kV 1 1	P2-2:A1:1:_HUMBOLDT 115kV Section MA &	P2-2	Bus	<100	<100	105.78	108.77	116.36	<100	<100	<100	<100		Interim: Gen redispatch. Bus upgrade/Monitor loading
HUMB-T-SENS-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	105.92	113.35	69.38	60.21	88.13	11.84		Interim: Gen redispatch. Bus upgrade/Monitor
HUMB-T-SENS-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	105.54	112.95	68.99	59.83	87.74	11.16		Interim: Gen redispatch. Monitor line loading due to long lead time
HUMB-T-SENS-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	86.01	79.69	100.46	100.11	21.64	14.43		Approved Bridgeville-Gabreville 115 kV Line project
HUMB-T-SENS-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	110.43	114.77	110.5	106.2	117.71	117.68		Interim: Gen redispatch at Humboldt Bay. Upgrade and increase capacity of the approved Humboldt Bay-Humboldt #1 60 kV reconductor project to.
HUMB-T-SENS-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	<100	<100	85.98	88.17	93.87	115.3		Interim: Gen redispatch. Monitor line loading due to long lead time



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generations	N/A	
HUMB-T-SENS-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	<100	100.38	99.9	99.98	99.28	<100		Gen redispatch at Humboldt Bay
HUMB-T-SENS-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	100.69	<100	<100	99.84	<100		Gen redispatch at Humboldt Bay. Monitor
HUMB-T-SENS-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	95.29	100.38	99.9	99.98	99.28	<100		Interim: Gen Redispatch. Reconductor
HUMB-T-SENS-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	102.45	98.61	102.12	101.71	102	101.44		Action Plan: SPS/Redispatch Humboldt Bay generation..
HUMB-T-SENS-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	<100	<100	<100	96.47	107.91	99.95		SPS/Reconductor
HUMB-T-SENS-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	<100	<100	<100	96.38	96.04	100.08		SPS/Reconductor
HUMB-T-SENS-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	<100	<100	<100	<100		Action Plan: Redispatch Humboldt Bay generation/SPS.
HUMB-T-SENS-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	101.19	109.14	100.66	100.28	112.29	<100		Action Plan. Gen redispatch/Reduce gen at Humboldt Bay/SPS
HUMB-T-SENS-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	97.7	107.63	95.76	96.7	97.09	<100		Existing Action Plan. Gen redispatch - Reduce gen at Humboldt Bay/SPS



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					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generations	N/A	
HUMB-T-SENS-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	97.96	105.77	96.62	96.46	108.45	<100		Action Plan. Gen redispatch -Reduce gen at Humboldt Bay/SPS
HUMB-T-SENS-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	99.03	<100	101.35	100.42	<100	<100		Approved Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	<100	<100	101.09	<100		Approved Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	<100	<100	100.97	<100		Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	100.66	<100		Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	101.48	<100	102.11	101.03	<100	<100		Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	99.84	<100	100.12	99.1	<100	<100		Bridgeville-Gabreville 115 kV project
HUMB-T-SENS-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	112.32	119.56	104.89	98.95	114	103.14		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 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generation s	N/A	



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions	
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generations	N/A		
HUMB-V-SENS-01	FRUITLND 60 kV	P1-2:A1:22:_BRIDGEVILLE-GARBERVILLE 60kV [6220] MOAS OPENED on BRDGVLL_ FRUTLDJT &	P1-2	Gen	>0.90	>0.90	>0.90	>0.90	0.8933	>0.90	>0.90	>0.90	>0.90		Monitor	
HUMB-V-SENS-02	BRDGVLL 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v &	P1-4	Transformer	1.1167	1.1003	<1.10	1.131	<1.10	1.1123	1.0941	<1.10	<1.10		Under review	
HUMB-V-SENS-03	HUMBOLDT 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v &	P1-4	Transformer	1.1544	1.1393	1.1155	1.1684	<1.10	1.1482	1.1323	1.1145	1.1147		Under review	
HUMB-V-SENS-04	FRT SWRD 60 kV	P2-1:A1:34:_BRIDGEVILLE-GARBERVILLE 60kV [6220] (BRDGVLL-FRUTLDJT) &	P2-1	Open-ended line	>0.90	>0.90	>0.90	>0.90	0.90	>0.90	>0.90	>0.90	>0.90		Corrective Action Plan	
HUMB-V-SENS-05	FRUITLND 60 kV	P2-1:A1:34:_BRIDGEVILLE-GARBERVILLE 60kV [6220] (BRDGVLL-FRUTLDJT) &	P2-1	Open-ended line	>0.90	>0.90	>0.90	>0.90	0.893	>0.90	>0.90	>0.90	>0.90		Corrective Action Plan	
HUMB-V-SENS-06	FRT SWRD 60 kV	P2-2:A1:8:_GRBRVLL 60kV Section 1E &	P2-2	Bus	1.1171	1.1136		1.1361	<1.10	1.1149	1.1088	<1.10	1.0807		Under review	
HUMB-V-SENS-07	BRDGVLL 115 kV	P2-3:A1:21:_BRDGVLL 115kV - Ring R1 & R3 &	P2-3	Circuit Breaker	0.8891	0.8915	0.8706	0.9121	0.8434	0.888	0.8874	0.8747	0.8913		Corrective Action Plan	
HUMB-V-SENS-08	FRUITLND 60 kV	P2-3:A1:15:_BRDGVLL - MA 60kV & RIO DELL JCT-BRIDGEVILLE line &	P2-3	Circuit Breaker	>0.90	>0.90	>0.90	>0.90	0.8933	>0.90	>0.90	>0.90	>0.90		Corrective Action Plan	
HUMB-V-SENS-09	GRBRVLL 60 kV	P2-3:A1:19:_BRDGVLL 115kV - Ring R3 & R2 &	P2-3	Circuit Breaker	>0.90	>0.90	>0.90	>0.90	0.8959	>0.90	>0.90	>0.90	>0.90		Corrective Action Plan	
HUMB-V-SENS-10	BRDGVLL 115 kV	P3: P1-1:A1:6:_HUMB_G1 14kV Gen Unit 1 & P1-4:A1:6:_HUMBOLDT SVD=v	P3	L-1/G-1	1.1206	1.1124	<1.10	<1.10	<1.10	1.1195	1.1021	<1.10	<1.10		Under review	
HUMB-V-SENS-11	HUMBOLDT 115 kV	P3: P1-1:A1:6:_HUMB_G1 14kV Gen Unit 1 & P1-4:A1:6:_HUMBOLDT SVD=v	P3	L-1/G-1	1.1582	1.1543	1.1232	<1.10	<1.10	1.1574	1.1395	<1.10	1.1293		Under review	



