



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-1	34103 CHWCGNJT 115 34109 CHWCGN 115 1	Base Case	P0	Basecase	100.35	100.29	100.29	99.21	39.49	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-2	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P1-2:A13:115:_Panoche - Mendota 115 kV Line	P1	Single Contingency	<100%	100.05	99.84	<100%	<100%	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-3	34169 TORNDJ 70.0 34574 COLNGA 1 70.0 1	P1-2:A20:35:_Paso Robles-Templeton 70 kV	P1	Single Contingency	NConv	<100%	<100%	157.84	<100%	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-4	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A20:35:_Paso Robles-Templeton 70 kV	P1	Single Contingency	NConv	<100%	<100%	229.81	<100%	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-5	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-3:A13:22:_Merced 115/70 kV Transformer No. 2	P1	Single Contingency	99.89	100.34	100.33	99.01	17.48	N/A	N/A	N/A	Short term rating/ Upgrade/expand SPS
Fresno-T-6	34169 TORNDJ 70.0 34574 COLNGA 1 70.0 1	P1-3:A20:1:_Templeton 230/70 kV Transformer	P1	Single Contingency	NConv	44.07	43.56	157.85	23.90	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-7	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P2-1:A13:178:_PANOCHE-T-MENDOTA #1 115 kV	P2	Single Contingency	<100%	102.78	103.03	<100%	<100%	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-8	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-1:A13:195:_CHEVPIPE-LOS BANS #1 70 kV	P2	Single Contingency	123.15	<100%	<100%	16.14	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-9	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P2-1:A13:195:_CHEVPIPE-LOS BANS #1 70 kV	P2	Single Contingency	113.94	<100%	<100%	40.60	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-10	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-1:A14:271:_HERNDON-PNDLJ2 #1 115 kV	P2	Single Contingency	96.05	104.70	116.75	32.50	24.47	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-11	34409 PNDLJ2 115 34416 BULLARD 115 1	P2-1:A14:272:_HERNDON-PNDLJ1 #1 115 kV	P2	Single Contingency	118.82	127.65	140.07	40.04	32.09	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-12	34169 TORNDJ 70.0 34574 COLNGA 1 70.0 1	P2-1:A14:340:_GATES-GATS2_TP #1 70 kV	P2	Single Contingency	113.96	94.98	90.85	42.30	46.33	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim



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Fresno-T-13	34144 MERCED 115 34146 MERCED M 115 2	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	133.81	130.88	130.28	133.85	23.86	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-14	34202 MERCED 70.0 34146 MERCED M 115 2	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	121.41	121.78	121.55	122.36	23.93	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-15	34202 MERCED 70.0 34230 MRCDFLLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	151.37	146.19	146.28	149.60	27.73	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-16	34321 MCSWAINJ 70.0 34230 MRCDFLLS 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	163.85	162.51	163.92	148.20	23.42	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-17	34321 MCSWAINJ 70.0 34232 EXCHEQUR 70.0 1	P2-2:A13:17:_BUS FAULT AT 34116 LE GRAND 115.00	P2	Single Contingency	192.98	191.59	193.34	172.59	31.29	N/A	N/A	N/A	Exchequer SPS will mitigate the overload (Loss of Legrand-Exchequer 115 kV line)
Fresno-T-18	34136 WILSON B 115 34144 MERCED 115 2	P2-2:A13:18:_BUS FAULT AT 34134 WILSON A 115.00	P2	Single Contingency	110.51	67.43	76.46	17.63	29.62	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim. mitigates future years. Propose operating solution in the interim.
Fresno-T-19	34134 WILSON A 115 34144 MERCED 115 1	P2-2:A13:19:_BUS FAULT AT 34136 WILSON B 115.00	P2	Single Contingency	112.36	58.38	65.74	23.72	24.56	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim. mitigates future years. Propose operating solution in the interim.
Fresno-T-20	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P2-2:A13:20:_BUS FAULT AT 34144 MERCED 115.00	P2	Single Contingency	99.93	100.41	100.40	99.03	17.48	N/A	N/A	N/A	Reduce Exchequer Generation.
Fresno-T-21	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	142.81	70.88	71.53	41.65	25.53	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-22	34160 HAMMONDS 115 34161 DFSTP 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	135.00	62.86	63.22	39.00	23.93	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-23	34161 DFSTP 115 34162 ORO LOMA 115 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	132.12	60.52	60.80	37.66	22.74	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-24	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	322.77	48.43	51.01	56.30	5.19	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-25	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	145.07	55.86	60.50	28.64	7.88	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-26	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	120.20	18.72	22.35	10.12	15.15	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-27	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	108.39	24.89	24.65	18.96	1.87	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-28	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	115.14	35.92	38.42	34.09	9.82	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-29	34252 MADERA 70.0 34256 BORDEN 70.0 2	P2-2:A13:29:_BUS D FAULT AT 34256 BORDEN 70.00	P2	Single Contingency	111.54	113.97	116.53	40.70	40.17	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-30	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-2:A14:36:_BUS 1 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	95.75	104.26	116.22	32.60	24.46	N/A	N/A	N/A	Reconductor/SPS/Operating Solution



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-31	34359 AIRWAYJ2 115 34408 BARTON 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	234.29	NConv	46.57	36.16	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-32	34366 SANGER 115 34359 AIRWAYJ2 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	248.66	NConv	51.59	41.78	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-33	34366 SANGER 115 34370 MC CALL 115 3	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	32.13	NConv	37.07	11.43	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-34	34408 BARTON 115 34412 HERNDON 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	223.84	NConv	36.97	32.67	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-35	34409 PNDLJ2 115 34416 BULLARD 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	227.06	NConv	40.22	32.59	N/A	N/A	N/A	Reconductor/Remove limiting elemets, if any.
Fresno-T-36	34411 PNDLJ1 115 34413 PNEDLE 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	110.76	NConv	16.11	18.22	N/A	N/A	N/A	Split the bus further/Reconductor/SPS
Fresno-T-37	34411 PNDLJ1 115 34416 BULLARD 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	111.81	NConv	16.13	18.25	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-38	34412 HERNDON 115 34409 PNDLJ2 115 1	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	NConv	144.05	NConv	23.78	20.98	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-39	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	77.76	104.84	105.36	25.74	39.90	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-40	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	71.12	71.28	24.87	26.34	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-41	34160 HAMMONDS 115 34161 DFSTP 115 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	63.04	62.91	22.17	24.68	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-42	34161 DFSTP 115 34162 ORO LOMA 115 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	60.66	60.44	20.80	23.20	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-43	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	70.52	77.63	34.41	28.98	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-44	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	60.76	66.97	18.50	16.58	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-45	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-4:A13:1:_BUS-TIE BREAKER (SW 279) FAULT AT 30765 LOSBANOS 230.00	P2	Single Contingency	NConv	11.95	13.25	9.20	11.98	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-46	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	4.54	14.51	NConv	14.21	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-47	34105 CERTANJ1 115 34121 SHARON T 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	4.20	12.54	NConv	12.64	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-48	34110 ATWATR J 115 34144 MERCED 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	16.57	20.14	NConv	10.65	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-49	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	56.82	57.74	NConv	17.53	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-50	34112 EXCHEQUR 115 34232 EXCHEQUR 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	21.98	21.70	NConv	6.07	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.

