



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-T-1	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Konocti - Eagle Rock 60kV	P1-2	Line	127.42	38.72	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-2	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Konocti - Eagle Rock 60kV	P1-2	Line	112.03	<100	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-3	Clear Lake-Hopland 60kV line (Granite-Hopland)	Konocti - Eagle Rock 60kV	P1-2	Line	133.09	44.35	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-4	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	115.56	116.70	114.12	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-5	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	101.12	102.12	99.86	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-6	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	101.17	102.16	99.91	<100	<100	Close Switch # 25 at Fitch Mountain to transfer Fitch mountain and Badger stations to Fulton #1 60kV line. Drop load, if needed.
NCNB-T-7	Tulucay - Napa 60kV line #1 (TULCAY1 - TULCY JT)	TULUCAY-BSLT TAP #1 60 kV	P2-1	Line Section Open	116.62	<100	<100	<100	<100	<100	<100	<100	Napa - Tulucay 60kV line upgrade
NCNB-T-8	Tulucay - Napa 60kV line #1 (Napa - Tulucay Jct)	TULUCAY-BSLT TAP #1 60 kV	P2-1	Line Section Open	139.13	115.26	117.28	<100	<100	<100	<100	<100	Napa - Tulucay 60kV line upgrade
NCNB-T-9	Ignacio - Bolinas #1 60kV line (Ignacio - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-10	Ignacio - Bolinas #2 60kV line (Stafford Jct - Tocaloma Jct)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-11	Ignacio - Bolinas #1 60kV line Bolinas - Woodacre)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-12	Ignacio - Bolinas #2 60kV line (Olema - Bolinas)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	130.10	126.33	120.19	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.

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NCNB-T-13	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	Nconv	Nconv	Nconv	104.52	101.19	95.73	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-14	Ignacio - Bolinas #2 60kV line (Tocaloma Jct - Olema)	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	106.23	105.47	101.74	<100	<100	<100	<100	<100	Reconductor the line between Bolinas and Olema. Line is currently rated 17 MVA emergency.
NCNB-T-15	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.62	69.36	69.56	<100	<100	<100	<100	<100	Reduce Indian Valley generation
NCNB-T-16	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	130.27	36.88	39.41	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-17	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	116.83	20.17	18.06	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-18	Clear Lake-Hopland 60kV line (Granite-Hopland)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	135.85	42.25	45.11	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-19	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	122.80	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-20	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.45	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-21	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	106.59	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-22	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	104.53	<100	<100	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-23	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	109.83	111.57	111.50	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-24	Santa Rosa - Corona 115kV line (Penngrove - Corona)	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	114.64	116.73	116.82	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-25	Corona - Lakeville 115kV line	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie Breaker	108.49	110.57	110.90	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-26	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie Breaker	90.06	109.75	99.16	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-27	Hopland Sub 115kV / 60kV transformer	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.04	94.91	83.64	81.29	68.82	59.94	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-28	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	114.25	116.12	112.49	<100	<100	Add a redundant tie breaker at Fulton 60kV
NCNB-T-29	Fulton - Hopland 60kV line (Cloverdale Jct - Geysers Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	99.97	101.61	98.44	<100	<100	Add a redundant tie breaker at Fulton 60kV
NCNB-T-30	Fulton - Hopland 60kV line (Geysers Jct - Fitch Mntn Jct)	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie Breaker	Nconv	Nconv	Nconv	100.02	101.65	98.48	<100	<100	Add a redundant tie breaker at Fulton 60kV



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NCNB-T-31	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie Breaker	110.52	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-32	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.86	119.75	28.37	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-33	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	112.55	121.08	23.82	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-34	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie Breaker	110.26	118.44	21.98	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-35	Garberville - Laytonville 60kV line (Garberville - Kekawaka Jct)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerine Jct1) and Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2)	P6	Multiple Contingency	<100	<100	<100	99.04	<100	<100	100.14	<100	Adjust Humboldt bay generation
NCNB-T-36	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	Eagle Rock - Redbud 115 kV Line (Eagle rock - Highland J1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	105.45	99.06	96.08	<100	<100	<100	<100	Adjust Indian valley unit
NCNB-T-37	Eagle Rock - Redbud 115kV line (Redbud - Redbud J2)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerine Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	107.11	93.18	85.64	<100	<100	<100	<100	Adjust Generation
NCNB-T-38	Fulton - Santa Rosa #1 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	<100	119.81	121.60	120.74	90.80	90.29	<100	<100	Drop load at Santa Rosa
NCNB-T-39	Fulton - Santa Rosa #2 115kV line (Fulton - Monroe)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	<100	119.19	120.98	120.17	90.37	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-40	Fulton - Santa Rosa #1 115kV line (Monroe - Santa Rosa)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	<100	109.94	111.70	111.00	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-41	Fulton - Santa Rosa #2 115kV line (Monroe - Santa Rosa)	Corona- Lakeville 115kV Line and Fulton-Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	<100	100.36	102.31	102.02	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-42	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	<100	NConv	NConv	<100	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-43	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1)	P6	Multiple Contingency	<100	110.47	111.58	111.48	<100	<100	<100	<100	Drop load at Santa Rosa



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NCNB-T-44	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2)	P6	Multiple Contingency	<100	115.31	116.74	116.91	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-45	Corona - Lakeville 115kV line	Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroe 2) and Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroe 1)	P6	Multiple Contingency	<100	109.10	110.58	110.86	<100	<100	<100	<100	Drop load at Santa Rosa
NCNB-T-46	Sonoma - Pueblo 115kV line	FULTON 230/115 kV Bank # 9 and FULTON 230/115 kV Bank # 4	P6	Multiple Contingency	<100	NConv	NConv	<100	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-47	Eagle Rock - Redbud 115kV line Cache J2 - Redbud J2)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	<100	101.08	<100	<100	<100	<100	<100	<100	Adjust Generation
NCNB-T-48	Mendocino - Philo Jct - Hopland 60kV line (Mendocino - Ukiah Jct)	FULTON 115/60.00 KV BANK NO.1 and FULTON 115/60.00 KV BANK NO.2	P6	Multiple Contingency	Nconv	NConv	NConv	NConv	NConv	NConv	NConv	<100	Mitigation Under Review
NCNB-T-49	Mendocino - Hartley 60 kV Line #1 (Mendocino - Upper Lake)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-50	Mendocino - Hartley 60 kV Line #1 (Mendocino - Upper Lake)	Eagle Rock 115/60 KV Bank #1 and Clear Lake- Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	<100	NConv	<100	<100	NConv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-51	Mendocino - Philo Jct - Hopland 60kV line (Philo Jct - Hopland Jct)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	<100	104.61	<100	92.69	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-52	Mendocino - Philo Jct - Hopland 60kV line (Philo Jct - Hopland Jct)	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	105.51	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-53	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	<100	111.21	98.30	102.19	98.21	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-54	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Konocti - Eagle Rock 60kV and Ukiah-Hopland- Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	<100	99.93	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-55	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	113.33	98.38	99.44	99.21	<100	90.25	<100	Clear Lake 60kV reinforcement project
NCNB-T-56	Mendocino - Philo Jct - Hopland 60kV line (Ukiah Jct - Philo Jct)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	102.22	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-57	Mendocino - Hartley 60 kV Line #1 (Upper Lake - Hartley)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project



