



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
30945 KERN PP 230 30943 STCKDLJ2 230 1 1	MIDWAY - 2E 230kV & KERN PP-BKRSFLDB-MIDWAY line	P2	Non-bus-tie breaker fault	98	NA	NA	29	NA	NA	103	NA	NA	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. Service Date : 4/2020. Short term: Action Plan
	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	98	NA	NA	35	NA	NA	104	NA	NA	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. Service Date : 4/2020. Short term: Action Plan
	MIDWAY 230kV - Section 2E & 2F	P2	Bus-tie breaker fault	98	NA	NA	28	NA	NA	103	NA	NA	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. Service Date : 4/2020. Short term: Action Plan
	MIDWAY 230kV Section 2E	P2	Bus Section Fault	98	NA	NA	28	NA	NA	103	NA	NA	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. Service Date : 4/2020. Short term: Action Plan
30948 ELKHIL_G 230 30970 MIDWAY 230 1 1	MIDWAY 230kV - Section 2E & 2F	P2	Bus-tie breaker fault	87	102	<90	14	73	<90	70	<90	19	<90	Redispatch Generation
	MIDWAY 230kV - Section 2F & 2E	P2	Bus-tie breaker fault	<90	<90	72	<90	<90	<90	<90	101	<90	103	Redispatch Generation
	MIDWAY 230kV Section 2F	P2	Bus Section Fault	85	100	70	14	71	<90	68	100	19	100	Redispatch Generation
30948 ELKHIL_G 230 30970 MIDWAY 230 2 1	ELKHIL_G-MIDWAY #1 230kV [0]	P1	N-1(Transmission Line)	85	100	70	14	71	<90	68	100	19	100	Redispatch Generation
	MIDWAY - 1F 230kV & MIDWAY-MIDWAY-R13 #1 line	P2	Non-bus-tie breaker fault	85	100	70	14	73	<90	68	100	20	101	Redispatch Generation
	MIDWAY 230kV - Section 1E & 1F	P2	Bus-tie breaker fault	<90	100	70	<90	81	<90	<90	101	20	102	Redispatch Generation
	MIDWAY 230kV Section 1F	P2	Bus Section Fault	85	100	70	14	73	<90	68	100	20	101	Redispatch Generation



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30970 MIDWAY 230 30942 STCKDLJ1 230 1 1	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	99	48	NA	29	17	<90	104	37	17	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. In Service Date : 4/2020. Short term: Action Plan
	STCKDLEB-KERN PP-MIDWAY 230kV [0] & KERN PP-BKRSFLDB-MIDWAY 230kV [0]	P6	N-1-1	<90	<90	NA	<90	<90	<90	104	<90	<90	NA	Project : Midway-Kern PP 230 kV line capacity increase project and Midway-Kern PP #2 230kV Line project. In Service Date : 4/2020. Short term: Action Plan
30970 MIDWAY 230 30945 KERN PP 230 3 1	MIDWAY-KERN #4 230kV [5170] & MIDWAY-KERN PP #2 230kV [0]	P6	N-1-1	NA	NA	<90	NA	NA	NA	NA	<90	<90	101	Sensitivity only
30970 MIDWAY 230 30945 KERN PP 230 4 1	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	NA	NA	69	NA	NA	NA	NA	<90	<90	NConv	Sensitivity only
	MIDWAY-KERN #3 230kV [5160] & MIDWAY-KERN PP #2 230kV [0]	P6	N-1-1	NA	NA	<90	NA	NA	NA	NA	<90	<90	102	Sensitivity only
30970 MIDWAY 230 30946 LAPALOMA 230 1 1	LAPALOMA 230kV - Middle Breaker Bay 2	P2	Non-bus-tie breaker fault	100	100	100	<90	97	<90	100	100	<90	100	Redispatch Generation
	MIDWAY - 1D 230kV & MIDWAY-WHEELER RIDGE #1 line	P2	Non-bus-tie breaker fault	100	100	100	<90	97	<90	100	100	<90	100	Redispatch Generation
	MIDWAY - 1D 230kV & STCKDLEB-KERN PP-MIDWAY line	P2	Bus Section Fault	100	NA	NA	<90	NA	NA	100	NA	NA	NA	Redispatch Generation
	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	100	101	102	2	98	<90	100	101	<90	NConv	Redispatch Generation
	MIDWAY 230kV Section 1D	P2	Bus Section Fault	100	101	101	2	97	<90	100	101	<90	102	Redispatch Generation
30970 MIDWAY 230 30946 LAPALOMA 230 2 1	LAPALOMA 230kV - Middle Breaker Bay 1	P2	Non-bus-tie breaker fault	100	100	100	<90	<90	<90	100	100	<90	100	Redispatch Generation
	MIDWAY - 2E 230kV & KERN PP-BKRSFLDA-MIDWAY line	P2	Bus Section Fault	100	100	NA	<90	102	100	100	NA	<90	NA	Redispatch Generation
	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	100	101	101	<90	<90	<90	100	101	<90	NConv	Redispatch Generation
	MIDWAY 230kV - Section 2E & 2F	P2		100	100	100	<90	102	<90	100	100	<90	101	Redispatch Generation
	MIDWAY 230kV Section 2E	P2	Bus Section Fault	100	100	100	<90	<90	<90	100	100	<90	100	Redispatch Generation

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30970 MIDWAY 230 30976 MIDWAY-R12 230 1 1	MIDWAY 230kV - Section 1E & 1F	P2	Bus-tie breaker fault	<90	<90	<90	<90	120	<90	NA	<90	<90	<90	Redispatch Generation
34139 BSCSCH T 70.0 34869 COPUS_E 70.0 1 1	MIDWAY 115kV - Section 2D & 1D	P2	Bus-tie breaker fault	<90	<90	<90	145	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
	Midway-Taft & Fellows-Taft 115 kV Lines	P7	N-2(Common structure)	<90	<90	<90	127	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
	MIDWAY-TAFT 115kV [2620] & FELLOWS-MIDSUN 115kV [1570]	P6	N-1-1	<90	<90	<90	182	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34225 BELRDG J 115 34774 MIDWAY 115 1 1	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P2	Bus Section Fault	61	57	58	41	96	58	60	57	103	57	Sensitivity only
	TEMBLOR - 1D 115kV & TEMBLOR-KERNRIDGE line	P2	Non-bus-tie breaker fault	61	57	58	41	96	58	60	58	103	57	Sensitivity only
	TEMBLOR - 1D 115kV & TEMBLOR-SAN LUIS OBISPO line	P2	Non-bus-tie breaker fault	61	57	58	41	96	58	60	58	103	57	Sensitivity only
	TEMBLOR 115kV Section 1D	P2	Bus Section Fault	61	57	58	41	96	58	60	58	103	57	Sensitivity only
34226 BELRDG J 115 34774 MIDWAY 115 1 1	TEMBLOR-SAN LUIS OBISPO 115kV [3960] & TEMBLOR-KERNRIDGE 115kV [3950]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	100	<90	Sensitivity only
34245 PSE MCKJ 115 34225 BELRDG J 115 1 1	MIDWAY 230kV - Section 1E & 1F	P2	Bus-tie breaker fault	<90	55	36	<90	107	65	<90	62	17	46	Redispatch Generation
34246 PSE MCKJ 115 34225 BELRDG J 115 1 1	PSEMCKIT 9.11kV Gen Unit 1 & TEMBLORD 12.47kV Gen Unit WP	P3	G-1N-1	<90	<90	<90	<90	<90	104	<90	104	<90	<90	Redispatch Generation
34706 WESTPARK 115 34752 KERN PWR 115 1 1	KERN-WESTPARK #2 115kV [2010] & PSE-BEAR 13.80kV Gen Unit 1	P3	G-1N-1	<90	<90	<90	<90	<90	106	<90	109	<90	<90	Scope Under Review: Kern PP 115 kV reinforcement project.
34706 WESTPARK 115 34752 KERN PWR 115 2 1	KERN PWR 115kV - Section 1E & 1D	P2	Bus-tie breaker fault	61	62	63	6	8	<90	64	75	41	101	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN-WESTPARK #1 115kV [2010] & PSE-BEAR 13.80kV Gen Unit 1	P3	G-1N-1	<90	<90	<90	<90	<90	106	<90	109	<90	<90	Scope Under Review: Kern PP 115 kV reinforcement project.
34709 7STNDRD 115 34752 KERN DWR 115 1 1	KERN PWR - 2E 115kV & KERN-MAGUNDEN-WITCO line	P2	Non-bus-tie breaker fault	63	64	65	20	12	74	65	79	30	153	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	109	116	123	23	4	130	113	145	67	227	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)



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PWR 115 1 1	KERN-LIVE OAK 115kV [1960] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	151	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN-MAGUNDEN-WITCO 115kV [1970] (KERN PWR-KERNWATR)	P2	Line section w/o fault	74	77	81	16	5	86	76	95	44	129	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34716 LRDO JCT 115 34709 7STNDRD 115 1 1	KERN PWR - 2E 115kV & KERN-MAGUNDEN-WITCO line	P2	Non-bus-tie breaker fault	45	45	44	44	55	53	44	55	31	130	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN-LIVE OAK 115kV [1960] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	128	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN-MAGUNDEN-WITCO 115kV [1970] (KERN PWR-KERNWATR)	P2	Line section w/o fault	55	57	60	54	70	64	54	70	44	107	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34716 LRDO JCT 115 34718 KERN OIL 115 1 1	KERN PWR - 2E 115kV & KERN-MAGUNDEN-WITCO line	P2	Non-bus-tie breaker fault	40	41	41	24	0	48	41	50	30	129	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	105	113	122	28	17	127	110	142	80	233	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	105	113	122	23	17	127	110	143	80	239	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN-LIVE OAK 115kV [1960] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	127	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34719 POSOMTJT 115 34718 KERN OIL 115 1 1	7TH STANDARD-KERN 115kV [1981] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	131	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34720 DSCVRYTP 115 34744 GODN_BER 115 1 1	7TH STANDARD-KERN 115kV [1981] & KERN-LIVE OAK 115kV [1960]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	154	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34724 KRN OL J 115 34736 MAGUNDEN 115 1 1	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	61	69	79	5	13	76	64	90	50	NConv	Scope Under Review: Kern PP 115 kV reinforcement project.
34724 KRN OL J 115 34744 GODN_BER 115 1 1	KERN-LIVE OAK 115kV [1960] & 7TH STANDARD-KERN 115kV [1981]	P6	N-1-1	<90	<90	<90	<90	<90	<90	<90	<90	<90	154	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	7STNDRD 115kV - Ring R1 & R2	P2	Non-bus-tie breaker fault	65	69	74	21	6	78	67	87	42	125	Scope Under Review: Kern PP 115 kV reinforcement project.
	7STNDRD 115kV - Ring R1 & R4	P2	Non-bus-tie breaker fault	84	89	94	20	14	99	87	109	61	148	Scope Under Review: Kern PP 115 kV reinforcement project.
	7TH STANDARD-KERN 115kV [1981]	P1	N-1(Transmission Line)	81	86	92	20	6	97	85	107	52	145	Scope Under Review: Kern PP 115 kV reinforcement project.
	7TH STANDARD-KERN 115kV [1981] & KERN-LIVE OAK 115kV [1960]	P6	N-1-1	105	111	118	<90	<90	125	109	139	<90	210	Scope Under Review: Kern PP 115 kV reinforcement project.



