



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-T-1	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #2 (AY-2) 115kV Cable	P1	N-1	96.09	99.16	101.58	75.98	61.78	105.24	104.32	105.52	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-2	Newark-Dixon Landing 115kV Line	Piercy-Metcalf 115 kV	P1	N-1	112.83	72.00	60.00	59.75	30.00	41.53	31.00	22.00	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-3	Piercy-Metcalf 115 kV Line	Newark-Dixon Landing 115kV Line	P1	N-1	104.41	64.53	66.27	54.07	20.82	55.98	38.09	37.54	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-4	Moraga-Oakland J 115kV Line	SN LNDRO-DMTARSL #1 115 kV	P2-1	Line section w/o fault	125.17	58.33	55.88	82.40	27.20	126.42	49.77	50.55	Short Term: Moraga-Oakland J SPS Long Term: Reconductor Moraga-Oakland J 115 kV Line
GBA-T-5	Oleum-Christie 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	101.14	56.99	58.18	80.79	51.27	66.21	36.73	36.37	Short Term : Action Plan ; Long Term : North Tower 115 kV Looping Project
GBA-T-6	Sobrante-El Cerrito STA G #2 115kV Line	BUS 1 FAULT AT 33010 SOBRANTE 115.00	P2	Bus	103.59	94.70	93.60	64.83	50.32	71.21	62.84	62.55	Short Term : Action Plan; Long Term : North Tower 115 kV Looping Project
GBA-T-7	Oakland D - Oakland L 115kV Cable	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	59.42	92.81	128.82	88.04	66.64	136.52	133.46	68.29	Existing Oakland D-L SPS
GBA-T-8	Oakland C - Oakland X #2 115kV Cable	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	27.94	89.63	111.58	75.92	61.54	118.51	116.16	35.70	Existing Oakland C-X SPS
GBA-T-9	Martinez-Oleum 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	256.30	218.08	219.47	174.53	142.53	171.27	143.11	140.14	SPS or system upgrade
GBA-T-10	Oleum-Martinez 115kV Line	BUS-TIE BREAKER FAULT AT 33010 SOBRANTE 115.00	P2	Bus-tie breaker	237.63	202.19	203.48	161.81	132.13	190.24	158.97	155.67	SPS or system upgrade
GBA-T-11	Moraga-Claremont #1 115kV Line	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	67.43	107.62	129.40	68.62	58.05	89.19	96.88	59.23	Increase generation in the Oakland Area
GBA-T-12	Moraga-Claremont #2 115kV Line	BUS-TIE BREAKER FAULT AT 32790 STATIN X 115.00	P2	Bus-tie breaker	67.53	107.78	129.59	68.72	58.13	89.32	97.02	59.32	Increase generation in the Oakland Area
GBA-T-13	Moraga-Oakland J 115kV Line	BUS D FAULT AT 35101 SN LNDRO 115.00	P2	Bus	124.96	61.82	59.04	82.37	29.00	126.24	51.84	52.44	Short Term: Moraga-Oakland J SPS Long Term: Reconductor Moraga-Oakland J 115 kV Line
GBA-T-14	Sobrante-Moraga 115kV Line	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	101.27	85.14	88.25	83.39	50.32	114.63	69.42	48.34	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-15	Moraga-Station X 115 kV #1 Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	39.42	91.49	109.91	75.15	60.14	117.98	115.20	45.70	Increase generation in the Oakland Area
GBA-T-16	Moraga-Oakland X #2 115kV Line	BUS-TIE BREAKER 162 FAULT AT 32780 CLARMNT 115.00	P2	Bus-tie breaker	39.42	91.49	109.91	75.15	60.14	117.98	115.20	45.70	Increase generation in the Oakland Area

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GBA-T-17	Moraga-Station X 115 kV #3 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	39.42	133.96	157.68	75.15	60.14	117.98	145.57	55.02	Increase generation in the Oakland Area
GBA-T-18	Moraga-Station X 115 kV #4 Line	BUS-TIE BREAKER FAULT AT 33020 MORAGA 115.00	P2	Bus-tie breaker	39.42	133.96	157.68	75.15	60.14	117.98	145.57	55.02	Increase generation in the Oakland Area
GBA-T-19	Moraga-San Leandro #1 115kV Line	BUS 2E FAULT AT 33020 MORAGA 115.00	P2	Bus	120.59	72.23	69.73	74.18	36.24	103.68	54.62	54.04	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-20	Moraga-San Leandro #2 115kV Line	BUS 1E FAULT AT 33020 MORAGA 115.00	P2	Bus	142.63	89.19	85.89	86.78	46.22	118.81	66.32	66.68	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-21	Piercy-Metcalf 115 kV Line	BUS-TIE BREAKER 730 AT 35120 NEWARK D 115.00	P2	Bus-tie breaker	104.72	76.12	78.13	54.16	21.85	66.70	39.95	38.39	Action Plan before Evergreen-Mabury Voltage Conversion
GBA-T-22	Pittsburg 230/115kV Transformer #13	BUS 2D FAULT AT 30526 PITSBG D 230.00	P2	Bus	112.69	67.43	68.04	68.80	72.45	50.66	53.60	50.78	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-23	Martinez-Sobrante 115kV Line	BUS-TIE BREAKER FAULT AT 30526 PITSBG D 230.00	P2	Bus-tie breaker	127.42	31.15	33.24	74.47	70.91	29.44	38.02	39.22	Reduce generation in Pittsburg 115 kV
GBA-T-24	Moraga-San Leandro #3 115kV Line	BUS 2E FAULT AT 33020 MORAGA 115.00	P2	Bus	103.72	62.11	59.96	63.81	31.05	89.93	47.36	46.86	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-25	Loyola-Monta Vista 60 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	112.49	79.46	75.40	49.43	17.56	58.81	32.50	30.17	Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-26	Potrero-Larkin #2 (AY-2) 115kV Cable	BUS-TIE BREAKER 102 FAULT AT 33204 POTRERO 115.00	P2	Bus-tie breaker	116.12	118.23	120.05	94.33	74.87	124.02	123.08	124.59	Short Term: Action Plan Long Term: Potrero 115 kV BAAH Conversion
GBA-T-27	Potrero-Mission (AX) 115kV Cable	NON-BUS-TIE BREAKER CBXX5 FAILURE AT POTRERO 115 kV	P2	Bus-tie breaker	99.19	100.56	102.02	79.47	64.59	106.37	105.56	106.53	Short Term: Action Plan Long Term: Potrero 115 kV BAAH Conversion
GBA-T-28	San Mateo-Belmont 115kV Line	BUS FAULT AT 33321 RVNSWD D 115.00	P2	Bus	105.91	99.17	98.46	66.02	66.97	84.25	82.65	79.82	Short Term: Action Plan Long Term: South of San Mateo Capacity Increase Project
GBA-T-29	Ravenswood-San Mateo #1 115kV Line	BUS-TIE BREAKER 112 FAULT AT 30700 SANMATEO 230.00	P2	Bus-tie breaker	89.43	48.29	47.06	61.74	14.91	100.01	51.59	48.65	Short Term: Action Plan Long Term: South of San Mateo Capacity Increase Project
GBA-T-30	Cooley Landing-Palo Alto 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	112.30	112.89	114.62	47.34	26.66	69.68	70.04	70.74	Palo Alto interim SPS
GBA-T-31	Ravenswood-Cooley Landing #1 115kV Line	BUS FAULT AT 33315 RVNSWD E 115.00	P2	Bus	162.96	124.90	125.77	79.66	37.37	117.40	96.68	94.06	Palo Alto interim SPS
GBA-T-32	San Mateo-Bair 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	134.27	130.99	57.61	80.27	62.65	104.56	100.07	41.27	Breaker is normally open. Invalid contingency
GBA-T-33	Bair 115/60kV Transformer #1	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	157.72	157.45	157.07	103.08	62.52	143.77	138.16	129.27	Breaker is normally open. Invalid contingency