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NCNB-T-58	Hartley - Clear Lake 60kV line	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-59	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-60	Clear Lake-Hopland 60kV line (Clear Lake-Granite)	Konocti - Eagle Rock 60kV and Mendocino - Clearlake 60 kV Line (Mendocino - Upper Lake)	P6	Multiple Contingency	<100	NConv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-61	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Clear Lake- Hopland 60 kV Line (Clear Lake - Granite) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	109.99	<100	<100	128.53	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-62	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerine Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	108.83	117.21	108.13	<100	99.63	78.10	<100	Adjust Generation
NCNB-T-63	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear lake 60kV reinforcement project
NCNB-T-64	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear lake 60kV reinforcement project
NCNB-T-65	Clear Lake-Hopland 60kV line (Granite-Hopland)	Hartley - Clear Lake 60kV and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	Nconv	<100	<100	Nconv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-66	Hopland Sub 115kV / 60kV transformer	Eagle Rock 115/60 KV Bank #1 and Mendocino -Clearlake 60 kV Line (Mendocino - Upper Lake)	P6	Multiple Contingency	<100	NConv	<100	<100	NConv	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-67	Fulton - Hopland 60kV line (Hopland Jct - Cloverdale Jct)	Eagle Rock - Cortina 115 kV Line (Lower Lake Jct - Highland J2) and Eagle Rock- Fulton-Silverado 115 kv (Eagle rock - Silverado Jct2	P6	Multiple Contingency	<100	98.40	98.86	99.39	100.57	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-68	Knocti - Middletown 60kV line	Eagle Rock 115/60 KV Bank #1 and Hartley - Clear Lake 60kV	P6	Multiple Contingency	<100	109.11	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-69	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	Hopland 115/60 kV Bank #2 and Clear Lake - Eagle Rock 60 kV Line (Clear Lake - Konocti)	P6	Multiple Contingency	<100	110.74	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-70	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	MENDOCINO - REDBUD 115 KV (Mendocino-LUCERN JCT2) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	101.65	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor



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NCNB-T-71	Fulton #1 60kV line (Fulton - Fitch Mtn tap)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct) and Konocti - Eagle Rock 60kV	P6	Multiple Contingency	<100	NConv	<100	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement project
NCNB-T-72	Fulton - Calistoga 60kV line (Dunbar - St Helna)	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	NConv	NConv	NConv	NConv	NConv	NConv	<100	Mitigation Under Review
NCNB-T-73	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 2 115 kV(New)	P6	Multiple Contingency	<100	<100	<100	115.69	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-74	Ignacio - San Rafael #1 115kV line	Ignacio - San Rafael No. 2 115 kV(New) and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	<100	<100	<100	121.37	<100	<100	<100	<100	Mitigation Under Review
NCNB-T-75	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No. 3 115 kV Line (Las Gallinas - San Rafael)	P6	Multiple Contingency	<100	<100	<100	101.96	<100	<100	<100	<100	This line needs to be built for a higher rating as a part of the Ignacio - Alto voltage conversion project
NCNB-T-76	New Ignacio - San Rafael #2 115kV line	Ignacio - San Rafael No. 1 115 kV Line and Ignacio - San Rafael No.3 115 kV Line (Ignacio - Las Gallinas)	P6	Multiple Contingency	<100	<100	<100	131.86	<100	<100	92.86	<100	This line needs to be built for a higher rating as a part of the Ignacio - Alto voltage conversion project
NCNB-T-78	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20)	P6	Multiple Contingency	<100	145.06	145.89	<100	102.14	100.95	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-79	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD)	P6	Multiple Contingency	<100	144.85	145.69	<100	102.14	100.95	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-80	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20)	P6	Multiple Contingency	<100	144.04	144.87	<100	101.44	100.26	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-81	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD)	P6	Multiple Contingency	<100	143.70	144.53	<100	101.44	100.26	<100	<100	Ignacio - Alto Voltage conversion project
NCNB-T-82	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	Geyser #3 - Eagle Rock 115 kv Line and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	<100	104.14	<100	<100	98.38	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-83	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	<100	103.93	96.88	<100	107.44	97.31	<100	<100	New Bridgeville - Garberville 115kV line



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-T-84	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah - City of Ukiah) and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	<100	104.84	<100	<100	96.85	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-85	Geyseys #3 - Cloverdale 115kV line (Cloverdale - MPE Tap)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	100.49	95.84	93.51	<100	<100	<100	<100	<100	Adjust Generation
NCNB-T-86	Santa Rosa - Corona 115kV line (Bellvue - Penngrove)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	109.90	111.46	111.51	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-87	Santa Rosa - Corona 115kV line (Penngrove - Corona)	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	114.72	116.61	116.83	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-88	Corona - Lakeville 115kV line	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	108.56	110.46	110.91	<100	<100	<100	<100	<100	Drop Load at Santa Rosa
NCNB-T-89	Clear Lake - Eagle Rock 60 kV Line #1 (Clear Lake - Knocti)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	<100	102.74	98.87	<100	<100	<100	<100	<100	Clear Lake 60kV reinforcement Project
NCNB-T-90	Fulton #1 60kV line (Fulton - Fitch Mntn tap)	Eagle Rock-Cortina 115kV Lines & Cortina-Mendocino No.1 115kV	P7	DCTL	104.15	<100	<100	<100	<100	<100	<100	<100	Fulton - Fitch Mountain 60kV line reconductor
NCNB-T-91	Ignacio - San Rafael #3 115kV line (Ignacio - Las gallinas)	Ignacio-San Rafael #2 & Ignacio-San Rafael #1 115kV Lines	P7	DCTL	<100	<100	115.72	<100	<100	<100	<100	<100	Drop load at San Rafael
NCNB-T-92	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Ignacio-Las Gallinas #1 115kV Lines	P7	DCTL	<100	<100	131.88	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project. Reconductor the line to a higher rating (at least 620 Amps)
NCNB-T-93	New Ignacio - San Rafael #2 115kV line	Ignacio-San Rafael #1 & Las Gallinas-San Rafael #3 115kV Lines	P7	DCTL	<100	<100	102.09	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project. Reconductor the line to a higher rating (at least 620 Amps)
NCNB-T-94	Ignacio - Alto 60kV line (Ignacio Jct - Sn Rafael Jct)	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	142.90	144.78	<100	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project.
NCNB-T-95	Ignacio - Alto 60kV line (Sn Rafael Jct - Greenbrae)	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	141.92	143.79	<100	<100	<100	<100	<100	<100	Ignacio - Alto Voltage conversion project.
NCNB-T-96	Bridgeville - Garberville 60kV (Between BRDGVLE - FRUTLDJT)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	104.86	108.73	29.63	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-97	Bridgeville - Garberville 60kV (Between FRUTLDJT - FTSWRDJT)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	107.02	111.19	25.79	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line
NCNB-T-98	Bridgeville - Garberville 60kV (Between FTSWRDJT - GRBRVLE)	Eagle Rock-Redbud & Cortina-Mendocino No.1 115 kV Lines	P7	DCTL	104.97	109.11	24.09	<100	<100	<100	<100	<100	New Bridgeville - Garberville 115kV line

