



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	
HUM-T-SENS-01	GRANITE-HPLND JT 60 kV 1 1	P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861] &	P1-2	T-line	103.02	91.16	34.38	71.55	<100	108.01	101.37	38.06	36.24		Approved Clear Lake Reinforcement Project. Interim: Redispatch Geysers, Potter Valley gens
HUM-T-SENS-02	MOLINO-TRNTN_JC 60 kV 1 1	P1-2:A2:62:_FULTON-LAGUNA-COTATI-SNMALDFL 60kV [6911] &	P1-2	T-line	87.27	76.19	85.96	60.95	50.57	95.9	79.03	100.54	85.85		Monitor line loading due to long lead time
HUM-T-SENS-03	PETLMA A-LKVLE JT 60 kV 1 1	P1-2:A2:66:_LAKEVILLE-PETALUMA C 60kV [7350] &	P1-2	T-line	100.53	86.04	94.6	63.89	54.66	109.76	92.8	113.99	98.92		Reconductor/replace limiting equipment at Petaluma A station
HUM-T-SENS-04	LAKEVLLE-LKVLE JT 60 kV 1 1	P1-2:A2:66:_LAKEVILLE-PETALUMA C 60kV [7350] &	P1-2	T-line	94.14	80.57	88.59	59.83	51.23	102.78	86.9	106.74	92.63		Reconductor the Lakeville #2 60 kV Line to address without BTM sensitivity overloads
HUM-T-SENS-05	GRANITE-HPLND JT 60 kV 1 1	P2-1:A2:55:_KONOCTI-EAGLE ROCK 60kV [6861] (KONOCTI6-EGLE RCK) &	P2-1	Open-ended lin	103.02	91.16	34.38	71.55	56.33	108.01	101.37	38.06	36.24		Approved Clear Lake Reinforcement Project. Redispatch Geysers, Potter Valley gens
HUM-T-SENS-06	NAPA-TULCY JT 60 kV 1 1	P2-1:A2:86:_TULUCAY-NAPA #2 60kV [8190] (TULUCAY-BSLT TAP) &	P2-1	Open-ended lin	123.06	<100	<100	81.33	<100	129.02	<100	105.99	<100		Interim: Action Plan. Upgrade and increase capacity of the approved Napa-Tulucay 60 kV Reconductoing project
HUM-T-SENS-07	IGNACO B-WOODACRE 60 kV 1 1	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT) &	P2-1	Open-ended lin	80.87	71.67	82.92	44.67	32.27	111.54	74.44	143.13	82.77		Ignacio-Bolinas-Stafford area 115 Voltage Conversion. Reconductor Ignacio-Bolinas #2 60 kV line to address without BTM sensitivity overloads
HUM-T-SENS-08	STAF_JCT-TOCA_JCT 60 kV 1 1	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT) &	P2-1	Open-ended lin	82.03	72.5	85.75	42.68	30.07	118.29	75.53	162.12	85.57		Ignacio-Bolinas-Stafford area 115 Voltage Conversion. Reconductor Ignacio-Bolinas #2 60 kV line to address without BTM sensitivity overloads
HUM-T-SENS-09	STAFFORD-STAF_JCT 60 kV 1 1	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT) &	P2-1	Open-ended lin	55.05	48.71	57.61	28.68	20.17	78.72	50.75	102.91	57.49		Ignacio-Bolinas-Stafford area 115 Voltage Conversion. Reconductor Ignacio-Bolinas #2 60 kV line to address without BTM sensitivity overloads



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HUM-T-SENS-10	OLEMA-BOLINAS 60 kV 1 1	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT) &	P2-1	Open-ended line	NonConv	NonConv	NonConv	105.58	74.69	NonConv	NonConv	NonConv	NonConv		Ignacio-Bolinas-Stafford area 115 Voltage Conversion. Reconductor Ignacio-Bolinas #2 60 kV line/Drop load
HUM-T-SENS-11	GRANITE-HPLND JT 60 kV 1 1	P2-3:A2:27:_EGLE RCK - MA 115kV & EAGLE ROCK-CORTINA line &	P2-3	Circuit breaker	106.23	95.63	96.62	74.79	62.13	112.35	104.84	107.3	96.7		Approved Clear Lake Reinforcement Project. Redispatch Geysers, Potter Valley gens to address sensitivity scenariooverloads
HUM-T-SENS-12	MOLINO-TRNTN_JC 60 kV 1 1	P2-3:A2:61:_LAGUNA - 1D 60kV & FULTON-LAGUNATP-COTATI-SNMA TAP line &	P2-3	Circuit breaker	87.27	76.19	85.96	60.95	<100	95.9	79.03	100.54	<100		Monitor line loading for sensitivity scenario overloads due to long lead time
HUM-T-SENS-13	PETLMA A-LKVLE JT 60 kV 1 1	P2-3:A2:66:_LAKEVILLE - 1D 60kV & LAKEVILLE-PETALUMA C line &	P2-3	Circuit breaker	94.09	80.31	88.25	59.69	51.22	102.71	86.7	106.38	92.37		Reconductor or replace limiting equipment at Petaluma A station to address without BTM sensitivity overloads
HUM-T-SENS-14	WILLITS-LYTNVLE 60 kV 1 1	P2-3:A2:39:_MENDOCNO - MA 60kV & MENDOCINO-PHILO JCT-HOPLAND line &	P2-3	Circuit breaker	NConv	NConv	96.43	NConv	59.14	NConv	NConv	NConv	96.44		Add a new line. Interim: Open Gerbreville-Laytonville line at Willits or Bridgeville depending on whether Humboldt or Geysers feeds load.
HUM-T-SENS-15	KEKAWAKA-LYTNVLE 60 kV 1 1	P2-3:A2:39:_MENDOCNO - MA 60kV & MENDOCINO-PHILO JCT-HOPLAND line &	P2-3	Circuit breaker	NConv	NConv	116.58	NConv	72.51	NConv	NConv	NConv	116.6		Add a new line. Interim: Open Gerbreville-Laytonville 60 kV Line and radialize and feed load via Humboldt
HUM-T-SENS-16	LAKEVILLE-VACA-DIX 230 kV 1 1	P2-4:A2:3:_LAKEVILLE 230kV - Section 2E & 2D &	P2-4	Bus-tie	94.8	<100	<100	64.32	<100	103.15	<100	<100	<100		Upgrade the Approved Vaca Dixon-Lakeville reconductoring project to address without BTM sensitivity overloads
HUM-T-SENS-17	TULUCAY-VACA-DIX 230 kV 1 1	P2-4:A2:1:_LAKEVILLE 230kV - Section 1E & 2E &	P2-4	Bus-tie	93.84	<100	<100	69.94	<100	100.42	<100	<100	<100		Upgrade the Approved Vaca Dixon-Lakeville reconductoring project to address without BTM sensitivity overloads
HUM-T-SENS-18	PENNGRVE-CORONA 115 kV 1 1	P2-4:A2:7:_FULTON 115kV - Section 2D & 1D &	P2-4	Bus-tie	104.78	98.23	105.96	71.44	59.16	110.5	105.08	119.45	106.82		Reconductor Penngrove-Corona 115 kV line sections