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34724 KRN OL J 115 34798 KERNWATR 115 1 1	Base Case	P0	Basecase	63	67	72	19	8	75	65	83	44	111	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR - 2D 115kV & KERN-KERN FRONT line	P2	Non-bus-tie breaker fault	82	87	92	20	8	97	85	107	52	147	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR - 2D 115kV & KERN-TEVIS-STOCKDALE-LAMONT line	P2	Non-bus-tie breaker fault	81	86	91	20	9	96	84	107	52	146	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR 115kV - Section 2D & 1D	P2	Bus-tie breaker fault	82	86	92	18	10	97	85	107	51	150	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN-LIVE OAK 115kV [1960]	P1	N-1(Transmission Line)	60	64	69	19	5	72	62	81	40	119	Scope Under Review: Kern PP 115 kV reinforcement project.
	Lerdo-Kern Oil-7th Standard 115 kV Line & Kern-Live Oak 115 kV Lines	P7	N-2(Common structure)	69	73	79	24	9	82	71	93	51	141	Scope Under Review: Kern PP 115 kV reinforcement project.
	LIVE OAK 115kV Section 1D	P2	Bus Section Fault	79	84	89	24	22	92	82	101	60	119	Scope Under Review: Kern PP 115 kV reinforcement project.
	Live Oak-Kern Oil & Lerdo-Kern Oil-7th Standard 115 kV Line	P7	N-2(Common structure)	71	76	83	17	15	84	74	95	56	109	Scope Under Review: Kern PP 115 kV reinforcement project.
	LIVE OAK-KERN OIL 115kV [2140] (PTRL JCT-LIVE OAK)	P2	Line section w/o fault	79	84	89	23	22	92	82	101	60	119	Scope Under Review: Kern PP 115 kV reinforcement project.
	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	54	58	63	13	7	65	56	71	38	106	Scope Under Review: Kern PP 115 kV reinforcement project.
	VEDDER TAP 115kV [2141] (PTRL JCT-POSOMTJT)	P2	Line section w/o fault	79	84	89	23	22	92	82	101	60	119	Scope Under Review: Kern PP 115 kV reinforcement project.
34726 PTRL JCT 115 34719 POSOMTJT 115 1 1	7TH STANDARD-KERN 115kV [1981] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	<90	<90	<90	<90	107	<90	112	<90	165	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34726 PTRL JCT 115 34728 LIVE OAK 115 1 1	KERN-MAGUNDEN-WITCO 115kV [1970] & 7TH STANDARD-KERN 115kV [1981]	P6	N-1-1	<90	<90	<90	<90	<90	108	<90	113	<90	165	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
34728 LIVE OAK 115 34752 KERN PWR 115 1 1	7TH STANDARD-KERN 115kV [1981] & KERN-MAGUNDEN-WITCO 115kV [1970]	P6	N-1-1	<90	101	102	<90	<90	117	102	125	<90	254	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)
	KERN-MAGUNDEN-WITCO 115kV [1970] (KERN PWR-KERNWATR)	P2	Line section w/o fault	54	58	63	22	7	67	57	75	35	128	Scope under review : North East Conversion ( Semitropic-Wasco-Famoso-Kern 70 kV)





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34749 TPMNTP1 115 34750 TUPMAN 115 1 1	MIDWAY - 2E 115kV & SMYRNA-SEMITROPIC-MIDWAY line	P2	Non-bus-tie breaker fault	111	130	139	39	46	140	118	156	98	139	System upgrade or preferred resource
	MIDWAY 115kV - Section 1E & 2E	P2	Bus-tie breaker fault	111	131	139	39	46	141	118	157	98	139	System upgrade or preferred resource
	MIDWAY 115kV Section 2E	P2	Bus Section Fault	111	130	139	39	46	140	118	156	98	139	System upgrade or preferred resource
34751 TPMNTP2 115 34750 TUPMAN 115 1 1	MIDWAY - 2E 115kV & SMYRNA-SEMITROPIC-MIDWAY line	P2	Non-bus-tie breaker fault	89	100	108	27	30	108	89	122	74	109	System upgrade or preferred resource
	MIDWAY 115kV - Section 1E & 2E	P2	Bus-tie breaker fault	88	100	108	27	30	108	89	122	74	109	System upgrade or preferred resource
	MIDWAY 115kV Section 2E	P2	Bus Section Fault	89	100	108	27	30	108	89	122	74	109	System upgrade or preferred resource
34752 KERN PWR 115 30945 KERN PP 230 3 1	KERN PP 230/115kV TB 4 & KERN PP 230/115kV TB 5	P6	N-1-1	<90	104	<90	<90	<90	<90	121	135	<90	192	Review Kern Bank SPS
	KERN PWR 115kV - Section 2D & 1D	P2	Bus-tie breaker fault	87	92	98	16	12	104	90	114	49	144	Review Kern Bank SPS
34752 KERN PWR 115 30945 KERN PP 230 4 1	KERN PP 230/115kV TB 5 & KERN PP 230/115kV TB 3	P6	N-1-1	<90	100	<90	<90	<90	117	101	130	<90	185	Review Kern Bank SPS
34752 KERN PWR 115 30945 KERN PP 230 5 1	KERN PP 230/115kV TB 3 & KERN PP 230/115kV TB 4	P6	N-1-1	<90	104	<90	<90	<90	121	<90	135	<90	192	Review Kern Bank SPS
	KERN PWR 115kV - Section 2D & 2E	P2	Bus-tie breaker fault	83	93	97	28	31	104	88	113	28	110	Review Kern Bank SPS
34752 KERN PWR 115 34753 TEVISJ1 115 1 1	KERN PWR - 2D 115kV & KERN-KERN FRONT line	P2	Non-bus-tie breaker fault	78	98	101	51	76	108	85	114	35	103	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR 115kV - Section 2D & 2E	P2	Bus-tie breaker fault	78	97	100	49	76	108	86	116	32	102	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN-TEVIS-STOCKDALE-LAMONT 115kV [1940] (KERN PWR-TEVISJ2)	P2	Line section w/o fault	78	97	100	52	76	108	85	115	35	101	Scope Under Review: Kern PP 115 kV reinforcement project.
34752 KERN PWR 115 34755 TEVISJ2 115 1 1	KERN PWR 115kV - Section 1E & 1D	P2	Bus-tie breaker fault	79	100	103	50	75	111	86	119	33	107	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN-TEVIS-STOCKDALE 115kV [1990] (KERN PWR-TEVISJ1)	P2	Line section w/o fault	79	99	102	50	76	110	86	118	34	105	Scope Under Review: Kern PP 115 kV reinforcement project.



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	7STNDRD 115kV - Ring R1 & R2	P2	Non-bus-tie breaker fault	69	73	77	23	9	82	71	90	45	129	Scope Under Review: Kern PP 115 kV reinforcement project.
	7STNDRD 115kV - Ring R1 & R4	P2	Non-bus-tie breaker fault	87	92	97	23	17	102	90	113	64	152	Scope Under Review: Kern PP 115 kV reinforcement project.
	7STNDRD 115kV - Ring R3 & R2	P2	Non-bus-tie breaker fault	60	63	68	20	16	70	62	78	47	103	Scope Under Review: Kern PP 115 kV reinforcement project.
	7STNDRD 115kV - Ring R3 & R4	P2	Non-bus-tie breaker fault	60	63	68	20	16	70	62	78	47	103	Scope Under Review: Kern PP 115 kV reinforcement project.
	7TH STANDARD-KERN 115kV [1981]	P1	N-1(Transmission Line)	85	90	95	23	10	100	88	110	55	149	Scope Under Review: Kern PP 115 kV reinforcement project.
	7TH STANDARD-KERN 115kV [1981] & KERN-LIVE OAK 115kV [1960]	P6	N-1-1	108	114	<90	<90	<90	129	112	143	<90	214	Scope Under Review: Kern PP 115 kV reinforcement project.
	Base Case	P0	Basecase	66	71	76	21	13	79	69	87	48	115	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN OIL-LIVE OAK-POSO MT 115kV [0] MOAS OPENED on KRNFRTT_POSO MT	P1	N-1(Transmission Line)	64	69	74	17	10	76	67	85	46	102	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PP 230kV - Middle Breaker Bay 1	P2	Non-bus-tie breaker fault	<90	60	65	<90	10	67	<90	74	41	100	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PP 230kV - Middle Breaker Bay 3	P2	Non-bus-tie breaker fault	<90	61	65	<90	10	67	<90	74	41	102	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PP 230kV - Middle Breaker Bay 4	P2	Non-bus-tie breaker fault	<90	60	65	<90	10	67	<90	75	41	100	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR - 2D 115kV & KERN-KERN FRONT line	P2	Non-bus-tie breaker fault	85	90	95	22	11	100	88	111	55	151	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR - 2D 115kV & KERN-TEVIS-STOCKDALE-LAMONT line	P2	Non-bus-tie breaker fault	84	90	95	23	12	100	88	110	55	150	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN PWR 115kV - Section 1E & 1D	P2	Bus-tie breaker fault	57	60	65	17	10	67	59	74	41	100	Scope Under Review: Kern PP 115 kV reinforcement project.



