



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-T-1	Oleum-Christie 115kV Line	CHRISTIE-SOBRANTE 115kV [1260]	P1	N-1	109	107	54	91	45	46	89	73			Short Term : Action Plan ; Long Term : North Tower 115 kV Looping Project
GBA-T-2	Newark-Dixon Landing 115kV Line	PIERCY-METCALF 115kV [4318]	P1	N-1	112	105	NA	85	58	NA	85	67			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-3	Piercy-Metcalf 115 kV Line	NEWARK-DIXON LANDING 115kV [2990]	P1	N-1	103	98	63	84	65	49	77	61			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-4	Evergreen-Almaden 60 kV Line	MONTA VISTA-LOS GATOS 60kV [7610]	P1	N-1	124	113	88	108	107	60	96	74			Short Term : Action Plan; Long Term : Monta Vista-Los Gatos-Evergreen 60 kV Project
GBA-T-5	Newark-Applied Materials 115kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	155	135	141	132	128	121	117	81			Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-6	Oleum-Christie 115kV Line	SOBRANTE 115kV - Section 1D & 1E	P2	Bus-tie breaker	110	108	53	93	44	45	89	74			Short Term : Action Plan ; Long Term : North Tower 115 kV Looping Project
GBA-T-7	Oakland D - Oakland L 115kV Cable	STATIN X 115kV - Section 2D & 1D	P2	Bus-tie breaker	113	107	104	122	119	113	104	90			Increase generation in the Oakland Area
GBA-T-8	Oakland C - Oakland L #1 115kV Cable	CLARMNT - 1D 115kV & SOBRANTE-GRIZZLY-CLAREMONT #2 line	P2	Non-bus-tie breaker	100	92	91	109	105	100	88	74			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-9	Oakland C - Oakland X #2 115kV Cable	CLARMNT - 1D 115kV & SOBRANTE-GRIZZLY-CLAREMONT #2 line	P2	Non-bus-tie breaker	101	95	93	110	106	102	99	89			Increase generation in the Oakland Area
GBA-T-10	Pittsburg 230/115kV Transformer #13	PITSBG D - 2D 230kV & PITSBG D-TBC_PT B1 #1 line	P2	Non-bus-tie breaker	103	106	57	89	82	45	4	70			Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-11	Martinez-Sobrante 115kV Line	SOBRANTE 115kV - Section 1D & 1E	P2	Bus-tie breaker	105	95	<90	71	<90	<90	95	54			Increase generation in Pittsburg 115 kV
GBA-T-12	Sobrante-Grizzly-Claremont #2 115kV Line (Hillside-Grizzly JCT)	MORAGA 230kV - Section 2D & 1D	P2	Bus-tie breaker	106	78	77	83	63	60	95	69			Increase generation in the Oakland Area
GBA-T-13	Oleum-Martinez 115kV Line	SOBRANTE 115kV - Section 1D & 1E	P2	Bus-tie breaker	238	222	179	224	174	169	207	186			SPS or system upgrade
GBA-T-14	Moraga-Claremont #1 115kV Line	STATIN X 115kV - Section 2D & 1D	P2	Bus-tie breaker	114	104	109	98	98	97	104	76			Increase generation in the Oakland Area
GBA-T-15	Moraga-Claremont #2 115kV Line	STATIN X 115kV - Section 2D & 1D	P2	Bus-tie breaker	114	104	109	98	99	97	105	76			Increase generation in the Oakland Area
GBA-T-16	Moraga-Oakland X #1 115kV Line	MORAGA 115kV - Section 1D & 1E	P2	Bus-tie breaker	103	95	99	111	112	113	99	88			Short Term : Action Plan ; Long Term : Preferred resource



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GBA-T-17	Moraga-Oakland X #2 115kV Line	MORAGA 115kV - Section 1D & 1E	P2	Bus-tie breaker	109	101	105	112	114	114	99	88			Increase generation in the Oakland Area
GBA-T-18	Moraga-Oakland X #3 115kV Line	MORAGA 115kV - Section 1D & 2D	P2	Bus-tie breaker	133	129	138	138	152	155	122	88			Increase generation in the Oakland Area
GBA-T-19	Moraga-Oakland X #4 115kV Line	MORAGA 115kV - Section 1D & 2D	P2	Bus-tie breaker	133	129	138	138	152	155	122	88			Increase generation in the Oakland Area
GBA-T-20	Moraga-Oakland J 115kV Line	SN LNDRO 115kV - Section 1E & 2E	P2	Bus-tie breaker	101	78	78	92	82	75	90	69			Short Term: Action plan - Open Grant-J line at Oakland J following RCEC outage Long Term: Reconductor Moraga-Oakland J 115 kV Line
GBA-T-21	Sobrante-Moraga 115kV Line	MORAGA 230kV - Section 2D & 1D	P2	Bus-tie breaker	132	86	87	110	78	80	115	76			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-22	Moraga-San Leandro #1 115kV Line	MORAGA 115kV - Section 2D & 2E	P2	Bus-tie breaker	111	64	57	104	65	53	94	57			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-23	Moraga-San Leandro #2 115kV Line	MORAGA 115kV - Section 1D & 1E	P2	Bus-tie breaker	129	85	84	120	85	77	108	74			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-24	Potrero-Larkin #1 (AY-1) 115kV Cable	LARKIN E Section 1E & LARKIN F Section 1F 115kV	P2	Non-bus-tie breaker	147	144	146	149	149	145	128	89			Larkin bus upgrade
GBA-T-25	San Mateo-Belmont 115kV Line	RVNSWD D 115kV - Section 1D & 2D	P2	Bus-tie breaker	101	96	97	96	92	89	90	88			Short Term: Action Plan Long Term: South of San Mateo Capacity Increase Project
GBA-T-26	Ravenswood-Palo Alto #2 115kV Line	RVNSWD E Section 1E & RVNSWD D Section 1D 115kV	P2	Non-bus-tie breaker	104	100	105	93	94	94	98	105			Palo Alto interim SPS
GBA-T-27	Cooley Landing-Palo Alto 115kV Line	RVNSWD E 115kV - Section 1E & 2E	P2	Bus-tie breaker	113	110	115	84	86	86	110	109			Palo Alto interim SPS
GBA-T-28	Ravenswood-Cooley Landing #1 115kV Line	RVNSWD E 115kV - Section 1E & 2E	P2	Bus-tie breaker	161	117	124	134	114	113	150	100			Palo Alto interim SPS
GBA-T-29	San Mateo-Bair 60kV Line	CLY LNDG 60kV - Section 1D & 2D	P2	Bus-tie breaker	127	117	54	115	113	49	110	90			Short Term: Action Plan Long Term: San Mateo-Bair 60 kV Line Reconductor Project
GBA-T-30	Bair 115/60kV Transformer #1	CLY LNDG 60kV - Section 1D & 2D	P2	Bus-tie breaker	147	137	149	148	148	150	130	93			Review Stanford 60 kV system configuration
GBA-T-31	Bair-Cooley Landing #2 60kV Line	CLY LNDG 60kV - Section 1D & 2D	P2	Bus-tie breaker	140	131	141	119	116	115	122	92			Review Stanford 60 kV system configuration
GBA-T-32	Eastshore 230/115kV Transformer #1	E. SHORE 230kV - Middle Breaker Bay 3	P2	Non-bus-tie breaker	84	103	103	90	102	100	52	95			Replace transformer



