SPS CLUSTER B

Delivery Point Network Study

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By SPP Engineering, Transmission Services

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
4/23/2024	SPP	Original	
4/29/2024	SPP	Updated the Recommended Projects	SPS submitted updated ratings for several lines
7/08/2024	SPP	Removed the Potash transformer from Table 3-4	Used SPS system adjustments to remove the Potash transformer overloads
8/20/2024	SPP	Added Sundown – Wolfforth 230 kV upgrade	SPS provided an updated 429 MVA emergency rating for the Sundown – Wolfforth 230kV line

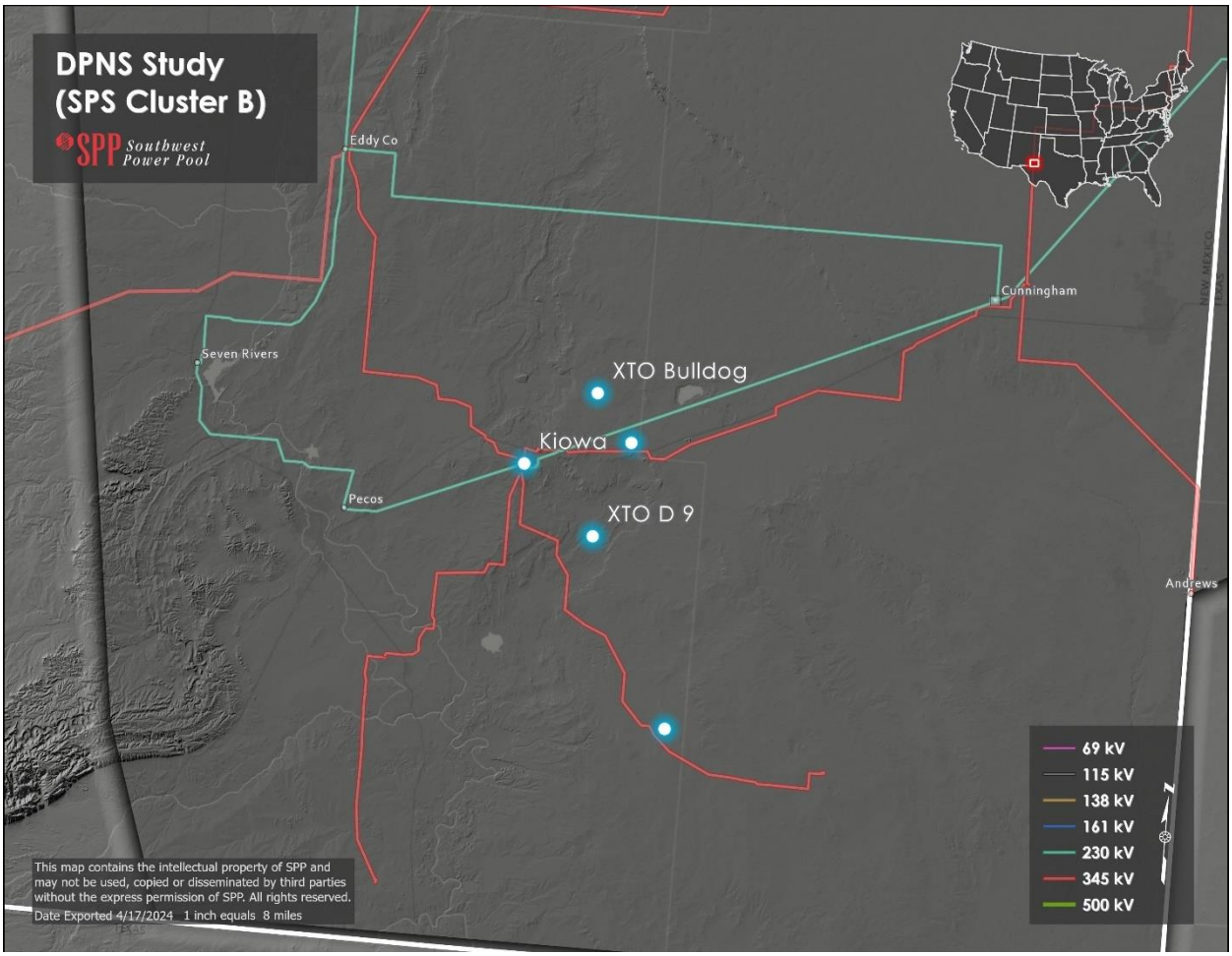
CONTENTS

SECTION 1: INTRODUCTION

This report outlines the results of an evaluation of regional transmission impacts from the following delivery point requests:

- DPA-2023-February-1719
- DPA-2023-March-1750
- DPA-2023-March-1751
- DPA-2023-March-1752
- DPA-2023-May-1780

The requesting entity plans to add load to these delivery points. These delivery points are in the Southwestern Public Service Company (SPS) transmission system.



The load flow models used for the evaluation were 2023 ITP models. SPP performed an AC contingency analysis on these models using PSS®E.

SECTION 2: STUDY METHODOLOGY

OBJECTIVE

The purpose of this study was to determine the regional transmission system impacts within the SPP footprint due to the new load served by SPS. SPP performed a Delivery Point Network Study ("DPNS") with the configurations shown in Table 2-1 below.

STUDY PROCESS

- Model Assumptions
  - 2023 ITP models
    - Model years 2023, 2024, 2027, and 2032
    - Summer Peak (2024S, 2027S, and 2032S), Winter Peak (2023W, 2024W, 2027W, and 2032W), and Light Load (2024L, 2027L, and 2032L)
    - Base Reliability Scenario
    - Total of 10 models
    - Includes the Crossroads-Hobbs-Road Runner 345kV double circuit line
    - Includes the following AQ requests
      - DPA-2022-October-1665 White Deer
      - DPA-2023-January-1705 Chevron Green
      - DPA-2022-December-1698 Chevron Dagger Lake
      - DPA-2022-December-1699 Chevron Jumping Springs
  - The models include the load additions for the delivery points under study. SPP compared results from study models both with and without these load additions to determine the impact to the transmission system.

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
2023ITPPF-23W.sav	2023	Winter Peak	Base Reliability	Base Case
2023ITPPF-24L.sav	2024	Light Load	Base Reliability	Base Case
2023ITPPF-24S.sav	2024	Summer Peak	Base Reliability	Base Case
2023ITPPF-24W.sav	2024	Winter Peak	Base Reliability	Base Case
2023ITPPF-27L.sav	2027	Light Load	Base Reliability	Base Case
2023ITPPF-27S.sav	2027	Summer Peak	Base Reliability	Base Case
2023ITPPF-27W.sav	2027	Winter Peak	Base Reliability	Base Case
2023ITPPF-32L.sav	2032	Light Load	Base Reliability	Base Case
2023ITPPF-32S.sav	2032	Summer Peak	Base Reliability	Base Case
2023ITPPF-32W.sav	2032	Winter Peak	Base Reliability	Base Case
2023ITPPF-23W_1719.sav	2023	Winter Peak	Base Reliability	Kiowa = 0/0 DI8 = 70/23.1 Bulldog = 5/1.643 DI9 = 15/5 Pronto = 0/0 Oxy CSR = 0/0