Study Area: **PG&E North Coast & North Bay**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-1	BIG RIVR 60 kV	BIG RIVR 60.00 SVD ID v	P1-4	Shunt Device	1.35	1.138	6.09	6.276	6.865	5.181	5.202	5.561	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-2	FRT BRGG 60 kV	BIG RIVR 60.00 SVD ID v	P1-4	Shunt Device	0.609	0.441	4.825	5.034	5.561	4.166	4.101	4.477	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-3	CALPELLA 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	5.602	2.122	9.979	10.525	10.283	8.549	8.016	6.407	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-4	HPLND JT 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	3.032	1.097	5.434	5.697	5.661	4.766	4.355	3.274	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-5	UKIAH 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 1 115.00	P2-2	Bus	4.852	1.836	8.726	9.194	9.012	7.504	7.002	5.536	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-6	CALPELLA 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	4.928	1.242	11.736	12.431	12.221	8.954	8.173	7.943	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-7	HPLND JT 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	2.63	0.675	6.639	6.958	6.866	4.932	4.455	4.336	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-8	MENDOCNO 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	5.347	1.339	12.608	13.368	13.138	9.651	8.819	8.57	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-9	REDBUD 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	2.56	0.635	6.301	6.62	6.495	4.714	4.286	4.147	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-10	UKIAH 115 kV	BUS FAULT AT 31200 MENDOCNO BUS 2 115.00	P2-2	Bus	4.258	1.086	10.336	10.927	10.748	7.836	7.135	6.934	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-11	CALPELLA 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.339	-0.605	9.555	4.203	-0.876	-0.619	-0.25	0.159	Clear Lake 60kV reinforcement project
NCNB-VD-12	CLER LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	5.091	1.148	15.193	3.279	2.148	9.853	2.088	2.475	Clear Lake 60kV reinforcement project
NCNB-VD-13	EGLE RCK 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	11.97	3.034	29.474	7.775	6.966	22.443	6.918	7.417	Clear Lake 60kV reinforcement project
NCNB-VD-14	GRANITE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	4.098	1.004	13.138	2.906	1.606	7.921	1.589	1.935	Clear Lake 60kV reinforcement project
NCNB-VD-15	HARTLEY 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	4.206	0.979	12.606	2.71	1.754	8.052	1.667	2.064	Clear Lake 60kV reinforcement project
NCNB-VD-16	HPLND JT 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	1.316	0.616	7.127	1.868	0.131	2.4	0.198	0.433	Clear Lake 60kV reinforcement project
NCNB-VD-17	HPLND JT 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	1.05	-0.738	6.678	2.547	-0.385	0.68	0.211	0.513	Clear Lake 60kV reinforcement project
NCNB-VD-18	KONOCIT6 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	9.72	1.925	25.441	5.554	4.614	18.605	4.519	4.986	Clear Lake 60kV reinforcement project
NCNB-VD-19	LOWR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	9.863	0.79	26.696	3.962	3.059	19.199	2.89	3.383	Clear Lake 60kV reinforcement project
NCNB-VD-20	LUCERNE 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.033	-0.463	8.115	3.463	-0.14	-0.219	-0.108	0.159	Clear Lake 60kV reinforcement project
NCNB-VD-21	MENDOCNO 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.195	-0.579	10.049	4.473	-0.965	-0.852	-0.341	0.086	Clear Lake 60kV reinforcement project
NCNB-VD-22	MIDDLTWN 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	10.078	-1.175	28.495	1.118	0.279	20.07	0.133	0.692	Clear Lake 60kV reinforcement project
NCNB-VD-23	REDBUD 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	-1.672	-1.453	7.697	1.541	-3.677	-2.714	-2.022	-1.008	Clear Lake 60kV reinforcement project
NCNB-VD-24	UKIAH 115 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.563	-0.648	8.759	3.772	-0.73	-0.245	-0.102	0.28	Clear Lake 60kV reinforcement project
NCNB-VD-25	UPPR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	3.289	0.808	9.781	2.107	1.339	6.1	1.225	1.626	Clear Lake 60kV reinforcement project