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



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Fresno-T-51	34121 SHARON T 115 34128 OAKH_JCT 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	7.99	16.72	NConv	10.73	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-52	34144 MERCED 115 34146 MERCED M 115 2	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	59.52	58.95	NConv	3.77	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-53	34157 PANOCHET 115 34155 PANOCH1 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	44.23	47.25	NConv	21.51	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-54	34157 PANOCHET 115 34156 MENDOTA 115 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	46.89	50.09	NConv	22.79	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-55	34202 MERCED 70.0 34146 MERCED M 115 2	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	61.10	61.11	NConv	3.75	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-56	34202 MERCED 70.0 34230 MRCDLLS 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	51.47	50.42	NConv	6.93	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-57	34321 MCSWAINJ 70.0 34230 MRCDLLS 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	67.82	67.85	NConv	7.81	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.



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Fresno-T-58	34321 MCSWAINJ 70.0 34232 EXCHEQUR 70.0 1	P2-4:A13:11:_BUS-TIE BREAKER 102 FAULT AT WILSON 115.00	P2	Single Contingency	NConv	67.00	66.89	NConv	10.96	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-59	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	36.24	130.40	132.27	56.24	79.86	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.
Fresno-T-60	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	73.29	110.98	117.04	47.58	54.01	N/A	N/A	N/A	Upgrade the T/F/ Explore possible SPS Options.
Fresno-T-61	34559 HURONJ 70.0 34560 CALFLAX 70.0 1	P2-4:A13:4:_ BUS-TIE BREAKER 202 FAULT AT 30790 PANOCHE 230.00	P2	Single Contingency	124.60	89.84	113.34	77.63	75.59	N/A	N/A	N/A	Increase Panoche Star Gate unit dispatch
Fresno-T-62	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A14:6:_ BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	103.48	9.60	10.80	8.60	27.90	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-63	34366 SANGER 115 34359 AIRWAYJ2 115 1	P2-4:A14:6:_ BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	103.81	91.38	98.27	34.25	23.68	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-64	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P2-4:A14:7:_ BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	107.00	23.40	14.14	83.69	34.40	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-65	34408 BARTON 115 34412 HERNDON 115 1	P2-4:A14:7:_ BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	111.74	81.04	93.77	12.06	33.61	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-66	34410 MANCHSTR 115 34412 HERNDON 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	112.74	84.55	96.29	14.37	32.22	N/A	N/A	N/A	Northern Fresno Area reinforcement mitigates future years. Propose Operating solution in the interim.
Fresno-T-67	34418 KINGSBRG 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	117.45	104.51	101.22	98.24	47.84	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-68	34429 GWF_HEP 115 34428 CONTADNA 115 1	P2-4:A14:7:_BUS-TIE BREAKER 202 FAULT AT 30875 MC CALL 230.00	P2	Single Contingency	121.53	108.51	105.26	100.39	50.64	N/A	N/A	N/A	Reduce GWF_HEP Generation
Fresno-T-69	30805 BORDEN 230 30810 GREGG 230 1	P1-2:A13:79:_Warnerville - Wilson 230 kV Line and P1-2:A13:7:_(New) Borden - Gregg #2 230 kV Line	P6	Multiple Contingency	<100%	<100%	118.80	<100%	<100%	N/A	N/A	N/A	HELMS RAS Model will mitigate the overload
Fresno-T-70	30805 BORDEN 230 30810 GREGG 230 2	P1-2:A13:86:_Borden - Gregg 230 kV Line and P1-2:A13:77:_Warnerville - Wilson 230 kV Line	P6	Multiple Contingency	<100%	100.16	<100%	<100%	<100%	N/A	N/A	N/A	HELMS RAS Model will mitigate the overload
Fresno-T-71	34116 LE GRAND 115 34134 WILSON A 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-72	34104 ATWATER 115 34110 ATWATR J 115 1	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	150.40	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-73	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-74	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-75	34112 EXCHEQUR 115 34116 LE GRAND 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-76	34116 LE GRAND 115 34134 WILSON A 115 1	P1-1:A13:59:_EXCHQUER 13.80 Generator ID 1 and P1-2:A13:106:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	121.77	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-77	34116 LE GRAND 115 34134 WILSON A 115 1	P1-2:A14:30:_Kerckhoff - Clovis - Sanger #1 115 kV Line (Woodward-Shepherd) and P1-2:A14:125:_Kerckhoff-Clovis-Sanger No. 2 115 kV Line	P6	Multiple Contingency	<100%	<100%	<100%	100.10	<100%	N/A	N/A	N/A	Kerckhoff SPS
Fresno-T-78	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct- Canal 70 kV Line	P6	Multiple Contingency	298.00	276.92	283.00	<100%	<100%	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-79	34118 LE GRNDJ 115 34136 WILSON B 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-80	34118 LE GRNDJ 115 34168 EL NIDO 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-81	34121 SHARON T 115 34128 OAKH_JCT 115 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-2:A13:93:_Wilson - Le Grand 115 kV Line	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-82	34134 WILSON A 115 30800 WILSON 230 1	P1-2:A13:106:_Panoche - Mendota 115 kV Line and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	112.33	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-83	34134 WILSON A 115 34104 ATWATER 115 1	P1-2:A13:90:_Atwater - Merced 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	106.33	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-84	34134 WILSON A 115 34144 MERCED 115 1	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	128.24	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-85	34136 WILSON B 115 34144 MERCED 115 2	P1-2:A13:97:_Wilson - Atwater #2 115 kV Line and P1-2:A13:100:_El Capitan - Wilson 115 kV Line	P6	Multiple Contingency	122.61	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Cressey - North Merced 115 kV Line Addition (North Merced 230 kV bank) mitigates future years. Propose operating solution in the interim.
Fresno-T-86	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	122.16	134.52	<100%	<100%	N/A	N/A	N/A	SPS to drop load
Fresno-T-87	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-88	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-89	34159 PANOCHSJ 115 34160 HAMMONDS 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	124.93	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-90	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	114.14	126.26	<100%	<100%	N/A	N/A	N/A	SPS to drop load
Fresno-T-91	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-92	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-93	34160 HAMMONDS 115 34161 DFSTP 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	117.87	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-94	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-2:A13:47:_Q644 115 kV Tap (Le Grand - Dairyland) and P1-2:A13:118:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	<100%	111.33	123.39	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-95	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-96	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-3:A13:5:_Wilson 230/115 kV Transformer No. 1 and P1-3:A13:6:_Wilson 230/115 kV Transformer No. 2	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-97	34161 DFSTP 115 34162 ORO LOMA 115 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	114.84	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-98	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	280.00	296.76	297.00	<100%	<100%	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-99	34208 CHEVPIPE 70.0 34210 SNTA NLA 70.0 1	P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:16:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	109.81	120.00	<100%	<100%	N/A	N/A	N/A	Evaluate possibility of a SPS/ propose summer setup