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GBA-T-33	Newark-Lawerence 115kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	250	220	227	174	169	159	192	136			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-34	Newark-Applied Materials 115kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	197	172	180	150	146	138	150	106			Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-35	Newark-Dixon Landing 115kV Line	MTCALF E 115kV - Section 1E & 2E	P2	Bus-tie breaker	113	106	72	86	83	57	85	68			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-36	Newark-Kifer 115kV Line	BUS-TIE BREAKER 392 FAULT AT NRS 115.00	P2	Non-bus-tie breaker	122	129	142	98	101	98	96	111			Reconductor
GBA-T-37	Lawrence - Monta Vista 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	177	154	163	123	120	113	133	92			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-38	Britton-Monta Vista 115 kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	110	95	100	92	90	84	82	56			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-39	Applied Materials-Britton 115 kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	152	133	139	127	123	117	114	78			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-40	Trimble-San Jose 'B' 115 kV Line	BUS-TIE BREAKER 392 FAULT AT NRS 115.00	P2	Non-bus-tie breaker	110	135	144	78	79	109	73	98			Reconductor
GBA-T-41	Markham No. 1 115 kV Tap	MTCALF E 115kV - Section 1E & 2E	P2	Bus-tie breaker	62	87	101	61	65	68	72	57			Reconductor
GBA-T-42	Swift-Metcalf 115 kV Line	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	103	95	77	87	87	61	77	60			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-43	Metcalf 230/115 kV Trans No. 1	METCALF 230kV - Section 2D & 2E	P2	Bus-tie breaker	113	64	NA	111	75	NA	104	55			Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-44	Metcalf 230/115 kV Trans No. 4	METCALF 230kV - Section 1D & 1E	P2	Bus-tie breaker	101	63	NA	107	74	NA	94	54			Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-45	Metcalf 230/115 kV Trans No. 2	METCALF 230kV - Section 1D & 2D	P2	Bus-tie breaker	117	91	99	113	83	79	103	50			Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-46	Metcalf 230/115 kV Trans No. 3	METCALF 230kV - Section 1D & 2D	P2	Bus-tie breaker	113	90	97	110	82	78	103	50			Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project

Study Area: PG&E Greater Bay Area_Baseline

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GBA-T-47	Piercy-Metcalf 115 kV Line	NEWARK F 115kV - Section 1F & 2F	P2	Bus-tie breaker	107	99	70	84	70	54	78	61			Action Plan before Evergreen-Mabury Voltage Conversion
GBA-T-48	Evergreen-Almaden 60 kV Line	LOS GATS 60kV Section 1A	P2	Bus	124	113	88	108	107	60	96	74			Short Term : Action Plan; Long Term : Monta Vista-Los Gatos-Evergreen 60 kV Project
GBA-T-49	Oleum-Christie 115kV Line	UNION CH 9kV Gen Unit 1 & CHRISTIE-SOBRANTE 115kV [1260]	P3	G-1/N-1	129	128	<90	<90	<90	<90	109	<90			Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-50	Pittsburg 230/115kV Transformer #12	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & PITSBG D 230/115kV TB 13	P3	G-1/N-1	111	100	<90	<90	<90	<90	<90	<90			Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-51	Pittsburg 230/115kV Transformer #13	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & PITSBG D 230/115kV TB 12	P3	G-1/N-1	129	116	<90	<90	<90	<90	<90	<90			Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-52	Moraga-Claremont #1 115kV Line	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & MORAGA-CLAREMONT #2 115kV [2710]	P3	G-1/N-1	105	98	100	<90	<90	<90	<90	<90			Increase generation in the Oakland Area
GBA-T-53	Moraga-Claremont #2 115kV Line	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & MORAGA-CLAREMONT #1 115kV [2700]	P3	G-1/N-1	105	98	100	<90	<90	<90	<90	<90			Increase generation in the Oakland Area
GBA-T-54	Newark-Dixon Landing 115kV Line	DEC STG1 24kV & DEC CTG1 18kV & DEC CTG2 18kV & DEC CTG3 18kV Gen Units & PIERCY-METCALF 115kV [4318]	P3	G-1/N-1	<90	106	<90	<90	<90	<90	<90	<90			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-55	Piercy-Metcalf 115 kV Line	DEC STG1 24kV & DEC CTG1 18kV & DEC CTG2 18kV & DEC CTG3 18kV Gen Units & NEWARK-DIXON LANDING 115kV [2990]	P3	G-1/N-1	104	98	<90	<90	<90	<90	<90	<90			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-56	San Mateo-Belmont 115kV Line	Ravenswood 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	99	97	99	94	91	86	89	114			Redundant bus relay
GBA-T-57	San Mateo 115/60kV Transformer #8	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	99	93	102	105	106	107	88	77			Redundant bus relay
GBA-T-58	San Mateo-Hillsdale JCT 60kV Line	Jefferson 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	186	174	194	183	188	191	165	158			Redundant bus relay
GBA-T-59	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Jefferson 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	212	199	221	175	180	183	188	153			Redundant bus relay
GBA-T-60	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Jefferson 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	202	190	210	198	204	207	180	147			Redundant bus relay
GBA-T-61	Jefferson-Hillsdale JCT 60kV Line	Jefferson 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	156	148	161	146	150	152	141	132			Redundant bus relay