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GBA-T-34	Bair-Cooley Landing #1 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	130.04	129.38	126.54	79.32	44.75	105.23	100.64	92.07	Breaker is normally open. Invalid contingency
GBA-T-35	Bair-Cooley Landing #2 60kV Line	BUS-TIE BREAKER FAULT AT 33316 CLY LND2 115.00	P2	Bus-tie breaker	126.65	125.78	122.58	78.14	50.69	83.85	80.42	73.27	Breaker is normally open. Invalid contingency
GBA-T-36	Eastshore 230/115kV Transformer #2	NON-BUS-TIE BREAKER CB2222 FAILURE AT EAST SHORE 230 kV	P2	Bus-tie breaker	103.33	104.22	103.80	20.34	88.77	43.93	93.89	95.48	Action Plan - reduce RCEC generation
GBA-T-37	Newark-Lawrence 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	323.12	324.89	320.60	148.46	113.31	137.56	137.46	133.26	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-38	Newark-Applied Materials 115kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	255.06	215.60	210.73	116.65	74.92	119.42	112.54	107.73	Short Term : Action Plan; Long Term : Monta Vista 230 kV Bus Upgrade Project
GBA-T-39	Newark-Dixon Landing 115kV Line	BUS FAULT AT 35643 MTCALF E 115.00	P2	Bus	113.51	107.63	107.67	60.07	40.32	66.68	65.99	64.42	SPS or rerate
GBA-T-40	Lawrence - Monta Vista 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	224.99	220.44	212.89	100.23	64.58	93.93	90.98	85.80	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-41	Britton-Monta Vista 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	140.68	139.08	135.35	62.72	39.71	70.59	69.26	66.08	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-42	Applied Materials-Britton 115 kV Line	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	193.87	191.95	187.01	91.07	59.62	101.94	99.99	95.34	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-T-43	Metcalf 230/115 kV Trans No. 1	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	98.52	108.75	93.65	65.97	43.72	97.66	72.55	60.83	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-44	Metcalf-Llagas 115 kV Line	BUS FAULT AT 35648 LLAGAS F 115.00	P2	Bus	90.72	85.72	126.42	18.26	10.63	5.38	6.64	5.78	Reduce Gilroy generation
GBA-T-45	Metcalf 230/115 kV Trans No. 3	BUS-TIE BREAKER 322 FAULT AT 30735 METCALF 230.00	P2	Bus-tie breaker	97.92	108.13	93.78	65.13	43.15	96.78	71.68	60.46	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-46	Potrero-Mission (AX) 115kV Cable	DEC CTG1 18.00 Generator ID 1 & Potrero-Larkin #2 (AY-2) 115kV Cable	P3	G-1/N-1	<90	102.33	104.31	<90	<90	107.43	107.63	108.56	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-47	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-EI Cerrito STA G #1 115kV Line & Sobrante-EI Cerrito STA G #2 115kV Line	P6	N-1/N-1	128.31	117.17	116.29	<90	<90	94.10	<90	<90	Action plan or explore potential mitigation
GBA-T-48	San Leandro - Oakland J #1 115kV Line	Moraga-Oakland J 115kV Line & Oakland C - Alameda 115kV Cable	P6	N-1/N-1	104.18	<90	<90	<90	<90	100.84	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project