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-100	34113 ARBURU T 70.0 34108 WRIGHT T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	111.05	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-101	34214 LOS BANS 70.0 34231 PCHCOWND 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	134.90	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-102	34220 ORTIGA 70.0 34222 MRCYSPRS 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	112.80	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-103	34222 MRCYSPRS 70.0 34258 MERCYSPRNGSS 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	132.85	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-104	34231 PCHCOWND 70.0 34108 WRIGHT T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	117.79	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-105	34258 MERCYSPRNGSS 70.0 34113 ARBURU T 70.0 1	P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	124.61	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-106	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:118:_Borden - Glass 70 kV Line and P1-2:A13:119:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	112.26	114.25	116.08	<100%	<100%	N/A	N/A	N/A	propose SPS/ Summer setup
Fresno-T-107	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:119:_Borden - Madera #2 70 kV Line and P1-2:A13:120:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	112.91	116.06	118.00	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-108	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:119:_Borden - Madera #2 70 kV Line and P1-2:A13:120:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	105.69	109.06	112.00	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS



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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-109	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:121:_Los Banos-Livingston Jct-Canal 70 kV Line and P1-2:A13:1:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL)	P6	Multiple Contingency	Not Solved	306.80	Not Solved	<100%	<100%	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-110	34256 BORDEN 70.0 34252 MADERA 70.0 1	P1-2:A13:125:_Borden - Glass 70 kV Line and P1-2:A13:126:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	112.26	115.36	117.20	<100%	<100%	N/A	N/A	N/A	SPS/Summer Setup/Reconductor
Fresno-T-111	34237 CANANDGA 70.0 34255 TRIGO J 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	96.09	99.36	102.00	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-112	34240 GLASS 70.0 34237 CANANDGA 70.0 1	P1-2:A13:126:_Borden - Madera #2 70 kV Line and P1-2:A13:127:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	105.70	109.06	112.00	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-113	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:129:_Borden - Madera #2 70 kV Line and P1-2:A13:130:_Borden - Madera #1 70 kV Line	P6	Multiple Contingency	112.91	116.06	117.98	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-114	34240 GLASS 70.0 34256 BORDEN 70.0 1	P1-2:A13:130:_Borden - Madera #1 70 kV Line and P1-2:A13:129:_Borden - Madera #2 70 kV Line	P6	Multiple Contingency	113.00	116.00	117.98	<100%	<100%	N/A	N/A	N/A	SPS/Summer Setup/Reconductor
Fresno-T-115	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:29:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.07	<100%	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-116	34206 CANAL 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:3:_Mercy Springs Sw Sta - Canal - Oro Loma 70 kV Line (MRCYSPRS - CANAL) and P1-2:A13:18:_Oro Loma - Mendota 115 kV Line (Tomatak - Mendota)	P6	Multiple Contingency	<100%	<100%	103.28	<100%	<100%	N/A	N/A	N/A	SPS/Summer Setup/Reconductor
Fresno-T-117	34169 TORND0 J 70.0 34174 PENZIR J 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	109.06	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-118	34169 TORND0 J 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	139.42	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-T-119	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	<100%	237.91	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options



Thermal Overloads

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-120	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	297.16	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-121	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	339.10	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-122	34206 CANAL 70.0 34212 LVNGSTNT 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	161.53	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-123	34206 CANAL 70.0 34216 SNTA RTA 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	280.98	91.31	104.21	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-124	34208 CHEVPIPE 70.0 34210 SNTA NLA 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	184.70	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-125	34216 SNTA RTA 70.0 34218 DOS PALS 70.0 1	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	291.55	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-126	34404 WST FRSO 115 34370 MC CALL 115 1	P1-2:A14:146:_McCall-California Ave. 115 kV Line and P1-2:A14:148:_California Ave.-Sanger 115 kV Line	P6	Multiple Contingency	<100%	<100%	107.52	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-127	34366 SANGER 115 34389 RAINBWTP 115 1	P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke) and P1-2:A14:33:_Pomegranate Wonderful Jct - Pomegranate Wonderful 115 kV Tap/Line	P6	Multiple Contingency	107.86	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-128	34380 REEDLEY 115 34394 PIEDRA 1 115 1	P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke) and P1-2:A14:33:_Pomegranate Wonderful Jct - Pomegranate Wonderful 115 kV Tap/Line	P6	Multiple Contingency	139.51	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-129	34390 DANISHCM 115 34370 MC CALL 115 1	P1-2:A14:148:_California Ave.-Sanger 115 kV Line and P1-2:A14:150:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	107.50	120.56	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-130	34559 HURONJ 70.0 34560 CALFLAX 70.0 1	P1-2:A14:22:_Q526 70 kV Tap (Schindler - Colinga) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.07	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-131	34402 CAL AVE 115 34366 SANGER 115 1	P1-2:A14:143:_McCall-California Ave. 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	103.23	111.52	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-132	34402 CAL AVE 115 34390 DANISHCM 115 1	P1-2:A14:145:_California Ave.-Sanger 115 kV Line and P1-2:A14:147:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	<100%	104.87	117.82	<100%	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-133	34566 PLSNTVLY 70.0 34570 COLNGA 2 70.0 1	P1-2:A14:25:_Schindler - Gates - Huron 70 kV Line(Q532SS - CALFLAX) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	<100%	<100%	<100%	100.31	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-134	34169 TORND0 J 70.0 34174 PENZIR J 70.0 1	P1-2:A14:53:_Westlands Solar Station - Gates 70 kV Line and P1-2:A20:174:_Coalinga No. 1- San Miguel 70 kV Line	P6	Multiple Contingency	<100%	<100%	<100%	100.97	<100%	N/A	N/A	N/A	Reconductor/SPS/Operating Solution
Fresno-T-135	34214 LOS BANS 70.0 30765 LOSBANOS 230 3	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	101.99	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