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
34752 KERN PWR 115 34798 KERNWATR 115 1 1	KERN PWR 115kV - Section 2D & 1D	P2	Bus-tie breaker fault	85	90	95	21	13	100	88	110	55	154	Scope Under Review: Kern PP 115 kV reinforcement project.
	KERN-LIVE OAK 115kV [1960]	P1	N-1(Transmission Line)	63	67	72	21	9	75	66	84	43	122	Scope Under Review: Kern PP 115 kV reinforcement project.
	LERDO - 1D 115kV & LERDO-KERN OIL-7TH STANDARD line	P2	Non-bus-tie breaker fault	60	64	68	20	16	70	62	78	47	103	Scope Under Review: Kern PP 115 kV reinforcement project.
	Lerdo-Kern Oil-7th Standard 115 kV Line & Kern-Live Oak 115 kV Lines	P7	N-2(Common structure)	72	76	83	26	13	86	74	96	55	145	Scope Under Review: Kern PP 115 kV reinforcement project.
	LERDO-KERN OIL-7TH STANDARD 115kV [1950]	P1	N-1(Transmission Line)	60	64	68	20	16	70	62	78	47	103	Scope Under Review: Kern PP 115 kV reinforcement project.
	LIVE OAK - 1D 115kV & KERN OIL-LIVE OAK-POSO MT line	P2	Non-bus-tie breaker fault	64	69	74	17	10	76	67	85	46	102	Scope Under Review: Kern PP 115 kV reinforcement project.
	LIVE OAK 115kV Section 1D	P2	Bus Section Fault	82	87	92	26	25	96	85	104	63	122	Scope Under Review: Kern PP 115 kV reinforcement project.
	Live Oak-Kern Oil & Lerdo-Kern Oil-7th Standard 115 kV Line	P7	N-2(Common structure)	74	79	86	19	18	88	77	98	59	113	Scope Under Review: Kern PP 115 kV reinforcement project.
	LIVE OAK-KERN OIL 115kV [2140] (PTRL JCT-LIVE OAK)	P2	Line section w/o fault	82	87	92	26	25	96	85	104	63	122	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY - 1D 230kV & MIDWAY-WHEELER RIDGE #1 line	P2	Non-bus-tie breaker fault	57	61	65	17	10	67	59	75	41	101	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY 230kV - Section 2F & 2E	P2	Bus-tie breaker fault	<90	<90	65	<90	<90	<90	<90	74	<90	104	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY 230kV Section 1D	P2	Bus Section Fault	57	61	65	17	10	68	59	75	41	104	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY 230kV Section 2E	P2	Bus Section Fault	58	61	65	15	10	68	60	74	41	101	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY-KERN #3 230kV [5160]	P1	N-1(Transmission Line)	<90	60	65	<90	10	67	<90	74	41	100	Scope Under Review: Kern PP 115 kV reinforcement project.
	MIDWAY-KERN #4 230kV [5170]	P1	N-1(Transmission Line)	<90	<90	65	<90	<90	<90	<90	<90	<90	100	Scope Under Review: Kern PP 115 kV reinforcement project.





Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
	Midway-Kern No. 1 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	57	60	65	16	10	67	60	74	41	101	Scope Under Review: Kern PP 115 kV reinforcement project.
	Midway-Kern No. 3 & Midway-Kern No. 1 230 kV Lines	P7	N-2(Common structure)	57	61	65	15	10	68	60	74	41	101	Scope Under Review: Kern PP 115 kV reinforcement project.
	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	57	61	66	15	10	68	60	74	41	110	Scope Under Review: Kern PP 115 kV reinforcement project.
	VEDDER TAP 115kV [2141] (PTRL JCT-POSOMTJT)	P2	Line section w/o fault	82	87	92	26	25	96	85	104	63	122	Scope Under Review: Kern PP 115 kV reinforcement project.
34766 SHAFTER 115 34774 MIDWAY 115 1 1	MIDWAY-TUPMAN-RIO BRAVO-RENFRO 115kV [2600] (MIDWAY-RIOBRVTM)	P2	Line section w/o fault	75	84	89	25	26	90	76	100	62	89	Sensitivity only
34775 RENFRJCT 115 34760 RIO BRVO 115 1 1	MIDWAY - 2E 115kV & SMYRNA-SEMITROPIC-MIDWAY line	P2	Non-bus-tie breaker fault	74	90	98	26	36	96	78	111	70	98	Sensitivity only
	MIDWAY 115kV - Section 1E & 2E	P2	Bus-tie breaker fault	74	90	98	26	36	96	78	111	70	98	Sensitivity only
	MIDWAY 115kV Section 2E	P2	Bus Section Fault	74	90	98	26	36	96	78	111	70	98	Sensitivity only
	MIDWAY-SHAFTER 115kV [2610]	P1	N-1(Transmission Line)	73	85	93	26	36	91	75	105	67	93	Sensitivity only
34777 FELLOWSG 115 34800 SANTA FE SUB 115 1 1	MARICOPA-CADET 70kV [0] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	102	102	<90	114	113	101	102	<90	108	102	System upgrade or preferred resource
	MIDWAY - 2D 115kV & MIDWAY-RENFRO-TUPMAN line	P2	Non-bus-tie breaker fault	59	58	60	73	97	51	59	50	131	60	Sensitivity only
	MIDWAY - 2D 115kV & MIDWAY-TEMBLOR line	P2	Non-bus-tie breaker fault	59	58	60	73	97	51	59	50	131	60	Sensitivity only
	MIDWAY 115kV - Section 2D & 2E	P2	Bus-tie breaker fault	59	58	61	73	97	52	60	51	131	61	Sensitivity only
	MIDWAY 115kV Section 2D	P2	Bus Section Fault	59	58	60	73	97	51	59	50	131	60	Sensitivity only
	MIDWAY-TAFT 115kV [2620]	P1	N-1(Transmission Line)	59	58	60	73	97	51	60	50	131	60	Sensitivity only



Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
	TAFT 115kV - Ring R2 & R1	P2	Non-bus-tie breaker fault	72	71	74	76	98	65	72	66	139	74	Sensitivity only
	TAFT 115kV - Ring R2 & R3	P2	Non-bus-tie breaker fault	58	58	60	75	97	51	59	50	131	60	Sensitivity only
34777 FELLOWSG 115 39070 AEVICTORYJT 115 1 1	MIDWAY - 2D 115kV & MIDWAY-RENFRO-TUPMAN line	P2	Non-bus-tie breaker fault	NA	62	48	NA	90	54	NA	53	122	64	Sensitivity only
	MIDWAY - 2D 115kV & MIDWAY-TEMBLOR line	P2	Non-bus-tie breaker fault	NA	62	48	NA	90	54	NA	53	122	64	Sensitivity only
	MIDWAY 115kV - Section 2D & 2E	P2	Bus-tie breaker fault	NA	62	48	NA	90	54	NA	53	122	65	Sensitivity only
	MIDWAY 115kV Section 2D	P2	Bus Section Fault	NA	62	48	NA	90	54	NA	53	122	64	Sensitivity only
	MIDWAY-TAFT 115kV [2620]	P1	N-1(Transmissio n Line)	NA	62	48	NA	90	54	NA	53	122	64	Sensitivity only
	MIDWAY-TAFT 115kV [2620] & MARICOPA-CADET 70kV [0]	P6	N-1-1	<90	100	<90	<90	107	100	<90	<90	<90	100	Redispatch Generation
	TAFT 115kV - Ring R2 & R1	P2	Non-bus-tie breaker fault	NA	75	62	NA	91	68	NA	69	130	78	Sensitivity only
	TAFT 115kV - Ring R2 & R3	P2	Non-bus-tie breaker fault	NA	62	48	NA	90	54	NA	53	122	64	Sensitivity only
34779 MIDSUN 115 34777 FELLOWSG 115 1 1	MIDWAY-TAFT 115kV [2620] & MARICOPA-CADET 70kV [0]	P6	N-1-1	100	<90	<90	106	<90	<90	100	<90	<90	<90	System upgrade or preferred resource
34794 TEMBLOR 115 34796 CARRIZO 115 1 1	MIDWAY 230kV - Section 1E & 1F	P2	Bus-tie breaker fault	NA	48	44	NA	105	58	NA	55	5	38	Redispatch Generation
	MIDWAY - 2D 115kV & MIDWAY-RENFRO-TUPMAN line	P2	Non-bus-tie breaker fault	51	50	52	63	83	44	51	43	113	52	Sensitivity only
	MIDWAY - 2D 115kV & MIDWAY-TEMBLOR line	P2	Non-bus-tie breaker fault	51	50	52	63	83	44	51	43	113	52	Sensitivity only
	MIDWAY 115kV - Section 2D & 2E	P2	Bus-tie breaker fault	51	50	52	63	84	44	52	44	113	52	Sensitivity only

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
34800 SANTA FE SUB 115 34802 MIDSET 115 1 1	MIDWAY 115kV Section 2D	P2	Bus Section Fault	51	50	52	63	83	44	51	43	113	52	Sensitivity only
	MIDWAY-TAFT 115kV [2620]	P1	N-1(Transmissio n Line)	51	50	52	63	83	44	51	43	113	52	Sensitivity only
	TAFT 115kV - Ring R2 & R1	P2	Non-bus-tie breaker fault	62	61	64	65	84	56	62	57	120	64	Sensitivity only
	TAFT 115kV - Ring R2 & R3	P2	Non-bus-tie breaker fault	50	50	52	65	83	44	51	43	113	52	Sensitivity only
34802 MIDSET 115 34776 TAFT 115 1 1	TAFT 115kV - Ring R2 & R1	P2	Non-bus-tie breaker fault	39	39	43	40	64	34	42	35	102	43	Sensitivity only
34860 TAFT A 70.0 34881 TAFT_SW_TAFM 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	172	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34861 TAFT A_J 70.0 34863 MOCO_JCT 70.0 1 1	MIDWAY-TAFT 115kV [2620] & FELLOWS-MIDSUN 115kV [1570]	P6	N-1-1	<90	<90	<90	189	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34862 MARICOPA 70.0 34867 GARDNR T 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	184	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34863 MOCO_JCT 70.0 34862 MARICOPA 70.0 1 1	MIDWAY-TAFT 115kV [2620] & FELLOWS-MIDSUN 115kV [1570]	P6	N-1-1	<90	<90	<90	133	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34867 GARDNR T 70.0 34875 Q620TP 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	183	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34868 COPUS_D 70.0 34887 S_KERN_TP 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	173	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34874 WHEELER 70.0 34756 WHEELER 115 2 1	MIDWAY-WHEELER RIDGE #1 230kV [5190] & Q946SWSTA-MIDWAY 230kV [0]	P6	N-1-1	<90	<90	<90	187	<90	<90	<90	<90	<90	<90	Scope Under Review: Wheeler Ridge Junction Project
34882 SAN EMDO 70.0 34904 OLD RIVR 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	166	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34887 S_KERN_TP 70.0 34882 SAN EMDO 70.0 1 1	FELLOWS-MIDSUN 115kV [1570] & MIDWAY-TAFT 115kV [2620]	P6	N-1-1	<90	<90	<90	166	<90	<90	<90	<90	<90	<90	Mitigation Under Review (Extend the Summer Setup)
34890 WEEDPATCH 70.0 34874 WHEELER 70 1 1	Kern Canyon PH & Rio Bravo PH	P3	G-1-1	95	96	101	<90	<90	104	<90	110	91	101	Scope Under Review: Wheeler Ridge-Weedpatch 70 kV Line Reconductor Project
365550 Q946SWSTA 230 38645 WHLR RJ2 230 2 1	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	93	126	153	55	99	129	95	134	111	NConv	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY 230kV Section 1D	P2	Bus Section Fault	93	125	150	54	98	127	94	131	109	160	Scope Under Review: Wheeler Ridge Junction Project
38600 BUENAVJ1 230 30970 MIDWAY 230 1 1	Q946SWSTA-MIDWAY 230kV [0] & Q946-Q946SWSTA #1 230kV [0]	P6	N-1-1	<90	117	136	<90	<90	119	<90	123	106	137	Scope Under Review: Wheeler Ridge Junction Project