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HUM-T-SENS-19	CORONA-LAKEVILLE 115 kV 1 1	P2-4:A2:7:_FULTON 115kV - Section 2D & 1D &	P2-4	Bus-tie	99.1	92.85	99.95	67.72	<100	104.46	99.4	112.77	100.75		Reconductor
HUM-T-SENS-20	GRANITE-HPLND JT 60 kV 1 1	P3: P1-1:A2:19:_POTTRVLY 2kV Gen Unit 1 & P1-2:A2:58:_KONOCI-EAGLE ROCK 60kV [6861]	P3	L-1/G-1	102.85	<100	<100	<100	<100	108.18	101.84	<100	<100		Upgrade approved Clear Lake Reinforcement Project to address sensitivity overloads. Redispatch Geysers, Potter Valley gens
HUM-T-SENS-21	PETLMA A-LKVLE JT 60 kV 1 1	P3: P1-1:A2:9:_GEYSER11 14kV Gen Unit 1 & P1-2:A2:66:_LAKEVILLE-PETALUMA C 60kV [7350]	P3	L-1/G-1	<100	<100	<100	<100	<100	112.35	<100	116.2	101.09		Reconductor/Replace limiting equipment at Petaluma A station
HUM-T-SENS-22	PENNGRVE-CORONA 115 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	95.13	81.34	50.33	57.02	41.22	103.27	89.19	60.55	51.46		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-23	CORONA-LAKEVILLE 115 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	<100	<100	<100	<100	<100	<100	<100	<100	<100		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-24	MLNO JCT-LAGUNATP 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	99.28	79.39	50.92	55.18	47.93	110.12	89.44	60.74	49.85		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-25	COTATI-PETC_JCT 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	157.37	129.09	90.66	92.33	76.25	174.37	142.89	110.64	97.72		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-26	PETLMA A-LKVLE JT 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	110.55	91.04	64.65	65.2	53.76	122.2	100.62	78.58	69.47		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-27	LAKEVILLE-LKVLE JT 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	103.51	85.25	60.57	61.06	50.4	114.42	94.21	73.61	65.08		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-28	COTATI-SNMA TAP 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	98.87	78.32	49.92	55.09	47.75	109.71	89.6	59.49	55.06		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads
HUM-T-SENS-29	SNMA TAP-LAGUNATP 60 kV 1 1	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P5-5	Relay	109.17	88.44	56.44	64.48	54.32	120.17	99.81	66.76	55.02		Action Plan. Upgrade protection to achieve redundancy for addressing sensitivity overloads



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HUM-T-SENS-30	TULUCAY-VACA-DIX 230 kV 1 1	P6: P1-2:A2:9:_VACA-LAKEVILLE #1 230kV [5840] & P1-2:A2:3:_GEYSR18-LAKEVILE-GEYSR20-SNTAFE-GEYSR13 230kV [4781]	P6	N-1-1	<100	<100	<100	<100	<100	100.01	<100	<100	<100		Approved Vaca Dixon-Lakeville reconductoring project
HUM-T-SENS-31	KEKAWAKA-LYTNVLE 60 kV 1 1	P6: P1-2:A2:24:_CORTINA-MENDOCINO #1 115kV [1330] & P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	100.81	99.19		Monitor. reduce generation at Humboldt Bay to address sensitivity overloads/SPS
HUM-T-SENS-32	INDIN VL-LUCERNJ1 115 kV 1 1	P6: P1-2:A2:13:_EAGLE ROCK-REDBUD 115kV [1480] & P1-2:A2:12:_EAGLE ROCK-CORTINA 115kV [1470]	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	NConv	<100		Monitor due to long lead time of sensitivity overloads/SPS
HUM-T-SENS-33	INDIN VL-CORTINA 115 kV 1 1	P1-2:A2:13:_EAGLE ROCK-REDBUD 115kV [1480] & P1-2:A2:12:_EAGLE ROCK-CORTINA 115kV [1470]	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	NConv	<100		Monitor due to long lead time of sensitivity overloads/SPS
HUM-T-SENS-34	FULTON-MONROE2 115 kV 1 1	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:34:_CORONA-LAKEVILLE 115kV [4311]	P6	N-1-1	108.14	102.56	109.28	<100	<100	114.35	109.86	123.53	109.14		Interim: Gen dispatch/Action Plan/SPS. Reconductor parallel lines
HUM-T-SENS-35	MONROE1-SNTA RSA 115 kV 1 1	P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630] & P1-2:A2:34:_CORONA-LAKEVILLE 115kV [4311]	P6	N-1-1	99.23	<100	100.7	<100	<100	104.79	101.41	113.31	100.6		Gen redispatch/Action Plan to address sensitivity overloads. SPS
HUM-T-SENS-36	BELLVUE-PENNGRVE 115 kV 1 1	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630]	P6	N-1-1	99.9	<100	101.96	<100	<100	105.32	100.15	115.05	101.87		Reconductor/SPS. Action Plan
HUM-T-SENS-37	PENNGRVE-CORONA 115 kV 1 1	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630]	P6	N-1-1	104.66	<100	106.79	<100	<100	110.42	105.03	120.4	106.69		Reconductor. Action Plan/SPS
HUM-T-SENS-38	CORONA-LAKEVLLE 115 kV 1 1	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630]	P6	N-1-1	98.99	<100	100.72	<100	<100	104.38	99.35	113.64	100.63		Reconductor/SPS. Gen redispatch. Action Plan
HUM-T-SENS-39	MENDOCNO-UKIAH JT 60 kV 1 1	P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE & P1-2:A2:14:_MENDOCINO-UKIAH 115kV [2420] MOAS OPENED on MENDOCNO_CALPELLA	P6	N-1-1	109.26	100.07	98.69	<100	<100	114.77	106.36	108.15	<100		Gen redispatch/Action Plan or SPS to address sensitivity overloads