Study Area: PG&E Greater Fresno



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-136	34487 SNGRJCT 115 34367 POMWDFLJT 115 1	P1-2:A14:130:_Kingsriver - Sanger - Reedley 115 kV Line and P1-2:A14:132:_McCall-Reedley 115 kV Line (McCall-Wahtoke)	P6	Multiple Contingency	108.57	<100%	<100%	<100%	<100%	N/A	N/A	N/A	MCCall-Sanger 115 kV Reconductor mitigates future years. Propose operating solution in the interim
Fresno-T-137	34231 PCHCOWND 70.0 34108 WRIGHT T 70.0 1	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:114:_Los Banos-Livingston Jct-Canal 70 kV Line	P6	Multiple Contingency	116.84	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-138	34200 ORO LOMA 70.0 34162 ORO LOMA 115 2	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-139	34200 ORO LOMA 70.0 34218 DOS PALS 70.0 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-140	34200 ORO LOMA 70.0 34222 MRCYSPRS 70.0 1	P1-3:A13:3:_Los Banos 230/70 kV Transformer No. 3 and P1-3:A13:4:_Los Banos 230/70 kV Transformer No. 4	P6	Multiple Contingency	NConv	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-T-141	34492 REEDLEY 70.0 34526 ORSI JCT 70.0 1	P1-4:A14:2:_DINUBA 70.00 SVD ID v and P1-2:A14:161:_Reedley - Dinuba 70 kV Line	P6	Multiple Contingency	102.93	<100%	<100%	<100%	<100%	N/A	N/A	N/A	Reedley 70 kV reinforcement project mitigates future years. Propose interim operating solution.
Fresno-T-142	30795 STOREY 2 230 30805 BORDEN 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	83.75	18.08	16.97	120.86	21.05	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-143	30800 WILSON 230 30795 STOREY 2 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	94.67	<100%	<100%	124.88	22.57	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-144	30805 BORDEN 230 30810 GREGG 230 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	62.74	<100%	<100%	130.54	30.62	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-145	34357 AIRWAYJ1 115 34366 SANGER 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	83.85	<100%	<100%	108.18	19.08	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-146	34357 AIRWAYJ1 115 34368 LASPALMS 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	74.17	<100%	<100%	104.66	17.56	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-147	34359 AIRWAYJ2 115 34408 BARTON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	82.15	<100%	<100%	112.27	18.49	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-148	34366 SANGER 115 34359 AIRWAYJ2 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	95.10	69.19	52.30	117.63	23.87	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-149	34408 BARTON 115 34412 HERNDON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	46.67	<100%	<100%	111.77	12.65	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-150	34410 MANCHSTR 115 34368 LASPALMS 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	68.17	<100%	<100%	100.78	17.57	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-151	34410 MANCHSTR 115 34412 HERNDON 115 1	P7-1:A13:19:_Panoche - Kearney & Gates - Gregg 230 kV Lines	P7	Multiple Contingency (common structure)	36.75	<100%	<100%	100.25	10.46	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-152	34402 CAL AVE 115 34366 SANGER 115 1	P7-1:A14:12:_McCall-California Ave. & McCall-West Fresno 115 kV Lines	P7	Multiple Contingency (common structure)	95.77	103.23	111.52	32.65	24.73	N/A	N/A	N/A	Reconductor/SPS
Fresno-T-153	30830 KEARNEY 230 30835 HERNDON 230 1	P7-1:A14:18:_Gates - Gregg 230 kV Line & Gates - McCall 230 kV Lines	P7	Multiple Contingency (common structure)	86.66	60.71	36.33	105.59	52.23	N/A	N/A	N/A	Model 2 Helms pump drop will mitigate the overload.
Fresno-T-154	34105 CERTANJ1 115 34100 CHWCHLLA 115 1	P7-1:A14:6:_Kerckhoff-Clovis-Sanger No. 1 & 2 115 kV Lines	P7	Multiple Contingency (common structure)	100.02	65.03	12.07	98.25	17.35	N/A	N/A	N/A	Northern Fresno Area reinforcement project will mitigate future years. Propose interim operating solution.



Thermal Overloads

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-T-155	34116 LE GRAND 115 34134 WILSON A 115 1	P7-1:A14:6:_Kerckhoff-Clovis-Sanger No. 1 & 2 115 kV Lines	P7	Multiple Contingency (common structure)	69.92	61.32	9.16	113.77	22.65	N/A	N/A	N/A	Back off Chowchilla/ Kerckhoff units for the off-peak overload. (Kerckhoff SPS)
Fresno-T-156	34169 TORND0 J 70.0 34574 COLNGA 1 70.0 1	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	Multiple Contingency (common structure)	NConv	44.09	43.59	157.84	23.90	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-T-157	36354 SAN MIGL 70.0 34574 COLNGA 1 70.0 1	P7-1:A20:2:_Templeton-Atascadero & Templeton-Paso Robles 70 kV Lines	P7	Multiple Contingency (common structure)	NConv	5.66	4.47	229.81	14.21	N/A	N/A	N/A	Estrella substation Project mitigates future years. Propose operating solution in the interim