Overloaded Facility	Contingency (All and Worst P6)	Category	Category Description	Loading % (Baseline Scenarios)					Loading % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
38600 BUENAVJ1 230 38640 WHLR RJ1 230 1 1	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	86	113	136	55	66	115	87	119	77	139	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	74	98	115	47	55	100	75	103	64	117	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	87	115	140	58	67	118	88	121	77	NConv	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY 230kV Section 2D	P2	Bus Section Fault	86	113	136	55	66	115	87	119	77	139	Scope Under Review: Wheeler Ridge Junction Project
	Q946-Q946SWSTA #1 230kV [0] & Q946SWSTA-MIDWAY 230kV [0]	P6	N-1-1	<90	106	124	<90	<90	108	<90	111	<90	126	Scope Under Review: Wheeler Ridge Junction Project
	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	73	97	114	47	54	100	74	102	63	115	Scope Under Review: Wheeler Ridge Junction Project
	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	82	107	125	47	84	109	83	112	95	127	Scope Under Review: Wheeler Ridge Junction Project
38640 WHLR RJ1 230 38650 WND GPJ1 230 1 1	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	78	102	123	48	56	104	80	108	66	126	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	66	87	103	40	45	90	67	92	54	104	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	80	104	127	51	57	107	81	110	66	NConv	Scope Under Review: Wheeler Ridge Junction Project
	MIDWAY 230kV Section 2D	P2	Bus Section Fault	78	102	123	48	56	104	80	108	66	126	Scope Under Review: Wheeler Ridge Junction Project
	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	66	87	102	40	44	89	67	92	53	103	Scope Under Review: Wheeler Ridge Junction Project
	Q946SWSTA-MIDWAY 230kV [0] & Q946-Q946SWSTA #1 230kV [0]	P6	N-1-1	<90	<90	112	<90	<90	<90	<90	101	<90	113	Scope Under Review: Wheeler Ridge Junction Project
	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	74	96	113	40	74	99	75	102	84	114	Scope Under Review: Wheeler Ridge Junction Project

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
3EMIDIO 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.94	0.85	1.02	1.01	0.93	1.01	0.91	0.94	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
3EMIDIO 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.03	0.95	0.88	1.02	1.01	0.95	1.02	0.94	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
3EMIDIO 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.95	0.88	1.02	1.02	0.95	1.02	0.93	0.96	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
7STNDRD 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.07	1.04	1.03	1.03	1.03	1.02	1.00	Load power factor correction and voltage support if needed
7STNDRD 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
ARVIN 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
ARVIN 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.02	0.94	1.02	0.92	0.97	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ARVIN 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.03	0.96	1.02	0.95	1.01	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ARVIN 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.88	1.03	1.03	0.95	1.02	0.94	0.98	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
ARVIN 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
ARVIN_ED 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.03	1.02	1.02	1.01	1.01	1.00	Load power factor correction and voltage support if needed
ARVIN_ED 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.06	1.03	0.99	1.00	1.01	1.00	0.89	Sensitivity Only
ARVINJ1 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed



Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
ARVINJ1 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.06	1.03	1.00	1.01	1.01	1.01	0.90	Sensitivity Only
ARVINJ2 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.03	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed
ARVINJ2 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.06	1.03	0.99	1.01	1.01	1.00	0.89	Sensitivity Only
BEAR MTN 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.03	1.02	1.00	Load power factor correction and voltage support if needed
BEAR MTN 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
BEAR TAP 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
BEAR TAP 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.03	1.00	1.01	1.02	1.01	0.89	Sensitivity Only
BKRSFLDA 230kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	0.98	0.96	0.96	1.01	0.99	0.96	0.97	0.98	0.96	0.90	Sensitivity Only
BOLTHSE 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.99	1.05	1.03	0.99	1.00	1.01	1.00	0.88	Sensitivity Only
BRY_PTLM 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.03	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
BSCL_PLD 70kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.02	1.02	Load power factor correction and voltage support if needed
BSCSCH T 70kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.02	1.02	Load power factor correction and voltage support if needed
BUENAVJ1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.98	0.93	0.91	1.01	0.97	0.93	0.97	0.93	0.92	0.89	Sensitivity Only

Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
BUENAVJ1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.83	0.76	1.00	0.89	0.83	0.91	0.81	0.83	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.96	0.92	0.89	1.01	0.96	0.92	0.96	0.91	0.92	0.42	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.92	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.98	0.93	0.91	1.01	0.97	0.93	0.97	0.93	0.92	0.89	Sensitivity Only
BUENAVJ2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.96	0.91	0.88	1.01	0.94	0.91	0.96	0.90	0.90	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.92	0.85	0.79	0.99	0.93	0.84	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.97	0.92	0.89	1.01	0.95	0.92	0.96	0.91	0.91	0.85	Scope Under Review: Wheelerridge voltage support project.
BUENAVJ2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
BUENAVT1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.98	0.93	0.91	1.01	0.97	0.93	0.97	0.93	0.92	0.89	Sensitivity Only
BUENAVT1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.83	0.76	1.00	0.89	0.83	0.91	0.81	0.83	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVT1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.96	0.92	0.89	1.01	0.96	0.92	0.96	0.91	0.92	<0.90	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
BUENAVT1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.92	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.
BUENAVT1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.98	0.93	0.91	1.01	0.97	0.93	0.97	0.93	0.92	0.89	Sensitivity Only
BUENAVT2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
BUENAVT2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.96	0.91	0.87	1.01	0.94	0.91	0.96	0.90	0.90	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVT2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.92	0.85	0.78	0.99	0.93	0.84	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
BUENAVT2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.96	0.92	0.89	1.01	0.95	0.92	0.96	0.91	0.91	0.85	Scope Under Review: Wheelerridge voltage support project.
BUENAVT2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
CADET 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.06	1.03	1.03	1.03	1.03	1.02	1.02	Load power factor correction and voltage support if needed
CALWATER 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
CALWATER 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.00	1.02	1.02	1.01	0.89	Sensitivity Only
CALWTRTP 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
CALWTRTP 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.00	1.02	1.02	1.01	0.89	Sensitivity Only
CASTAC 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.01	0.97	0.90	1.02	1.01	0.96	1.00	0.95	0.98	0.88	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
CASTAC 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.00	0.93	0.84	1.01	1.00	0.92	1.00	0.90	0.93	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
CASTAC 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.00	0.94	0.87	1.02	1.01	0.94	1.00	0.93	0.98	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
CASTAC 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.00	0.94	0.86	1.01	1.01	0.93	1.00	0.92	0.95	0.81	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
CASTAC 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.01	0.97	0.90	1.02	1.01	0.96	1.00	0.95	0.98	0.88	Sensitivity Only
CAWELO C 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.04	1.03	1.03	1.03	1.03	0.98	Load power factor correction and voltage support if needed
CAWELO C 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.03	1.02	1.05	1.04	1.02	1.03	1.02	1.03	0.88	Sensitivity Only
CAWELO C 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.01	1.05	1.04	1.02	1.02	1.03	1.02	0.87	Sensitivity Only
CELERON 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.07	1.02	1.03	1.03	1.03	1.01	1.02	Load power factor correction and voltage support if needed
CHARKA 115kV	Base Case	P0	Basecase	1.03	1.02	1.02	1.05	1.03	1.02	1.03	1.01	1.00	1.01	Load power factor correction and voltage support if needed
COLUMBUS 115kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed
COLUMBUS 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	0.99	1.06	1.03	1.00	1.01	1.02	1.01	0.89	Sensitivity Only
COPUS_D 70kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.02	1.02	Load power factor correction and voltage support if needed
COPUS_E 70kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.02	1.02	Load power factor correction and voltage support if needed
CUYAMA 70kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.04	1.02	Load power factor correction and voltage support if needed
CUYAMA2 70kV	Base Case	P0	Basecase	1.05	1.00	0.99	1.07	1.02	0.99	1.00	0.99	0.98	0.99	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
CYMRIC 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.03	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
DEXZEL 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.03	1.02	0.99	Load power factor correction and voltage support if needed
DEXZEL 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.01	1.02	0.89	Sensitivity Only
DEXZEL 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
DEXZEL 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
DISCOVER 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	0.99	Load power factor correction and voltage support if needed
DISCOVER 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.89	Sensitivity Only
DISCOVER 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
DISCOVER 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.00	1.06	1.04	1.01	1.02	1.02	1.02	0.89	Sensitivity Only
DOUBLECJ 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.03	1.02	Load power factor correction and voltage support if needed
DSCVRYTP 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.03	1.02	0.99	Load power factor correction and voltage support if needed
DSCVRYTP 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.89	Sensitivity Only
DSCVRYTP 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
DSCVRYTP 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only



Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
EANDB 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.02	1.01	Load power factor correction and voltage support if needed
EANDBJT 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.02	1.02	Load power factor correction and voltage support if needed
ELK HLLS 70kV	Base Case	P0	Basecase	1.02	1.00	1.00	1.06	1.02	1.00	1.00	1.00	0.99	1.00	Load power factor correction and voltage support if needed
EMDO JCT 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.03	0.98	0.92	1.03	1.02	0.98	1.02	0.97	1.00	0.90	Short Term: No issue; Long Term : Wheeler Ridge Voltage Support ( San Emdo SVD)/Monitor the sensitivity scenario
EMDO JCT 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.95	0.86	1.03	1.01	0.94	1.02	0.92	0.95	<0.90	Short Term: No issue; Long Term : Wheeler Ridge Voltage Support ( San Emdo SVD)/Monitor the sensitivity scenario
EMDO JCT 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.03	0.96	0.89	1.03	1.02	0.96	1.02	0.95	1.00	<0.90	Short Term: No issue; Long Term : Wheeler Ridge Voltage Support ( San Emdo SVD)/Monitor the sensitivity scenario
EMDO JCT 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.95	0.88	1.02	1.02	0.95	1.02	0.94	0.97	0.83	Short Term: No issue; Long Term : Wheeler Ridge Voltage Support ( San Emdo SVD)/Monitor the sensitivity scenario
EMDO JCT 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.03	0.98	0.92	1.03	1.02	0.98	1.02	0.97	1.00	0.90	Short Term: No issue; Long Term : Wheeler Ridge Voltage Support ( San Emdo SVD)/Monitor the sensitivity scenario
FAMOSO 115kV	Base Case	P0	Basecase	1.03	1.01	1.01	1.05	1.03	1.01	1.03	1.01	1.00	1.01	Load power factor correction and voltage support if needed
FELLOWSG 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.03	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
FRITO LY 115kV	Base Case	P0	Basecase	1.05	1.03	1.04	1.06	1.04	1.04	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
FRTLYTP 115kV	Base Case	P0	Basecase	1.06	1.03	1.04	1.06	1.04	1.04	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
GANSO 115kV	Base Case	P0	Basecase	1.05	1.03	1.04	1.06	1.03	1.04	1.05	1.03	1.01	1.03	Load power factor correction and voltage support if needed
GARDNER 70kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.02	1.02	1.03	1.02	1.03	1.02	Load power factor correction and voltage support if needed
GARDNR T 70kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.02	1.02	1.03	1.02	1.03	1.02	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
GODN_BER 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
GODN_BER 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.01	0.89	Sensitivity Only
GODN_BER 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.01	0.87	Sensitivity Only
GODN_BER 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
GOSE LKE 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.05	1.03	1.03	1.03	1.02	1.03	Load power factor correction and voltage support if needed
GRAPEVNE 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.01	0.97	0.91	1.02	1.01	0.97	1.01	0.95	0.98	0.88	Sensitivity Only
GRAPEVNE 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.01	0.93	0.85	1.02	1.00	0.92	1.00	0.90	0.94	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
GRAPEVNE 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.01	0.95	0.88	1.02	1.01	0.94	1.00	0.93	0.98	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
GRAPEVNE 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.01	0.94	0.87	1.02	1.01	0.94	1.01	0.92	0.95	0.81	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
GRAPEVNE 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.01	0.97	0.91	1.02	1.01	0.97	1.01	0.95	0.98	0.88	Sensitivity Only
GRIMWAY 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.03	1.02	1.02	1.01	1.01	1.00	Load power factor correction and voltage support if needed
GRIMWAY 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.05	1.00	0.98	1.07	1.03	0.99	1.00	1.00	1.00	0.89	Sensitivity Only
GRMMWY T 70kV	Base Case	P0	Basecase	1.06	1.00	1.00	1.04	1.00	1.00	1.00	0.99	1.00	0.99	Load power factor correction and voltage support if needed
GRMWY_SM 70kV	Base Case	P0	Basecase	1.06	1.00	0.99	1.04	1.00	0.99	1.00	0.99	1.00	0.99	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
HIGHSRA 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.03	1.02	Load power factor correction and voltage support if needed
INERGY 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
INERGYT1 12.47kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
INERGYT2 12.47kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.03	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
KELLEY 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.97	0.91	1.02	1.01	0.97	1.02	0.96	0.99	0.89	Sensitivity Only
KELLEY 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.94	0.85	1.02	1.00	0.93	1.01	0.91	0.94	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
KELLEY 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.95	0.88	1.02	1.01	0.95	1.01	0.94	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
KELLEY 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.94	0.87	1.02	1.01	0.94	1.01	0.93	0.96	0.81	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
KELLEY 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.97	0.91	1.02	1.01	0.97	1.02	0.96	0.99	0.89	Sensitivity Only
KERN OIL 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.02	1.02	0.99	Load power factor correction and voltage support if needed
KERN OIL 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.01	1.02	0.89	Sensitivity Only
KERN OIL 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
KERN OIL 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
KERN PP 230kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	0.98	0.97	0.96	1.01	0.99	0.96	0.97	0.98	0.96	0.88	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
KERN PWR 115kV	Base Case	P0	Basecase	1.06	1.04	1.03	1.07	1.04	1.04	1.04	1.03	1.02	1.02	Load power factor correction and voltage support if needed
KERN1 T 13.2kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.00	0.97	0.96	1.02	1.00	0.97	0.98	0.98	0.97	0.87	Sensitivity Only
KERN2 T 13.2kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.00	0.97	0.96	1.02	1.00	0.97	0.98	0.98	0.97	0.87	Sensitivity Only
KERNFRNT 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.03	1.02	1.02	1.02	1.01	0.99	Load power factor correction and voltage support if needed
KERNFRNT 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.03	1.01	1.00	1.04	1.03	1.00	1.01	1.00	1.01	0.88	Sensitivity Only
KERNFRNT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.03	1.01	1.00	1.05	1.03	1.00	1.01	0.99	1.01	0.86	Sensitivity Only
KERNFRNT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.99	1.05	1.03	1.00	1.01	1.01	1.00	0.88	Sensitivity Only
KERNRDGE 115kV	Midsun-Midway & Midway-Temblor 115 kV Lines	P7	N-2(Common structure)	1.03	0.94	0.95	0.85	0.93	0.93	1.03	0.93	0.92	0.93	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
KERNRDGE 115kV	MIDWAY - 2D 115kV & MIDWAY-TEMBLOR line	P2	Non-bus-tie breaker fault	1.03	0.94	0.95	0.85	0.93	0.93	1.03	0.93	0.92	0.93	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
KERNRDGE 115kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1	1.03	0.94	0.95	0.85	0.93	0.93	1.03	0.93	0.92	0.93	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
KERNRDGE 115kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P2	Bus Section Fault	1.03	0.94	0.95	0.85	0.93	0.93	1.03	0.93	0.92	0.93	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
KERNWATR 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.03	1.02	1.00	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
KERNWATR 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.01	0.88	Sensitivity Only
KERNWATR 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.00	1.05	1.04	1.00	1.01	1.00	1.01	0.86	Sensitivity Only
KERNWATR 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
KNG_ELIS 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.07	1.03	1.03	1.03	1.03	1.01	1.02	Load power factor correction and voltage support if needed
KRN CNYN 70kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.04	1.03	1.03	1.03	1.03	1.03	1.03	Load power factor correction and voltage support if needed
KRN OLJ 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
KRN OLJ 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.01	0.88	Sensitivity Only
KRN OLJ 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.01	1.00	1.01	0.86	Sensitivity Only
KRN OLJ 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.00	1.02	1.02	1.01	0.89	Sensitivity Only
KRNFRNTT 115kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.06	1.04	1.02	1.03	1.02	1.02	0.99	Load power factor correction and voltage support if needed
KRNFRNTT 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.03	1.01	1.01	1.05	1.03	1.01	1.02	1.00	1.01	0.89	Sensitivity Only
KRNFRNTT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.03	1.01	1.02	1.00	1.01	0.87	Sensitivity Only
KRNFRNTT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.01	1.00	1.05	1.03	1.00	1.01	1.01	1.01	0.88	Sensitivity Only
KTL_SF_J1 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.01	1.01	Load power factor correction and voltage support if needed



Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
KTL_SF_J1 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	0.99	1.06	1.04	1.00	1.01	1.01	1.01	0.90	Sensitivity Only
LAKEVIEW 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.03	0.98	0.92	1.03	1.02	0.98	1.02	0.97	1.00	0.90	Sensitivity Only
LAKEVIEW 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.95	0.86	1.02	1.01	0.94	1.02	0.92	0.95	<0.90	Scope Under Review: Wheelerridge voltage support project.
LAKEVIEW 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.03	0.96	0.89	1.03	1.02	0.96	1.02	0.95	1.00	<0.90	Scope Under Review: Wheelerridge voltage support project.
LAKEVIEW 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.95	0.88	1.02	1.02	0.95	1.02	0.94	0.97	0.83	Scope Under Review: Wheelerridge voltage support project.
LAKEVIEW 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.03	0.98	0.92	1.03	1.02	0.98	1.02	0.97	1.00	0.90	Sensitivity Only
LAMONT 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed
LAMONT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.07	1.03	0.99	1.01	1.01	1.00	0.89	Sensitivity Only
LEBEC 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.00	0.97	0.90	1.01	1.00	0.96	1.00	0.95	0.98	0.88	Sensitivity Only
LEBEC 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.00	0.93	0.84	1.01	1.00	0.92	1.00	0.90	0.93	<0.90	Scope Under Review: Wheelerridge voltage support project.
LEBEC 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.00	0.94	0.87	1.01	1.00	0.94	1.00	0.93	0.98	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
LEBEC 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.00	0.93	0.86	1.01	1.01	0.93	1.00	0.92	0.95	0.80	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
LEBEC 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.00	0.97	0.90	1.01	1.00	0.96	1.00	0.95	0.98	0.88	Sensitivity Only
LERDO 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.04	1.02	1.03	1.02	1.02	0.99	Load power factor correction and voltage support if needed
LERDO 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.89	Sensitivity Only
LERDO 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.01	1.00	1.05	1.04	1.01	1.02	1.02	1.01	0.88	Sensitivity Only
LIVE OAK 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	1.00	Load power factor correction and voltage support if needed
LIVE OAK 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.89	Sensitivity Only
LIVE OAK 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.87	Sensitivity Only
LIVE OAK 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.01	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
LRDO JCT 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.03	1.02	1.00	Load power factor correction and voltage support if needed
LRDO JCT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.05	1.02	1.02	1.06	1.04	1.02	1.02	1.01	1.02	0.90	Sensitivity Only
LRDO JCT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
MAGNDN J 70kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.04	1.03	1.03	1.03	1.03	1.03	1.03	Load power factor correction and voltage support if needed
MAGUDN J 115kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.03	1.02	1.02	1.02	1.01	0.99	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
MAGUDN J 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.99	1.06	1.03	0.99	1.01	1.01	1.00	0.88	Sensitivity Only
MAGUNDEN 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.04	1.03	1.03	1.03	1.03	1.03	1.03	Load power factor correction and voltage support if needed
MAGUNDEN 115kV	Base Case	P0	Basecase	1.04	1.02	1.01	1.06	1.04	1.01	1.02	1.01	1.01	0.98	Load power factor correction and voltage support if needed
MAGUNDEN 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.03	1.00	0.99	1.05	1.03	0.99	1.00	0.98	1.00	0.87	Sensitivity Only
MAGUNDEN 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.03	1.00	0.99	1.06	1.03	0.99	1.00	0.98	1.00	0.85	Sensitivity Only
MAGUNDEN 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.98	1.06	1.03	0.99	1.00	1.00	1.00	0.87	Sensitivity Only
MARICOPA 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.06	1.03	1.03	1.03	1.03	1.02	1.02	Load power factor correction and voltage support if needed
MCKIBBEN 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.04	1.02	1.04	1.02	1.01	1.02	Load power factor correction and voltage support if needed
MCKTTRCK 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.08	1.03	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
MDWY_P_S 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.08	1.03	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
MIDSET 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.03	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
MIDSUN 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.02	1.03	1.03	1.03	1.01	1.03	Load power factor correction and voltage support if needed
MIDWAY 115kV	Base Case	P0	Basecase	1.06	1.05	1.05	1.07	1.04	1.05	1.06	1.05	1.02	1.05	Load power factor correction and voltage support if needed
MOCO 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.06	1.03	1.03	1.03	1.03	1.02	1.02	Load power factor correction and voltage support if needed
MOCO_JCT 70kV	Base Case	P0	Basecase	1.05	1.03	1.02	1.06	1.03	1.03	1.03	1.03	1.02	1.02	Load power factor correction and voltage support if needed
NORCO 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.03	Load power factor correction and voltage support if needed
NORCO_TA 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.03	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
NORTHMWY 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.08	1.03	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
OGLE JCT 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.04	1.03	1.03	1.03	1.03	0.98	Load power factor correction and voltage support if needed
OGLE JCT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.03	1.03	1.05	1.04	1.02	1.03	1.02	1.03	0.88	Sensitivity Only
OGLE JCT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.01	1.05	1.04	1.02	1.02	1.03	1.02	0.87	Sensitivity Only
OGLE TAP 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.04	1.03	1.03	1.03	1.03	0.98	Load power factor correction and voltage support if needed
OGLE TAP 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.03	1.03	1.05	1.04	1.03	1.03	1.02	1.03	0.88	Sensitivity Only
OGLE TAP 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.01	1.05	1.04	1.02	1.03	1.03	1.03	0.87	Sensitivity Only
ORION 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
ORION 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.02	0.94	1.02	0.92	0.97	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ORION 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.03	0.96	1.02	0.95	1.01	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ORION 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.89	1.03	1.03	0.95	1.02	0.94	0.98	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
ORION 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
ORIONC1 34.5kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.96	0.88	1.03	1.02	0.96	1.03	0.94	1.01	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
ORIONC1 34.5kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.97	0.90	1.03	1.03	0.97	1.03	0.95	1.01	0.84	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
ORIONC2 34.5kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.96	0.88	1.03	1.03	0.96	1.03	0.94	1.01	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ORIONC2 34.5kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.97	0.90	1.03	1.03	0.97	1.03	0.95	1.01	0.84	Sensitivity Only
ORIONTP 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
ORIONTP 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.02	0.94	1.02	0.92	0.97	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ORIONTP 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.03	0.96	1.02	0.95	1.01	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
ORIONTP 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.88	1.03	1.03	0.95	1.02	0.94	0.98	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
ORIONTP 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
PACI_PIP 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.01	0.97	0.91	1.02	1.01	0.97	1.01	0.96	0.98	0.88	Sensitivity Only
PACI_PIP 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.01	0.93	0.85	1.02	1.00	0.93	1.00	0.91	0.94	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
PACI_PIP 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.01	0.95	0.88	1.02	1.01	0.94	1.00	0.93	0.98	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
PACI_PIP 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.01	0.94	0.87	1.02	1.01	0.94	1.01	0.92	0.95	0.81	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario



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High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
PACI_PIP 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.01	0.97	0.91	1.02	1.01	0.97	1.01	0.96	0.98	0.88	Sensitivity Only
PONDROAD 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.04	1.02	1.04	1.02	1.02	1.02	Load power factor correction and voltage support if needed
POSO MT 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.04	1.02	1.03	1.02	1.01	0.99	Load power factor correction and voltage support if needed
POSO MT 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.03	1.01	1.01	1.04	1.03	1.01	1.01	1.00	1.01	0.88	Sensitivity Only
POSO MT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.03	1.01	1.00	1.05	1.03	1.00	1.01	1.00	1.01	0.86	Sensitivity Only
POSO MT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.99	1.05	1.03	1.00	1.01	1.01	1.00	0.88	Sensitivity Only
POSOMTJT 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.02	1.02	0.99	Load power factor correction and voltage support if needed
POSOMTJT 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.01	1.02	0.89	Sensitivity Only
POSOMTJT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.01	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
POSOMTJT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
PSE-3 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.03	1.02	Load power factor correction and voltage support if needed
PTRL JCT 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.03	1.03	1.02	1.00	Load power factor correction and voltage support if needed
PTRL JCT 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.01	1.02	0.89	Sensitivity Only
PTRL JCT 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
PTRL JCT 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.01	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
Q356 70kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.07	1.05	1.03	1.03	1.03	1.04	1.03	Load power factor correction and voltage support if needed
Q356TP 70kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.07	1.05	1.03	1.03	1.03	1.04	1.03	Load power factor correction and voltage support if needed
Q482 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.05	1.02	1.04	1.02	1.03	1.02	Load power factor correction and voltage support if needed
Q557 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.05	1.02	1.04	1.02	1.03	1.02	Load power factor correction and voltage support if needed
Q620 70kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.02	1.02	1.03	1.02	1.03	1.02	Load power factor correction and voltage support if needed
Q620C1 13.8kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.01	1.01	Load power factor correction and voltage support if needed
Q620C2 13.8kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.02	1.02	1.02	1.02	1.01	1.02	Load power factor correction and voltage support if needed
Q620TP 70kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.02	1.02	1.03	1.02	1.03	1.02	Load power factor correction and voltage support if needed
Q622BSS 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.05	1.04	1.03	1.04	1.03	1.02	1.01	Load power factor correction and voltage support if needed
Q653EAC2 34.5kV	Base Case	P0	Basecase	1.03	1.03	1.03	1.06	1.07	1.03	1.03	1.03	1.06	1.03	Load power factor correction and voltage support if needed
Q744 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.02	1.00	Load power factor correction and voltage support if needed
Q744 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.05	1.00	0.99	1.07	1.03	0.99	1.01	1.01	1.01	0.90	Sensitivity Only
Q946SWSTA 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
Q946SWSTA 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.86	1.02	0.95	0.90	0.95	0.89	0.90	0.85	Scope Under Review: Wheelerridge voltage support project.

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High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
Q946SWSTA 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.96	0.91	0.86	1.01	0.94	0.90	0.96	0.89	0.90	<0.90	Scope Under Review: Wheelerridge voltage support project.
Q946SWSTA 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.85	0.79	0.99	0.93	0.84	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
Q946SWSTA 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.96	0.91	0.88	1.01	0.95	0.91	0.96	0.90	0.91	0.84	Scope Under Review: Wheelerridge voltage support project.
Q946SWSTA 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
Q946SWSTA 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.02	0.96	0.90	0.95	0.90	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
Q988 70kV	Base Case	P0	Basecase	1.05	1.02	1.02	1.06	1.02	1.02	1.03	1.02	1.03	1.02	Load power factor correction and voltage support if needed
RASMSNTP 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	0.99	Load power factor correction and voltage support if needed
RASMSNTP 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.89	Sensitivity Only
RASMSNTP 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only
RASMSNTP 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
RASMUSEN 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	0.99	Load power factor correction and voltage support if needed
RASMUSEN 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.04	1.02	1.02	1.05	1.04	1.02	1.02	1.01	1.02	0.89	Sensitivity Only
RASMUSEN 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.04	1.02	1.01	1.05	1.04	1.01	1.02	1.00	1.02	0.87	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
RASMUSEN 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.02	1.00	1.06	1.04	1.01	1.02	1.02	1.01	0.89	Sensitivity Only
REGULUS 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed
REGULUS 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.07	1.03	0.99	1.01	1.01	1.00	0.89	Sensitivity Only
RENFRJCT 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
RENFRO 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
RENFRO2 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.06	1.04	1.03	1.04	1.02	1.00	1.02	Load power factor correction and voltage support if needed
RIO BRVO 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
RIOBRVQF 70kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.04	1.03	1.03	1.03	1.03	1.03	1.03	Load power factor correction and voltage support if needed
RIOBRVTM 115kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.06	1.04	1.05	1.05	1.04	1.01	1.04	Load power factor correction and voltage support if needed
RNFROTP1 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
RNFROTP2 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.06	1.04	1.03	1.04	1.02	1.00	1.02	Load power factor correction and voltage support if needed
ROSE 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.98	0.92	1.02	1.02	0.97	1.02	0.96	0.99	0.89	Sensitivity Only
ROSE 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.94	0.86	1.02	1.01	0.93	1.01	0.91	0.95	<0.90	Scope Under Review: Wheelerridge voltage support project.
ROSE 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.02	1.02	0.95	1.01	0.94	0.99	<0.90	Scope Under Review: Wheelerridge voltage support project.
ROSE 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.95	0.88	1.02	1.02	0.95	1.02	0.93	0.96	0.82	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
ROSE 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.98	0.92	1.02	1.02	0.97	1.02	0.96	0.99	0.89	Sensitivity Only
ROSEDAL 115kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.07	1.04	1.04	1.04	1.03	1.02	1.02	Load power factor correction and voltage support if needed
S_KERN 70kV	Base Case	P0	Basecase	1.03	1.03	1.03	1.05	1.07	1.03	1.03	1.03	1.06	1.03	Load power factor correction and voltage support if needed
S_KERN_TP 70kV	Base Case	P0	Basecase	1.03	1.03	1.03	1.05	1.07	1.03	1.03	1.03	1.06	1.03	Load power factor correction and voltage support if needed
SAN EMDO 70kV	Base Case	P0	Basecase	1.03	1.03	1.02	1.05	1.05	1.03	1.03	1.02	1.04	1.02	Scope Under Review: Wheelerridge voltage support project.
SANTA FE SUB 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.03	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
SEMI_TAP 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
SEMITR&1 115kV	Base Case	P0	Basecase	1.04	1.02	1.03	1.06	1.03	1.03	1.04	1.02	1.01	1.02	Load power factor correction and voltage support if needed
SEMITROPIC_D 115kV	Base Case	P0	Basecase	1.04	1.02	1.03	1.06	1.03	1.03	1.04	1.02	1.01	1.02	Load power factor correction and voltage support if needed
SEMITROPIC_E 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
SEMITRPJ 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.03	1.03	1.04	1.02	1.01	1.02	Load power factor correction and voltage support if needed
SHAFTER 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.00	1.02	Load power factor correction and voltage support if needed
SLR_TANH 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.03	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
SM1T013141 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
SMTRPCWS 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
SMYRNA 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.04	1.02	1.04	1.02	1.02	1.02	Load power factor correction and voltage support if needed
SN BRNRD 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.87	1.03	1.01	0.94	1.02	0.92	0.96	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
SN BRNRD 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.96	1.02	0.95	1.00	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak



Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
SN BRNRD 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.89	1.03	1.02	0.96	1.02	0.94	0.97	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
STALIONJ 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
STALIONJ 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.02	0.94	1.02	0.92	0.96	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
STALIONJ 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.96	1.02	0.95	1.00	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
STALIONJ 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.89	1.03	1.03	0.96	1.02	0.94	0.98	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
STALIONJ 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
STALLION 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
STALLION 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.02	0.94	1.02	0.92	0.96	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
STALLION 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.96	1.02	0.95	1.00	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
STALLION 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.96	0.89	1.03	1.03	0.96	1.02	0.94	0.98	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
STALLION 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.99	0.92	1.03	1.03	0.98	1.02	0.97	1.01	0.90	Sensitivity Only
STCKDLEA 230kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	0.98	0.97	0.95	1.01	0.99	0.96	0.97	0.98	0.96	0.88	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
STCKDLEB 230kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	0.98	0.97	0.95	1.01	0.99	0.96	0.97	0.98	0.96	0.88	Sensitivity Only
STCKDLJ 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.01	1.01	Load power factor correction and voltage support if needed
STOCKDLE 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.01	Load power factor correction and voltage support if needed
STOCKDLE 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.06	1.03	1.00	1.01	1.01	1.01	0.90	Sensitivity Only
TAFT 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.03	1.03	1.03	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TAFT A 70kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.07	1.04	1.04	1.04	1.04	1.02	1.04	Load power factor correction and voltage support if needed
TAFT A_J 70kV	Base Case	P0	Basecase	1.05	1.04	1.03	1.07	1.03	1.04	1.04	1.04	1.02	1.03	Load power factor correction and voltage support if needed
TAFT_SW_TAFC 70kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.07	1.04	1.04	1.04	1.04	1.02	1.04	Load power factor correction and voltage support if needed
TAFT_SW_TAFM 70kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.07	1.04	1.04	1.04	1.04	1.02	1.04	Load power factor correction and voltage support if needed
TECUYA 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.89	Sensitivity Only
TECUYA 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.94	0.86	1.02	1.01	0.94	1.02	0.92	0.95	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TECUYA 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.95	1.02	0.94	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TECUYA 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.95	0.88	1.02	1.02	0.95	1.02	0.94	0.96	0.82	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
TECUYA 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.89	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
TECUYA T 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
TECUYA T 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.01	0.94	1.02	0.92	0.95	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TECUYA T 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.95	1.02	0.95	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TECUYA T 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.95	0.88	1.02	1.02	0.95	1.02	0.94	0.96	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
TECUYA T 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
TEJON 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
TEJON 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.94	0.86	1.03	1.01	0.94	1.02	0.92	0.95	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TEJON 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.95	1.02	0.94	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
TEJON 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.95	0.88	1.02	1.02	0.95	1.02	0.94	0.96	0.82	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
TEJON 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
TEMBLOR 70kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.03	1.03	1.03	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TEMBLOR 115kV	Midsun-Midway & Midway-Temblor 115 kV Lines	P7	N-2(Common structure)	1.03	0.94	0.95	0.86	0.93	0.93	1.03	0.93	0.92	0.94	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
TEMBLOR 115kV	MIDWAY - 2D 115kV & MIDWAY-TEMBLOR line	P2	Non-bus-tie breaker fault	1.03	0.94	0.95	0.86	0.93	0.93	1.03	0.93	0.92	0.94	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
TEMBLOR 115kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1(Transmission Line)	1.03	0.94	0.95	0.86	0.93	0.93	1.03	0.93	0.92	0.93	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
TEMBLOR 115kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P2	Bus Section Fault	1.03	0.94	0.95	0.86	0.93	0.93	1.03	0.93	0.92	0.94	Scope Under Review: Midway-Temblor 115 kV Line Reconductor and Voltage Support
TEVIS 115kV	Base Case	P0	Basecase	1.06	1.02	1.02	1.07	1.04	1.02	1.03	1.02	1.01	1.00	Load power factor correction and voltage support if needed
TEVIS 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.04	1.00	0.99	1.06	1.04	1.00	1.01	1.01	1.01	0.90	Sensitivity Only
TEVIS2 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.01	1.01	Load power factor correction and voltage support if needed
TEVISJ1 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.07	1.04	1.03	1.03	1.02	1.01	1.01	Load power factor correction and voltage support if needed
TEVISJ2 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.07	1.04	1.03	1.03	1.03	1.01	1.01	Load power factor correction and voltage support if needed
TEXCO_NM 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.03	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TPMNTP1 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TPMNTP2 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TUPMAN 115kV	Base Case	P0	Basecase	1.05	1.03	1.03	1.06	1.04	1.03	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
TX_BV_HL 70kV	Base Case	P0	Basecase	1.03	1.02	1.01	1.07	1.02	1.01	1.02	1.01	1.00	1.01	Load power factor correction and voltage support if needed
TX_ROSDL 115kV	Base Case	P0	Basecase	1.06	1.04	1.04	1.07	1.04	1.04	1.04	1.03	1.02	1.02	Load power factor correction and voltage support if needed
UNIVRSTY 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.05	1.03	1.03	1.03	1.03	1.02	1.03	Load power factor correction and voltage support if needed
VALPREDO 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.03	0.98	0.92	1.02	1.02	0.98	1.02	0.96	0.99	0.89	Sensitivity Only

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
VALPREDO 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.94	0.86	1.02	1.01	0.94	1.02	0.91	0.95	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
VALPREDO 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.03	0.96	0.89	1.02	1.02	0.95	1.02	0.94	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
VALPREDO 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.95	0.88	1.02	1.02	0.95	1.02	0.93	0.96	0.82	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
VALPREDO 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.03	0.98	0.92	1.02	1.02	0.98	1.02	0.96	0.99	0.89	Sensitivity Only
VEDDER 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.06	1.04	1.02	1.03	1.02	1.01	0.99	Load power factor correction and voltage support if needed
VEDDER 115kV	KERN PWR 115kV - Section 1E & 2E	P2	Non-bus-tie breaker	1.03	1.01	1.01	1.04	1.03	1.00	1.01	1.00	1.01	0.88	Sensitivity Only
VEDDER 115kV	KERN PWR 115kV Section 2E	P2	Non-bus-tie breaker	1.03	1.01	1.00	1.05	1.03	1.00	1.01	1.00	1.01	0.86	Sensitivity Only
VEDDER 115kV	Midway-Kern No. 3 & Midway-Kern No. 4 230 kV Lines	P7	N-2(Common structure)	1.03	1.00	0.99	1.05	1.03	1.00	1.01	1.01	1.00	0.88	Sensitivity Only
WEEDPATCH_SF 70kV	Base Case	P0	Basecase	1.06	1.01	1.00	1.04	1.01	1.01	1.01	1.00	1.01	1.00	Load power factor correction and voltage support if needed
WEEDPTCH 70kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.00	0.96	0.89	1.03	1.02	0.95	1.00	0.94	0.98	0.87	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
WEEDPTCH 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.00	0.92	0.83	1.03	1.01	0.91	1.00	0.89	0.93	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WEEDPTCH 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.00	0.93	0.86	1.03	1.01	0.93	1.00	0.91	0.98	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WEEDPTCH 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.00	0.93	0.85	1.03	1.02	0.92	1.00	0.91	0.95	0.79	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario



Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WEEDPTCH 70kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.00	0.96	0.89	1.03	1.02	0.95	1.00	0.94	0.98	0.87	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
WELLFILD 70kV	Base Case	P0	Basecase	1.06	1.00	0.99	1.04	1.00	0.99	1.00	0.99	1.00	0.99	Load power factor correction and voltage support if needed
WESTPARK 115kV	Base Case	P0	Basecase	1.06	1.03	1.03	1.07	1.04	1.03	1.04	1.03	1.02	1.01	Load power factor correction and voltage support if needed
WESTPLAT 115kV	Base Case	P0	Basecase	1.05	1.03	1.04	1.06	1.04	1.04	1.04	1.03	1.01	1.03	Load power factor correction and voltage support if needed
WHEELER 230kV	Base Case	P0	Basecase	0.99	0.97	0.97	1.02	0.98	0.97	0.99	0.97	0.95	0.96	Sensitivity Only
WHEELER 70kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.03	0.95	0.87	1.03	1.02	0.95	1.03	0.93	0.96	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WHEELER 70kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.03	0.97	0.90	1.03	1.02	0.96	1.03	0.95	1.00	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WHEELER 70kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.03	0.96	0.89	1.03	1.03	0.96	1.03	0.95	0.97	0.84	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
WHEELER 115kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
WHEELER 115kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	1.02	0.95	0.86	1.03	1.01	0.94	1.02	0.92	0.95	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WHEELER 115kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	1.02	0.96	0.89	1.03	1.02	0.96	1.02	0.95	0.99	<0.90	Short Term: No issue; Long Term : Monitor the 27 Peak
WHEELER 115kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	1.02	0.95	0.88	1.03	1.02	0.95	1.02	0.94	0.96	0.83	Short Term: No issue; Long Term : Monitor the 27 Peak and QF sensitivity scenario
WHEELER 115kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	1.02	0.98	0.92	1.03	1.02	0.98	1.02	0.97	0.99	0.90	Sensitivity Only
WHEELER 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.82	1.00	0.94	0.87	0.93	0.86	0.88	0.80	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WHEELER 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.86	1.02	0.95	0.90	0.95	0.89	0.90	0.85	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.93	0.84	0.77	1.00	0.89	0.83	0.92	0.82	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.85	0.79	1.00	0.93	0.85	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.85	0.79	1.01	0.90	0.85	0.92	0.83	0.85	0.74	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.82	1.00	0.94	0.87	0.93	0.86	0.88	0.80	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.02	0.95	0.90	0.95	0.90	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
WHEELER 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.94	0.88	0.85	1.01	0.91	0.88	0.94	0.88	0.87	0.84	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.95	0.88	0.83	1.00	0.94	0.88	0.94	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.91	0.87	1.01	0.95	0.90	0.95	0.90	0.90	0.86	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.84	0.76	1.00	0.89	0.83	0.91	0.81	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.86	0.81	1.00	0.93	0.86	0.92	0.85	0.89	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.92	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WHLR RJ1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.95	0.88	0.83	1.00	0.94	0.88	0.94	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.91	0.88	1.01	0.96	0.91	0.96	0.90	0.92	0.87	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ1 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.95	0.89	0.86	1.01	0.92	0.89	0.94	0.88	0.87	0.85	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.86	1.01	0.95	0.90	0.95	0.89	0.90	0.85	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.93	0.85	0.78	1.00	0.90	0.84	0.92	0.83	0.85	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.85	0.79	1.00	0.92	0.85	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.86	0.80	1.01	0.91	0.86	0.93	0.84	0.86	0.75	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.89	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
WHLR RJ2 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.94	0.88	0.84	1.01	0.91	0.88	0.93	0.87	0.86	0.83	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.88	0.83	1.00	0.94	0.88	0.94	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WHLR RT1 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.91	0.87	1.01	0.95	0.90	0.95	0.90	0.90	0.86	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.84	0.76	1.00	0.89	0.83	0.91	0.81	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.86	0.81	1.00	0.93	0.86	0.92	0.85	0.89	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.92	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.88	0.83	1.00	0.94	0.88	0.94	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.91	0.88	1.01	0.96	0.91	0.96	0.90	0.91	0.87	Scope Under Review: Wheelerridge voltage support project.
WHLR RT1 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.95	0.89	0.86	1.01	0.92	0.89	0.94	0.88	0.87	0.85	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.86	1.01	0.95	0.89	0.95	0.89	0.89	0.85	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.93	0.85	0.78	1.00	0.90	0.84	0.92	0.83	0.85	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.92	0.85	0.79	0.99	0.92	0.84	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.86	0.80	1.01	0.91	0.86	0.93	0.84	0.86	0.75	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WHLR RT2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.89	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
WHLR RT2 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.94	0.88	0.84	1.01	0.91	0.88	0.93	0.87	0.86	0.83	Scope Under Review: Wheelerridge voltage support project.
WILDWOOD1 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.05	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
WILDWOOD1TP 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.05	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
WILDWOOD2 115kV	Base Case	P0	Basecase	1.04	1.03	1.03	1.06	1.05	1.03	1.04	1.03	1.02	1.03	Load power factor correction and voltage support if needed
WND GPJ1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.88	0.83	1.00	0.94	0.88	0.93	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.90	0.90	0.86	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.84	0.76	1.00	0.89	0.83	0.92	0.81	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.86	0.80	1.00	0.93	0.86	0.92	0.85	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.88	0.83	1.00	0.94	0.88	0.93	0.87	0.89	0.81	Scope Under Review: Wheelerridge voltage support project.
WND GPJ1 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.91	0.88	1.01	0.96	0.91	0.95	0.90	0.91	0.87	Scope Under Review: Wheelerridge voltage support project.



Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WND GPJ1 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.95	0.89	0.85	1.01	0.92	0.89	0.94	0.88	0.87	0.84	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.86	1.01	0.95	0.90	0.95	0.89	0.89	0.85	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.93	0.85	0.78	1.00	0.90	0.84	0.92	0.83	0.85	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.85	0.79	1.00	0.92	0.85	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.85	0.79	1.01	0.91	0.85	0.92	0.84	0.86	0.75	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.89	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
WND GPJ2 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.94	0.88	0.84	1.01	0.91	0.88	0.93	0.87	0.86	0.83	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.88	0.83	1.00	0.94	0.87	0.93	0.87	0.88	0.81	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.90	0.90	0.86	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern  
High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WND GPT1 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.92	0.84	0.76	1.00	0.89	0.83	0.91	0.81	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.93	0.86	0.80	1.00	0.93	0.85	0.92	0.85	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.92	0.84	0.78	1.01	0.90	0.84	0.92	0.83	0.85	0.73	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.88	0.83	1.00	0.94	0.87	0.93	0.87	0.88	0.81	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.91	0.88	1.01	0.95	0.91	0.95	0.90	0.91	0.87	Scope Under Review: Wheelerridge voltage support project.
WND GPT1 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.95	0.89	0.85	1.01	0.92	0.89	0.94	0.88	0.87	0.84	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY - 2D 230kV & MIDWAY-MIDWAY-R12 #1 line	P2	Non-bus-tie breaker fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY - 2D 230kV & Q946SWSTA-MIDWAY line	P2	Non-bus-tie breaker fault	0.95	0.90	0.86	1.01	0.95	0.89	0.95	0.89	0.89	0.85	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY 230kV - Section 1E & 1D	P2	Bus-tie breaker fault	0.93	0.85	0.77	1.00	0.90	0.84	0.92	0.82	0.84	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY 230kV - Section 2D & 2E	P2	Bus-tie breaker fault	0.92	0.85	0.79	0.99	0.92	0.84	0.92	0.84	0.88	<0.90	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY 230kV Section 1D	P2	Bus Section Fault	0.93	0.85	0.79	1.01	0.91	0.85	0.92	0.84	0.86	0.75	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	MIDWAY 230kV Section 2D	P2	Bus Section Fault	0.94	0.87	0.81	1.00	0.94	0.87	0.93	0.86	0.88	0.79	Scope Under Review: Wheelerridge voltage support project.

Study Area: PG&E Kern

High/Low Voltages



Substation	Contingency (All and Worst P6)	Category	Category Description	Post Cont. Voltage Deviation % (Baseline Scenarios)					Post Cont. Voltage Deviation % (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
WND GPT2 230kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1(Transmission Line)	0.96	0.90	0.87	1.01	0.95	0.90	0.95	0.89	0.91	0.86	Scope Under Review: Wheelerridge voltage support project.
WND GPT2 230kV	Q946SWSTA-WHLR RJ2 230kV [0] No Fault	P2	Line section w/o fault	0.94	0.88	0.84	1.01	0.91	0.88	0.93	0.87	0.86	0.83	Scope Under Review: Wheelerridge voltage support project.
WSCOPRSN 115kV	Base Case	P0	Basecase	1.04	1.02	1.02	1.05	1.03	1.02	1.04	1.02	1.01	1.02	Load power factor correction and voltage support if needed

Study Area: PG&E Kern

Voltage Deviation



Substation	Contingency (All and Worst P6)	Category	Category Description	Voltage PU (Baseline Scenarios)					Voltage PU (Sensitivity Scenarios)					Project & Potential Mitigation Solutions
				2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	2022 SP High CEC Forecast	2019 SP Peak-Shift	2027 SP Peak-Shift	2022 SP Heavy Renewable & Min Gas Gen	2027 Retirement of QF Generations	
CARRIZO 115 kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1	1.5	6.6	5.9	12.8	6.8	7.4	1.5	7.4	7.7	7.3	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
CARRIZO 115 kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P1	N-1	1.5	6.6	5.9	12.8	7.0	7.4	1.5	7.5	7.7	7.1	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
KERNRIDGE 115 kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1	1.2	8.7	8.3	18.0	9.9	9.9	1.1	9.9	10.2	9.6	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
KERNRIDGE 115 kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P1	N-1	1.2	8.7	8.3	18.0	10.0	9.9	1.1	10.0	10.2	9.4	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
TEMBLOR 115 kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1	1.5	8.9	8.5	18.1	10.0	10.1	1.6	10.2	10.3	9.8	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
TEMBLOR 115 kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P1	N-1	1.6	9.0	8.5	18.1	10.1	10.2	1.6	10.2	10.3	9.6	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
TX-LOST 69 kV	MIDWAY-TEMBLOR 115kV [2630]	P1	N-1	0.6	4.2	4.0	8.6	4.7	4.7	0.5	4.8	4.9	4.6	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
TX-LOST 69 kV	MIDWAY-TEMBLOR 115kV [2630] (TEMBLOR-PSE MCKJ)	P1	N-1	0.6	4.2	4.0	8.6	4.8	4.8	0.5	4.8	4.9	4.5	Scope under review : Midway-Temblor 115 kV Line Recondcutor and voltage support project
Q946 230 kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1	1.5	8.9	8.5	0.5	3.3	9.0	5.2	9.4	5.3	12.1	Scope under review : Wheeler Ridge Voltage Support
Q946 230 kV Switching Station	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1	4.5	8.7	11.6	0.5	3.3	9.0	5.2	9.4	5.3	12.1	Scope under review : Wheeler Ridge Voltage Support
WHEELER 230 kV	Q946SWSTA-MIDWAY 230kV [0]	P1	N-1	3.5	6.9	9.4	0.6	2.4	7.2	4.0	7.5	3.9	9.8	Scope under review : Wheeler Ridge Voltage Support

Study Area: PG&E Kern

Transient Stability



Contingency	Category	Category Description	Transient Stability Performance (Number of voltage and frequency violations)										Potential Mitigation Solutions
			2019 Summer Peak	2022 Summer Peak	2027 Summer Peak	2019 Spring Light Load	2022 Spring Off-Peak	Select..	Select..	Select..	Select..	Select..	
LAPALOMA 3Ø FAULT WITH NORMAL CLEARING.	P1-1		0	0	0	0	0						No violation
ELK HILL 3Ø FAULT WITH NORMAL CLEARING.	P1-1		0	0	0	0	0						No violation
LINE WHLR RJ2 230.0 TO WND GPJ2 230.0 CIRCUIT 1 3Ø FAULT WITH NORMAL CLEARING.	P1-2		0	Nconv	Nconv	0	Nconv						Mitigation under review
MIDWAY 500/230 KV TRANSFORMER 3Ø FAULT WITH NORMAL CLEARING	P1-3		0	0	Nconv	0	0						Mitigation under review
KERN PP 230 KV SLG FAULT WITH NORMAL CLEARING	P2-2		0	0	0	0	0						No violation
FAMOSO 70 KV SLG FAULT WITH NORMAL CLEARING	P2-3		0	0	0	0	0						No violation
MIDWAY 230 KV NON BUS TIE STUCK BREAKER SLG FAULT ALONG WITH THE LOSS OF TRANSMISSION CIRCUIT	P4-2		0	0	0	0	0						No violation
MIDWAY 115 KV NON BUS TIE STUCK BREAKER SLG FAULT WITH THE BUS SECTION FAULT	P4-5		0	0	0	0	0						No violation



Study Area: PG&E Kern



Single Contingency Load Drop

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 Kern**



**Single Source Substation with more than 100 MW Load**

Substation	Load Served (MW)										Potential Mitigation Solutions
	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	

No single Source Substation with more than 100 MW Load.