Study Area: **PG&E North Coast & North Bay**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-26	BIG RIVR 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0	0	9.895	9.135	8.904	0	0	0	New Bridgeville - Garberville 115kV line
NCNB-VD-27	CALPELLA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	6.069	2.51	13.753	13.904	13.143	9.671	9.182	8.048	New Bridgeville - Garberville 115kV line
NCNB-VD-28	CLER LKE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.858	0.669	7.292	7.162	6.614	3.582	3.256	3.234	New Bridgeville - Garberville 115kV line
NCNB-VD-29	CLOVRDL 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.119	0.913	5.727	5.611	5.261	3.619	3.362	2.973	New Bridgeville - Garberville 115kV line
NCNB-VD-30	COVELO6 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.562	0.497	11.503	11.761	10.424	3.213	4.818	4.149	New Bridgeville - Garberville 115kV line
NCNB-VD-31	ELK 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.547	0.341	10.511	9.798	9.428	1.489	1.367	1.353	New Bridgeville - Garberville 115kV line
NCNB-VD-32	FRT BRGG 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.527	0.183	10.825	10.072	9.82	1.123	1.078	1.148	New Bridgeville - Garberville 115kV line
NCNB-VD-33	FRT SWRD 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.65	0.308	5.097	6.692	2.635	0.035	3.526	0.966	New Bridgeville - Garberville 115kV line
NCNB-VD-34	FRUITLND 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.505	0.25	4.443	5.715	2.361	0.231	2.955	0.853	New Bridgeville - Garberville 115kV line
NCNB-VD-35	GARCIA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.548	0.341	10.506	9.796	9.425	1.489	1.367	1.357	New Bridgeville - Garberville 115kV line
NCNB-VD-36	GRANITE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.906	0.665	7.604	7.43	6.912	3.773	3.457	3.405	New Bridgeville - Garberville 115kV line
NCNB-VD-37	GRBRVLE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.841	0.362	5.682	7.804	3.027	-0.527	4.179	1.117	New Bridgeville - Garberville 115kV line
NCNB-VD-38	HARTLEY 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.105	0.805	8.759	8.496	7.913	4.042	3.682	3.712	New Bridgeville - Garberville 115kV line
NCNB-VD-39	HPLND JT 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.021	0.654	8.381	8.099	7.664	4.26	3.975	3.843	New Bridgeville - Garberville 115kV line
NCNB-VD-40	HPLND JT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	3.494	1.483	9.12	8.999	8.455	5.862	5.493	4.876	New Bridgeville - Garberville 115kV line
NCNB-VD-41	KEKAWAKA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.959	0.363	7.194	8.885	5.033	0.423	4.445	1.98	New Bridgeville - Garberville 115kV line
NCNB-VD-42	LYTNVLE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.555	0.494	11.387	11.643	10.324	3.207	4.81	4.144	New Bridgeville - Garberville 115kV line
NCNB-VD-43	MASONITE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.329	0.951	11.705	11.02	10.509	4.765	4.342	4.439	New Bridgeville - Garberville 115kV line
NCNB-VD-44	MENDOCNO 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.747	1.039	13.786	12.854	12.454	5.587	5.002	5.406	New Bridgeville - Garberville 115kV line
NCNB-VD-45	PHILO 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	1.092	0.66	11.002	10.33	9.851	3.086	2.833	2.815	New Bridgeville - Garberville 115kV line
NCNB-VD-46	PNT ARNA 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	0.547	0.341	10.504	9.794	9.423	1.489	1.367	1.357	New Bridgeville - Garberville 115kV line
NCNB-VD-47	PTTR VLY 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.645	1.023	13.575	12.709	12.316	5.286	4.854	5.191	New Bridgeville - Garberville 115kV line
NCNB-VD-48	UKIAH 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	5.319	2.224	12.496	12.571	11.87	8.625	8.167	7.175	New Bridgeville - Garberville 115kV line
NCNB-VD-49	UPPR LKE 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.294	0.899	10.017	9.619	9.046	4.412	4.016	4.123	New Bridgeville - Garberville 115kV line
NCNB-VD-50	WILLITS 60 kV	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker	2.217	0.785	13.177	12.468	12.034	4.686	4.556	4.792	New Bridgeville - Garberville 115kV line

Study Area: PG&E North Coast & North Bay

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-51	BELLVUE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	5.656	5.27	9.713	10.508	10.744	8.396	8.456	8.66	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-52	MONROE1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.545	7.104	12.962	13.69	14.037	11.051	10.923	11.234	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-53	MONROE2 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.57	7.12	13.021	13.75	14.095	11.106	10.977	11.287	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-54	PENNGRVE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	4.216	3.89	7.005	7.826	7.979	6.254	6.452	6.586	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-55	SNTA RSA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	7.155	6.718	12.336	13.082	13.405	10.529	10.441	10.728	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-56	STONY PT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	6.164	5.767	10.642	11.427	11.691	9.166	9.176	9.408	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-57	CALPELLA 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.869	0.401	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-58	CLER LKE 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.142	0.602	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-59	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	11.661	7.636	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-60	GRANITE 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.374	0.73	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-61	HPLND JT 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	1.985	1.062	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-62	HPLND JT 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.956	0.518	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-63	MENDOCNO 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.852	0.38	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-64	UKIAH 115 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.896	0.434	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add a redundant tie breaker at Fulton 60kV
NCNB-VD-65	CLER LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	5.396	1.305	12.778	2.54	2.591	11.535	2.54	2.761	Clear Lake 60kV reinforcement project
NCNB-VD-66	EGLE RCK 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	12.288	3.669	26.591	7.146	7.235	24.362	7.314	7.537	Clear Lake 60kV reinforcement project
NCNB-VD-67	GRANITE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	4.402	1.042	10.653	2.064	2.11	9.564	2.06	2.248	Clear Lake 60kV reinforcement project
NCNB-VD-68	HARTLEY 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	4.492	1.09	10.616	2.091	2.193	9.632	2.095	2.375	Clear Lake 60kV reinforcement project
NCNB-VD-69	KONOCIT6 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.038	2.56	22.558	4.926	4.883	20.523	4.915	5.106	Clear Lake 60kV reinforcement project
NCNB-VD-70	LOWR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.187	1.802	23.6	3.448	3.212	21.203	3.215	3.356	Clear Lake 60kV reinforcement project
NCNB-VD-71	MIDDLTWN 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	10.41	0.513	25.099	0.841	0.304	22.197	0.264	0.337	Clear Lake 60kV reinforcement project
NCNB-VD-72	UPPR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	3.549	0.873	8.244	1.617	1.768	7.54	1.622	1.958	Clear Lake 60kV reinforcement project
NCNB-VD-73	CALPELLA 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.909	0.427	7.929	8.649	7.782	3.932	3.736	0.761	Close switch #25 at Fitch mountain sub
NCNB-VD-74	CLER LKE 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.199	0.644	5.636	5.998	5.748	3.619	3.199	2.667	Close switch #25 at Fitch mountain sub

