Study Area: **PG&E North Coast & North Bay - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NCNB-SP-T-1	Mendocino - Clear Lake 60 kV Line #1 between Mendocino - Upper Lake	Konocti - Eagle Rock 60kV	B	L-1	96%	104%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-2	Clear Lake-Hopland 60kV line (between Clear Lake-Granite)	Konocti - Eagle Rock 60kV	B	L-1	133%	148%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-3	Clear Lake-Hopland 60kV line (between Granite-Hopland)	Konocti - Eagle Rock 60kV	B	L-1	139%	154%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-4	Clear Lake - Eagle Rock 60 kV Line #1 (Between CLER LKE - KONOCTI)	Konocti - Eagle Rock 60kV	B	L-1	111%	127%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-5	Hopland 115/60kV Transformer	Konocti - Eagle Rock 60kV	B	L-1	99%	101%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-6	Clear Lake - Eagle Rock 60 kV Line #1 (Between KONOCTI6 - EGLE RCK)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA	B	L-1	98%	102%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-7	Tulucay - Napa 60kV line #1 (between TULCAY1 - TULCY JT)	Tulucay - Napa #2 60 kV (Tulucay 60 kV to Basalt 60 kV)	B	L-1	110%	< 100%	< 100%	Napa - Tulucay No. 1 60kV line updgrade will mitigate the overload
NCNB-SP-T-8	Mendocino - Clear Lake 60 kV Line #1 between Mendocino - Upper Lake	POTTRVLY Unit ID 1 & Konocti - Eagle Rock 60kV	B	G-1 / L-1	< 100%	107%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-9	Clear Lake-Hopland 60kV line (between Clear Lake-Granite)	POTTRVLY Unit ID 1 & Konocti - Eagle Rock 60kV	B	G-1 / L-1	135%	150%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-10	Clear Lake-Hopland 60kV line (between Granite-Hopland)	POTTRVLY Unit ID 1 & Konocti - Eagle Rock 60kV	B	G-1 / L-1	140%	156%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-SP-T-11	Clear Lake - Eagle Rock 60 kV Line #1 (Between CLER LKE - KONOCTI)	POTTRVLY Unit ID 1 & Konocti - Eagle Rock 60kV	B	G-1 / L-1	113%	131%	< 100%	Clear Lake 60kV system Reinforcement Project

Study Area: **PG&E North Coast & North Bay - Summer Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NCNB-SP-T-12	Bridgeville - Garberville 60kV line (Between Bridgeville - Fruitland JCT)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & Cortina - Mendocino 115 kV Line	C	L-1-1	115%	113%	< 100%	Bridgeville - Garberville 115kV line. Adjust Humboldt Bay Generation
NCNB-SP-T-13	Garberville - Laytonville 60kV line (between Garberville - Kekawaka Jct)	Geysers #5 - Geyser #3 115 kV (Q184 Tap to Geyser 56) & Cortina - Mendocino 115 kV Line	C	L-1-1	< 100%	< 100%	108%	
NCNB-SP-T-14	Bridgeville - Garberville 60kV line (Between Fruitland JCT - Fort Seward Jct)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & Cortina - Mendocino 115 kV Line	C	L-1-1	116%	114%	< 100%	
NCNB-SP-T-15	Cortina - Mendocino 115kV line (Between Mendocino - Lucern1 Jt)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & EAGLE ROCK 115/60 KV BANK NO.1	C	L-1-1	108%	107%	< 100%	Disable Flip Flop scheme at Lucern. Adjust Geysers 115kV generation at Eagle Rock & at Indian Vly. Drop Load at Ukiah and Lucern if Overload persists.
NCNB-SP-T-16	Cortina - Mendocino 115kV line (Between Lucern Jt - Indian Vly)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & EAGLE ROCK 115/60 KV BANK NO.1	C	L-1-1	106%	106%	< 100%	
NCNB-SP-T-17	Eagle Rock - Cortina 115kV line (Between Eagle Rock - HomeStk Tap)	MENDOCINO 115/60 KV BANK NO.1 & Cortina - Mendocino 115 kV Line	C	L-1-1	< 100%	100%	< 100%	Adjust Geysers 115kV generation at Eagle Rock
NCNB-SP-T-18	Eagle Rock - Cortina 115kV line (Between HomeStk Tap - Highland Jct2)	Mendocino- Ukiah 115 kV(Mendocino 115kV to CALPELLA 115k & Cortina - Mendocino 115 kV Line	C	L-1-1	100%	100%	100%	Adjust Geysers 115kV generation at Eagle Rock
NCNB-SP-T-19	Eagle Rock - Cortina 115kV line (Between Highland Jct2 - Cache Jct1)	Geysers #5 - Geyser #3 115 kV (Q184 Tap to Geyser 56) & Cortina - Mendocino 115 kV Line	C	L-1-1	< 100%	< 100%	102%	Adjust Geysers 115kV generation at Eagle Rock