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GBA-T-62	Los Altos-Loyola 60 kV Line	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	40	25			Redundant bus relay
GBA-T-63	Loyola-Monta Vista 60 kV Line	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	70	53			Redundant bus relay
GBA-T-64	Monta Vista 230/60 kV Trans No. 5	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	267	170			Redundant bus relay
GBA-T-65	Monta Vista 115/60 kV Trans No. 6	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	118	87			Redundant bus relay
GBA-T-66	Monta Vista-Permanente 60 kV Line	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	58	46			Redundant bus relay
GBA-T-67	Monta Vista-Los Gatos 60 kV Line	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	diverge	diverge	diverge	diverge	diverge	diverge	50	31			Redundant bus relay
GBA-T-68	Oleum-Christie 115kV Line	CHRISTIE-SOBRAANTE 115kV [1260] & UNION CH 9kV Gen Unit 1	P6	N-1/N-1	130	128	93	<90	<90	<90	109	94			Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-69	Christie-Sobrante (Oleum-Sobrante) 115kV Line	SOBRANTE-G #1 115kV [3720] & SOBRANTE-G #2 115kV [3730]	P6	N-1/N-1	134	124	102	<90	<90	<90	117	93			SPS or system upgrade
GBA-T-70	Sobrante-El Cerrito STA G #1 115kV Lin	SOBRANTE-G #2 115kV [3730] & CHRISTIE-SOBRANTE 115kV [1260]	P6	N-1/N-1	100	95	<90	<90	<90	<90	92	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-71	Sobrante-El Cerrito STA G #2 115kV Line	SOBRANTE-G #1 115kV [3720] & CHRISTIE-SOBRANTE 115kV [1260]	P6	N-1/N-1	103	95	<90	<90	<90	<90	92	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-72	Oakland D - Oakland L 115kV Cable	C-X #2 115kV [9962] & C-X #3 115kV [9925]	P6	N-1/N-1	114	107	104	<90	<90	<90	104	90			Increase generation in the Oakland Area
GBA-T-73	Oakland C - Oakland L #1 115kV Cable	K-D #1 115kV [9966] & PITTSBURG-LOS MEDANOS #2 115kV [9993]	P6	N-1/N-1	100	92	91	<90	<90	<90	<90	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-74	Oakland C - Oakland X #2 115kV Cable	C-X #3 115kV [9925] & D-L #1 115kV [9963]	P6	N-1/N-1	114	107	104	<90	<90	<90	104	90			Increase generation in the Oakland Area
GBA-T-75	Pittsburg 230/115kV Transformer #12	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & PITSBG D 230/115kV TB 13	P6	N-1/N-1	111	100	<90	<90	<90	<90	<90	<90			Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-76	Pittsburg 230/115kV Transformer #13	LMECCT2 18kV & LMECCT1 18kV & LMECST1 18kV Gen Units & PITSBG D 230/115kV TB 12	P6	N-1/N-1	129	116	<90	<90	<90	<90	<90	<90			Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-77	Martinez-Oleum 115kV Line	SOBRANTE-G #2 115kV [3730] & SOBRANTE-G #1 115kV [3720]	P6	N-1/N-1	117	108	<90	<90	<90	<90	100	97			Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-78	Moraga-Clairemont #1 115kV Line	C-X #3 115kV [9925] & C-X #2 115kV [9962]	P6	N-1/N-1	111	104	106	<90	<90	<90	101	<90			Increase generation in the Oakland Area
GBA-T-79	Moraga-Clairemont #2 115kV Line	C-X #2 115kV [9962] & C-X #3 115kV [9925]	P6	N-1/N-1	111	104	106	<90	<90	<90	102	<90			Increase generation in the Oakland Area



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GBA-T-80	Moraga-Oakland X #1 115kV Line	MORAGA-OAKLAND #2 115kV [2730] & D-L #1 115kV [9963]	P6	N-1/N-1	106	100	99	<90	<90	<90	99	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-81	Moraga-Oakland X #2 115kV Line	MORAGA-OAKLAND #1 115kV [2720] & D-L #1 115kV [9963]	P6	N-1/N-1	106	100	99	<90	<90	<90	99	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-82	Moraga-Oakland X #3 115kV Line	MORAGA-OAKLAND #1 115kV [2720] & D-L #1 115kV [9963]	P6	N-1/N-1	106	100	99	<90	<90	<90	99	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-83	Moraga-Oakland X #4 115kV Line	MORAGA-OAKLAND #1 115kV [2720] & D-L #1 115kV [9963]	P6	N-1/N-1	106	100	99	<90	<90	<90	99	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-84	Moraga-San Leandro #1 115kV Line	MORAGA-SAN LEANDRO #2 115kV [2780] & MORAGA-SAN LEANDRO #3 115kV [2790]	P6	N-1/N-1	128	<90	<90	<90	<90	<90	107	<90			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-85	Moraga-San Leandro #2 115kV Line	MORAGA-SAN LEANDRO #1 115kV [2770] & MORAGA-SAN LEANDRO #3 115kV [2790]	P6	N-1/N-1	129	<90	<90	<90	<90	<90	108	<90			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-86	Moraga-San Leandro #3 115kV Line	MORAGA-SAN LEANDRO #1 115kV [2770] & MORAGA-SAN LEANDRO #2 115kV [2780]	P6	N-1/N-1	103	<90	<90	<90	<90	<90	<90	<90			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-87	Potrero-Mission (AX) 115kV Cable	A-Y #1 (UNDERGROUND IDLE) 115kV [9952] & A-Y #2 115kV [9953]	P6	N-1/N-1	113	108	111	111	110	110	100	<90			TBC runback scheme modification
GBA-T-88	Martin-Sneath Lane 60kV Line	MILLBRAE-SANMATEO #1 115kV [0] & MARTIN-MILLBRAE #1 115kV [2230]	P6	N-1/N-1	123	114	119	105	114	114	122	<90			Review Stanford 60 kV system configuration
GBA-T-89	San Mateo-Belmont 115kV Line	RAVENSWD 230/115kV TB 2 & RAVENSWD 230/115kV TB 1	P6	N-1/N-1	102	100	101	100	100	96	97	100			Action plan or explore potential mitigation
GBA-T-90	Ravenswood-Palo Alto #1 115kV Line	RVNSWD E-PLO ALTO #2 115kV [0] & RVNSWD D-CLY LND #1 115kV [0]	P6	N-1/N-1	105	102	107	94	95	96	99	108			Palo Alto interim SPS
GBA-T-91	Ravenswood-Palo Alto #2 115kV Line	RVNSWD E-PLO ALTO #1 115kV [0] & RVNSWD D-CLY LND #1 115kV [0]	P6	N-1/N-1	105	102	106	94	95	95	99	108			Palo Alto interim SPS
GBA-T-92	Cooley Landing-Palo Alto 115kV Line	RVNSWD E-PLO ALTO #2 115kV [0] & RVNSWD E-PLO ALTO #1 115kV [0]	P6	N-1/N-1	112	109	113	<90	<90	<90	108	108			Palo Alto interim SPS
GBA-T-93	Ravenswood-Cooley Landing #1 115kV Line	RVNSWD E-PLO ALTO #1 115kV [0] & RVNSWD E-PLO ALTO #2 115kV [0]	P6	N-1/N-1	130	94	98	108	<90	<90	121	<90			Short Term : Action Plan ; Long Term : Ravenswood – Cooley Landing 115 kV Line Reconductor Project
GBA-T-94	Millbrae-Sneath Lane 60kV Line	MARTIN-SNEATH LANE 60kV [7210] & HLLSDLJT-HLF MNBY 60kV [0]	P6	N-1/N-1	90	<90	91	99	100	105	<90	<90			Action plan or explore potential mitigation
GBA-T-95	San Mateo 115/60kV Transformer #8	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	99	93	102	105	106	107	<90	<90			Review Stanford 60 kV system configuration
GBA-T-96	San Mateo-Hillsdale JCT 60kV Line	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	186	174	194	182	186	190	165	158			Review Stanford 60 kV system configuration