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GBA-T-49	Pittsburg 230/115kV Transformer #13	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #12	P6	N-1/N-1	137.87	139.52	<90	<90	<90	99.67	99.51	<90	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-50	Martinez-Oleum 115kV Line	Sobrante-EI Cerrito STA G #2 115kV Line & Sobrante-EI Cerrito STA G #1 115kV Line	P6	N-1/N-1	108.09	<90	92.35	<90	<90	<90	<90	<90	Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-51	Moraga-Claremont #1 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	<90	99.36	107.06	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-52	Moraga-Claremont #1 115kV Line	Moraga-Claremont #2 115kV Line & Oakland C - Oakland L #1 115kV Cable	P6	N-1/N-1	<90	102.82	107.84	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-53	Moraga-Claremont #2 115kV Line	Oakland C - Oakland X #2 115kV Cable & Oakland C - Oakland X #3 115kV Cable	P6	N-1/N-1	<90	99.50	107.21	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-54	Moraga-Claremont #2 115kV Line	Moraga-Claremont #1 115kV Line & Oakland C - Oakland L #1 115kV Cable	P6	N-1/N-1	<90	103.00	107.90	<90	<90	<90	<90	<90	Increase generation in the Oakland Area
GBA-T-55	Moraga-San Leandro #1 115kV Line	Moraga-San Leandro #3 115kV Line & Moraga-San Leandro #2 115kV Line	P6	N-1/N-1	142.05	93.03	<90	<90	<90	118.55	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-56	Moraga-San Leandro #2 115kV Line	Moraga-San Leandro #3 115kV Line & Moraga-San Leandro #1 115kV Line	P6	N-1/N-1	142.49	93.47	90.32	<90	<90	118.93	<90	<90	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-57	Potrero-Mission (AX) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Potrero-Larkin #2 (AY-2) 115kV Cable	P6	N-1/N-1	118.86	122.59	125.15	93.40	<90	130.28	129.37	130.64	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-58	Martin-Larkin (HY-1) 115kV Cable	Potrero-Larkin #1 (AY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	149.34	149.97	150.49	94.67	<90	177.18	177.40	177.83	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-59	San Mateo-Belmont 115kV Line	Ravenswood 230/115kV Transformer #1 & Ravenswood 230/115kV Transformer #2	P6	N-1/N-1	118.48	109.29	108.73	<90	<90	<90	<90	<90	Action plan or explore potential mitigation
GBA-T-60	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto #2 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	138.09	98.00	98.35	<90	<90	92.64	<90	<90	Palo Alto interim SPS
GBA-T-61	Millbrae-Sneath Lane 60kV Line	Martin-Sneath Lane 60kV Line & Hillsdale JCT - Half Moon Bay 60kV Line	P6	N-1/N-1	104.80	109.52	114.42	<90	<90	124.56	128.99	133.67	Action plan or explore potential mitigation
GBA-T-62	San Mateo-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	202.79	201.54	197.40	122.52	101.75	203.83	196.42	183.56	Review Stanford 60 kV system configuration
GBA-T-63	San Mateo-Bair 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	134.34	130.15	<90	<90	<90	104.61	100.12	<90	San Mateo-Bair 60 kV Line Reconductor Project
GBA-T-64	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	231.74	230.56	226.30	139.74	97.77	198.41	191.55	179.62	Review Stanford 60 kV system configuration
GBA-T-65	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	222.01	221.19	217.41	133.76	93.42	227.11	219.63	206.48	Review Stanford 60 kV system configuration



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GBA-T-66	Jefferson-Hillsdale JCT 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	172.67	171.11	167.53	110.81	<90	167.38	160.14	149.24	Review Stanford 60 kV system configuration
GBA-T-67	Bair-Cooley Landing #1 60kV Line	Ravenswood-Cooley Landing #2 115kV Line & Cooley Landing 115/60kV Transformer #1	P6	N-1/N-1	130.11	129.45	126.59	<90	<90	105.28	100.69	92.12	Review Stanford 60 kV system configuration
GBA-T-68	Grant-Eastshore #1 115kV Line	Grant-Eastshore #2 115kV Line & San Leandro Oakland J #1 115kV Line	P6	N-1/N-1	103.01	<90	<90	<90	<90	<90	<90	<90	Short Term : Action Plan Long Term :East shore-Oakland J project
GBA-T-69	Grant-Eastshore #2 115kV Line	Grant-Eastshore #1 115kV Line & San Leandro Oakland J #1 115kV Line	P6	N-1/N-1	103.01	<90	<90	<90	<90	<90	<90	<90	Short Term : Action Plan Long Term :East shore-Oakland J project
GBA-T-70	Newark-Dixon Landing 115kV Line	Piercy-Metcalf 115 kV & Evergreen-Mabury 115 kV	P6	N-1/N-1	NA	122.06	123.66	<90	<90	<90	<90	<90	Action plan or rerate
GBA-T-71	Newark-Milpitas #1 115kV Line	Newark-Milpitas #2 115kV Line & Swift-Metcalf 115 kV	P6	N-1/N-1	131.63	133.30	134.63	<90	<90	<90	<90	<90	Action plan or explore potential mitigation
GBA-T-72	Metcalf-Llagas 115 kV Line	Metcalf-Morgan Hill 115 kV & Llagas-Gilroy Foods 115 kV	P6	N-1/N-1	115.75	131.14	98.77	<90	<90	<90	<90	<90	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-73	Oakland D - Oakland L 115kV Cable	Oakland C - Oakland X #3 115kV Cable & Oakland C - Oakland X #2 115kV Cable	P6	N-1/N-1	<90	82.06	95.90	<90	<90	136.87	120.77	<90	Increase generation in the Oakland Area
GBA-T-74	Pittsburg 230/115kV Transformer #12	LMEC GSU CC1 & Pittsburg 230/115kV Transformer #13	P6	N-1/N-1	118.89	120.31	0.00	<90	<90	<90	<90	<90	Short Term: Action plan Long Term: Pittsburg 230/115 kV Transformer Addition project
GBA-T-75	Moraga-Station X 115 kV #1 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-76	Moraga-Oakland X #2 115kV Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-77	Moraga-Station X 115 kV #3 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-78	Moraga-Station X 115 kV #4 Line	Claremont K - Oakland D #1 115kV Cable & Claremont K - Oakland D #2 115kV Cable	P6	N-1/N-1	<90	91.77	98.86	<90	<90	118.34	109.04	<90	Increase generation in the Oakland Area
GBA-T-79	Contra Costa-Balfour 60kV Line	Willow Pass-Contra Costa 60kV Line & CC Sub 230/115kV Transformer #3	P6	N-1/N-1	<90	<90	<90	100.45	<90	<90	<90	<90	Reduce Contra Costa generation
GBA-T-80	Potrero-Larkin #1 (AY-1) 115kV Cable	Martin-Larkin (HY-1) 115kV Cable & Mission-Larkin (XY-1) 115kV Cable	P6	N-1/N-1	151.63	151.91	152.23	96.55	<90	163.28	163.50	163.83	Short Term: Action Plan Long Term: Modifying TBC DC Runback Scheme
GBA-T-81	Ravenswood-Palo Alto #1 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	113.49	106.39	106.89	<90	<90	<90	<90	<90	Palo Alto interim SPS