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-T-1	Philo Jct - Elk 60kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	102%	< 100%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-WP-T-2	Tulucay - Napa #1 60kV line (Between Tulucay - Tulucay Jct)	Tulucay - Napa #2 60 kV (Tulucay 60 kV to Basalt 60 kV)	B	L-1	115%	< 100%	< 100%	Napa - Tulucay No. 1 60kV line updgrade will mitigate the overload
NCNB-WP-T-3	Philo Jct - Elk 60kV	GEYSER 7&8 Unit ID 1 & Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	G-1/L-1	104%	< 100%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-WP-T-4	Cortina - Mendocino 115kV line (Between Mendocino - Lucern1 Jt)	Eagle Rock- Cortina 115 kV (Eagle Rock 115kV to Lower Lake) & GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE Tap)	C	L-1-1	113%	108%	< 100%	Disable Flip Flop scheme at Lucern. Adjust Geysers 115kV generation at Eagle Rock & at Indian Vly. Drop Load at Ukiah and Lucern if Overload persists.
NCNB-WP-T-5	Eagle Rock - Rede Bud 115kV line (Between Highland Jct 1 - Cache Jct 2)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE Tap) & Cortina - Mendocino 115 kV Line	C	L-1-1	103%	93%	< 100%	Adjust Geyserys generation at Eagle Rock
NCNB-WP-T-6	Eagle Rock - Rede Bud 115kV line (Between Cache Jct 2 - Redbud Jct 2)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE Tap) & Cortina - Mendocino 115 kV Line	C	L-1-1	103%	93%	< 100%	Adjust Geyserys generation at Eagle Rock
NCNB-WP-T-7	Eagle Rock - Rede Bud 115kV line (Between Redbud Jct 2 - Redbud)	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE Tap) & Cortina - Mendocino 115 kV Line	C	L-1-1	103%	93%	< 100%	Adjust Geyserys generation at Eagle Rock
NCNB-WP-T-8	Santa Rosa - Corona 115kV (Between Bellevue - Penngrove)	FULTON 230/115 kV Bank # 4 & FULTON 230/115 kV Bank # 9	C	L-1-1	118%	< 100%	< 100%	3rd 230/115kV transformer at Fulton
NCNB-WP-T-9	Santa Rosa - Corona 115kV (Between Penngrove - Corona)	FULTON 230/115 kV Bank # 4 & FULTON 230/115 kV Bank # 9	C	L-1-1	119%	< 100%	< 100%	3rd 230/115kV transformer at Fulton
NCNB-WP-T-10	Corona - Lakeville 115kV line	FULTON 230/115 kV Bank # 4 & FULTON 230/115 kV Bank # 9	C	L-1-1	126%	< 100%	< 100%	3rd 230/115kV transformer at Fulton