Study Area: PG&E Greater Fresno

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-1	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	<5%	<5%	11.795	<5%	<5%	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-VD-2	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P1	Single Contingency	6.722	<5%	<5%	1.083	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-3	GILLRAN 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.662	<5%	<5%	1.969	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-4	MADERAPR 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.375	<5%	<5%	1.92	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-5	MENDOTA 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.034	<5%	<5%	2.657	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-6	NEWHALL 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	10.424	<5%	<5%	1.694	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-7	PMTFMPP 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	11.642	<5%	<5%	1.968	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-8	Q607 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	15.034	<5%	<5%	2.541	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-9	CANTUA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.35	4.917	8.953	5.368	6.694	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-10	FIREBAGH 70 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	6.334	<5%	<5%	1.207	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-11	GILLRAN 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.007	3.475	4.162	1.864	-0.259	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-12	KAMM 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	13.521	5.79	10.035	5.898	7.391	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-13	MADERAPR 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.72	3.388	4.053	1.816	-0.259	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-14	MENDOTA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.334	4.644	5.629	2.526	-0.187	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-15	NEWHALL 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	10.776	2.99	3.588	1.595	-0.341	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-16	PMTFMPP 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.987	3.469	4.156	1.862	-0.258	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-17	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.335	4.44	5.381	2.416	-0.187	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-18	WESTLNDS 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.803	4.52	8.45	5.128	6.378	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-19	AIRWAYS 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	34.852	26.174	26.983	0.013	1.314	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-20	ARBURUA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	21.904	2.147	2.295	2.447	1.431	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-21	BARTON 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	40.522	32.537	33.384	0.066	1.572	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-22	BULLARD 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	80.515	78.504	78.872	1.039	1.869	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

Study Area: PG&E Greater Fresno

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-23	CANAL 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	25.949	2.882	3.043	3.39	1.509	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-24	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.35	4.917	8.953	5.368	6.694	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-25	CHEVPIPE 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	29.486	5.572	5.864	4.398	2.773	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-26	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	<5%	11.633	11.795	<5%	5.532	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-VD-27	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	15.37	1.073	1.122	1.255	0.619	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-28	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	13.496			0.862		N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-29	FIREBAGH 70 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	6.334	<5%	<5%	1.207	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-30	GILLRAN 115 kV	P2-1:A13:160:_PANOCHE-T-PANOCHÉ1 #1 115 kV	P2	Single Contingency	11.486	<5%	<5%	1.884	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-31	GILLRAN 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.772	3.717	4.14	3.925	0.074	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-32	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	12.007	3.475	4.162	1.864	-0.259	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-33	HERNDON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	64.101	59.787	60.488	0.47	1.682	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-34	KAMM 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	13.521	5.79	10.035	5.898	7.391	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-35	LIVNGSTN 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	27.397	3.248	3.396	3.539	1.668	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-36	MADERAPR 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	11.203	<5%	<5%	1.836	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-37	MADERAPR 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.482	3.615	4.021	3.827	0.069	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-38	MADERAPR 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	11.72	3.388	4.053	1.816	-0.259	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-39	MANCHSTR 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	22.72	12.657	13.471	-0.522	0.885	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-40	MENDOTA 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	14.804	<5%	<5%	2.542	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-41	MENDOTA 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	15.178	5.09	5.751	5.26	0.186	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-42	MENDOTA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	15.334	4.644	5.629	2.526	-0.187	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-43	MRCYSPRS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	21.397	1.699	1.809	2.333	1.008	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-44	NEWHALL 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHE1 #1 115 kV	P2	Single Contingency	10.264	<5%	<5%	1.616	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

Study Area: PG&E Greater Fresno

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-45	NEWHALL 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	10.525	3.233	3.587	3.466	0.006	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-46	NEWHALL 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	10.776	2.99	3.588	1.595	-0.341	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-47	ORO LOMA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	12.63	0.7	0.728	0.847	0.442	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-48	ORTIGA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	23.017	2.238	2.375	2.685	1.225	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-49	PCHCOWND 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	23.373	3.591	3.858	2.891	2.752	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-50	PMTFMPP 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHÉ1 #1 115 kV	P2	Single Contingency	11.466	<5%	<5%	1.882	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-51	PMTFMPP 115 kV	P2-3:A13:36:_NON-BUS-TIE BREAKER CB1322 FAULT AT 30465 MENDOTA 115.00	P2	Single Contingency	11.753	3.711	4.134	3.921	0.074	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-52	PMTFMPP 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.987	3.469	4.156	1.862	-0.258	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-53	PNEDLE 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	82.099	80.353	80.775	1.205	1.924	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-54	Q548 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	21.4	1.768	1.885	2.319	1.101	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-55	Q607 115 kV	P2-1:A13:160:_PANOCHE1-PANOCHÉ1 #1 115 kV	P2	Single Contingency	14.804	<5%	<5%	2.431	<5%	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

Study Area: PG&E Greater Fresno

Voltage Deviations



ID	Substation	Worst Contingency	Category	Category Description	Post Cont. Voltage Deviation %								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-VD-56	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	15.335	4.44	5.381	2.416	-0.187	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-57	SESWTF 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	34.823	26.152	26.96	0.013	1.314	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-VD-58	SNTA NLA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	29.43	5.528	5.818	4.382	2.752	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-59	SNTA RTA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	17.976	1.483	1.557	1.746	0.808	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-60	WESTLNDS 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	11.803	4.52	8.45	5.128	6.378	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-VD-61	WRGHT PP 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	22.933	3.156	3.388	2.752	2.351	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