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-T-82	Ravenswood-Palo Alto #2 115kV Line	Ravenswood-Cooley Landing #1 115kV Line & Ravenswood-Palo Alto #1 115kV Line	P6	N-1/N-1	113.37	106.26	106.75	<90	<90	<90	<90	<90	Palo Alto interim SPS
GBA-T-83	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto #1 115kV Line & Ravenswood-Palo Alto #2 115kV Line	P6	N-1/N-1	110.26	110.93	112.49	<90	<90	<90	<90	<90	Palo Alto interim SPS
GBA-T-84	San Mateo 115/60kV Transformer #8	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	109.95	106.46	104.20	0.00	<90	109.95	106.06	100.33	Stanford switching issue
GBA-T-85	Bair 115/60kV Transformer #1	Cooley Landing 115/60kV Transformer #1 & Ravenswood-Cooley Landing #2 115kV Line	P6	N-1/N-1	157.80	157.99	157.12	103.16	<90	143.81	138.21	129.30	Stanford switching issue
GBA-T-86	Bair-Cooley Landing #2 60kV Line	Cooley Landing 115/60kV Transformer #1 & Ravenswood-Cooley Landing #2 115kV Line	P6	N-1/N-1	126.70	125.84	122.61	<90	<90	<90	<90	<90	Stanford switching issue
GBA-T-87	Jefferson-Stanford #1 60kV Line	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	104.72	105.18	104.77	<90	<90	113.01	110.83	107.77	Stanford switching issue
GBA-T-88	Newark-Milpitas #2 115kV Line	Swift-Metcalf 115 kV & Newark-Milpitas #1 115kV Line	P6	N-1/N-1	109.62	111.00	112.10	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-89	Dixon Landing-McKee 115 kV Line	Newark-Dixon Landing 115kV Line & Piercy-Metcalf 115 kV	P6	N-1/N-1	<90	118.61	121.27	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-90	Mabury-Jennings J. 115 kV Line	Piercy-Metcalf 115 kV & Newark-Dixon Landing 115kV Line	P6	N-1/N-1	<90	138.79	141.86	<90	<90	<90	<90	<90	Review Stanford 60 kV system configuration
GBA-T-91	Metcalf-Morgan Hill 115 kV Line	Llagas-Gilroy Foods 115 kV & Metcalf-Llagas 115 kV	P6	N-1/N-1	99.86	111.03	<90	<90	<90	<90	<90	<90	Short Term: Action Plan Long Term: Morgan Hill Area Reinforcement Project
GBA-T-92	Oleum-Christie 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	96.40	103.32	100.40	79.53	39.92	65.30	64.55	64.22	SPS or system upgrade
GBA-T-93	Christie-Sobrante (Oleum-Sobrante) 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	132.15	118.20	116.72	82.84	64.10	94.10	80.28	79.33	SPS or system upgrade
GBA-T-94	Martinez-Oleum 115kV Line	Sobrante-G Nos. 1 & 2 115 kV lines	P7	DCTL	104.78	87.80	91.68	87.61	73.39	83.97	71.87	70.79	Short Term: Action Plan; Long Term :North Tower 115 kV Looping Project
GBA-T-95	Moraga-San Leandro #1 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	126.40	74.64	72.04	77.59	37.42	108.65	56.40	55.85	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-96	Moraga-San Leandro #2 115kV Line	Moraga-Oakland J 115 kV and Moraga-San Leandro No. 3 115 kV lines	P7	DCTL	127.68	75.39	72.76	78.37	37.79	109.74	56.97	56.41	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-97	Moraga-San Leandro #3 115kV Line	Moraga-San Leandro Nos. 1 & 2 115 kV lines	P7	DCTL	114.12	75.87	73.37	69.53	38.26	96.09	56.86	56.08	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-T-98	Cooley Landing-Palo Alto 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	110.26	110.93	112.49	46.83	26.58	68.65	68.78	69.53	Palo Alto interim SPS



ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-T-99	Ravenswood-Cooley Landing #1 115kV Line	Ravenswood-Palo Alto Nos. 1 & 2 115 kV lines	P7	DCTL	138.09	98.00	98.35	64.98	38.70	92.64	75.66	73.85	Palo Alto interim SPS
GBA-T-100	San Mateo 115/60kV Transformer #8	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	109.73	105.69	103.90	66.44	55.82	109.74	106.32	100.47	Review Stanford 60 kV system configuration
GBA-T-101	San Mateo-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	208.44	206.07	202.39	122.70	103.21	209.58	201.34	187.30	Review Stanford 60 kV system configuration
GBA-T-102	San Mateo-Hillsdale JCT 60kV Line (Beresford-Hillsdale)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	238.44	235.94	232.22	139.98	99.26	204.16	196.48	183.35	Review Stanford 60 kV system configuration
GBA-T-103	San Mateo-Hillsdale JCT 60kV Line (Hillsdale-Hillsdale JCT)	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	228.67	226.55	223.31	134.03	94.92	233.87	225.44	210.87	Review Stanford 60 kV system configuration
GBA-T-104	Jefferson-Hillsdale JCT 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	178.27	175.70	172.41	111.69	83.53	173.08	165.04	153.08	Review Stanford 60 kV system configuration
GBA-T-105	Jefferson-Stanford #1 60kV Line	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	108.10	107.79	107.95	74.78	73.00	116.53	113.92	110.01	Review Stanford 60 kV system configuration
GBA-T-106	Newark-Lawrence 115kV Line	Newark-Applied Materials & Lawrence-Monta Vista 115 kV Lines	P7	DCTL	104.00	109.95	114.11	56.32	63.15	50.84	53.55	54.99	SPS or system upgrade
GBA-T-107	Newark-Dixon Landing 115kV Line	Swift - Metcalf & Piercy - Metcalf 115 kV Lines	P7	DCTL	113.23	63.83	64.73	59.96	28.04	37.07	44.98	45.19	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project
GBA-T-108	Trimble-San Jose 'B' 115 kV Line	Metcalf - El Patio No. 1 & 2 115 kV Lines	P7	DCTL	100.08	97.18	94.90	40.02	23.80	38.54	70.01	68.78	SPS or system upgrade
GBA-T-109	Piercy-Metcalf 115 kV Line	Newark - Dixon Landing & Newark - Milpitas #1 115 kV Lines	P7	DCTL	104.50	64.45	66.19	54.08	20.77	55.91	37.99	37.43	Short Term : Action Plan; Long Term : Evergreen-Mabury Voltage Conversion Project