Study Area: PG&E Greater Bay Area_Baseline



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-T-97	San Mateo-Bair 60kV Line	RVNSWD E-CLY LND2 #2 115kV [0] & CLY LND 115/60kV TB 1	P6	N-1/N-1	126	116	<90	114	113	<90	110	<90			San Mateo-Bair 60 kV Line Reconductor Project
GBA-T-98	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	212	198	221	174	178	182	188	152			Review Stanford 60 kV system configuration
GBA-T-99	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	202	189	210	197	201	206	180	146			Review Stanford 60 kV system configuration
GBA-T-100	Jefferson-Hillsdale JCT 60kV Line	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	156	148	161	144	148	150	141	131			Review Stanford 60 kV system configuration
GBA-T-101	Bair 115/60kV Transformer #1	CLY LND 115/60kV TB 1 & RVNSWD E-CLY LND2 #2 115kV [0]	P6	N-1/N-1	147	137	149	148	147	150	129	92			Review Stanford 60 kV system configuration
GBA-T-102	Bair-Cooley Landing #1 60kV Line	RVNSWD E-CLY LND2 #2 115kV [0] & CLY LND 115/60kV TB 1	P6	N-1/N-1	126	114	123	119	117	115	109	92			Review Stanford 60 kV system configuration
GBA-T-103	Bair-Cooley Landing #2 60kV Line	CLY LND 115/60kV TB 1 & RVNSWD E-CLY LND2 #2 115kV [0]	P6	N-1/N-1	115	110	116	<90	<90	<90	100	<90			Review Stanford 60 kV system configuration
GBA-T-104	Eastshore 230/115kV Transformer #1	EASTSHORE-SAN MATEO 230kV [4650] & E. SHORE 230/115kV TB 2	P6	N-1/N-1	<90	100	100	<90	<90	<90	<90	95			Replace transformer
GBA-T-105	Eastshore 230/115kV Transformer #2	EASTSHORE-SAN MATEO 230kV [4650] & E. SHORE 230/115kV TB 1	P6	N-1/N-1	<90	100	100	<90	<90	<90	<90	94			Replace transformer
GBA-T-106	Dumbarton-Newark 115kV Line	EASTSHORE-SAN MATEO 230kV [4650] & PITTSBURG-EASTSHORE 230kV [5462]	P6	N-1/N-1	100	<90	<90	<90	<90	<90	<90	<90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-107	Newark-Dixon Landing 115kV Line	METCALF SVD=v & PIERCY-METCALF 115kV [4318]	P6	N-1/N-1	<90	106	<90	<90	<90	<90	<90	<90			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-108	Newark-Milpitas #2 115kV Line	NEWARK-MILPITAS #1 115kV [3080] & SWIFT-METCALF 115kV [3900]	P6	N-1/N-1	112	106	114	<90	<90	<90	<90	<90			Action plan or rerate
GBA-T-109	Newark-Milpitas #1 115kV Line	NEWARK-MILPITAS #2 115kV [3080] & SWIFT-METCALF 115kV [3900]	P6	N-1/N-1	135	127	137	<90	<90	<90	103	<90			Action plan or rerate
GBA-T-110	Trimble-San Jose 'B' 115 kV Line	LOS ESTEROS-NORTECH 115kV [4032] & EL PATIO-SAN JOSE A 115kV [1520]	P6	N-1/N-1	93	100	100	<90	<90	<90	100	<90			Reconductor
GBA-T-111	Dixon Landing-McKee 115 kV Line	PIERCY-METCALF 115kV [4318] & NEWARK-DIXON LANDING 115kV [2990]	P6	N-1/N-1	<90	<90	113	<90	<90	<90	<90	<90			Action plan or rerate
GBA-T-112	Mabury-Jennings J. 115 kV Line	NEWARK-DIXON LANDING 115kV [2990] & PIERCY-METCALF 115kV [4318]	P6	N-1/N-1	<90	<90	137	<90	<90	<90	<90	<90			Action plan or rerate
GBA-T-113	Metcalf-Llagas 115 kV Line	METCALF-MORGAN HILL 115kV [2570] & LLAGAS-GILROY-GILROY F-GILROYPK 115kV [2151]	P6	N-1/N-1	109	<90	<90	<90	<90	<90	<90	<90			Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project

Study Area: PG&E Greater Bay Area_Baseline



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-T-114	Piercy-Metcalf 115 kV Line	METCALF SVD=v & NEWARK-DIXON LANDING 115kV [2990]	P6	N-1/N-1	105	100	<90	<90	<90	<90	<90	<90			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-115	Evergreen 115/60 kV Transformer No. 1	ALMADEN SVD=v & MONTA VISTA-LOS GATOS 60kV [7610]	P6	N-1/N-1	101	91	<90	<90	<90	<90	<90	<90			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-116	Evergreen-Almaden 60 kV Line	ALMADEN SVD=v & MONTA VISTA-LOS GATOS 60kV [7610]	P6	N-1/N-1	132	120	93	<90	<90	<90	100	<90			Short Term : Action Plan; Long Term : Monta Vista-Los Gatos-Evergreen 60 kV Project
GBA-T-117	Oleum-Christie 115kV Line	Christie-Sobrante 115 kV and Martinez-Sobrante 115 kV lines	P7	DCTL	109	107	93	91	78	74	89	73			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-118	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	134	123	102	119	96	92	118	93			SPS or system upgrade
GBA-T-119	Martinez-Oleum 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	112	108	90	92	74	74	99	97			Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-120	Oleum-Martinez 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	104	100	83	102	82	82	92	90			Short Term : Action Plan ; Long Term : Preferred resource
GBA-T-121	Moraga-San Leandro #1 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	115	69	69	108	70	64	98	61			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-122	Moraga-San Leandro #2 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	117	70	70	110	71	65	99	61			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-123	Moraga-San Leandro #3 115kV Line	Moraga-San Leandro Nos. 1 & 2 115 kV lines	P7	DCTL	103	69	69	97	70	64	86	60			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-124	Ravenswood-Palo Alto #2 115kV Line	Ravenswood-Palo Alto No. 1 115 kV and Cooley Landing-Palo Alto 115 kV lines	P7	DCTL	94	91	95	83	84	84	91	108			Palo Alto interim SPS
GBA-T-125	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	112	109	113	83	84	85	108	108			Palo Alto interim SPS
GBA-T-126	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	130	94	98	108	89	90	121	83			Short Term : Action Plan ; Long Term : Ravenswood – Cooley Landing 115 kV Line Reconductor Project
GBA-T-127	San Mateo 115/60kV Transformer #8	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	97	91	100	103	105	106	86	77			Review Stanford 60 kV system configuration
GBA-T-128	San Mateo-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	187	176	194	185	188	191	166	158			Review Stanford 60 kV system configuration