Study Area: PG&E Greater Fresno

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-1	BER VLLY 70 kV	Base Case	P0	No Contingency	1.0604	1.0613	1.0598	1.0842	1.0706	N/A	N/A	N/A	Under Review with PTO
Fresno-V-2	BOWLES 70 kV	Base Case	P0	No Contingency	1.0336	1.0725	1.0685	1.0434	1.0998	N/A	N/A	N/A	Under Review with PTO
Fresno-V-3	BRCEBG J 70 kV	Base Case	P0	No Contingency	1.0557	1.0565	1.0551	1.0824	1.0679	N/A	N/A	N/A	Under Review with PTO
Fresno-V-4	CARUTHRS 70 kV	Base Case	P0	No Contingency	1.0275	1.0665	1.0618	1.0416	1.0987	N/A	N/A	N/A	Under Review with PTO
Fresno-V-5	EXCHEQUR 70 kV	Base Case	P0	No Contingency	1.0699	1.0707	1.0691	1.0874	1.0743	N/A	N/A	N/A	Under Review with PTO
Fresno-V-6	EXCHEQUR 115 kV	Base Case	P0	No Contingency	1.0521	1.0526	1.0514	1.0668	1.0491	N/A	N/A	N/A	Under Review with PTO
Fresno-V-7	FRESNOWW 70 kV	Base Case	P0	No Contingency	1.0459	1.0849	1.0817	1.0479	1.0998	N/A	N/A	N/A	Under Review with PTO
Fresno-V-8	FRWWTAP 70 kV	Base Case	P0	No Contingency	1.046	1.085	1.0818	1.0479	1.1	N/A	N/A	N/A	Under Review with PTO
Fresno-V-9	KEARNEY 70 kV	Base Case	P0	No Contingency	1.046	1.085	1.0818	1.0477	1.1001	N/A	N/A	N/A	Under Review with PTO
Fresno-V-10	MC SWAIN 70 kV	Base Case	P0	No Contingency	1.0557	1.0554	1.0536	1.0751	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-11	MCSWAINJ 70 kV	Base Case	P0	No Contingency	1.0551	1.0548	1.053	1.0745	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-12	MRCDFLLS 70 kV	Base Case	P0	No Contingency	1.055	1.0548	1.053	1.0745	1.0738	N/A	N/A	N/A	Under Review with PTO
Fresno-V-13	SAXONCRK 70 kV	Base Case	P0	No Contingency	1.0548	1.0557	1.0543	1.0821	1.0674	N/A	N/A	N/A	Under Review with PTO
Fresno-V-14	BOWLES 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1025	1.098	<1.10	1.1339	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-15	CARUTHRS 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.0967	1.0916	<1.10	1.1329	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-16	CHWCHLLA 115 kV	P1-2:A13:99:_Le Grand - Chowchilla 115 kV Line	P1	Single Contingency	>0.90	>0.90	0.8993	>0.90	>0.90	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-17	EXCHEQUR 70 kV	P1-2:A13:123:_Merced Falls-Exchequer 70 kV Line	P1	Single Contingency	1.085	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-18	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P1	Single Contingency	0.8945	>0.90	>0.90	1.019	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-19	FRESNOWW 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1145	1.1109	<1.10	1.1339	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)

Study Area: PG&E Greater Fresno

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-20	GILLRAN 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8757	>0.90	>0.90	1.01	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-21	KEARNEY 70 kV	P1-3:A14:13:_Kearney 230/70 kV Transformer No. 2	P1	Single Contingency	<1.10	1.1146	1.111	<1.10	1.1341	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-22	MADERAPR 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8827	>0.90	>0.90	1.0129	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-23	MENDOTA 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.859	>0.90	>0.90	1.0091	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-24	NEWHALL 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8916	>0.90	>0.90	1.0156	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-25	PMTFMPP 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8771	>0.90	>0.90	1.0107	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-26	Q607 115 kV	P1-2:A13:106:_Panoche - Mendota 115 kV Line	P1	Single Contingency	0.8591	>0.90	>0.90	1.0102	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-27	AIRWAYS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6715	0.7533	0.742	1.0357	1.0284	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-28	ARBURUA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7961	1.0032	1.0021	1.0245	1.0483	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-29	BARTON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6159	0.6916	0.6798	1.0324	1.0266	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-30	BOWLES 70 kV	P2-2:A14:8:_BUS 1 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0263	1.0505	1.0465	1.0429	1.1121	N/A	N/A	N/A	Check T/F Tap settings
Fresno-V-31	BOWLES 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.102	1.0975	<1.10	1.1322	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-32	BOWLES 70 kV	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0251	1.0485	1.044	1.0416	1.1119	N/A	N/A	N/A	Check T/F Tap settings
Fresno-V-33	BULLARD 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.209	0.2301	0.2202	1.0177	1.0261	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-34	CANAL 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7441	0.9898	0.988	1.0136	1.0503	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-35	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8946	0.9777	0.9388	0.9847	0.9583	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-36	CARUTHRS 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.0962	1.091	<1.10	1.1312	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-37	CHEVPIPE 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-38	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	>0.90	0.9032	0.8993	<0.90	0.9959	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-39	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8473	0.9995	0.9973	1.03	1.0481	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-40	EXCHEQUR 70 kV	P2-1:A13:225:_MCSWAINJ-EXCHEQUR #1 70 kV	P2	Single Contingency	1.0851	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-41	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8268	>0.90	>0.90	1.0212	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-42	FRESNOWW 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.114	1.1104	>1.10	1.1322	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-43	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8722	0.9603	0.9539	1.011	1.0284	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-44	HERNDON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.3911	0.4374	0.4273	1.0266	1.0281	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-45	KAMM 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.893	0.9763	0.9373	0.984	0.9569	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-46	KEARNEY 70 kV	P2-3:A14:7:_ NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.1142	1.1105	>1.10	1.1325	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-47	LIVNGSTN 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7084	0.9747	0.9811	1.0063	1.0459	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-48	MADERAPR 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8792	0.9652	0.9589	1.0139	1.0329	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-49	MANCHSTR 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.7888	0.8875	0.8747	1.0422	1.0332	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-50	MC SWAIN 70 kV	P2-2:A13:28:_ BUS FAULT AT 34230 MRCDFLS 70.00	P2	Single Contingency	1.0879	1.0885	1.0873	1.104	1.0767	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-51	MENDOTA 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.856	0.9673	0.9601	1.0104	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-52	MRCYSPRS 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8007	1.0073	1.0064	1.026	1.0516	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-53	NEWHALL 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8881	0.9681	0.962	1.0166	1.0355	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-54	ORO LOMA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8839	1.0122	1.0114	1.0361	1.049	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-55	ORTIGA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7789	0.9978	0.9963	1.0213	1.051	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-56	PANOCHET 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8562	0.9675	0.9603	1.0107	1.0339	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-57	PCHCOWND 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7974	1.0044	1.0028	1.0271	1.0509	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-58	PMTFMPP 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8737	0.9616	0.9552	1.0117	1.0296	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-59	PNEDLE 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.1949	0.2139	0.2043	1.0158	1.025	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-60	PNEDLE2 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.2517	0.279	0.2691	1.0199	1.0265	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-61	Q548 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8018	1.0076	1.0066	1.0264	1.0515	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-62	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8561	0.9706	0.9636	1.0114	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-63	SESWTF 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6723	0.7541	0.7429	1.0359	1.0284	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-64	SNTA NLA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-65	SNTA RTA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8183	0.9934	0.991	1.0254	1.0482	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-66	WESTLNDS 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8974	0.9797	0.9416	0.9856	0.9594	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-67	WRGHT PP 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7962	1.0033	1.0017	1.027	1.0507	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-68	AIRWAYS 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6715	0.7533	0.742	1.0357	1.0284	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-69	ARBURUA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7961	1.0032	1.0021	1.0245	1.0483	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-70	BARTON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6159	0.6916	0.6798	1.0324	1.0266	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-71	BOWLES 70 kV	P2-2:A14:8:_BUS 1 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0263	1.0505	1.0465	1.0429	1.1121	N/A	N/A	N/A	Check T/F Tap settings
Fresno-V-72	BOWLES 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.102	1.0975	<1.10	1.1322	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-73	BOWLES 70 kV	P2-4:A14:6:_BUS-TIE BREAKER 202 FAULT AT 30835 HERNDON 230.00	P2	Single Contingency	1.0251	1.0485	1.044	1.0416	1.1119	N/A	N/A	N/A	Check T/F Tap settings
Fresno-V-74	BULLARD 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.209	0.2301	0.2202	1.0177	1.0261	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-75	CANAL 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7441	0.9898	0.988	1.0136	1.0503	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-76	CANTUA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHÉ 115.00	P2	Single Contingency	0.8946	0.9777	0.9388	0.9847	0.9583	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-77	CARUTHRS 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	<1.10	1.0962	1.091	<1.10	1.1312	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-78	CHEVPIPE 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-79	CHWCHLLA 115 kV	P2-1:A13:136:_CHWCHLLA-CERTAN T #1 115 kV	P2	Single Contingency	>0.90	0.9032	0.8993	<0.90	0.9959	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-80	DOS PALS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8473	0.9995	0.9973	1.03	1.0481	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-81	EXCHEQUR 70 kV	P2-1:A13:225:_MCSWAINJ-EXCHEQUR #1 70 kV	P2	Single Contingency	1.0851	<1.10	<1.10	1.1012	<1.10	N/A	N/A	N/A	Modify Exchequer SPS (Exchequer 70 kV pocket)
Fresno-V-82	FIREBAGH 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8268	>0.90	>0.90	1.0212	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-83	FRESNOWW 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.114	1.1104	>1.10	1.1322	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-84	GILLRAN 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8722	0.9603	0.9539	1.011	1.0284	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-85	HERNDON 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.3911	0.4374	0.4273	1.0266	1.0281	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-86	KAMM 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.893	0.9763	0.9373	0.984	0.9569	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-87	KEARNEY 70 kV	P2-3:A14:7:_NON-BUS-TIE BREAKER CB2322 FAULT AT 30830 KEARNEY 230.00	P2	Single Contingency	>1.10	1.1142	1.1105	>1.10	1.1325	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-88	LIVNGSTN 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7084	0.9747	0.9811	1.0063	1.0459	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-89	MADERAPR 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8792	0.9652	0.9589	1.0139	1.0329	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-90	MANCHSTR 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.7888	0.8875	0.8747	1.0422	1.0332	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-91	MC SWAIN 70 kV	P2-2:A13:28:_BUS FAULT AT 34230 MRCDFLS 70.00	P2	Single Contingency	1.0879	1.0885	1.0873	1.104	1.0767	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-92	MENDOTA 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.856	0.9673	0.9601	1.0104	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-93	MRCYSPRS 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8007	1.0073	1.0064	1.026	1.0516	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-94	NEWHALL 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8881	0.9681	0.962	1.0166	1.0355	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-95	ORO LOMA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8839	1.0122	1.0114	1.0361	1.049	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-96	ORTIGA 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7789	0.9978	0.9963	1.0213	1.051	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-97	PANOCHET 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8562	0.9675	0.9603	1.0107	1.0339	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-98	PCHCOWND 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7974	1.0044	1.0028	1.0271	1.0509	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-99	PMTFMPP 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8737	0.9616	0.9552	1.0117	1.0296	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-100	PNEDLE 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.1949	0.2139	0.2043	1.0158	1.025	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-101	PNEDLE2 115 kV	P2-2:A14:37:_ BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.2517	0.279	0.2691	1.0199	1.0265	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-102	Q548 70 kV	P2-2:A13:27:_ BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8018	1.0076	1.0066	1.0264	1.0515	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-103	Q607 115 kV	P2-4:A13:12:_ BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2	Single Contingency	0.8561	0.9706	0.9636	1.0114	1.0337	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.