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions	
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Summer Off-Peak	2021 Summer Light Load	2018 SP No BTM-PV	2021 SP No AAEE	2026 SP No BTM-PV	2026 Retirement of QF Generations	N/A		
HUMB-V-SENS-12	BRDGVILLE 115 kV	P6: P1-2:A1:3:_HUMBOLDT-TRINITY 115kV [1820] & P1-4:A1:6:_HUMBOLDT SVD=v	P6	N-1-1	1.1245	1.1172	<1.10	1.1425	<1.10	1.124	1.1164	<1.10	1.0895		Under review	
HUMB-V-SENS-13	BRDGVILLE 115 kV	P6: P1-4:A1:4:_GRBRVILLE SVD=v & P1-4:A1:6:_HUMBOLDT SVD=v	P6	N-1-1	1.1208	1.1084	1.1302	1.143	<1.10	1.1197	1.0962	1.1287	1.133		Under review	
HUMB-V-SENS-14	FRT SWRD 60 kV	P1-4:A1:4:_GRBRVILLE SVD=v & P1-2:A1:23:_GARBERVILLE-LAYTONVILLE 60kV [8365]	P6	N-1-1	1.1122	1.1136	<1.10	1.1362	<1.10	1.1149	1.1089	<1.10	<1.10		Under review	
HUMB-V-SENS-15	FRUITLND 60 kV	P1-2:A1:21:_RIO DELL JCT-BRIDGEVILLE 60kV [7850] MOAS OPENED on CARLOTTA_SWNS FLT & P1-3:A1:3:_BRDGVILLE 115/60kV TB 1	P6	N-1-1	>0.90	>0.90	>0.90	>0.90	0.891	>0.90	>0.90	>0.90	>0.90		Corrective Action Plan	
HUMB-V-SENS-16	FRUITLND 60 kV	P1-2:A1:22:_BRIDGEVILLE-GARBERVILLE 60kV [6220] MOAS OPENED on BRDGVILLE_FRUTLDJT & P1-4:A1:4:_GRBRVILLE SVD=v	P6	N-1-1	1.0751	1.0781	1.0781	1.1899	<1.10	<1.10	<1.10	1.0767	1.0811		Under review	
HUMB-V-SENS-17	GRBRVILLE 60 kV	P1-2:A1:24:_BRIDGEVILLE-GARBERVILLE 60kV [6220] MOAS OPENED on FTSWRDJT_GRBRVILLE & P1-4:A1:4:_GRBRVILLE SVD=v	P6	N-1-1	1.1933	1.1992	1.0941	1.262	<1.10	1.1879	1.1817	1.0924	1.0962		Under review	
HUMB-V-SENS-18	GRBRVILLE 60 kV	P1-4:A1:4:_GRBRVILLE SVD=v & P1-4:A1:6:_HUMBOLDT SVD=v	P6	N-1-1	<1.10	<1.10	1.145	1.1235	<1.10	<1.10	<1.10	1.1432	1.1486		Monitor	
HUMB-V-SENS-19	HOOPA 60 kV	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60kV [7130] MOAS OPENED on HUMBOLDT_MPLE CRK & P1-4:A1:7:_MPLE CRK SVD=v	P6	N-1-1	0.8331	0.829	0.8297	0.9184	0.9274	0.8266	0.8146	0.8157	0.8408		Corrective Action Plan	
HUMB-V-SENS-20	HUMBOLDT 115 kV	P1-4:A1:6:_HUMBOLDT SVD=v & P1-2:A1:2:_HUMBOLDT-BRIDGEVILLE 115kV [1810]	P6	N-1-1	1.1795	1.1774	1.1806	1.1861	<1.10	1.1779	1.173	1.1788	1.1808		Under review	
HUMB-V-SENS-21	MPLE CRK 60 kV	P1-2:A1:14:_HUMBOLDT-MAPLE CREEK 60kV [7130] MOAS OPENED on HUMBOLDT_MPLE CRK & P1-4:A1:1:_HUMBOLDT SHUNT=7h	P6	N-1-1	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	1.104	<1.10	<1.10		Monitor	

Study Area: PG&E Humboldt

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance										Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-TS-1														
X-TS-2														
X-TS-3														
X-TS-4														
X-TS-5														
X-TS-6														
X-TS-7														
X-TS-8														
X-TS-9														
X-TS-10														
X-TS-11														
X-TS-12														
X-TS-13														
X-TS-14														
X-TS-15														
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X-TS-28														
X-TS-29														
X-TS-30														
X-TS-31														



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