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-T-129	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	213	201	221	177	180	183	189	153			Review Stanford 60 kV system configuration
GBA-T-130	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	203	192	211	201	204	207	181	147			Review Stanford 60 kV system configuration
GBA-T-131	Jefferson-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	157	150	162	148	150	152	142	132			Review Stanford 60 kV system configuration
GBA-T-132	Newark-Dixon Landing 115kV Line	Swift - Metcalf & Piercy - Metcalf 115 kV Lines	P7	DCTL	113	106	43	86	53	36	85	68			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-133	Piercy-Metcalf 115 kV Line	Newark - Dixon Landing & Newark - Milpitas #1 115 kV Lines	P7	DCTL	104	98	63	84	65	49	77	61			Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-VD-1	EMBRCDRD 230 kV	H-Z #2 230kV [9982]	P1	N-1	4.1	5.1	4.3	5.1	2.0	4.3	4.2	5.6			Short Term : Action Plan ; Long Term : Martin 230 kV Bus Extension Project
GBA-VD-2	GILROY F 115 kV	METCALF-MORGAN HILL 115kV [2570]	P1	N-1	<5.0	<5.0	<5.0	6.3	<5.0	<5.0	5.3	<5.0			Short Term : Action Plan ; Long Term : Morgan Hill Reinforcement Project
GBA-VD-3	LLAGAS 115 kV	METCALF-MORGAN HILL 115kV [2570]	P1	N-1	<5.0	<5.0	<5.0	6.3	<5.0	<5.0	5.3	<5.0			Short Term : Action Plan ; Long Term : Morgan Hill Reinforcement Project
GBA-VD-4	LOS GATS 60 kV	MONTA VISTA-LOS GATOS 60kV [7610]	P1	N-1	4.6	5.1	3.5	3.8	3.7	3.5	4.1	2.8			Short Term : Action Plan; Long Term : Monta Vista – Los Gatos – Evergreen 60 kV Project
GBA-VD-5	MRGN HIL 115 kV	METCALF-MORGAN HILL 115kV [2570]	P1	N-1	<5.0	<5.0	<5.0	8.5	<5.0	<5.0	7.2	<5.0			Short Term : Action Plan ; Long Term : Morgan Hill Reinforcement Project
GBA-VD-6	ALHAMBRA 115 kV	MARTINEZ-SOBRANTE 115kV [2270] (MARTNZ D-ALHAMTP1)	P2-1	Line section w/o fault	4.2	4.0	5.8	4.1	5.7	5.8	3.8	1.0			Transfer trip to open other end
GBA-VD-7	EMBRCDRD 230 kV	H-Z #2 230kV [9982] (MARTIN C-EMBRCDRD)	P2-1	Line section w/o fault	4.1	5.1	<5.0	5.1	2.0	<5.0	4.2	5.6			Short Term : Action Plan ; Long Term : Martin 230 kV Bus Extension Project
GBA-VD-8	PACIFICA 60 kV	SNANDRES-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	0.3	0.2	0.2	0.3	0.4	0.5	5.3	4.7			Transfer trip to open other end
GBA-VD-9	SN BRNOT 60 kV	SNANDRES-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	0.3	0.2	0.2	0.3	0.5	0.6	5.4	4.8			Transfer trip to open other end
GBA-VD-10	SNANDRES 60 kV	SNANDRES-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	-0.5	-0.7	-0.5	-5.8	0.5	0.6	6.2	5.5			Transfer trip to open other end
GBA-VD-11	SNTH LNE 60 kV	SNANDRES-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	0.3	0.2	0.2	0.3	0.4	0.5	5.3	4.6			Transfer trip to open other end
GBA-VD-12	APP MAT 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	16.3	12.8	13.9	13.0	12.9	11.9	10.4	2.8			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-13	BRITTN 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	16.8	13.2	14.4	13.4	13.3	12.3	10.7	2.9			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-14	LAWRENCE 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	14.6	11.4	12.5	11.6	11.5	10.6	9.3	2.5			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-15	LOCKHD 1 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	11.6	8.8	9.7	8.9	9.0	8.2	7.2	1.9			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-16	LOCKHD 2 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	12.6	9.7	10.6	9.8	9.8	9.0	7.8	2.1			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-17	LOS ALTS 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	25.2	20.1	21.8	20.5	20.3	18.7	16.4	4.0			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-18	LOS GATS 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	25.8	20.4	21.9	20.9	20.6	18.7	16.7	4.0			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-19	LOYOLA 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	25.0	19.9	21.6	20.3	20.1	18.5	16.3	4.0			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-VD-20	MOFT.FLD 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	11.5	8.8	9.7	8.9	9.0	8.2	7.1	1.9			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-21	MT EDEN 115 kV	EASTSHRE 115kV - Section 1D & 1E	P2	Bus-tie breaker	10.0	8.4	8.5	8.9	8.2	8.0	5.3	3.5			Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-VD-22	MT VIEW 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	22.6	18.1	19.6	18.4	18.2	16.8	14.8	3.7			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-23	PERMNTE 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	24.5	19.6	21.2	20.0	19.7	18.2	16.1	4.0			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-24	PHILLIPS 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	15.6	12.2	13.3	12.4	12.3	11.3	9.9	2.7			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-25	STELLING 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	22.6	18.0	19.5	18.3	18.1	16.8	14.8	3.7			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-26	WHISMAN 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	22.6	18.1	19.6	18.4	18.2	16.8	14.8	3.7			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-27	WOLFE 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	22.6	18.0	19.5	18.4	18.2	16.8	14.8	3.7			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-28	CAROLNDS 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	10.7	9.9	11.5	11.2	11.6	12.4	9.5	5.5			Redundant bus relay
GBA-VD-29	CRYSTLSG 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	17.8	16.9	19.1	18.9	19.7	20.7	16.1	10.5			Redundant bus relay
GBA-VD-30	EMRLD LE 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	17.7	16.9	19.0	18.8	19.7	20.6	16.0	10.5			Redundant bus relay
GBA-VD-31	GRANT 115 kV	East Shore 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	10.0	7.6	7.7	8.9	7.4	7.3	4.7	3.2			Redundant bus relay
GBA-VD-32	HLF MNBY 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	9.5	8.7	10.3	10.1	10.6	11.4	8.2	3.7			Redundant bus relay
GBA-VD-33	LAS PLGS 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	17.9	17.1	19.3	19.0	19.9	20.9	16.2	10.6			Redundant bus relay
GBA-VD-34	LOS ALTS 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	76.7	75.3	76.5	76.4	76.1	76.3	18.8	2.1			Redundant bus relay
GBA-VD-35	LOS GATS 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	78.3	77.0	77.9	78.1	77.8	77.5	19.1	2.1			Redundant bus relay
GBA-VD-36	LOYOLA 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	75.2	73.8	75.0	74.9	74.6	74.8	18.6	2.1			Redundant bus relay