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

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-VD-1	DIXON LD 115 kV	Newark-Dixon Landing 115kV Line	P1	N-1	6.22	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	Evergreen-Mabury Voltage Conversion
GBA-VD-2	EDES 115 kV	Oakland J - Grant 115kV Line	P1	N-1	<5.0	5.04	5.18	<5.0	<5.0	<5.0	<5.0	<5.0	Flip flop scheme. Not instanteneous
GBA-VD-3	HLF MNBY 60 kV	Hillsdale JCT - Half Moon Bay 60kV Line	P1	N-1	<5.0	<5.0	<5.0	<5.0	<5.0	6.18	7.12	7.37	Flip flop scheme. Not instanteneous
GBA-VD-4	ALHAMBRA 115 kV	MARTNZ D-ALHAMTP1 #1 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	5.09	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation
GBA-VD-5	DMTAR_SL 115 kV	SN LNDRO-DMTARSL #1 115 kV	P2-1	Line section w/o fault	<5.0	<5.0	<5.0	<5.0	<5.0	6.15	<5.0	<5.0	Mitigation under investigation
GBA-VD-6	EDES 115 kV	EDS GRNT-GRANT #1 115 kV	P2-1	Line section w/o fault	<5.0	5.44	5.55	<5.0	<5.0	<5.0	5.32	5.21	Mitigation under investigation
GBA-VD-7	LOCKHD 1 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	<5.0	5.24	5.61	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation
GBA-VD-8	MOFT.FLD 115 kV	NEWARK F-LCKHD J1 #1 115 kV	P2-1	Line section w/o fault	<5.0	5.23	5.60	<5.0	<5.0	<5.0	<5.0	<5.0	Mitigation under investigation
GBA-VD-9	DIXON LD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	6.51	5.25	4.83	1.62	0.82	1.83	1.59	1.60	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-10	LOCKHD 1 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	17.22	17.17	16.38	5.17	3.10	6.03	6.28	5.51	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-VD-11	MOFT.FLD 115 kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	17.18	17.13	16.35	5.17	3.09	6.02	6.27	5.51	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd



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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-1	A.M.D 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-2	Agnew 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-3	Agnew 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.02	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-4	ALMADEN 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-5	ALTAMONT 60kV	Basecase	P0	N-0	1.04	1.05	1.04	1.08	1.10	1.05	1.07	1.05	Mitigation under investigation
GBA-V-6	AMES DST 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-7	ANTIOCH 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.08	1.08	1.07	Mitigation under investigation
GBA-V-8	APP MAT 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-9	BAIR 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-10	BAIR 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.03	1.03	1.02	Mitigation under investigation
GBA-V-11	BALFOUR 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-12	BAY MDWS 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-13	BAYSHOR1 115kV	Basecase	P0	N-0	1.05	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-14	BELMONT 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-15	BERESFRD 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-16	BIXLER 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.06	1.10	1.04	1.06	1.04	Mitigation under investigation
GBA-V-17	BRIONES 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-18	BRITTN 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-19	Brokaw 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-20	BURLNGME 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.03	1.08	1.03	1.03	1.02	Mitigation under investigation
GBA-V-21	CAL MEC 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-22	CALEVRAS 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-23	CALMAT60 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-24	CAROLD1 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-25	CAROLD2 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-26	CAROLNDS 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-27	CC SUB 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.08	1.08	1.07	Mitigation under investigation
GBA-V-28	CC SUB 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-29	CCA 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-30	Central 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-31	CHRISTIE 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-32	CLAYTN 115kV	Basecase	P0	N-0	1.02	1.01	1.02	1.03	1.05	1.02	1.03	1.03	Mitigation under investigation
GBA-V-33	CLMBA_ST 115kV	Basecase	P0	N-0	1.03	1.02	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-34	CLY LND 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.04	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-35	CP LECEF 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.03	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-36	CROWN Z 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-37	CRYOGEN 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-38	CRYSTLSG 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-39	CYTE PMP 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-40	DALY CTY 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-41	DIXON LD 115kV	Basecase	P0	N-0	1.01	1.02	1.01	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-42	DLY CTYP 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-43	DOMTAR 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-44	DU PONT 60kV	Basecase	P0	N-0	1.07	1.07	1.07	1.08	1.11	1.07	1.08	1.07	Mitigation under investigation
GBA-V-45	Duane 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-46	DYERWND 60kV	Basecase	P0	N-0	1.04	1.05	1.05	1.08	1.10	1.05	1.07	1.05	Mitigation under investigation
GBA-V-47	E DUBLIN 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-48	EDENVALE 115kV	Basecase	P0	N-0	1.03	1.04	1.03	1.06	1.09	1.05	1.05	1.04	Mitigation under investigation
GBA-V-49	EL PATIO 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.02	1.03	1.03	Mitigation under investigation
GBA-V-50	EMBRCDRD 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-51	EMBRCDRE 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation