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HUM-T-SENS-40	MENDOCNO-UPPR LKE 60 kV 1 1	P1-2:A2:54:_CLEAR LAKE-HOPLAND 60kV [6390] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	NonConv	NonConv	<100	150.02	100.78	NonConv	NonConv	<100	<100		Load transfer/Action Plan. Reconductor/SPS
HUM-T-SENS-41	PHLO JCT-HPLND JT 60 kV 1 1	P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE & P1-2:A2:14:_MENDOCINO-UKIAH 115kV [2420] MOAS OPENED on MENDOCNO_CALPELLA	P6	N-1-1	108.42	<100	<100	<100	<100	113.45	104.92	107.99	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-42	UKIAH JT-PHLO JCT 60 kV 1 1	P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE & P1-2:A2:14:_MENDOCINO-UKIAH 115kV [2420] MOAS OPENED on MENDOCNO_CALPELLA	P6	N-1-1	109.32	100.13	98.75	<100	<100	114.84	106.42	108.22	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-43	UPPR LKE-HARTLEY 60 kV 1 1	P1-2:A2:54:_CLEAR LAKE-HOPLAND 60kV [6390] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	NonConv	NonConv	<100	140.49	<100	NonConv	NonConv	<100	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-44	HARTLEY-CLER LKE 60 kV 1 1	P1-2:A2:54:_CLEAR LAKE-HOPLAND 60kV [6390] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	NonConv	NonConv	<100	107.84	<100	NonConv	NonConv	<100	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-45	CLER LKE-GRANITE 60 kV 1 1	P1-2:A2:44:_MENDOCINO-HARTLEY 60kV [7510] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	NonConv	155.44	<100	110.2	<100	NonConv	NonConv	<100	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-46	CLER LKE-KONOCTI6 60 kV 1 1	P1-2:A2:13:_EAGLE ROCK-REDBUD 115kV [1480] & P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE	P6	N-1-1	116.13	106.58	120.02	<100	101.62	117.78	110.89	128.89	119.87		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-47	GRANITE-HPLND JT 60 kV 1 1	P1-2:A2:44:_MENDOCINO-HARTLEY 60kV [7510] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	NonConv	NonConv	<100	113.71	<100	NonConv	NonConv	<100	<100		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-48	GRANITE-HPLND JT 60 kV 1 1	P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861] & P1-2:A2:71:_HOMSTKTP-MIDDLTWN #1 115kV [0]	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	101.76	<100		Action Plan/SPS to address sensitivity overloads



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HUM-T-SENS-49	HPLND JT-HPLND JT 115 kV 2 1	P1-2:A2:14:_MENDOCINO-UKIAH 115kV [2420] MOAS OPENED on MENDOCNO_CALPELLA & P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE	P6	N-1-1	155.41	NonConv	NonConv	126.15	113.81	160.99	153.51	164.19	152.25		Action Plan. Reverse Power Relay will trip. Load drop if overload persists post Hopland bank tripping via existing Reverse Power Relay activation
HUM-T-SENS-50	HPLND JT-CLVRDLJT 60 kV 1 1	P1-3:A2:33:_FULTON 115/60kV TB 2 & P1-3:A2:32:_FULTON 115/60kV TB 1	P6	N-1-1	219.32	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan.
HUM-T-SENS-51	MOLINO-MLNO JCT 60 kV 1 1	P1-3:A2:33:_FULTON 115/60kV TB 2 & P1-3:A2:32:_FULTON 115/60kV TB 1	P6	N-1-1	114.04	108.94	116.24	<100	<100	119.23	109.89	124.42	115.29		Action Plan/SPS to also address sensitivity overloads
HUM-T-SENS-52	MLNO JCT-FULTON 60 kV 1 1	P1-3:A2:22:_LAKEVILE 230/60kV TB 5 & P1-3:A2:21:_LAKEVILE 230/60kV TB 3	P6	N-1-1	NonConv	NonConv	NonConv	106.47	<100	NonConv	NonConv	NonConv	NonConv		Add new transformer at Lakeville/ Action Plan (Drop load)
HUM-T-SENS-53	MLNO JCT-LAGUNATP 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-54	CLVRDLJTGYSRJCT1 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	149.99	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-55	GYSRJCT1-FTCHMTNP 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	149.01	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-56	FULTON-FTCHMTNP 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	<100	<100	NonConv	<100	NonConv	<100	<100	<100		Reconductor/SPS. Action Plan
HUM-T-SENS-57	COTATI-PETC_JCT 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-58	COTATI-SNMA TAP 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-59	MCDWLLSW-LAKEVLLE 60 kV 1 1	P1-3:A2:22:_LAKEVILE 230/60kV TB 5 & P1-3:A2:21:_LAKEVILE 230/60kV TB 3	P6	N-1-1	133.24	<100	132.52	<100	<100	132.23	132.34	131.86	131.35		Add new transformer at Lakeville/Reconductor/SPS. Action Plan/Drop load
HUM-T-SENS-60	PETC_JCT-PETLMA A 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-61	PETLMA A-LKVLE JT 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan
HUM-T-SENS-62	SNMA TAP-LAGUNATP 60 kV 1 1	P1-3:A2:22:_LAKEVILE 230/60kV TB 5 & P1-3:A2:21:_LAKEVILE 230/60kV TB 3	P6	N-1-1	NonConv	NonConv	NonConv	157.48	116.08	NonConv	NonConv	NonConv	NonConv		Add new transformer at Lakeville/ Action Plan (Drop load)
HUM-T-SENS-63	LAKEVLLE-LKVLE JT 60 kV 1 1	P1-3:A2:32:_FULTON 115/60kV TB 1 & P1-3:A2:33:_FULTON 115/60kV TB 2	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv		Reconductor/SPS. Action Plan