Study Area: PG&E Greater Bay Area_Baseline

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-VD-37	MT EDEN 115 kV	East Shore 230 kV BAAH Bus #2 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	10.0	8.4	8.5	8.9	8.2	8.0	4.7	3.5			Redundant bus relay
GBA-VD-38	MT VIEW 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	85.2	84.1	85.0	84.8	84.4	84.3	21.5	0.8			Redundant bus relay
GBA-VD-39	PERMNTE 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	71.1	69.6	70.3	70.9	70.5	70.4	18.4	2.1			Redundant bus relay
GBA-VD-40	RALSTON 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	17.8	16.9	19.1	18.9	19.7	20.7	16.1	10.5			Redundant bus relay
GBA-VD-41	STANFORD 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	18.4	17.4	19.7	19.5	20.4	21.4	16.6	10.9			Redundant bus relay
GBA-VD-42	STELLING 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	84.9	83.7	84.6	84.4	84.1	84.0	21.4	0.8			Redundant bus relay
GBA-VD-43	WATRSHEd 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	14.8	13.8	15.8	15.6	16.2	17.1	13.2	8.4			Redundant bus relay
GBA-VD-44	WHISMAN 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	85.2	84.0	85.0	84.7	84.4	84.3	21.5	0.8			Redundant bus relay
GBA-VD-45	WOLFE 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	84.9	83.7	84.6	84.4	84.1	84.0	21.4	0.8			Redundant bus relay
GBA-VD-46	WOODSIDE 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redundant relay (bus)	17.9	17.0	19.3	19.0	19.9	20.8	16.1	10.6			Redundant bus relay
GBA-VD-47	CAROLNDS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	10.7	10.6	11.3	12.2	11.6	12.4	9.6	5.5			Review Stanford 60 kV system configuration
GBA-VD-48	CRYSTLSG 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.2	17.9	19.3	20.0	19.8	20.7	16.6	10.6			Review Stanford 60 kV system configuration
GBA-VD-49	EMRLD LE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.1	17.8	19.2	20.0	19.7	20.6	16.6	10.6			Review Stanford 60 kV system configuration
GBA-VD-50	HLF MNBY 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	9.5	9.4	10.2	11.2	10.6	11.4	8.3	3.2			Review Stanford 60 kV system configuration
GBA-VD-51	LAS PLGS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.3	18.0	19.4	20.2	19.9	20.9	16.7	10.6			Review Stanford 60 kV system configuration
GBA-VD-52	RALSTON 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.1	17.9	19.2	20.0	19.7	20.7	16.6	10.6			Review Stanford 60 kV system configuration
GBA-VD-53	STANFORD 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.7	18.5	19.9	20.7	20.4	21.4	17.1	10.9			Review Stanford 60 kV system configuration



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-VD-54	WATRSLED 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	14.9	14.8	15.8	16.7	16.3	17.1	13.6	8.4			Review Stanford 60 kV system configuration
GBA-VD-55	WOODSIDE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	18.3	18.0	19.4	20.2	19.9	20.8	16.7	10.6			Review Stanford 60 kV system configuration

Study Area: PG&E Greater Bay Area_Baseline

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-V-1	ALTAMONT 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.06	1.06	1.05	1.07	1.06			Under review with PTO
GBA-V-2	BAILY J1 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-3	BAILY J2 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-4	BAILY J3 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-5	CHRISTIE 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.06			Under review with PTO
GBA-V-6	CYTE PMP 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06			Under review with PTO
GBA-V-7	DYERWND 60 kV	Base Case	P0	Normal	1.05	1.04	1.05	1.06	1.06	1.06	1.07	1.07			Under review with PTO
GBA-V-8	EDENVALE 115 kV	Base Case	P0	Normal	1.04	1.03	1.04	1.04	1.04	1.04	1.05	1.06			Under review with PTO
GBA-V-9	EDNVL J1 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.05	1.06			Under review with PTO
GBA-V-10	EDNVL J3 115 kV	Base Case	P0	Normal	1.04	1.03	1.04	1.04	1.04	1.04	1.05	1.06			Under review with PTO
GBA-V-11	FRANKLIN 60 kV	Base Case	P0	Normal	1.03	1.03	1.04	1.03	1.03	1.03	1.04	1.06			Under review with PTO
GBA-V-12	IBM-BALY 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-13	IBM-HR J 115 kV	Base Case	P0	Normal	1.04	1.03	1.04	1.04	1.04	1.04	1.04	1.06			Under review with PTO
GBA-V-14	IBM-HRRS 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.05	1.06			Under review with PTO
GBA-V-15	LMEC 115 kV	Base Case	P0	Normal	1.05	1.05	1.05	1.05	1.05	1.06	1.04	1.03			Under review with PTO
GBA-V-16	LOS ALTS 60 kV	Base Case	P0	Normal	1.01	1.02	1.02	1.02	1.02	1.03	1.03	1.06			Under review with PTO
GBA-V-17	LOYOLA 60 kV	Base Case	P0	Normal	1.02	1.03	1.03	1.03	1.03	1.03	1.04	1.06			Under review with PTO
GBA-V-18	MARTIN 60 kV	Base Case	P0	Normal	1.05	1.05	1.05	1.12	1.05	1.05	0.97	0.97			Under review with PTO
GBA-V-19	MNTA VSA 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-20	MTCALF D 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06			Under review with PTO
GBA-V-21	MTCALF E 115 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.06			Under review with PTO
GBA-V-22	PACIFICA 60 kV	Base Case	P0	Normal	1.03	1.03	1.03	1.06	1.02	1.02	0.99	1.00			Under review with PTO
GBA-V-23	PACIFJCT 60 kV	Base Case	P0	Normal	1.03	1.03	1.03	1.06	1.02	1.03	0.99	1.00			Under review with PTO
GBA-V-24	PCBRICK 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.06			Under review with PTO
GBA-V-25	PERMNNTE 60 kV	Base Case	P0	Normal	1.03	1.04	1.04	1.04	1.04	1.05	1.05	1.06			Under review with PTO
GBA-V-26	PRT CSTA 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.06			Under review with PTO
GBA-V-27	SEQUOIA 60 kV	Base Case	P0	Normal	1.03	1.03	1.04	1.03	1.03	1.03	1.04	1.06			Under review with PTO
GBA-V-28	SN BRNOT 60 kV	Base Case	P0	Normal	1.03	1.03	1.03	1.06	1.02	1.03	0.99	1.00			Under review with PTO
GBA-V-29	SNANDRES 60 kV	Base Case	P0	Normal	1.03	1.03	1.03	1.06	1.02	1.03	1.00	1.01			Under review with PTO
GBA-V-30	SNTH LNE 60 kV	Base Case	P0	Normal	1.03	1.03	1.03	1.06	1.02	1.03	0.99	1.00			Under review with PTO
GBA-V-31	UNIN CHM 60 kV	Base Case	P0	Normal	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.06			Under review with PTO
GBA-V-32	MARTIN 60 kV	SN BRNOT-SNTH LNE 60kV [0] No Fault	P2-1	Line section w/o fault	1.05	1.06	1.05	1.14	1.05	1.05	0.97	1.11			Transfer trip to open other end
GBA-V-33	MLLBRETP 60 kV	MILLBRAE-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.03	1.11	1.02	1.02	0.94	0.96			Transfer trip to open other end
GBA-V-34	PACIFICA 60 kV	SN BRNOT-SNTH LNE 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.04	1.12	1.02	1.02	0.99	1.07			Transfer trip to open other end
GBA-V-35	PACIFJCT 60 kV	SN BRNOT-SNTH LNE 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.04	1.12	1.02	1.03	0.99	1.07			Transfer trip to open other end