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-T-11	Philo Jct - Elk 60kV	Ukiah-Hopland-Cloverdale 115 kV (Ukiah sub 115kv to Hopl & Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	C	L-1-1	124%	< 100%	< 100%	Clear Lake 60kV system Reinforcement Project
NCNB-WP-T-12	Mendocino - Philo Jct - Hopland 60kV line (Between Philo Jct - Hopland Jct)	MENDOCINO 115/60 KV BANK NO.1 & MENDOCINO 115/60 kV BANK # 3	C	T-1-1	96%	128%	105%	Drop Load at Elk, Philo and Big River as needed.
NCNB-WP-T-13	Mendocino - Hartley 60kV(Between Mendocino - Upper Lake)	Clear Lake- Hopland 60 Kv(Clear Lake 60 KV sub to Granite) & Konocti - Eagle Rock 60kV	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-14	Mendocino - Hartley 60kV(Between Upper Lake - Hartley)	EAGLE ROCK 115/60 KV BANK NO.1 & Clear Lake- Hopland 60 Kv(Clear Lake 60 KV sub to Granit	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-15	Hartley - Clear Lake 60kV	EAGLE ROCK 115/60 KV BANK NO.1 & Clear Lake- Hopland 60 Kv(Clear Lake 60 KV sub to Granit	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-16	Clear Lake - Holpand 60kV (Between Clear Lake - Granite)	Mendocino -Clearlake 60 kV (Mendocino Sub 60 kV to Upper & Konocti - Eagle Rock 60kV	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-17	Clear Lake - Holpand 60kV (Between Granite - Hopland Jct)	Mendocino -Clearlake 60 kV (Mendocino Sub 60 kV to Upper & Konocti - Eagle Rock 60kV	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-18	Hopland Jct 115/60kV transformer	Mendocino- Ukiah 115 kV(Mendocino 115kV to CALPELLA 115k & GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA	C	L-1-1	Diverged	Diverged	Diverged	Install a new 45 MVAR Cap Bank in the Mendocino Willits area.
NCNB-WP-T-19	Fulton - Hopland 60kV (Between Hopland Jct - Cloverdale)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah sub 115kv to Hopl & Konocti - Eagle Rock 60kV	C	L-1-1	105%	110%	< 100%	Drop Load at Ukaiah

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-T-20	Eagle Rock - Konocti 60kV	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & Cortina - Mendocino 115 kV Line	C	L-1-1	136%	119%	< 100%	Drop Load at Ukaiah
NCNB-WP-T-21	Fulton - Hopland 60kV (Between Cloverdale Jct - Geysers Jct)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah sub 115kv to Hopl & Konocti - Eagle Rock 60kV	C	L-1-1	98%	103%	< 100%	Drop Load at Ukaiah
NCNB-WP-T-22	Fulton - Hopland 60kV (Between Geysers Jct - Fitch Mnt Tap)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah sub 115kv to Hopl & Konocti - Eagle Rock 60kV	C	L-1-1	98%	102%	< 100%	Drop Load at Ukaiah
NCNB-WP-T-23	Fulton - Hopland 60kV (Between FTCHMTNP - Fulton)	Ukiah-Hopland-Cloverdale 115 kV (Ukiah sub 115kv to Hopl & Konocti - Eagle Rock 60kV	C	L-1-1	136%	< 100%	< 100%	Drop Load at Ukaiah
NCNB-WP-T-24	Ignacio - San Rafael 115kV #3 (Between Ignacio - Las Gallinas)	Ignacio - San Rafael No. 3 115 kV & Ignacio - San Rafael No. 2 115 kV(New)	C	L-1-1	< 100%	121%	120%	The line is overloaded after the Ignacio - Alto Voltage Conversion Project. Reconductor the Ignacio - Sanrafael #3 115kV line to a higher rating.
NCNB-WP-T-25	Ignacio - San Rafael 115kV #3 (Between Las Gallinas - San Rafael)	Ignacio - San Rafael No. 2 115 kV(New) & Ignacio - San Rafael No. 3 115 kV	C	L-1-1	< 100%	101%	99%	The line is overloaded after the Ignacio - Alto Voltage Conversion Project. Reconductor the Ignacio - Sanrafael #3 115kV line to a higher rating.
NCNB-WP-T-26	Ignacio - San Rafael #2 115kV	Ignacio - San Rafael No. 3 115 kV & Ignacio - San Rafael No.3 115 kV (Ignacio 115 kv to Las	C	L-1-1	< 100%	117%	115%	This is the new 115kV line being built as a part of Ignacio - Alto Voltage conversion project. Build the line to a minimum of 620 Amps LTE rating.