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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-52	EMRLD LE 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-53	EST GRND 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-54	EVERGREN 60kV	Basecase	P0	N-0	1.02	1.03	1.02	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-55	EVGRGN 1 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-56	FairView 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-57	Fibergla 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-58	FMC 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-59	FRANKLIN 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-60	FREMNT 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-61	FRICKWND 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-62	FRKLNALT 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-63	Gia12 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-64	Gia32 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-65	GILROY 115kV	Basecase	P0	N-0	0.00	1.03	1.03	0.00	1.09	0.00	1.03	1.03	Mitigation under investigation
GBA-V-66	GWF#2 HS 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-67	HICKS 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-68	HILDAL47 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-69	HILDAL49 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.02	Mitigation under investigation
GBA-V-70	HILLSdle 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-71	HLF MNBY 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.06	1.03	1.03	1.02	Mitigation under investigation
GBA-V-72	HNTRS PT 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-73	Homestea 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-74	HPH1_1 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-75	HPH2_2 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-76	IBM-BALY 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-77	IBM-HRRS 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.04	Mitigation under investigation
GBA-V-78	INTAKE 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-79	IUKA 60kV	Basecase	P0	N-0	1.01	1.00	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-80	JARVIS 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-81	JEFFERSN 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-82	JEFRSN_D 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-83	JENING J 115kV	Basecase	P0	N-0	0.00	1.01	1.01	0.00	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-84	JENNINGS 115kV	Basecase	P0	N-0	0.00	1.01	1.01	0.00	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-85	JMDAMCX1 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-86	JMDAMCX2 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-87	Juliette 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-88	JV BART 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-89	Kenneth 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-90	KIRKER 115kV	Basecase	P0	N-0	1.03	1.02	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-91	KPH1_9 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-92	KPH2_10 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-93	KPH3_11 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.01	1.01	Mitigation under investigation
GBA-V-94	KRS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-95	KRS 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-96	Laf T1 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-97	Laf T2 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-98	Laf T3 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-99	LARKIN D 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-100	LARKIN E 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-101	LARKIN F 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-102	LAS PLGS 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.07	1.01	1.02	1.02	Mitigation under investigation

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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-103	LAWRENCE 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-104	LIVERMRE 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-105	LIVRMR_2 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-106	LLAGAS 115kV	Basecase	P0	N-0	0.00	1.03	1.02	0.00	1.09	0.00	1.03	1.02	Mitigation under investigation
GBA-V-107	LMEC 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-108	LOCKHD 1 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-109	LONESTAR 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-110	LOS ALTS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.05	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-111	LOS GATS 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.05	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-112	LOYOLA 60kV	Basecase	P0	N-0	1.01	1.02	1.01	1.05	1.08	1.03	1.04	1.04	Mitigation under investigation
GBA-V-113	LPOSTAS 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-114	LS ESTRS 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.03	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-115	LS ESTRS 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-116	MABURY 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.02	1.03	1.03	Mitigation under investigation
GBA-V-117	MARKHAM 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-118	MARSH 60kV	Basecase	P0	N-0	1.05	1.06	1.06	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-119	MARTIN 60kV	Basecase	P0	N-0	1.15	1.05	1.05	1.14	1.19	1.05	1.05	1.05	Mitigation under investigation
GBA-V-120	MARTIN C 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-121	MARTIN C 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-122	Mathew 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-123	MCKEE 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-124	METCALF 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-125	MILLBRAE 60kV	Basecase	P0	N-0	1.06	1.03	1.03	1.06	1.10	1.03	1.03	1.03	Mitigation under investigation
GBA-V-126	MILLBRAE 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.04	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-127	MILPITAS 115kV	Basecase	P0	N-0	1.01	1.02	1.01	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-128	Mission 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-129	MISSON 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-130	MNTA VSA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.06	1.08	1.05	1.05	1.04	Mitigation under investigation
GBA-V-131	MNTA VSA 115kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-132	MOCCASIN 115kV	Basecase	P0	N-0	1.04	1.04	1.04	1.05	1.06	1.04	1.05	1.05	Mitigation under investigation
GBA-V-133	MOFT.FLD 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-134	MONTAGUE 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-135	MONTAVIS 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-136	MRGN HIL 115kV	Basecase	P0	N-0	1.03	1.03	1.01	1.05	1.09	1.04	1.04	1.02	Mitigation under investigation
GBA-V-137	MRT RCTR 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-138	MT VIEW 115kV	Basecase	P0	N-0	1.00	1.00	0.99	1.03	1.05	1.01	1.02	1.01	Mitigation under investigation
GBA-V-139	MTCALF D 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-140	MTCALF E 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.06	1.09	1.05	1.05	1.05	Mitigation under investigation
GBA-V-141	NAJ 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-142	NEWARK 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-143	NEWARK D 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-144	NORTECH 115kV	Basecase	P0	N-0	1.02	1.03	1.02	1.03	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-145	Northwes 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-146	NRS 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-147	NRS 300 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-148	NRS 400 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-149	NRS 500 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-150	NRS 600 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-151	NRSrser 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-152	NUMMI 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-153	NWRK 2 M 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.03	1.06	1.03	1.03	1.03	Mitigation under investigation