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High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-104	SESWTF 115 kV	P2-2:A14:37:_BUS 2 FAULT AT 34412 HERNDON 115.00	P2	Single Contingency	0.6723	0.7541	0.7429	1.0359	1.0284	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-105	SNTA NLA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.732	0.9812	0.9793	1.0108	1.0496	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-106	SNTA RTA 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.8183	0.9934	0.991	1.0254	1.0482	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-107	WESTLND 115 kV	P2-4:A13:12:_BUS-TIE BREAKER 202 FAULT AT PANOCH 115.00	P2	Single Contingency	0.8974	0.9797	0.9416	0.9856	0.9594	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-108	WRGHT PP 70 kV	P2-2:A13:27:_BUS FAULT AT 34214 LOS BANS 70.00	P2	Single Contingency	0.7962	1.0033	1.0017	1.027	1.0507	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-109	GILLRAN 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8465	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-110	MADERAPR 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8538	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-111	NEWHALL 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.863	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-112	PMTFMPP 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.848	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-113	MENDOTA 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche-Mendota 115 kV Line	P3	Multiple Contingency	0.8293	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-114	AVENAL 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2083	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-115	BORDEN 230 kV	P1-2:A13:64: _Warnerville - Wilson 230 kV Line and P1-2:A13:75: _Borden - Gregg 230 kV Line	P6	Multiple Contingency	0.8983	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	BORDEN 230 kV voltage support project mitigates later years. Propose interim operating solutions.
Fresno-V-116	CAL AVE 115 kV	P1-2:A14:140: _California Ave.-Sanger 115 kV Line and P1-2:A14:142: _McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8678	0.8406	0.8406	>0.90	>0.90	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-117	CALFLAX 70 kV	P1-2:A13:46: _Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18: _Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2022	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-118	CANAL 70 kV	P1-2:A13:114: _Los Banos-Livingston Jct- Canal 70 kV Line and P1-2:A13:47: _Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.2045	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-119	COLNGA 1 70 kV	P1-2:A13:46: _Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18: _Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.269	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-120	DAIRYLND 115 kV	P1-2:A13:115: _Panoche - Mendota 115 kV Line and P1-2:A13:45: _Q644 115 kV Tap (Le Grand - Dairyland)	P6	Multiple Contingency	>0.90	0.781	0.7275	>0.90	>0.90	N/A	N/A	N/A	Provide additional reactive support (Exchequer/Legrand pocket)
Fresno-V-121	DANISHCM 115 kV	P1-2:A14:140: _California Ave.-Sanger 115 kV Line and P1-2:A14:142: _McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8763	0.85	0.8144	>0.90	>0.90	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)
Fresno-V-122	DERRICK 70 kV	P1-2:A13:46: _Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18: _Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2126	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-123	DOS PALS 70 kV	P1-2:A13:47: _Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22: _Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.2654	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-124	FIREBAGH 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.1425	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-125	GATES 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2118	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-126	HENRIETA 230 kV	P1-2:A14:11:_Henrietta - Gregg 230 kV Line (HENTAP1 - MUSTANGSS) and P1-2:A14:9:_Henrietta - Mc Call 230 kV Line (HENTAP2 - MUSTANGSS)	P6	Multiple Contingency	0.8881	0.884	>0.90	0.8614	>0.90	N/A	N/A	N/A	Operating solution/ interim SPS
Fresno-V-127	HURON 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2055	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-128	JACALITO 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2353	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-129	KETTLEMN 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	0.2084	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-130	LIVNGSTN 70 kV	P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.7285	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-131	MRCYSPRS 70 kV	P1-2:A13:46:_Los Banos - Mercy Springs Sw Sta 70 kV Line (MERCYSPRNGSS - ARBURU Tap) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8406	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.