Study Area: **PG&E North Coast & North Bay**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-75	FTCH MTN 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	11.717	7.672	63.108	65.172	65.032	38.165	38.303	36.456	Close switch #25 at Fitch mountain sub
NCNB-VD-76	GRANITE 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.429	0.77	7.208	7.625	7.373	4.449	4.071	3.41	Close switch #25 at Fitch mountain sub
NCNB-VD-77	HPLND JT 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	2.034	1.097	11.359	11.894	11.638	6.639	6.358	5.356	Close switch #25 at Fitch mountain sub
NCNB-VD-78	HPLND JT 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	1.003	0.549	7.054	7.515	7.019	3.793	3.62	1.979	Close switch #25 at Fitch mountain sub
NCNB-VD-79	LUCERNE 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.575	0.257	5.575	6.117	5.485	2.687	2.547	0.446	Close switch #25 at Fitch mountain sub
NCNB-VD-80	MENDOCNO 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.891	0.406	8.082	8.844	7.915	3.968	3.77	0.544	Close switch #25 at Fitch mountain sub
NCNB-VD-81	UKIAH 115 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line Section Open	0.938	0.461	7.679	8.33	7.563	3.869	3.68	1.106	Close switch #25 at Fitch mountain sub
NCNB-VD-82	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	5.789	5.472	9.768	10.422	10.749	8.553	8.584	8.781	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-83	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.68	7.308	13.019	13.602	14.042	11.211	11.054	11.357	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-84	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.705	7.324	13.078	13.661	14.1	11.266	11.108	11.411	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-85	PENNGRVE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	4.347	4.088	7.057	7.745	7.984	6.405	6.576	6.702	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-86	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	7.289	6.921	12.392	12.994	13.41	10.689	10.572	10.851	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-87	STONY PT 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	6.298	5.971	10.698	11.339	11.696	9.325	9.306	9.531	Need reactive support in the Santa Rosa - Corona area
NCNB-VD-88	ALTO 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	4.022	2.291	13.121	13.518	2.609	7.196	7.105	0.705	Ignacio - Alto Voltage conversion project
NCNB-VD-89	GREENBRE 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	3.354	1.924	11.441	11.805	1.576	6.134	6.047	0	Ignacio - Alto Voltage conversion project
NCNB-VD-90	HMLTNBFD 60 kV	IGNACO A-HMLTNBFD #1 60 kV	P2-1	Line Section Open	2.662	1.658	6.804	7.049		5.762	5.808		Ignacio - Alto Voltage conversion project
NCNB-VD-91	ALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.039	1.251	6.808	7.141		4.65	4.665		Ignacio - Alto Voltage conversion project
NCNB-VD-92	GREENBRE 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.8	1.691	8.785	9.181		6.108	6.14		Ignacio - Alto Voltage conversion project
NCNB-VD-93	NOVATO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	5.806	3.386	16.181	16.774		11.772	11.87		Ignacio - Alto Voltage conversion project

Study Area: PG&E North Coast & North Bay

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-94	SAUSALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line Section Open	2.026	1.244	6.831	7.167		4.688	4.705		Ignacio - Alto Voltage conversion project
NCNB-VD-95	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	3.549	1.821	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-96	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	8.617	4.913	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-97	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	11.665	6.465	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-98	TOCALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	10.363	5.845	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-99	WOODACRE 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line Section Open	1.44	0.693	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-100	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	5.027	3.567	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-101	OLEMA 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	2.149	1.298	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-102	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line Section Open	6.012	4.228	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Reconductor the line between Olema and Bolinas
NCNB-VD-103	CLER LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	5.46	1.156	12.871	2.581		11.605	2.387		Clear Lake 60kV reinforcement project
NCNB-VD-104	GRANITE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	4.456	0.921	10.733	2.099		9.623	1.916		Clear Lake 60kV reinforcement project
NCNB-VD-105	HARTLEY 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	4.546	0.966	10.699	2.127		9.693	1.889		Clear Lake 60kV reinforcement project
NCNB-VD-106	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	10.149	2.28	22.708	4.992	4.949	20.644	4.83	5.171	Clear Lake 60kV reinforcement project
NCNB-VD-107	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	10.3	1.39	23.761	3.498		21.329	3.151		Clear Lake 60kV reinforcement project
NCNB-VD-108	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	10.526	-0.114	25.274	0.867		22.331	0.234		Clear Lake 60kV reinforcement project
NCNB-VD-109	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	3.595	0.773	8.315	1.647		7.591	1.366		Clear Lake 60kV reinforcement project
NCNB-VD-110	CALPELLA 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	2.833	0	8.661	8.996	9.046	5.821	5.794	5.156	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-111	LUCERNE 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	1.989	0	5.905	6.353	6.368	4.071	4.084	3.667	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-112	MENDOCNO 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	3.054	0	9.359	9.711	9.764	6.293	6.272	5.571	Need additional reactive support in the Mendocino 60kV area
NCNB-VD-113	UKIAH 115 kV	MENDOCNO 115.00 SVD ID v	P1-4	Shunt Device	2.48	0	7.538	7.844	7.89	5.061	5.024	4.487	Need additional reactive support in the Mendocino 60kV area

Study Area: **PG&E North Coast & North Bay**

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-VD-114	COVELO6 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.9	0.192	-4.436	0.447	-3.433	-4.237	-5.93	-5.274	New Bridgeville - Garberville 115kV line
NCNB-VD-115	GRBRVLE 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	0.007		-6.063		-0.802	-2.934		0.311	New Bridgeville - Garberville 115kV line
NCNB-VD-116	KEKAWAKA 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.239		-5.829		-1.861	-3.448		-1.425	New Bridgeville - Garberville 115kV line
NCNB-VD-117	LYTNVLE 60 kV	WILLITS-LYTNVLE #1 60 kV	P2-1	Line Section Open	-0.896	0.191	-4.398	0.443	-3.404	-4.229	-5.92	-5.267	New Bridgeville - Garberville 115kV line