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	
HUM-T-SENS-64	IGNACIO- LS GLLNS 115 kV 3 1	P1-2:A6:15:_IGNACIO-SAN RAFAEL #1 115kV [1850] & P1-2:A6:28:_IGNACIO-SAN RAFL #2 115kV [0]	P6	N-1-1	<100	<100	105.24	<100	<100	<100	<100	120.43	105.19		Monitor. Reconductor/SPS. Action Plan
HUM-T-SENS-65	IGNACIO-SAN RAFL 115 kV 1 1	P1-2:A6:28:_IGNACIO-SAN RAFL #2 115kV [0] & P1-2:A6:14:_IGNACIO-SAN RAFAEL #3 115kV [1860] MOAS OPENED on IGNACIO_LS GLLNS	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	<100	<100		Action Plan. SPS
HUM-T-SENS-66	IGNACIO-SAN RAFL 115 kV 2 1	P1-2:A6:15:_IGNACIO-SAN RAFAEL #1 115kV [1850] & P1-2:A6:14:_IGNACIO-SAN RAFAEL #3 115kV [1860] MOAS OPENED on IGNACIO_LS GLLNS	P6	N-1-1	<100	<100	119.78	<100	<100	<100	<100	137.35	119.71		Upgrade Ignacio-Alto Voltage Conversion project with higher rated conductors
HUM-T-SENS-67	LS GLLNS-SAN RAFL 115 kV 3 1	P1-2:A6:15:_IGNACIO-SAN RAFAEL #1 115kV [1850] & P1-2:A6:28:_IGNACIO-SAN RAFL #2 115kV [0]	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	102.12	<100		Monitor. Action Plan to address sensitivity overloads
HUM-T-SENS-68	SAN RAFL-Greenbrae 115 kV 1 1	P1-3:A6:9:_IGNACIO 115/60kV TB 1 & P1-3:A6:8:_IGNACIO 115/60kV TB 3	P6	N-1-1	<100	<100	122.51	<100	<100	<100	<100	144.43	122.43		Monitor. Ignacio-Alto Voltage Conversion project. Action Plan
HUM-T-SENS-69	IG JCT-SAN_RFLJ 60 kV 1 1	P1-2:A6:23:_IGNACIO-ALTO-SAUSALITO #2 60kV [7170] & P1-2:A6:24:_IGNACIO-ALTO-SAUSALITO #1 60kV [7160]	P6	N-1-1	128.1	118.23	<100	<100	<100	140.7	124.51	<100	<100		Ignacio-Alto Voltage Conversion project/SPS. Action Plan
HUM-T-SENS-70	SAN_RFLJ-GREENBRE 60 kV 1 1	P1-2:A6:24:_IGNACIO-ALTO-SAUSALITO #1 60kV [7160] & P1-2:A6:23:_IGNACIO-ALTO-SAUSALITO #2 60kV [7170]	P6	N-1-1	127.18	117.43	<100	<100	<100	139.74	123.66	<100	<100		Action Plan. SPS to also address sensitivity overloads
HUM-T-SENS-71	GREENBRE-ALTO 60 kV 1 1	P6: P1-3:A6:8:_IGNACIO 115/60kV TB 3 & P1-3:A6:9:_IGNACIO 115/60kV TB 1	P6	N-1-1	<100	<100	<100	<100	<100	<100	<100	107.85	<100		Monitor. Action Plan/SPS to address long term sensitivity overload
HUM-T-SENS-72	BELLVUE-PENNGRVE 115 kV 1 1	P7-1:A2:14:_FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 Lines &	P7	N-2 (DCTL)	99.9	93.56	101.96	68.16	56.26	105.26	100.15	114.03	101.87		Reconductor. Action Plan
HUM-T-SENS-73	PENNGRVE-CORONA 115 kV 1 1	P7-1:A2:14:_FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 Lines &	P7	N-2 (DCTL)	104.66	98.19	106.79	71.43	59.17	110.35	105.03	119.33	106.7		Reconductor. Action Plan
HUM-T-SENS-74	CORONA-LAKEVLL 115 kV 1 1	P7-1:A2:14:_FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 Lines &	P7	N-2 (DCTL)	98.99	92.81	100.72	67.72	<100	104.33	99.35	112.66	100.63		Action Plan. Reconductor
HUM-T-SENS-75	HPLND JT-CLVRDLJT 60 kV 1 1	P7-1:A2:6:_GEYSERS #9-LAKEVILLE & EAGLE ROCK-FULTON-SILVERADO Lines &	P7	N-2 (DCTL)	80.52	99.86	100.81	80.46	87.52	83.13	90.02	95.08	97.19		Monitor line loading due to long lead line.