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-T-27	Ignacio - San Rafael #2 115kV (BetweenSan Rafael - Greenbrae)	IGNACO B 115/60.00 kV BANK No. 1 & IGNACO A 115/60.00 kV BANK No. 2	C	L-1-1	< 100%	107%	110%	This is the new 115kV line being built as a part of Ignacio - Alto Voltage conversion project. Build the line to a minimum of 620 Amps LTE rating.
NCNB-WP-T-28	Tulucay - Napa #1 60kV line (Between Tulucay - Tulucay Jct)	FULTON 230/115 kV Bank # 4 & Tulucay - Napa #2 60 kV (Tulucay 60 kV to Basalt 60 kV)	C	L-1-1	122%	< 100%	< 100%	Napa - Tulucay No. 1 60kV line updgrade will mitigate the overload
NCNB-WP-T-29	Ignacio A - Ignacio B 60kV	FULTON 230/115 kV Bank # 4 & IGNACO A 115/60.00 kV BANK No. 2	C	L-1-1	101%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.
NCNB-WP-T-30	32664 IGNACO A 60.0 32677 HMLTNBFD 60.0 1	Ignacio _Alto 60 kV (Ignacio A 60kv to Ignacio Jct 60 k & Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	C	L-1-1	146%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.
NCNB-WP-T-31	32677 HMLTNBFD 60.0 32684 ALTOJT1 60.0 1	Ignacio _Alto 60 kV (Ignacio A 60kv to Ignacio Jct 60 k & Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	C	L-1-1	152%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.
NCNB-WP-T-32	Ignacio - Alto 60kV (Between Ignacio Jct - San Rafael Jct)	Ignacio - Alto - Saulsalito # 1 60 kV (IGNACO A 60.00 t & Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	C	L-1-1	137%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.
NCNB-WP-T-33	Ignacio - Alto 60kV (Between San Rafael Jct - GreenBrae)	Ignacio - Alto - Saulsalito # 1 60 kV (IGNACO A 60.00 t & Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	C	L-1-1	137%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.
NCNB-WP-T-34	Ignacio - Alto 60kV (Between GreenBrae - Alto)	IGNACO B 115/60.00 kV BANK No. 1 & IGNACO A 115/60.00 kV BANK No. 2	C	L-1-1	< 100%	108%	111%	This line is overloaded after the Ignacio - Alto voltage conversion project. Build the line to a higher rating.

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-T-35	Ignacio - Alto 60kV (Between Alto - Alto Jct 1)	Ignacio _Alto 60 kV (Ignacio A 60kv to Ignacio Jct 60 k & Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	C	L-1-1	121%	< 100%	< 100%	Ignacio - Alto Voltage Conversion Project.

Study Area: **PG&E North Coast & North Bay- Summer Off-Peak & Summer Light Load**

Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	

No thermal overload concerns identified.

Study Area: **PG&E North Coast & North Bay - Summer Peak**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NCNB-SP-VD-1	UKIAH 115 kV	Mendocino- Ukiah 115 kV(Mendocino 115kV to CALPELLA 115k	B	L-1	6%	6%	5%	PG&E Summer Action Plan
NCNB-SP-VD-2	GRANITE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	10%	12%	<5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-3	HARTLEY 60 kV	Konocti - Eagle Rock 60kV	B	L-1	11%	12%	<5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-4	CLER LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	12%	15%	<5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-5	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	B	L-1	22%	26%	5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-6	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	23%	27%	<5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-7	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	B	L-1	25%	29%	<5%	Clear Lake 60kV system reinforcement project
NCNB-SP-VD-8	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	8%	10%	<5%	Clear Lake 60kV system reinforcement project

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-VD-1	ELK 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	16%	< 5%	< 5%	Big River SVC
NCNB-WP-VD-2	PHILO 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	11%	< 5%	< 5%	Big River SVC
NCNB-WP-VD-3	GARCIA 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	16%	< 5%	< 5%	Big River SVC
NCNB-WP-VD-4	GRANITE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	7%	7%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-5	HARTLEY 60 kV	Konocti - Eagle Rock 60kV	B	L-1	7%	7%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-6	BIG RIVR 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	18%	< 5%	< 5%	Big River SVC
NCNB-WP-VD-7	CLER LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	9%	9%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-8	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	B	L-1	16%	16%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-9	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	17%	16%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-10	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	B	L-1	17%	17%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-WP-VD-11	PNT ARNA 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	16%	< 5%	< 5%	Big River SVC
NCNB-WP-VD-12	UPPR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	6%	6%	< 5%	Clear Lake 60kV system reinforcement project