Study Area: PG&E Greater Bay Area_Baseline

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-V-36	SN BRNOT 60 kV	SN BRNOT-SNTH LNE 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.04	1.12	1.02	1.02	0.99	1.07			Transfer trip to open other end
GBA-V-37	SNANDRES 60 kV	MILLBRAE-MLLBRETP 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.03	1.11	1.02	1.02	0.94	0.96			Transfer trip to open other end
GBA-V-38	SNTH LNE 60 kV	SN BRNOT-SNTH LNE 60kV [0] No Fault	P2-1	Line section w/o fault	1.04	1.04	1.04	1.12	1.02	1.03	0.99	1.07			Transfer trip to open other end
GBA-V-39	APP MAT 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.85	0.88	0.87	0.88	0.89	0.90	0.92	1.00			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-40	BRITTN 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.84	0.88	0.87	0.88	0.88	0.89	0.91	1.00			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-41	LAWRENCE 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.86	0.90	0.89	0.90	0.90	0.91	0.93	1.01			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-42	LOS ALTS 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.76	0.82	0.80	0.82	0.82	0.84	0.87	1.02			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-43	LOS GATS 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.74	0.80	0.80	0.80	0.80	0.84	0.85	1.01			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-44	LOYOLA 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.77	0.83	0.81	0.83	0.83	0.85	0.87	1.02			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-45	MT VIEW 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.78	0.83	0.81	0.83	0.83	0.85	0.87	0.99			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-46	PERMNTE 60 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.79	0.84	0.83	0.84	0.84	0.86	0.89	1.02			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-47	PHILLIPS 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.85	0.89	0.88	0.89	0.89	0.91	0.92	1.00			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-48	STELLING 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.78	0.83	0.82	0.83	0.83	0.85	0.87	0.99			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-49	WHISMAN 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.78	0.83	0.81	0.83	0.83	0.85	0.87	0.99			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-50	WOLFE 115 kV	MONTAVIS 230kV - Section 1D & 2D	P2	Bus-tie breaker	0.78	0.83	0.82	0.83	0.83	0.85	0.87	0.99			Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-51	CRYSTLSG 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.84	0.85	0.83	0.84	0.83	0.82	0.87	0.93			Redundant bus relay
GBA-V-52	EMRLD LE 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.85	0.86	0.84	0.84	0.83	0.83	0.87	0.93			Redundant bus relay
GBA-V-53	LAS PLGS 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.84	0.85	0.82	0.83	0.82	0.81	0.86	0.93			Redundant bus relay
GBA-V-54	LOS ALTS 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.25	0.27	0.25	0.26	0.26	0.26	0.84	1.03			Redundant bus relay
GBA-V-55	LOS GATS 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.22	0.24	0.24	0.23	0.23	0.25	0.83	1.03			Redundant bus relay

Study Area: PG&E Greater Bay Area_Baseline

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-V-56	LOYOLA 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.27	0.29	0.28	0.28	0.28	0.28	0.85	1.04			Redundant bus relay
GBA-V-57	MT VIEW 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.15	0.17	0.16	0.16	0.17	0.17	0.80	1.02			Redundant bus relay
GBA-V-58	PERMNTE 60 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.32	0.34	0.34	0.33	0.34	0.34	0.86	1.04			Redundant bus relay
GBA-V-59	RALSTON 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.84	0.86	0.83	0.84	0.83	0.82	0.87	0.93			Redundant bus relay
GBA-V-60	STANFORD 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.82	0.84	0.81	0.82	0.81	0.80	0.85	0.91			Redundant bus relay
GBA-V-61	STELLING 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.16	0.17	0.17	0.17	0.17	0.18	0.81	1.02			Redundant bus relay
GBA-V-62	WATRSLED 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.88	0.89	0.87	0.88	0.87	0.86	0.90	0.95			Redundant bus relay
GBA-V-63	WHISMAN 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.15	0.17	0.16	0.16	0.17	0.17	0.80	1.02			Redundant bus relay
GBA-V-64	WOLFE 115 kV	Monta Vista 115kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.16	0.17	0.16	0.17	0.17	0.18	0.80	1.02			Redundant bus relay
GBA-V-65	WOODSIDE 60 kV	Jefferson 230 kV BAAH Bus #1 (failure of non-redundent relay)	P5-5	Non-redndant relay (bus)	0.84	0.85	0.83	0.83	0.82	0.81	0.86	0.93			Redundant bus relay
GBA-V-66	CRYSTLSG 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.84	0.86	0.83	0.84	0.84	0.82	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-67	EMRLD LE 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.85	0.86	0.84	0.85	0.84	0.83	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-68	LAS PLGS 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.84	0.85	0.82	0.83	0.83	0.82	0.86	>0.9			Review Stanford 60 kV system configuration
GBA-V-69	MILLBRAE 60 kV	MARTIN-MILLBRAE #1 115kV [2230] & MILLBRAE-SANMATEO #1 115kV [0]	P6	N-1/N-1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-70	MILLBRAE 115 kV	MARTIN-MILLBRAE #1 115kV [2230] & MILLBRAE-SANMATEO #1 115kV [0]	P6	N-1/N-1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-71	RALSTON 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.84	0.86	0.83	0.84	0.84	0.82	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-72	SANPAULA 115 kV	MILLBRAE-SANMATEO #1 115kV [0] & MARTIN-MILLBRAE #1 115kV [2230]	P6	N-1/N-1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	0.87	>0.9			Review Stanford 60 kV system configuration
GBA-V-73	SNANDRES 60 kV	MARTIN-MILLBRAE #1 115kV [2230] & MILLBRAE-SANMATEO #1 115kV [0]	P6	N-1/N-1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	0.88	>0.9			Review Stanford 60 kV system configuration
GBA-V-74	STANFORD 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.82	0.84	0.81	0.82	0.82	0.81	0.85	>0.9			Review Stanford 60 kV system configuration
GBA-V-75	WATRSLED 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.88	0.89	0.87	0.88	0.87	0.86	0.00	>0.9			Review Stanford 60 kV system configuration
GBA-V-76	WOODSIDE 60 kV	JEFFERSN 230/60kV TB 1 & JEFFERSN 230/60kV TB 2	P6	N-1/N-1	0.84	0.85	0.83	0.84	0.83	0.82	0.87	>0.9			Review Stanford 60 kV system configuration

Study Area: PG&E Greater Bay Area_Baseline

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %										Potential Mitigation Solutions
					2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Winter Peak	2021 Winter Peak	2026 Winter Peak	2018 Spring Off-Peak	2021 Summer Light Load			
GBA-V-77	CAROLNDS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.92	0.92	0.91	0.91	0.91	0.90	0.94	0.98			Review Stanford 60 kV system configuration
GBA-V-78	CRYSTLSG 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.84	0.85	0.83	0.83	0.83	0.82	0.86	0.93			Review Stanford 60 kV system configuration
GBA-V-79	EMRLD LE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.84	0.85	0.84	0.83	0.83	0.83	0.87	0.93			Review Stanford 60 kV system configuration
GBA-V-80	LAS PLGS 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.83	0.84	0.82	0.82	0.82	0.81	0.86	0.93			Review Stanford 60 kV system configuration
GBA-V-81	RALSTON 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.84	0.85	0.83	0.83	0.83	0.82	0.86	0.93			Review Stanford 60 kV system configuration
GBA-V-82	STANFORD 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.82	0.83	0.81	0.81	0.81	0.80	0.85	0.91			Review Stanford 60 kV system configuration
GBA-V-83	WATRSHED 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.88	0.88	0.87	0.86	0.87	0.86	0.90	0.95			Review Stanford 60 kV system configuration
GBA-V-84	WOODSIDE 60 kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.83	0.84	0.82	0.82	0.82	0.81	0.86	0.93			Review Stanford 60 kV system configuration