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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-154	ORACLE60 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-155	OX_MTN60 60kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-156	PACIFICA 60kV	Basecase	P0	N-0	1.08	1.03	1.02	1.08	1.13	1.02	1.02	1.02	Mitigation under investigation
GBA-V-157	Palm 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-158	PARKS 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-159	PCBRICK 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-160	PERMNNTE 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.06	1.07	1.04	1.05	1.04	Mitigation under investigation
GBA-V-161	PHILLIPS 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-162	PIERCY 115kV	Basecase	P0	N-0	1.02	1.03	1.02	1.05	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-163	PITSBURG 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.06	1.03	1.04	1.04	Mitigation under investigation
GBA-V-164	PITTSBRG 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-165	POT_SVC 115kV	Basecase	P0	N-0	1.05	1.03	1.04	1.04	1.09	1.03	1.03	1.04	Mitigation under investigation
GBA-V-166	POTRERO 115kV	Basecase	P0	N-0	1.05	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-167	POTRERO 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-168	PRAXAIR 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-169	PRT CSTA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-170	Q687 115kV	Basecase	P0	N-0	1.03	1.03	1.03	1.04	1.05	1.03	1.04	1.04	Mitigation under investigation
GBA-V-171	RADUM 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-172	RALSTON 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-173	RAVENSWD 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.02	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-174	REDWOOD 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-175	RIVRBANK 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-176	RLSTN35 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-177	RLSTN45 60kV	Basecase	P0	N-0	1.02	1.01	1.01	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-178	RVEC 115kV	Basecase	P0	N-0	1.05	1.05	1.05	1.05	1.08	1.05	1.05	1.05	Mitigation under investigation
GBA-V-179	RVNSWD D 115kV	Basecase	P0	N-0	1.04	1.04	1.03	1.05	1.09	1.04	1.04	1.04	Mitigation under investigation
GBA-V-180	S.L.A.C. 230kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.02	1.03	1.03	Mitigation under investigation
GBA-V-181	SAN CRLS 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-182	SAN MATO 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-183	SAN RAMN 60kV	Basecase	P0	N-0	1.02	1.01	1.00	1.03	1.06	1.01	1.03	1.02	Mitigation under investigation
GBA-V-184	SANMATEO 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-185	SANMATEO 230kV	Basecase	P0	N-0	1.02	1.02	1.02	1.02	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-186	SANPAULA 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.04	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-187	SARATOGA 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-188	SEAWEST 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-189	SEQUOIA 60kV	Basecase	P0	N-0	1.03	1.03	1.02	1.05	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-190	Serra 60kV	Basecase	P0	N-0	1.00	1.00	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-191	SERRMNTE 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.04	1.09	1.03	1.03	1.03	Mitigation under investigation
GBA-V-192	SFASWSTA 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-193	SFIA 115kV	Basecase	P0	N-0	1.04	1.03	1.02	1.03	1.08	1.03	1.03	1.02	Mitigation under investigation
GBA-V-194	SFIA-MA 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.08	1.02	1.02	1.02	Mitigation under investigation
GBA-V-195	SFPP CNC 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-196	SHAWROAD 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-197	SHLL CHM 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-198	SHLLCHMT 60kV	Basecase	P0	N-0	1.06	1.06	1.06	1.07	1.11	1.07	1.07	1.07	Mitigation under investigation
GBA-V-199	SHREDDER 115kV	Basecase	P0	N-0	1.03	1.02	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-200	SJB DG 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-201	SJB EF 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-202	SMATEO3M 115kV	Basecase	P0	N-0	1.03	1.03	1.02	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-203	SN BRNOT 60kV	Basecase	P0	N-0	1.08	1.03	1.03	1.08	1.13	1.03	1.02	1.03	Mitigation under investigation
GBA-V-204	SN JSE A 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.03	1.02	Mitigation under investigation

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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-205	SNANDRES 60kV	Basecase	P0	N-0	1.07	1.03	1.03	1.07	1.12	1.03	1.02	1.03	Mitigation under investigation
GBA-V-206	SNTH LNE 60kV	Basecase	P0	N-0	1.08	1.03	1.03	1.08	1.13	1.03	1.02	1.03	Mitigation under investigation
GBA-V-207	SRS 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-208	SRS 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-209	SSS 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.02	Mitigation under investigation
GBA-V-210	STAUFFER 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-211	STELLING 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-212	STONE 115kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.08	1.02	1.03	1.02	Mitigation under investigation
GBA-V-213	SUNOL 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-214	SWIFT 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.08	1.03	1.04	1.03	Mitigation under investigation
GBA-V-215	TRAN230A 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.05	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-216	TRAN230B 230kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-217	TRAN-60 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.02	1.03	1.02	Mitigation under investigation
GBA-V-218	TRIMBLE 115kV	Basecase	P0	N-0	1.02	1.02	1.01	1.03	1.07	1.02	1.03	1.03	Mitigation under investigation
GBA-V-219	UAL COGN 115kV	Basecase	P0	N-0	1.04	1.03	1.03	1.03	1.08	1.03	1.03	1.03	Mitigation under investigation
GBA-V-220	UNIN CHM 60kV	Basecase	P0	N-0	1.03	1.03	1.03	1.05	1.07	1.03	1.04	1.04	Mitigation under investigation
GBA-V-221	Uranium 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-222	URICH 60kV	Basecase	P0	N-0	1.02	1.02	1.01	1.04	1.05	1.02	1.02	1.02	Mitigation under investigation
GBA-V-223	VALLECTS 60kV	Basecase	P0	N-0	1.01	1.00	1.00	1.03	1.06	1.01	1.02	1.01	Mitigation under investigation
GBA-V-224	VASCO 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.02	1.03	1.02	Mitigation under investigation
GBA-V-225	VASONA 230kV	Basecase	P0	N-0	1.01	1.01	1.00	1.04	1.06	1.02	1.02	1.02	Mitigation under investigation
GBA-V-226	VINEYARD 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.03	1.06	1.01	1.02	1.02	Mitigation under investigation
GBA-V-227	Walsh 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.02	Mitigation under investigation
GBA-V-228	WARNERVL 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-229	WATRSLED 60kV	Basecase	P0	N-0	1.03	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-230	WESTRN_D 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-231	WHISMAN 115kV	Basecase	P0	N-0	1.00	1.00	0.99	1.03	1.05	1.01	1.02	1.01	Mitigation under investigation
GBA-V-232	WLLW PSS 60kV	Basecase	P0	N-0	1.05	1.06	1.05	1.07	1.11	1.07	1.07	1.06	Mitigation under investigation
GBA-V-233	WND MSTR 230kV	Basecase	P0	N-0	1.01	1.01	1.01	1.02	1.05	1.01	1.02	1.00	Mitigation under investigation
GBA-V-234	WOLFE 115kV	Basecase	P0	N-0	1.00	1.00	1.00	1.03	1.05	1.02	1.02	1.01	Mitigation under investigation
GBA-V-235	WOODSIDE 60kV	Basecase	P0	N-0	1.01	1.01	1.01	1.04	1.07	1.02	1.02	1.02	Mitigation under investigation
GBA-V-236	WRNRVLE 115kV	Basecase	P0	N-0	1.01	1.01	1.01	1.03	1.06	1.02	1.02	1.01	Mitigation under investigation
GBA-V-237	ZANKER 115kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.07	1.03	1.03	1.03	Mitigation under investigation
GBA-V-238	Zeno 60kV	Basecase	P0	N-0	1.01	1.01	1.00	1.02	1.07	1.01	1.02	1.01	Mitigation under investigation
GBA-V-239	ZONDWD 60kV	Basecase	P0	N-0	1.02	1.02	1.02	1.04	1.06	1.03	1.03	1.03	Mitigation under investigation
GBA-V-240	EDES 115kV	BUS-TIE BREAKER FAULT AT 30550 MORAGA 230.00	P2	Bus-tie breaker	0.89	0.94	0.94	0.96	1.02	0.89	0.95	0.95	Short Term : Action Plan ; Long Term : East Shore-Oakland J 115 kV Reconductoring Project
GBA-V-241	LOCKHD 1 115kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.83	0.83	0.83	0.98	1.03	0.96	0.96	0.96	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-242	MOFT.FLD 115kV	BUS-TIE BREAKER FAULT AT 30705 MONTAVIS 230.00	P2	Bus-tie breaker	0.83	0.83	0.84	0.98	1.03	0.96	0.96	0.96	Action Plan before Monta Vista 230 kV Bus Upgrade Project is completetd
GBA-V-243	CAROLNDS 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.89	0.89	0.89	0.97	0.00	0.87	0.87	0.88	Review Stanford 60 kV system configuration
GBA-V-244	CRYSTLSG 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.78	0.78	0.91	0.99	0.75	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-245	EMRLD LE 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.79	0.79	0.91	0.99	0.76	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-246	LAS PLGS 60kV	Jefferson 230/60kV Transformer #1 & _Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.78	0.77	0.77	0.90	0.99	0.74	0.76	0.78	Review Stanford 60 kV system configuration