Study Area: **PG&E North Coast & North Bay- Summer Off-Peak & Summer Light Load**

Voltage Deviations

ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	
NCNB-NP-VD-1	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	B	L-1	< 5%	6%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-NP-VD-2	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	< 5%	6%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-NP-VD-3	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	B	L-1	< 5%	6%	< 5%	Clear Lake 60kV system reinforcement project
NCNB-NP-VD-4	NRTH TWR 115 kV	Oleum - North Tower-Christie 115 kV (North tower sub to	B	L-1	-6%	-6%	< 5%	PG&E Action Plan

Study Area: **PG&E North Coast & North Bay - Summer Peak**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	
NCNB-SP-V-1	GRANITE 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.8989	0.8793	0.9871	Clear Lake 60kV system reinforcement project
NCNB-SP-V-2	HARTLEY 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.8824	0.8615	0.9725	
NCNB-SP-V-3	CLER LKE 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.8693	0.8456	0.9764	
NCNB-SP-V-4	KONOCTI6 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.7867	0.749	0.9772	
NCNB-SP-V-5	LOWR LKE 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.7518	0.7073	0.9993	
NCNB-SP-V-6	LOWR LKE 60kV	EAGLE ROCK 115/60 KV BANK NO.1	B	T-1	0.7531	0.7071	0.9997	
NCNB-SP-V-7	MIDDLTWN 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.6982	0.6441	1.0372	
NCNB-SP-V-8	UPPR LKE 60kV	Konocti - Eagle Rock 60kV	B	L-1	0.9118	0.8947	0.9835	

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-V-1	ELK 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	0.8698	> 0.9	> 0.9	Big River SVC
NCNB-WP-V-2	GARCIA 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	0.8731	> 0.9	> 0.9	Big River SVC
NCNB-WP-V-3	BIG RIVR 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	0.8566	> 0.9	> 0.9	Big River SVC
NCNB-WP-V-4	PNT ARNA 60 kV	Mendocino- Willits- Fort Bragg 60 kV(Mendocino sub 60kV	B	L-1	0.873	> 0.9	> 0.9	Big River SVC
NCNB-WP-V-5	FRT BRGG 60 kV	Fort Bragg - Elk 60kV (Fort Bragg to Big River)	B	L-1	0.9047	0.8831	0.8622	Install 45 MVAR Cap bank in the Mendocino Willits area
NCNB-WP-V-6	GREENBRE 60 kV	Ignacio _Alto 60 kV (Ignacio A 60kv to Ignacio Jct 60 k	B	L-1	0.8991	> 0.9	> 0.9	Ignacio - Alto Voltage conversion project
NCNB-WP-V-7	KONOCTI6 60 kV	Konocti - Eagle Rock 60kV	B	L-1	0.8507	0.853	> 0.9	Clear Lake 60kV system reinforcement project
NCNB-WP-V-8	LOWR LKE 60 kV	Konocti - Eagle Rock 60kV	B	L-1	0.8322	0.8345	> 0.9	Clear Lake 60kV system reinforcement project
NCNB-WP-V-9	MIDDLTWN 60 kV	Konocti - Eagle Rock 60kV	B	L-1	0.8027	0.805	> 0.9	Clear Lake 60kV system reinforcement project
NCNB-WP-V-10	SAUSALTO 60 kV	Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t	B	L-1	0.8834	> 0.9	> 0.9	Ignacio - Alto Voltage conversion project
NCNB-WP-V-11	CORONA 115 kV	FULTON 230/115 kV Bank # 4 & Corona-Lakeville 115kV)	C	L-1-1	0.8832	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-12	COTATI 60 kV	FULTON 230/115 kV Bank # 4 & FULTON 230/115 kV Bank # 9	C	L-1-1	0.7794	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-13	FULTON 115 kV		C	L-1-1	0.8116	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-14	LAGUNA 60 kV		C	L-1-1	0.7942	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-15	MOLINO 60 kV		C	L-1-1	0.8073	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-16	MONROE1 115 kV		C	L-1-1	0.8185	> 0.9	> 0.9	3rd 230/115kV Fulton transformer