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	
HUM-T-SENS-76	MOLINO-TRNTN_JC 60 kV 1 1	P7-1:A2:24:_FULTON-SANTA ROSA #1 & FULTON-MOLINO-COTATI Lines &	P7	N-2 (DCTL)	<100	<100	85.94	<100	<100	<100	<100	100.51	85.83		Monitor line loading due to long lead line for sensitivity scenarion overloads
HUM-T-SENS-77	COTATI-PETC_JCT 60 kV 1 1	P7-1:A2:10:_FULTON-IGNACIO #1 & FULTON-LAKEVILLE Lines &	P7	N-2 (DCTL)	75.27	51.87	68.74	16.8	20.05	91.6	65.04	102.55	77.22		Monitor line loading due to long lead line for sensitivity scenarion overloads
HUM-T-SENS-78	IGNACIO-LS GLLNS 115 kV 3 1	P7-1:A6:23:_Ignacio - San Rafael #1 & #2 Lines &	P7	N-2 (DCTL)	<100	<100	105.24	<100	<100	<100	<100	120.43	105.19		Monitor. Reconductor. Action Plan
HUM-T-SENS-79	IG JCT-SAN_RFLJ 60 kV 1 1	P7-1:A6:6:_IGNACIO-ALTO-SAUSALITO #2 & IGNACIO-ALTO-SAUSALITO #1 Lines &	P7	N-2 (DCTL)	128.15	118.23	<100	78.87	57.76	140.64	124.51	<100	<100		Upgrade Ignacio-Alto Voltage Conversion project to also address sensitivity scenario overloads
HUM-T-SENS-80	SAN_RFLJ-GREENBRE 60 kV 1 1	P7-1:A6:6:_IGNACIO-ALTO-SAUSALITO #2 & IGNACIO-ALTO-SAUSALITO #1 Lines &	P7	N-2 (DCTL)	127.28	117.43	<100	78.34	57.35	139.68	123.66	<100	<100		Upgrade Ignacio-Alto Voltage Conversion project to also address sensitivity scenario overloads
HUM-T-SENS-81	IGNACIO-SAN RAFL 115 kV 2 1	P7-1:A6:14:_Ignacio-San Rafael #1 & Las Gallinas-San Rafael #3 115kV Lines &	P7	N-2 (DCTL)	<100	<100	95.12	<100	<100	<100	<100	108.92	95.07		Monitor. Upgrade Ignacio-Alto Voltage Conversion project to also address sensitivity scenario overloads

Study Area: PG&E North Coast & North Bay

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring 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	
NCNB-VD-SENS-01	LOWR LKE 60 kV	P1-2:A2:58:_KONOCITI-EAGLE ROCK 60kV [6861]	P1-2	T-line	15.609	13.956	<5.0	10.326	5.947	16.398	15.218	<5.0	<5.0		Under review
NCNB-VD-SENS-02	EGLE RCK 60 kV	P1-3:A2:29:_EGLE RCK 115/60kV TB 1	P1-3	Transformer	18.196	16.456	5.68	12.34	6.813	19.074	17.871	5.643	5.522		Under review
NCNB-VD-SENS-03	BIG RIVR 60 kV	P1-4:A2:1:_BIG RIVR SVD=v	P1-4	Shunt device	<5.0	-5.359	-5.051	-6.604	<5.0	<5.0	-5.037	<5.0	<5.0		Action Plan/ Radialize
NCNB-VD-SENS-04	LOWR LKE 60 kV	P2-1:A2:55:_KONOCITI-EAGLE ROCK 60kV [6861] (KONOCITI6-EGLE RCK)	P2-1	Open-ended line	15.609	13.956	<5.0	10.326	5.947	16.398	15.218	<5.0	<5.0		Under review
NCNB-VD-SENS-05	NOVATO 60 kV	P2-1:A6:20:_IGNACIO-ALTO 60kV [7150] (IGNACO A-IG JCT)	P2-1	Open-ended line	14.104	13.151	N/A	8.065	<5.0	15.238	14.08	N/A	N/A		Under review
NCNB-VD-SENS-06	STAFFORD 60 kV	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT)	P2-1	Open-ended line	NonConv	NonConv	NonConv	15.843	8.131	NonConv	NonConv	NonConv	NonConv		Under review
NCNB-VD-SENS-07	WOODACRE 60 kV	P2-1:A6:24:_IGNACIO-BOLINAS #1 60kV [7140] (IGNACO B-WOODACRE)	P2-1	Open-ended line	12.269	11.202	12.117	7.391	<5.0	13.603	11.521	13.957	12.106		Under review
NCNB-VD-SENS-08	EGLE RCK 60 kV	P2-2:A2:24:_EGLE RCK 115kV Section MA	P2-2	Bus	<10.0	<10.0	<10.0	<10.0	<10.0	NonConv	NonConv	<10.0	<10.0		Under review
NCNB-VD-SENS-09	LOWR LKE 60 kV	P2-2:A2:58:_EGLE RCK 60kV Section 1D	P2-2	Bus	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0		Under review
NCNB-VD-SENS-10	EGLE RCK 60 kV	P2-3:A2:29:_EGLE RCK - MA 115kV & EGLE RCK-FULTON-SILVERDO line	P2-3	Circuit breaker	NonConv	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0		Under review
NCNB-VD-SENS-11	WILLITS 60 kV	P2-3:A2:39:_MENDOCNO - MA 60kV & MENDOCINO-PHILO JCT-HOPLAND line	P2-3	Circuit breaker	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	NonConv	10.836		Open Gerbreville-Laytonville line at Willits or Bridgeville depending on whether Humboldt or Geysers feeds load.
NCNB-VD-SENS-12	LOWR LKE 60 kV	P2-3:A2:27:_EGLE RCK - MA 115kV & EAGLE ROCK-CORTINA line	P2-3	Circuit breaker	<10.0	14.269	16.912	11.321	6.025	<10.0	<10.0	20.412	17.315		Under review
NCNB-VD-SENS-13	SNTA RSA 115 kV	P2-4:A2:7:_FULTON 115kV - Section 2D & 1D	P2-4	Bus-tie	10.981	9.453	10.576	7.851	<10.0	11.134	9.937	11.274	11.388		Under review
NCNB-VD-SENS-14	SONOMA 115 kV	P2-4:A2:10:_LAKEVILLE 115kV - Section 1D & 2D	P2-4	Bus-tie	11.553	10.194	11.361	<10.0	<10.0	13.356	11.016	14.609	11.305		Under review
NCNB-VD-SENS-15	CALISTGA 60 kV	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Relay failure	12.158	10.585	<10.0	6.231	<10.0	13.499	11.166	<10.0	<10.0		Under review
NCNB-VD-SENS-16	FULTON 115 kV	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Relay failure	12.899	10.696	<10.0	9.276	6.429	13.364	11.104	<10.0	<10.0		Under review