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
2023ITPPF-24L_1719.sav	2024	Light Load	Base Reliability	Kiowa = 0/0 DI8 = 70/23.1 Bulldog = 20/6.574 DI9 = 15/5 Pronto = 0/0 Oxy CSR = 0/0
2023ITPPF-24S_1719.sav	2024	Summer Peak	Base Reliability	Kiowa = 0/0 DI8 = 70/23.1 Bulldog = 20/6.574 DI9 = 15/5 Pronto = 0/0 Oxy CSR = 0/0
2023ITPPF-24W_1719.sav	2024	Winter Peak	Base Reliability	Kiowa = 85/27.94 DI8 = 0/0 Bulldog = 20/6.574 DI9 = 15/5 Pronto = 0/0 Oxy CSR = 0/0
2023ITPPF-27L_1719.sav	2027	Light Load	Base Reliability	Kiowa = 200/65.74 DI8 = 0/0 Bulldog = 10/3.286 DI9 = 15/5 Pronto = 33/10.847 Oxy CSR = 30/14.53
2023ITPPF-27S_1719.sav	2027	Summer Peak	Base Reliability	Kiowa = 200/65.74 DI8 = 0/0 Bulldog = 10/3.286 DI9 = 15/5 Pronto = 33/10.847 Oxy CSR = 30/14.53
2023ITPPF-27W_1719.sav	2027	Winter Peak	Base Reliability	Kiowa = 200/65.74 DI8 = 0/0 Bulldog = 10/3.286 DI9 = 15/5 Pronto = 33/10.847 Oxy CSR = 30/14.53
2023ITPPF-32L_1719.sav	2032	Light Load	Base Reliability	Kiowa = 350/115.04 DI8 = 0/0 Bulldog = 50/16.43 DI9 = 15/5 Pronto = 58.36/19.18 Oxy CSR = 45/21.79
2023ITPPF-32S_1719.sav	2032	Summer Peak	Base Reliability	Kiowa = 350/115.04 DI8 = 0/0 Bulldog = 50/16.43 DI9 = 15/5 Pronto = 55.2/18.14 Oxy CSR = 45/21.79
2023ITPPF-32W_1719.sav	2032	Winter Peak	Base Reliability	Kiowa = 350/115.04 DI8 = 0/0 Bulldog = 50/16.43 DI9 = 15/5 Pronto = 58.36/19.18 Oxy CSR = 45/21.79

Table 2-1: Study Cases

- Steady State Analysis
  - Assumptions (consistent with the ITP analysis)
    - AC contingency analysis on all load flow models using PSS®E

        - Monitored Elements
            - SPP facilities 69 kV and above
            - First-tier companies 100 kV and above
        - Contingencies (consistent with the ITP analysis)
            - Provided for the ITP by SPP members and first-tier companies
        - Apply SPP Criteria and NERC reliability standards
    - Compare thermal overloads and voltage violations that occur with and without the delivery point changes to determine thermal overloads and voltage violations resulting from the load addition to the transmission system.
- Dynamics Analysis
    - Assumptions
        - 2024 TPL Dynamics Model Set
            - 2025 and 2033 Summer Peak Base Case and Change Case
    - Analyses
        - Fast Fault Screening using POM Studio
- Short Circuit Analysis
    - Assumptions
        - Used 2023 Final ITP Short Circuit models (Max Fault)
            - Placed all available facilities in service
                - Generation
                - Transmission lines
                - Transformers
                - Buses
            - Short Circuit Output
                - Physical
            - Short Circuit Coordinates
                - Polar
            - Short Circuit Parameters
                - 3 Phase
            - FLAT – classical fault analysis conditions
    - Analyses
        - Three-phase fault

SECTION 3: RESULTS OF ANALYSIS

POTENTIAL THERMAL OVERLOADS AND VOLTAGE VIOLATIONS

The analysis identified potential thermal overloads and voltage violations resulting from the load added to the delivery points. Table 3-1 details the potential thermal violations resulting from the load addition and Table 3-2 details the potential voltage violations resulting from the load addition.