Study Area: **PG&E North Coast & North Bay**

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-1	SAUSALTO 60 kV	BUS FAULT AT 30445 IGNACIO BUS 1 230.00	P2-2	Bus	1.0127	1.0496	0.8996	0.8971	0.9913	0.9383	0.9439	1.0325	Ignacio - Alto Voltage conversion project
NCNB-V-2	CLER LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9652	1.0135	0.8315	0.9681	0.9782	0.8943	0.979	0.9775	Clear lake 60kV reinforcement project
NCNB-V-3	EGLE RCK 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9344	1.0204	0.744	0.9719	0.9778	0.8187	0.9755	0.9723	Clear lake 60kV reinforcement project
NCNB-V-4	GRANITE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9778	1.0153	0.8589	0.9766	0.9884	0.9193	0.9879	0.9858	Clear lake 60kV reinforcement project
NCNB-V-5	HARTLEY 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9676	1.0108	0.8501	0.9637	0.973	0.9041	0.9734	0.9728	Clear lake 60kV reinforcement project
NCNB-V-6	KONOCIT6 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9342	1.0202	0.7438	0.9717	0.9776	0.8185	0.9753	0.9721	Clear lake 60kV reinforcement project
NCNB-V-7	LOWR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9217	1.0313	0.7075	0.9952	0.999	0.7936	0.9979	0.9952	Clear lake 60kV reinforcement project
NCNB-V-8	MIDDLTWN 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9015	1.0502	0.6518	1.0356	1.0361	0.7543	1.0355	1.0332	Clear lake 60kV reinforcement project
NCNB-V-9	UPPR LKE 60 kV	BUS FAULT AT 31220 EGLE RCK 115.00	P2-2	Bus	0.9768	1.0113	0.8843	0.9725	0.9805	0.9289	0.981	0.9811	Clear lake 60kV reinforcement project
NCNB-V-10	BELLVUE 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9675	0.9792	0.89	0.8853	0.8856	0.9149	0.9223	0.9191	Drop load at Santa Rosa
NCNB-V-11	MONROE1 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9554	0.9714	0.8643	0.8592	0.8594	0.8952	0.9029	0.8998	Drop load at Santa Rosa
NCNB-V-12	MONROE2 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9547	0.9709	0.8629	0.8578	0.858	0.8938	0.9015	0.8985	Drop load at Santa Rosa
NCNB-V-13	SNTA RSA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9561	0.9718	0.8659	0.8608	0.861	0.8961	0.9038	0.9007	Drop load at Santa Rosa
NCNB-V-14	STONY PT 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31236 FULTON 115.00	P2-4	Tie-Breaker	0.9601	0.9717	0.8763	0.8714	0.8717	0.901	0.9085	0.9054	Drop load at Santa Rosa
NCNB-V-15	PUEBLO 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Tie-Breaker	1.0326	1.035	0.9046	0.8988	0.9045	1.0093	0.9946	0.9979	Drop load at Santa Rosa
NCNB-V-16	SONOMA 115 kV	BUS-TIE BREAKER CB102 FAULT AT 31255 LAKEVILLE 115.00	P2-4	Tie-Breaker	1.0245	1.0312	0.8854	0.8777	0.8816	0.9986	0.9829	0.9854	Drop load at Santa Rosa
NCNB-V-17	BIG RIVR 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.035	1.035	0.9822	0.8343	0.9898	1.035	1.035	1.035	Need additional reactive support in Mendocino area
NCNB-V-18	COVELO6 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0045	0.9977	0.865	0.7095	0.8859	0.9913	0.9952	1.0037	Need additional reactive support in Mendocino area
NCNB-V-19	ELK 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0213	1.0227	0.9785	0.8554	0.9901	1.0315	1.0306	1.0337	Need additional reactive support in Mendocino area
NCNB-V-20	FRT BRGG 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0214	1.0208	0.952	0.7965	0.9564	1.0252	1.0267	1.0251	Need additional reactive support in Mendocino area
NCNB-V-21	FRT SWRD 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0301	1.0246	0.9381	0.8502	1.0274	1.0082	1.0047	1.0524	Need additional reactive support in Mendocino area
NCNB-V-22	FRUITLND 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0306	1.024	0.9478	0.8781	1.0238	1.0115	1.0079	1.0498	Need additional reactive support in Mendocino area
NCNB-V-23	GARCIA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0211	1.0227	0.9809	0.8578	0.9925	1.0332	1.0323	1.0356	Need additional reactive support in Mendocino area
NCNB-V-24	GRBRVILLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0303	1.0237	0.9332	0.8201	1.033	1.0197	1.0162	1.0669	Need additional reactive support in Mendocino area
NCNB-V-25	KEKAWAKA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0258	1.0192	0.915	0.7912	0.9933	1.0112	1.0099	1.0491	Need additional reactive support in Mendocino area
NCNB-V-26	LYTNVILLE 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.008	1.003	0.8736	0.7201	0.8942	0.9919	0.9957	1.0038	Need additional reactive support in Mendocino area

Study Area: **PG&E North Coast & North Bay**

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-27	PHILO 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0153	1.0191	0.9768	0.8881	0.9899	1.025	1.0244	1.0299	Need additional reactive support in Mendocino area
NCNB-V-28	PNT ARNA 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.021	1.0226	0.9808	0.8577	0.9924	1.033	1.0322	1.0354	Need additional reactive support in Mendocino area
NCNB-V-29	PTTR VLY 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	0.9978	0.995	0.9052	0.7494	0.9066	1.0252	1.0301	1.0251	Need additional reactive support in Mendocino area
NCNB-V-30	WILLITS 60 kV	BUS-TIE BREAKER CB42 FAULT AT 31300 MENDOCNO 60.00	P2-4	Tie-Breaker	1.0032	1.0015	0.8847	0.7251	0.8854	0.9882	0.9929	0.9873	Need additional reactive support in Mendocino area
NCNB-V-31	FTCH MTN 60 kV	BUS-TIE BREAKER FAULT AT 31378 FULTON 60.00	P2-4	Tie-Breaker	0.9111	0.9659	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Add redundant tie breaker at Fulton 60kV
NCNB-V-32	CLER LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9621	1.0119	0.8556	0.9755	0.9738	0.8774	0.9745	0.9746	Clear lake 60kV reinforcement project
NCNB-V-33	EGLE RCK 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9312	1.014	0.7728	0.9782	0.9751	0.7995	0.9716	0.9711	Clear lake 60kV reinforcement project
NCNB-V-34	GRANITE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9747	1.015	0.8837	0.985	0.9833	0.9029	0.9832	0.9827	Clear lake 60kV reinforcement project
NCNB-V-35	HARTLEY 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9647	1.0097	0.87	0.9699	0.9686	0.8883	0.9691	0.9697	Clear lake 60kV reinforcement project
NCNB-V-36	KONOCIT6 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.931	1.0138	0.7727	0.978	0.9749	0.7994	0.9714	0.9709	Clear lake 60kV reinforcement project
NCNB-V-37	LOWR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9185	1.0212	0.7385	1.0003	0.9975	0.7735	0.9947	0.9954	Clear lake 60kV reinforcement project
NCNB-V-38	MIDDLTWN 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.8982	1.0333	0.6858	1.0384	1.0358	0.733	1.0341	1.0367	Clear lake 60kV reinforcement project
NCNB-V-39	UPPR LKE 60 kV	Eagle Rock 115/60 KV Bank #1	P1-3	Transformer	0.9742	1.0107	0.8996	0.9774	0.9762	0.9145	0.9771	0.9778	Clear lake 60kV reinforcement project
NCNB-V-40	FTCH MTN 60 kV	FULTON-FTCHMTNP #1 60 kV	P2-1	Line section Open	0.9105	0.9656	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Close Switch @25 at Fitch mountain sub
NCNB-V-41	BELLVUE 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9662	0.9772	0.8895	0.8862	0.8855	0.9133	0.921	0.9179	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-42	MONROE1 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.954	0.9693	0.8637	0.8601	0.8593	0.8936	0.9015	0.8986	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-43	MONROE2 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9534	0.9689	0.8623	0.8587	0.8579	0.8922	0.9002	0.8972	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-44	SNTA RSA 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9548	0.9697	0.8653	0.8617	0.8609	0.8945	0.9025	0.8995	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-45	STONY PT 115 kV	Fulton-Santa Rosa #1 & #2 115kV Lines	P7	DCTL	0.9588	0.9696	0.8757	0.8723	0.8716	0.8994	0.9072	0.9041	Install Reactive support in the Santa Rosa - Corona corridor
NCNB-V-46	ALTO 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	0.9919	1.0389	0.8295	0.8253	0.9956	0.913	0.9202	1.026	Ignacio - Alto Voltage conversion project
NCNB-V-47	GREENBRE 60 kV	Ignacio-Alto-Sausalito #2 & #1 60kV Lines	P7	DCTL	0.9983	1.0427	0.8459	0.8418	1.0091	0.9235	0.9306	1.035	Ignacio - Alto Voltage conversion project
NCNB-V-48	ALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.0117	1.0493	0.8926	0.8891	>0.9	0.9384	0.9446	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-49	GREENBRE 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.0039	1.045	0.8724	0.8681	>0.9	0.9238	0.9297	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-50	NOVATO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	0.992	1.0392	0.8414	0.836	>0.9	0.9038	0.9096	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-51	SAUSALTO 60 kV	IGNACO A-IG JCT #1 60 kV	P2-1	Line section Open	1.007	1.0445	0.8816	0.878	>0.9	0.922	0.9277	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-52	BOLINAS 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	1.0075	1.0504	Nconv	Nconv	Nconv	0.9238	0.9335	0.9446	Reconductor the line between Olema and Bolinas
NCNB-V-53	OLEMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.952	1.016	Nconv	Nconv	Nconv	0.8092	0.8222	0.8386	Reconductor the line between Olema and Bolinas
NCNB-V-54	STAFFORD 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.9238	1.0044	Nconv	Nconv	Nconv	0.7533	0.7678	0.7866	Reconductor the line between Olema and Bolinas
NCNB-V-55	TOCALOMA 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	0.9358	1.009	Nconv	Nconv	Nconv	0.7768	0.7908	0.8087	Reconductor the line between Olema and Bolinas
NCNB-V-56	WOODACRE 60 kV	IGNACO B-STAF_JCT #1 60 kV	P2-1	Line section Open	1.0312	1.0638	Nconv	Nconv	Nconv	0.9751	0.9833	0.992	Reconductor the line between Olema and Bolinas