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-V-17	MONROE2 115 kV		C	L-1-1	0.8178	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-18	CALISTGA 60 kV		C	L-1-1	0.6881	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-19	FORT RSS 60 kV		C	L-1-1	0.7284	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-20	SLMN CRK 60 kV		C	L-1-1	0.74	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-21	ST.HELNA 60 kV		C	L-1-1	0.7616	> 0.9	> 0.9	3rd 230/115kV Fulton transformer
NCNB-WP-V-22	ELK 60 kV	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & Cortina - Mendocino 115 kV Line	C	L-1-1	0.7721	0.8881	> 0.9	Install 45 MVAR Cap bank in the Mendocino Willits area
NCNB-WP-V-23	PHILO 60 kV		C	L-1-1	0.7907	0.8921	> 0.9	
NCNB-WP-V-24	GARCIA 60 kV		C	L-1-1	0.7749	0.8912	> 0.9	
NCNB-WP-V-25	COVELO6 60 kV		C	L-1-1	0.7813	0.8537	> 0.9	
NCNB-WP-V-26	HARTLEY 60 kV		C	L-1-1	0.8348	0.8956	> 0.9	
NCNB-WP-V-27	WILLITS 60 kV		C	L-1-1	0.8083	0.8941	> 0.9	
NCNB-WP-V-28	BIG RIVR 60 kV		C	L-1-1	0.7726	0.894	> 0.9	
NCNB-WP-V-29	UKIAH 115 kV	GEYSER # 3 - CLOVERDALE 115K (CLOVERDALE 115KV to MPE TA & Mendocino- Ukiah 115 kV(Mendocino 115kV to CALPELLA 115k	C	L-1-1	0.732	0.7687	> 0.9	Install 45 MVAR Cap bank in the Mendocino Willits area
NCNB-WP-V-30	CLOVRDLE 115 kV		C	L-1-1	0.7593	0.7931	> 0.9	
NCNB-WP-V-31	HPLND JT 115 kV		C	L-1-1	0.7627	0.7965	> 0.9	

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	
NCNB-WP-V-32	ALTO 60 kV	Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t & Ignacio - Alto - Saulsalito # 1 60 kV (IGNACO A 60.00 t	C	L-1-1	0.7838	> 0.9	> 0.9	Ignacio - Alto Voltage conversion project
NCNB-WP-V-33	Greenbrae 115 kV	Ignacio - Alto - Saulsalito # 2 60 kV (IGNACO A 60.00 t & San Rafael-Green Bay 115kV(New)	C	L-1-1	> 0.9	0.8995	0.896	Ignacio - Alto Voltage conversion project

Study Area: **PG&E North Coast & North Bay- Summer Off-Peak & Summer Light Load**

High/Low Voltage

ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)			Potential Mitigation Solutions
					2016 Summer Off-Peak	2019 Summer Light Load	N/A	

No high/low voltage concerns identified.

Study Area: **PG&E North Coast & North Bay - Summer Peak**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	

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

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	

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

Study Area: **PG&E North Coast & North Bay- Summer Off-Peak & Summer Light Load**

Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)			Potential Mitigation Solutions
				2016 Summer Off-Peak	2019 Summer Light Load	N/A	

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

Study Area: **PG&E North Coast & North Bay - Summer Peak**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		2016 Summer Peak	2019 Summer Peak	2024 Summer Peak	

No single source substation with more than 100 MW Load

Study Area: **PG&E North Coast & North Bay- Winter Peak**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		2016 Winter Peak	2019 Winter Peak	2024 Winter Peak	

No single source substation with more than 100 MW Load

Study Area: **PG&E North Coast & North Bay- Summer Off-Peak & Summer Light Load**

Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)			Potential Mitigation Solutions
		2016 Summer Off-Peak	2019 Summer Light Load	N/A	

No single source substation with more than 100 MW Load