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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Summer Light Load	2017 Winter Peak	2020 Winter Peak	2025 Winter Peak	
GBA-V-247	RALSTON 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.79	0.78	0.78	0.91	0.99	0.75	0.77	0.79	Review Stanford 60 kV system configuration
GBA-V-248	STANFORD 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.74	0.74	0.74	0.88	0.96	0.71	0.72	0.74	Review Stanford 60 kV system configuration
GBA-V-249	WATRSLED 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.84	0.83	0.83	0.94	1.01	0.81	0.82	0.83	Review Stanford 60 kV system configuration
GBA-V-250	WOODSIDE 60kV	Jefferson 230/60kV Transformer #1 & Jefferson 230/60kV Transformer #2	P6	N-1/N-1	0.78	0.78	0.78	0.90	0.99	0.75	0.76	0.78	Review Stanford 60 kV system configuration
GBA-V-251	HLF MNBY 60kV	Jefferson 230/60kV Transformer #2 & Jefferson 230/60kV Transformer #1	P6	N-1/N-1	0.91	0.90	0.90	0.99	1.05	0.88	0.88	0.89	Review Stanford 60 kV system configuration
GBA-V-252	CAROLNDS 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.88	0.88	0.87	0.97	1.02	0.85	0.86	0.88	Review Stanford 60 kV system configuration
GBA-V-253	CRYSTLSG 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.76	0.91	0.98	0.73	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-254	EMRLD LE 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.77	0.91	0.98	0.74	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-255	HLF MNBY 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.89	0.89	0.89	0.99	1.03	0.86	0.87	0.88	Review Stanford 60 kV system configuration
GBA-V-256	LAS PLGS 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.76	0.76	0.76	0.90	0.98	0.72	0.74	0.76	Review Stanford 60 kV system configuration
GBA-V-257	RALSTON 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.77	0.77	0.77	0.91	0.98	0.73	0.75	0.77	Review Stanford 60 kV system configuration
GBA-V-258	STANFORD 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.72	0.72	0.72	0.88	0.95	0.68	0.70	0.72	Review Stanford 60 kV system configuration
GBA-V-259	WATRSLED 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.82	0.82	0.82	0.94	1.00	0.79	0.80	0.82	Review Stanford 60 kV system configuration
GBA-V-260	WOODSIDE 60kV	Monta Vista-Jefferson Nos. 1 & 2 230 kV lines	P7	DCTL	0.76	0.76	0.76	0.90	0.98	0.73	0.74	0.76	Review Stanford 60 kV system configuration

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

Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	N/A	N/A	N/A	N/A	
GBA-SP-TS-1	BUS 1E FAULT30527PITSBG E 230.00	P5	Delayed fault clearing (Bus)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles; Frequency Dip below 59.0 Hz for 6 Cycles					Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-2	BUS FAULT AT 30630 NEWARK 1D 230.00	P2	Normal clearing (Bus)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%					Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-3	BUS-TIE BREAKER FAULT AT 35648 LLAGAS 115.00	P4	Stuck breaker (Non bus-tie)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles					Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-4	Pittsburg-Tesla 1 230kV Line	P5	Delayed fault clearing (Line)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%					Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-5	Pittsburg-San Ramon and San Ramon-Moraga 230 kV Lines	P6	Normal clearing (N-1/N-1)	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 30%; Load Bus Voltage Dip 20% for 40 Cycles					Reassess with actual fault clearing times and SLG fault impedances where applicable.
GBA-SP-TS-6	Monta Vista-Jefferson Nos. 1 & 2 230 kV Lines	P7	Normal clearing (DCTL)	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%	Load Bus Voltage Dip> 30%					Reassess with actual fault clearing times and SLG fault impedances where applicable.



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-SP-SLD-1												

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

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



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-SP-SS-1	Kirker 115 kV	109	111	114	34	28	68	68	69	Loop the Kirker 115 kV substation.