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High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-57	BOLINAS 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line section Open	0.9927	1.0329	Nconv	Nconv	Nconv	0.8786	0.8876	0.8968	Reconductor the line between Olema and Bolinas
NCNB-V-58	WOODACRE 60 kV	IGNACO B-WOODACRE #1 60 kV	P2-1	Line section Open	0.9855	1.0284	Nconv	Nconv	Nconv	0.8598	0.869	0.8786	Reconductor the line between Olema and Bolinas
NCNB-V-59	CLER LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9615	1.0134	0.8547	0.9751	>0.9	0.8767	0.976	>0.9	Clear lake 60kV reinforcement project
NCNB-V-60	GRANITE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9742	1.0162	0.8829	0.9847	>0.9	0.9023	0.9846	>0.9	Clear lake 60kV reinforcement project
NCNB-V-61	HARTLEY 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9642	1.011	0.8692	0.9696	>0.9	0.8877	0.9711	>0.9	Clear lake 60kV reinforcement project
NCNB-V-62	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9299	1.0166	0.7712	0.9774	0.9743	0.7982	0.9722	0.9703	Clear lake 60kV reinforcement project
NCNB-V-63	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9174	1.0253	0.7369	0.9998	>0.9	0.7723	0.9953	>0.9	Clear lake 60kV reinforcement project
NCNB-V-64	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.897	1.0396	0.684	1.0381	>0.9	0.7317	1.0344	>0.9	Clear lake 60kV reinforcement project
NCNB-V-65	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV	P1-2	Line	0.9738	1.0117	0.8989	0.9771	>0.9	0.914	0.9796	>0.9	Clear lake 60kV reinforcement project
NCNB-V-66	MONROE2 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monoroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8764	0.8757	0.8763	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-67	SNTA RSA 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monoroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8794	0.8787	0.8793	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-68	STONY PT 115 kV	Fulton - Santa Rosa No.1 115 kV Line (Monroe 1 - Santa Rosa) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monoroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8876	0.887	0.8877	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-69	ANNAPOLS 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-70	CALISTGA 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-71	COTATI 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-72	DUNBAR 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-73	FORT RSS 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-74	FTCH MTN 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-75	FULTON 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-76	HPLND JT 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-77	LAGUNA 60 kV	FULTON 115/60.00 KV BANK NO.2 and FULTON 115/60.00 KV BANK NO.1	P6	Multiple Contingency	Nconv	Nconv	>0.9	>0.9	>0.9	Nconv	Nconv	Nconv	After the loss of first bank, change the operating configuration to radialize the 60kV system fed from Fulton.
NCNB-V-78	CLER LKE 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8492	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-79	EGLE RCK 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7652	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-80	GRANITE 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8775	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-81	HARTLEY 60 kV	FULTON 230/115 kV Bank # 4 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8643	>0.9	>0.9	>0.9	>0.9	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-82	ANNAPOLS 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8083	0.8252	>0.9	0.8515	0.845	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-83	BELLVUE 115 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8811	0.894	>0.9	0.9111	0.9075	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-84	CALISTGA 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.7992	0.8188	>0.9	0.9283	0.931	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-85	COTATI 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8414	0.8585	>0.9	0.87	0.8648	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-86	FORT RSS 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8203	0.8375	>0.9	0.8624	0.8566	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-87	FTCH MTN 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8606	0.8901	>0.9	0.9146	0.9123	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-88	FULTON 115 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8492	0.8638	>0.9	0.889	0.8849	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-89	GUALALA 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.7867	0.8031	>0.9	0.8316	0.8238	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-90	GYSRVLLE 60 kV	FULTON 230/115 kV Bank # 4 and FULTON 230/115 kV Bank # 9	P6	Multiple Contingency	>0.9	>0.9	0.8789	0.8948	>0.9	0.9292	0.9245	>0.9	3rd Fulton 230/115kV transformer
NCNB-V-91	BELLVUE 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	>0.9	>0.9	0.8851	0.8852	0.8856	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-92	MONROE1 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	>0.9	>0.9	0.8593	0.8592	0.8592	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-93	MONROE2 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	>0.9	>0.9	0.8578	0.8577	0.8578	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-94	SNTA RSA 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monroee 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monroee 2)	P6	Multiple Contingency	>0.9	>0.9	0.8608	0.8608	0.8609	>0.9	>0.9	>0.9	Drop load at Santa Rosa