Study Area: PG&E Greater Bay Area_Baseline

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	Select..	Select..	Select..	Select..	Select..	
GBA-SP-TS-1	Delta Energy Center 3Ø fault with normal clearing.	P1-1		6	6	7	6	6						Under review with PTO .
GBA-SP-TS-2	Lone Tree-Cayetano 230 kV line 3Ø fault with normal clearing.	P1-2		0	0	0	0	0						No violation
GBA-SP-TS-3	Tesla 230/115 kV bank 3Ø fault with normal clearing.	P1-3		0	0	0	0	0						No violation
GBA-SP-TS-4	Metcalf 230 kV 3Ø fault with normal clearing.	P1-4		0	0	0	0	0						No violation
GBA-SP-TS-5	Metcalf 230 kV SLG fault with normal clearing.	P2-2a		0	0	0	0	0						No violation
GBA-SP-TS-6	Pittsburg 230 kV SLG fault with normal clearing.	P2-2b		1	2	2	2	2						Under review with PTO .
GBA-SP-TS-7	Newark 230 kV SLG fault with normal clearing.	P2-2c		2	2	2	4	4						Under review with PTO .
GBA-SP-TS-8	Llagas 115 kV breaker SLG fault with normal clearing.	P2-3		9	9	9	11	11						Under review with PTO .
GBA-SP-TS-9	Monta Vista 230 kV breaker SLG fault with normal clearing.	P2-4		31	58	63	43	0						Under review with PTO .
GBA-SP-TS-10	LMEC 3Ø fault with normal clearing with DEC offline in the base case.	P3-1		0	0	0	0	0						No violation
GBA-SP-TS-11	Newark-Dixon Landing 115 kV 3Ø fault with normal clearing with DEC offline in the base case.	P3-2		0	0	0	0	0						No violation
GBA-SP-TS-12	Pittsburg 230/115 kV Bank 3Ø fault with normal clearing with DEC offline in the base case.	P3-3		0	0	1	2	1						Under review with PTO .
GBA-SP-TS-13	Newark SVD 3Ø fault with normal clearing with DEC offline in the base case.	P3-4		0	0	0	0	0						No violation
GBA-SP-TS-14	DEC SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-1		164	173	218	36	289						Under review with PTO .
GBA-SP-TS-15	Lone Tree-Cayetano 230 kV line SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-2		3	3	3	3	3						Under review with PTO .

Study Area: PG&E Greater Bay Area_Baseline

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	Select..	Select..	Select..	Select..	Select..	
GBA-SP-TS-16	Tesla 230/115 kV bank SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-3		5	7	7	5	5						Under review with PTO .
GBA-SP-TS-17	Metcalf SVD SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-4		0	0	0	0	0						No violation
GBA-SP-TS-18	Lagas 115 kV SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-5		9	9	9	11	11						Under review with PTO .
GBA-SP-TS-19	Monta Vista 230 kV breaker SLG fault expanded to elements lost due to stuck breaker and clear fault from remote breakers with normal clearing time.	P4-6		31	58	63	43	0						Under review with PTO .
GBA-SP-TS-20	DEC SLG fault with delayed clearing.	P5-1		4	4	4	4	4						Under review with PTO .
GBA-SP-TS-21	Pittsburg-Tesla #1 230kV Line SLG fault with delayed clearing.	P5-2		4	2	2	4	4						Under review with PTO .
GBA-SP-TS-22	Pittsburg 230/115 kV transformer SLG fault with delayed clearing.	P5-3		107	107	184	101	149						Under review with PTO .
GBA-SP-TS-23	Metcalf SVD SLG fault with delayed clearing.	P5-4		0	7	0	0	0						Under review with PTO .
GBA-SP-TS-24	Los Esteros #1 230 kV SLG fault with delayed clearing.	P5-5		4	4	4	0	0						Under review with PTO .
GBA-SP-TS-25	Los Esteros #2 230 kV SLG fault with delayed clearing.	P5-5a		0	0	0	0	0						No violation
GBA-SP-TS-26	Martin #1 230 kV SLG fault with delayed clearing.	P5-5b		0	0	4	3	0						Under review with PTO .
GBA-SP-TS-27	Martin #2 230 kV SLG fault with delayed clearing.	P5-5c		6	29	12	10	6						Under review with PTO .
GBA-SP-TS-28	Pittsburg-San Ramon 230kV Line 3Ø fault with normal clearing with the San Ramon-Moraga 230kV Line out in base case.	P6-1-1		12	12	12	11	4						Under review with PTO .

Study Area: PG&E Greater Bay Area_Baseline

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
				2018 Summer Peak	2021 Summer Peak	2026 Summer Peak	2018 Spring Off-Peak	2021 Summer Light Load	Select..	Select..	Select..	Select..	Select..	
GBA-SP-TS-29	Cooley Landing 115/60kV Transformer #1 3Ø fault with Ravenswood-Cooley Landing #2 115kV Line out in base case.	P6-1-2		0	0	0	0	0						No violation
GBA-SP-TS-30	Newark SVD 3Ø fault with normal clearing with the Newark-Dixon Landing 115kV Line out in base case.	P6-1-3		0	0	0	0	0						No violation
GBA-SP-TS-31	Ravenswood-Cooley Landing #2 115kV Line 3Ø fault with normal clearing with the Cooley Landing 115/60kV Transformer #1 out in base case.	P6-2-1		0	0	0	0	0						No violation
GBA-SP-TS-32	Jefferson 230/60kV Transformer #2 3Ø fault with normal clearing with the Jefferson 230/60kV Transformer #1 out in base case.	P6-2-2		0	0	0	0	0						No violation
GBA-SP-TS-33	Newark SVD 3Ø fault with normal clearing with the Tesla 230/115 kV bank out in base case.	P6-2-3		0	0	0	0	0						No violation
GBA-SP-TS-34	Newark-Dixon Landing 115kV Line 3Ø fault with normal clearing with the Newark SVD out in base case.	P6-3-1		0	0	0	0	0						No violation
GBA-SP-TS-35	Tesla 230/115 kV bank 3Ø fault with normal clearing with the Newark SVD out in base case.	P6-3-2		0	0	0	0	0						No violation
GBA-SP-TS-36	Metcalf SVD 3Ø fault with normal clearing with the Newark SVD out in base case.	P6-3-3		0	0	0	0	0						No violation
GBA-SP-TS-37	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines SLG fault with normal clearing.	P7-1		13	11	10	13	13						Under review with PTO .

Study Area: **PG&E Greater Bay Area_Baseline**



Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)										Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

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

Study Area: **PG&E Greater Bay Area_Baseline**



Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)										Potential Mitigation Solutions
		Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
GBA-SP-SS-1	Kirker	106	102	111								Under review with PTO