Study Area: PG&E North Coast & North Bay

Voltage Deviations

[illegible]



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		
NCNB-V-SENS-01	CALPELLA 115 kV	Base Case	P0	Normal	1.0556	<1.05	<1.05	1.051	<1.05	1.0511	1.0537	<1.05	1.0573		Under review	
NCNB-V-SENS-02	INDIN VL 115 kV	Base Case	P0	Normal	1.0577	1.054	<1.05	1.0633	1.0503	1.0512	1.0529	<1.05	1.0613		Under review	
NCNB-V-SENS-03	LUCERNE 115 kV	Base Case	P0	Normal	1.0559	<1.05	<1.05	1.0585	<1.05	<1.05	1.0521	<1.05	1.0585		Under review	
NCNB-V-SENS-04	MENDOCNO 115 kV	Base Case	P0	Normal	1.0622	<1.05	<1.05	1.0562	<1.05	1.0577	1.0604	1.053	1.0638		Under review	
NCNB-V-SENS-05	SKAGGS 115 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.0502	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-06	EGLERCK 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	1.0515	<1.05	<1.05	<1.05	<1.05	1.0528		Under review	
NCNB-V-SENS-07	FTCHMTNP 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	1.0501	<1.05	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-08	FULTON 60 kV	Base Case	P0	Normal	1.0509	1.0527	1.0532	1.0562	1.0531	1.0507	1.0507	1.0524	1.0541		Under review	
NCNB-V-SENS-09	IGNACOB 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.0512	<1.05	<1.05	<1.05	<1.05		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		
NCNB-V-SENS-10	MIRABEL 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.0525	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-11	NOVATO 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.051	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-12	SAUSALTO 60 kV	Base Case	P0	Normal	>0.95	>0.95	>0.95	>0.95	>0.95	>0.95	0.946	>0.95	>0.95		Under review	
NCNB-V-SENS-13	WOHLER 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.0516	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-14	WOODACRE 60 kV	Base Case	P0	Normal	<1.05	<1.05	<1.05	<1.05	1.0502	<1.05	<1.05	<1.05	<1.05		Under review	
NCNB-V-SENS-15	LOWR LKE 60 kV	P1-2:A2:58:_KONOCI-T-EAGLE ROCK 60kV [6861] &	P1-2	T-line	0.8468	0.8626	>0.90	0.9147	0.9632	0.8331	0.8483	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-16	EGLE RCK 60 kV	P1-3:A2:29:_EGLE RCK 115/60kV TB 1 &	P1-3	Transformer	0.8677	0.8813	0.9914	0.9281	0.9704	0.8557	0.8683	0.9929	0.9976		Clearlake Reinforcement Project	
NCNB-V-SENS-17	BIG RIVR 60 kV	P1-4:A2:1:_BIG RIVR SVD=v &	P1-4	Shunt device	>0.90	1.0886	1.0854	1.1009	<1.10	<1.10	1.0854	<1.10	<1.10		Action Plan	
NCNB-V-SENS-18	LOWR LKE 60 kV	P2-1:A2:55:_KONOCI-T-EAGLE ROCK 60kV [6861] (KONOCI-T-EGLE RCK) &	P2-1	Open-ended line	0.8468	0.8626	>0.90	0.9147	0.9632	0.8331	0.8483	>0.90	>0.90		Clearlake Reinforcement Project	