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ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions	
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A		
Fresno-V-132	ORO LOMA 70 kV	P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2 and P1-2:A13:47:_Mercy Springs SS - Canal- Oro Loma 70 kV Line (MRCYSPRS - MERCYSPRNGSS)	P6	Multiple Contingency	0.2188	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-133	ORTIGA 70 kV	P1-2:A13:46:_Los Banos - Mercy Springs Sw Sta 70 kV Line (MERCYSPRNGSS - ARBURU Tap) and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8505	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement project mitigates later year issues/Summer set up in the interim.
Fresno-V-134	PENNZIER 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.2134	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-135	PLSNTVLY 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1926	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-136	Q526 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1967	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-137	Q548 70 kV	P1-2:A13:114:_Los Banos-Livingston Jct- Canal 70 kV Line and P1-3:A13:22:_Oro Loma 115/70 kV Transformer No. 2	P6	Multiple Contingency	0.8955	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-138	Q607 115 kV	P1-1:A13:57:_CHOWCOGN 13.80 Generator ID 1 and P1-2:A13:106:_Panoche - Mendota 115 kV Line	P6	Multiple Contingency	0.8294	>0.90	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Oroloma 70 kV reinforcement proj mitigates future years.(Mercy Spring 230/70 kV bank). Propose operating solution in the interim.
Fresno-V-139	SCHLNDLR 70 kV	P1-2:A13:46:_Panoche - Schindler #2 115 kV Line (Q612 Tap) and P1-3:A14:18:_Gates 230/70 kV Bank #5	P6	Multiple Contingency	>0.90	>0.90	>0.90	>0.90	>0.90	0.1976	N/A	N/A	N/A	Case Diverged/ Explore Reactive support options
Fresno-V-140	WST FRSO 115 kV	P1-2:A14:140:_California Ave.-Sanger 115 kV Line and P1-2:A14:142:_McCall-West Fresno 115 kV Line	P6	Multiple Contingency	0.8572	0.8286	0.79	>0.90	>0.90	>0.90	N/A	N/A	N/A	Provide additional reactive support (Herndon/Mccall 115 kV pocket)

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

High/Low Voltage



ID	Substation	Worst Contingency	Category	Category Description	Voltage (PU)								Potential Mitigation Solutions
					2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	2017 Spring Off-Peak	2020 Spring Light Load	N/A	N/A	N/A	
Fresno-V-141	YOSEMITE 70 kV	P1-2:A13:75:_Borden - Gregg 230 kV Line and P1-2:A13:92:_Exchequer - Le Grand 115 kV Line	P6	Multiple Contingency	0.8987	>0.90	>0.90	>0.90	>0.90	N/A	N/A	N/A	Wilson 115 kV reinforcement project mitigates later years. Propose interim operating solution.
Fresno-V-142	CARUTHRS 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0203	1.0446	1.0395	1.0404	1.1108	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-143	FRESNOWW 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0388	1.0634	1.06	1.0467	1.1118	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-144	KEARNEY 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.039	1.0636	1.0601	1.0465	1.1121	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)
Fresno-V-145	BOWLES 70 kV	P7-1:A14:26:_Herndon - Kearney & Herndon - Ashlan 230 kV Lines	P7	Multiple Contingency (common structure)	1.0264	1.0508	1.0464	1.0422	1.1118	N/A	N/A	N/A	Check T/F Taps (Kearney 70 kV pocket)

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Transient Stability



ID	Contingency	Category	Category Description	Transient Stability Performance							Potential Mitigation Solutions
				2017 Summer Peak	2020 Summer Peak	2025 Summer Peak	N/A	N/A	N/A	N/A	
Fresno-SP-TS-1	Templeton 230/70 kV Transformer	P1-3	Multiple Contingency	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 20 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 20 Cycles					Estrella substation Project mitigates future years. Propose operating solution in the interim
Fresno-SP-TS-2	BUS 2 FAULT AT 34412 HERNDON 115.00	P2-2	Single Contingency	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for40 Cycles					Under review
Fresno-SP-TS-3	BUS-TIE BREAKER 202 FAULT AT PANOCHE 115.00	P2-4	Single Contingency	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for 40 Cycles	Load Bus Voltage Dip> 25%; Load Bus Voltage Dip 20% for40 Cycles					Under review

Study Area: PG&E Greater Fresno



Single Contingency Load Drop

ID	Worst Contingency	Category	Category Description	Amount of Load Drop (MW)								Potential Mitigation Solutions
				Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SP-SLD-1												

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

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



Single Source Substation with more than 100 MW Load

ID	Substation	Load Served (MW)								Potential Mitigation Solutions
		Select..	Select..	Select..	Select..	Select..	Select..	Select..	Select..	
X-SP-SS-1										

No single source substation with more than 100 MW Load