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NCNB-V-95	STONY PT 115 kV	Fulton- Santa Rosa No.1 115 kV Line (Fulton - Monoroe 1) and Fulton- Santa Rosa No.2 115 kV Line (Fulton - Monoroe 2)	P6	Multiple Contingency	>0.9	>0.9	0.8713	0.8714	0.8716	>0.9	>0.9	>0.9	Drop load at Santa Rosa
NCNB-V-96	CLER LKE 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8522	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-97	EGLE RCK 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7687	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-98	GRANITE 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8805	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-99	HARTLEY 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.8667	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-100	KONOCIT6 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7686	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-101	LOWR LKE 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.7341	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-102	MIDDLTWN 60 kV	GEO.ENGY 9.11 Generator ID 1 and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	0.681	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-103	CLOVRDLE 115 kV	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8029	0.8282	0.8248	0.8573	0.8619	0.8612	Clear Lake 60kV reinforcement project
NCNB-V-104	GRANITE 60 kV	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8832	0.9088	0.9079	0.9161	0.9269	0.928	Clear Lake 60kV reinforcement project
NCNB-V-105	HPLND JT 60 kV	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.85	0.8737	0.872	0.8936	0.8987	0.899	Clear Lake 60kV reinforcement project
NCNB-V-106	HPLND JT 115 kV	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.8071	0.8324	0.8292	0.8591	0.8637	0.863	Clear Lake 60kV reinforcement project
NCNB-V-107	UKIAH 115 kV	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP) and Mendocino- Ukiah 115 kV(Mendocino - Calpella)	P6	Multiple Contingency	>0.9	>0.9	0.7882	0.8139	0.8104	0.841	0.8454	0.8442	Clear Lake 60kV reinforcement project
NCNB-V-108	CLER LKE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.8124	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-109	EGLE RCK 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.7234	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-110	GRANITE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.8489	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-111	HPLND JT 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.9582	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-112	KONOCIT6 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.7233	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-113	LOWR LKE 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.6934	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-114	MIDDLTWN 60 kV	Hartley - Clear Lake 60kV and Eagle Rock 115/60 KV Bank #1	P6	Multiple Contingency	>0.9	>0.9	Nconv	>0.9	>0.9	0.6471	>0.9	>0.9	Clear Lake 60kV reinforcement project

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-115	ALTO 60 kV	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO-TWR2_20)	P6	Multiple Contingency	>0.9	>0.9	0.8168	0.8189	>0.9	0.9066	0.916	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-116	GREENBRE 60 kV	Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO- HMLTNBFD) and Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO-TWR2_20)	P6	Multiple Contingency	>0.9	>0.9	0.8335	0.8355	>0.9	0.9173	0.9265	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-117	ALTO 60 kV	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO-HMLTNBFD)	P6	Multiple Contingency	>0.9	>0.9	0.8177	0.8197	>0.9	>0.9	>0.9	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-118	GREENBRE 60 kV	Ignacio - Alto - Sausalito No. 2 60 kV Line (IGNACIO- TWR2_20) and Ignacio - Alto - Sausalito No. 1 60 kV Line (IGNACIO-HMLTNBFD)	P6	Multiple Contingency	>0.9	>0.9	0.8343	0.8363	>0.9	>0.9	>0.9	>0.9	Ignacio - Alto Voltage conversion project
NCNB-V-119	CLER LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7904	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-120	HARTLEY 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.8224	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-121	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7492	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-122	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7327	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-123	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.7064	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-124	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV and Clear Lake-Hopland 60 kV Line (Clear Lake - Granite)	P6	Multiple Contingency	0.8639	>0.9	Nconv	>0.9	>0.9	Nconv	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-125	GRANITE 60 kV	Konocti - Eagle Rock 60kV and Cortina - Mendocino No.1 115 kV (Mendocino - Lucerne Jct1)	P6	Multiple Contingency	>0.9	>0.9	0.868	>0.9	>0.9	0.8784	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-126	CALPELLA 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8175	>0.9	>0.9	0.9587	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-127	CLOVRDLE 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7852	>0.9	>0.9	0.9416	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-128	COVELO6 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8682	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-129	ELK 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8814	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-130	FRT BRGG 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8844	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project

Study Area: PG&E North Coast & North Bay

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-V-131	GARCIA 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8839	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-132	HPLND JT 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7694	>0.9	>0.9	0.9324	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-133	LYTNVLL 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8767	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-134	MASONITE 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8413	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-135	MENDOCNO 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8264	>0.9	>0.9	0.9647	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-136	PHILO 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8531	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-137	PNT ARNA 60 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8838	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-138	UKIAH 115 kV	Konocti - Eagle Rock 60kV and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8046	>0.9	>0.9	0.9501	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-139	MASONITE 60 kV	Konocti - Eagle Rock 60kV and Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	>0.9	>0.9	0.863	>0.9	>0.9	>0.9	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-140	MENDOCNO 115 kV	Konocti - Eagle Rock 60kV and Ukiah-Hopland-Cloverdale 115 kV (Ukiah - Hopland Jct)	P6	Multiple Contingency	>0.9	>0.9	0.8645	>0.9	>0.9	0.9718	>0.9	>0.9	Clear Lake 60kV reinforcement project
NCNB-V-141	CLOVRDLE 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8133	0.8356	0.8285	0.8608	0.8626	0.8634	Clear Lake 60kV reinforcement project
NCNB-V-142	HPLND JT 60 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8591	0.8803	0.8754	0.8968	0.8993	0.9011	Clear Lake 60kV reinforcement project
NCNB-V-143	HPLND JT 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.8174	0.8398	0.8329	0.8626	0.8644	0.8653	Clear Lake 60kV reinforcement project
NCNB-V-144	UKIAH 115 kV	Mendocino- Ukiah 115 kV(Mendocino - Calpella) and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P6	Multiple Contingency	>0.9	>0.9	0.7989	0.8216	0.8141	0.8446	0.8461	0.8466	Clear Lake 60kV reinforcement project



ID	Contingency	Category	Category Description	Transient Stability Performance								Potential Mitigation Solutions
				2017 Spring Off-Peak	2020 Spring Light Load	2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
NCNB-TS-1	Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P1-2	Line			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-2	NON-BUS-TIE BREAKER CB532 FAULT AT 30430 FULTON 230.00	P2-3	Breaker			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-3	BUS-TIE BREAKER CB102 FAULT AT 31200 MENDOCNO 115.00	P2-4	Tie-Breaker			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.
NCNB-TS-4	GEYSER11 ID 1 and Geyser # 3 - Cloverdale 115K (Cloverdale - MPE TAP)	P3-2	G-1/L-1			voltage dip >30%.	voltage dip >30%.	voltage dip >30%.				Reassess with actual fault clearing times and SLG fault impedances where applicable.

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..	
X-SLD-1												

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



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..	
X-SS-1										

No single source substation with more than 100 MW Load