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		
NCNB-V-SENS-19	NOVATO 60 kV	P2-1:A6:20:_IGNACIO-ALTO 60kV [7150] (IGNACO A-IG JCT) &	P2-1	Open-ended line	0.8762	0.8641	Cont not found	0.9572		0.8591	0.8519	Cont not found	Cont not found		Ignacio - Alto Voltage Conversion	
NCNB-V-SENS-20	TOCALOMA 60 kV	P2-1:A6:23:_IGNACIO-BOLINAS #2 60kV [7180] (IGNACO B-STAF_JCT) &	P2-1	Open-ended line	0.7021	0.7205	0.6847	0.8836	0.9722	0.5291	0.7044	0.3078	0.686		Under review	
NCNB-V-SENS-21	WOODACRE 60 kV	P2-1:A6:24:_IGNACIO-BOLINAS #1 60kV [7140] (IGNACO B-WOODACRE) &	P2-1	Open-ended line	0.8861	0.8756	0.8832	0.9586		0.8663	0.8694	0.8568	0.8838		Under review	
NCNB-V-SENS-22	EGLERCK 60 kV	P2-2:A2:24:_EGLERCK 115kV Section MA &	P2-2	Bus fault	>0.90	>0.90	>0.90	>0.90	>0.90	0.8457	0.8592	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-23	LOWR LKE 60 kV	P2-2:A2:58:_EGLERCK 60kV Section 1D &	P2-2	Bus fault	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90		Under review	
NCNB-V-SENS-24	COVELO6 60 kV	P2-3:A2:39:_MENDOCINO - MA 60kV & MENDOCINO-PHILO JCT-HOPLAND line &	P2-3	Circuit breaker	-2.807	-2.7898	0.8768	-1.8993	0.877	-2.9843	-2.7969	-1.8565	0.8767		Under review	
NCNB-V-SENS-25	LOWR LKE 60 kV	P2-3:A2:27:_EGLERCK - MA 115kV & EAGLE ROCK-CORTINA line &	P2-3	Circuit breaker	>0.90	0.8595	0.8635	0.9047	0.9624	>0.90	>0.90	0.8284	0.8616		Under review	
NCNB-V-SENS-26	MONROE2 115 kV	P2-4:A2:7:_FULTON 115kV - Section 2D & 1D &	P2-4	Bus-tie	0.891	0.8979	0.8916	0.94	0.9907	0.8838	0.8899	0.8775	0.8842		Add VAR support	
NCNB-V-SENS-27	SONOMA 115 kV	P2-4:A2:10:_LAKEVILLE 115kV - Section 1D & 2D &	P2-4	Bus-tie	0.9054	0.9113	0.9044	<1.10	>0.90	0.8819	0.9007	0.8654	0.9055		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		
NCNB-V-SENS-28	KONOCI6 60 kV	P1-1:A2:9:_GEYSER11 14kV Gen Unit 1 & P1-2:A2:58:_KONOCI-EAGLE ROCK 60kV [6861]	P3	L-1/G-1	0.8629	0.8767	>0.90	0.9246	>0.90	0.8497	0.8633	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-29	LOWR LKE 60 kV	P1-1:A2:9:_GEYSER11 14kV Gen Unit 1 & P1-3:A2:29:_EGLE RCK 115/60kV TB 1	P3	L-1/G-1	0.8444	0.8603	>0.90	0.9127	>0.90	0.8282	0.8455	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-30	CALISTGA 60 kV	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P6	N-1-1	0.8577	0.882	>0.90	0.9478	>0.90	0.838	0.8695	>0.90	>0.90		Under review	
NCNB-V-SENS-31	FULTON 115 kV	P5-5:A2:1:_Fulton 230 kV BAAH Bus #1 (failure of non-redundent relay) &	P6	N-1-1	0.8885	0.9016	>0.90	0.9388	0.9835	0.8789	0.8957	>0.90	>0.90		Under review	
NCNB-V-SENS-32	ALTO 60 kV	P1-2:A6:23:_IGNACIO-ALTO-SAUSALITO #2 60kV [7170] & P1-2:A6:24:_IGNACIO-ALTO-SAUSALITO #1 60kV [7160]	P6	N-1-1	0.8689	0.857	>0.90	>0.90	>0.90	0.845	0.8448	>0.90	>0.90		Under review	
NCNB-V-SENS-33	ANNAPOLS 60 kV	P1-3:A2:33:_FULTON 115/60kV TB 2 & P1-3:A2:32:_FULTON 115/60kV TB 1	P6	N-1-1	NonConv	NonConv	NonConv	NonConv	0.6302	NonConv	NonConv	NonConv	NonConv		Corrective Action Plan/Under review	
NCNB-V-SENS-34	BELLVUE 115 kV	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630]	P6	N-1-1	0.9151	0.9206	0.9085	0.9554	>0.90	0.9085	0.9143	0.8969	0.9093		Monitor	
NCNB-V-SENS-35	BIG RIVR 60 kV	P1-2:A2:49:_FORT BRAGG-ELK 60kV [2060] MOAS OPENED on FRT BRGG_BIG RIVR & P1-4:A2:1:_BIG RIVR SVD=v	P6	N-1-1	1.2669	1.2812	1.2809	1.2867	<1.10	1.2618	1.2667	1.2769	1.2743		Under review	
NCNB-V-SENS-36	BOLINAS 60 kV	P1-3:A6:8:_IGNACIO 115/60kV TB 3 & P1-3:A6:9:_IGNACIO 115/60kV TB 1	P6	N-1-1	>0.90	>0.90	0.8924	>0.90	>0.90	>0.90	>0.90	0.8443	0.8931		Monitor	



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		
NCNB-V-SENS-37	CALPELLA 115 kV	P1-2:A2:18:_CLOVRDLE-MPE TAP-GEYERS56 115kV [1650] MOAS OPENED on MPE TAP_MPE & P1-2:A2:14:_MENDOCINO-UKIAH 115kV [2420] MOAS OPENED on MENDOCNO_CALPELLA	P6	N-1-1	0.7756	0.818	0.8079	0.8574	0.9207	0.7633	0.7861	0.7764	0.8071		Under review	
NCNB-V-SENS-38	CLER LKE 60 kV	P1-2:A2:54:_CLEAR LAKE-HOPLAND 60kV [6390] & P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861]	P6	N-1-1	0.2779	0.3203	>0.90	0.7291	0.8872	0.2688	0.2832	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-39	DUNBAR 60 kV	P1-3:A2:21:_LAKEVILE 230/60kV TB 3 & P1-3:A2:22:_LAKEVILE 230/60kV TB 5	P6	N-1-1	0.1966	>0.90	0.1926	0.8284	>0.90	0.1803	0.2048	0.1633	0.1901		Under review	
NCNB-V-SENS-40	EGLE RCK 60 kV	P1-2:A2:54:_CLEAR LAKE-HOPLAND 60kV [6390] & P1-3:A2:29:_EGLE RCK 115/60kV TB 1	P6	N-1-1	NonConv	NonConv	0.965	0.6864	0.8706	NonConv	NonConv	0.9619	0.9651		Clearlake Reinforcement Project	
NCNB-V-SENS-41	FRT BRGG 60 kV	P1-2:A2:50:_FORT BRAGG-ELK 60kV [2060] MOAS OPENED on BIG RIVR_ELK & P1-4:A2:1:_BIG RIVR SVD=v	P6	N-1-1	1.1224	1.1359	1.1296	1.1475	<1.10	1.1177	1.1256	1.117	1.1229		Under review	
NCNB-V-SENS-42	GARCIA 60 kV	P1-2:A2:43:_MENDOCINO-PHILO JCT-HOPLAND 60kV [7520] & P1-4:A2:1:_BIG RIVR SVD=v	P6	N-1-1	1.1164	1.139	1.131	1.1738	<1.10	1.1071	1.1224	1.1107	1.1296		Under review	
NCNB-V-SENS-43	GRANITE 60 kV	P1-2:A2:44:_MENDOCINO-HARTLEY 60kV [7510] & P1-3:A2:29:_EGLE RCK 115/60kV TB 1	P6	N-1-1	0.8657	0.8849	>0.90	0.9444	>0.90	0.842	0.8683	>0.90	>0.90		Clearlake Reinforcement Project/Under review	
NCNB-V-SENS-44	HOMEPROC 115 kV	P1-2:A2:12:_EAGLE ROCK-CORTINA 115kV [1470] & P1-2:A2:23:_EAGLE ROCK-CORTINA 115kV [1470] (2)	P6	N-1-1	>0.90	>0.90	0.8908	>0.90	>0.90	>0.90	>0.90	0.8842	0.8968		Monitor	



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		
NCNB-V-SENS-45	IGNACO A 60 kV	P1-3:A6:9:_IGNACIO 115/60kV TB 1 & P1-3:A6:8:_IGNACIO 115/60kV TB 3	P6	N-1-1	>0.90	>0.90	0.909	>0.90	>0.90	>0.90	>0.90	0.8638	0.9097		Monitor	
NCNB-V-SENS-46	LOWR LKE 60 kV	P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861] & P1-3:A2:26:_HPLND JT 115/60kV TB 2	P6	N-1-1	0.7913	0.8244	>0.90	0.8795	>0.90	0.7745	0.7965	>0.90	>0.90		Clearlake Reinforcement Project	
NCNB-V-SENS-47	LOWR LKE 60 kV	P1-2:A2:58:_KONOCTI-EAGLE ROCK 60kV [6861] & P1-3:A2:46:_MIDDLTWN 115/60kV TB 1	P6	N-1-1	>0.90	>0.90	0.8601	>0.90	>0.90	>0.90	>0.90	0.8425	0.8684		Monitor	
NCNB-V-SENS-48	MCDWLLSW 60 kV	P1-3:A2:22:_LAKEVILE 230/60kV TB 5 & P1-3:A2:21:_LAKEVILE 230/60kV TB 3	P6	N-1-1	NonConv	NonConv	NonConv	0.8364	>0.90	NonConv	NonConv	NonConv	NonConv		Under review	
NCNB-V-SENS-49	MONTCLLO 115 kV	P1-3:A2:17:_FULTON 230/115kV TB 4 & P1-3:A2:18:_FULTON 230/115kV TB 9	P6	N-1-1	0.9026	0.9168	>0.90	0.9552	>0.90	0.8911	0.9072	>0.90	>0.90		Under review	
NCNB-V-SENS-50	PNT ARNA 60 kV	P1-4:A2:1:_BIG RIVR SVD=v & P1-2:A2:49:_FORT BRAGG-ELK 60kV [2060] MOAS OPENED on FRT BRGG_BIG RIVR	P6	N-1-1	1.1951	1.2038	1.2042	1.2142	<1.10	1.1884	1.1937	1.2032	1.2025		Under review	
NCNB-V-SENS-51	SILVERDO 115 kV	P1-3:A2:18:_FULTON 230/115kV TB 9 & P1-3:A2:17:_FULTON 230/115kV TB 4	P6	N-1-1	0.9002	0.9149	>0.90	0.9528	>0.90	0.8893	0.9053	>0.90	>0.90		Under review	
NCNB-V-SENS-52	SNTA RSA 115 kV	P1-2:A2:27:_FULTON-SANTA ROSA #1 115kV [1620] & P1-2:A2:28:_FULTON-SANTA ROSA #2 115kV [1630]	P6	N-1-1	0.895	0.9016	0.8881	0.9422	>0.90	0.8876	0.8939	0.8743	0.8889		Add VAR support	
NCNB-V-SENS-53	SONOMA 115 kV	P1-2:A2:35:_LAKEVILLE-SONOMA #1 115kV [2063] & P1-2:A2:36:_LAKEVILLE-SONOMA #2 115kV [2070]	P6	N-1-1	0.9169	0.9218	0.9136	>0.90	>0.90	0.8945	0.912	0.8774	0.9147		Action Plan/ Radialize	



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		
NCNB-V-SENS-54	ALTO 60 kV	P7-1:A6:6:_IGNACIO-ALTO-SAUSALITO #2 & IGNACIO-ALTO-SAUSALITO #1 Lines &	P7	N-2 (DCTL)	0.8687	0.857	>0.90	0.9565	>0.90	0.8453	0.8448	>0.90	>0.90		Ignacio - Alto Voltage Conversion	
NCNB-V-SENS-55	MONROE2 115 kV	P7-1:A2:14:_FULTON-SANTA ROSA #1 & FULTON-SANTA ROSA #2 Lines &	P7	N-2 (DCTL)	0.8921	0.8983	0.8845	0.94	0.9906	0.885	0.8903	0.8784	0.8853		Add VAR support	
NCNB-V-SENS-56	SAUSALTO 60 kV	P7-1:A6:2:_LAKEVILLE-IGNACIO #1 & IGNACIO-SOBRANTE Lines &	P7	N-2 (DCTL)	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	0.8947	0.9656			Monitor	
NCNB-V-SENS-57	SONOMA 115 kV	P7-1:A2:15:_LAKEVILLE-SONOMA #1 & LAKEVILLE-SONOMA #2 Lines &	P7	N-2 (DCTL)	0.9169	0.9218	0.9136	>0.90	>0.90	0.8952	0.912	0.8773	0.9147		Action Plan/ Radialize	

Study Area: PG&E North Coast & North Bay

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														
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X-TS-29														
X-TS-30														
X-TS-31														

Study Area: PG&E North Coast & North Bay



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 North Coast & North Bay



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