Year	Season	Facility Name	Contingencies	RATE A, RATE B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
2027	Light Load	MADDOX 3 - PEARLE 3 - 1	CUNNINHAM 3 - QUAHADA 3 - 1	120/120	131.04	109.2
2027	Light Load	SUNDOWN 6 - WOLFFORTH 6 - 1	TUCO_INT 7 - YOAKUM 7 - 1	426/426	498.42	117
2027	Summer	MADDOX 3 - PEARLE 3 - 1	KIOWA 7 - KIOWA 3 - 1	120/120	122.28	101.9
2027	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	120/120	122.04	101.7
2027	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - POTASH_JCT 6 - 1	120/120	120.36	100.3
2027	Winter	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	120/120	128.76	107.3
2027	Winter	MADDOX 3 - PEARLE 3 - 1	KIOWA 7 - KIOWA 3 - 1	120/120	128.76	107.3
2027	Winter	MADDOX 3 - PEARLE 3 - 1	POTASH_JCT 3 - POTASH_JCT 6 - 1	120/120	122.64	102.2
2032	Light Load	MADDOX 3 - PEARLE 3 - 1	CUNNINHAM 3 - QUAHADA 3 - 1	120/120	148.44	123.7
2032	Light Load	CUNNINHAM 3 - QUAHADA 3 - 1	MADDOX 3 - PEARLE 3 - 1	158/159	159.318	100.2
2032	Light Load	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	120/120	123.48	102.9
2032	Light Load	MADDOX 3 - PEARLE 3 - 1	PCA 3 - XTO_BIGEDDY3 - 1	120/120	121.44	101.2
2032	Light Load	WOLFFORTH 3 - TERRY_CNTY 3 - 1	SUNDOWN 6 - WOLFFORTH 6 - 1	231/231	243.936	105.6
2032	Light Load	SUNDOWN 6 - WOLFFORTH 6 - 1	WOLFFORTH 3 - TERRY_CNTY 3 - 1	426/426	432.39	101.5
2032	Light Load	SUNDOWN 6 - WOLFFORTH 6 - 1	P43:345:SPS:TUCO_NR50_SLG:::EHV:	426/426	541.45	127.1
2032	Light Load	SUNDOWN 6 - WOLFFORTH 6 - 1	TUCO_INT 7 - YOAKUM 7 - 1	426/426	541.02	127
2032	Summer	SUNDOWN 6 - WOLFFORTH 6 - 1	TUCO_INT 7 - YOAKUM 7 - 1	426/426	451.56	106
2032	Summer	MADDOX 3 - PEARLE 3 - 1	PCA 3 - XTO_BIGEDDY3 - 1	120/120	147.12	122.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	120/120	145.32	121.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	POTASH_JCT 3 - POTASH_JCT 6 - 1	120/120	138.48	115.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	PCA 3 - POTASH_JCT 3 - 1	120/120	136.08	113.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	HOBBS_INT 6 - HOBBS_INT 7 - 1	120/120	134.88	112.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	NA_ENRICH 3 - TARGA 3 - 1	120/120	134.76	112.3
2032	Summer	CUNNINHAM 3 - QUAHADA 3 - 1	LYNCH_TP 3 - PEARLE 3 - 1	158/159	170.607	107.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:U03.1.CRDNL.NEF:::HV:'	120/120	134.28	111.9
2032	Summer	CUNNINHAM 3 - QUAHADA 3 - 1	MADDOX 3 - PEARLE 3 - 1	158/159	185.871	116.9
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CARDINAL 3 - TARGA 3 - 1	120/120	133.92	111.6

Year	Season	Facility Name	Contingencies	RATE A, RATE B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SAGE_BRUSH 3 - CARDINAL 3 - 1	120/120	133.56	111.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MONUMNT_TP 3 - BYRD_TP 3 - 1	120/120	132.36	110.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNINHAM 3 - MONUMNT_TP 3 - 1	120/120	132.36	110.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	EDDY_NORTH 6 - CUNNIGHM_N 6 - 1	120/120	132.12	110.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUSTERMTN 3 - WHITTEN 3 - 1	120/120	132.12	110.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LEA_ROAD 3 - WARD 3 - 1	120/120	131.64	109.7
2032	Summer	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - TARGA HV - 1	120/120	131.52	109.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	COOPER_RNCH3 - BYRD_TP 3 - 1	120/120	131.4	109.5
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LEA_ROAD 3 - OIL_CENTER 3 - 1	120/120	131.16	109.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	OIL_CENTER 3 - COOPER_RNCH3 - 1	120/120	131.16	109.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SAGE_BRUSH 3 - CHEVRON_DAGG - 1	120/120	130.92	109.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	OASIS 6 - SN_JUAN_TAP6 - 1	120/120	130.8	109
2032	Summer	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:T84.1.WHOBBS.NEF:::HV:'	120/120	130.68	108.9
2032	Summer	MADDOX 3 - PEARLE 3 - 1	YOAKUM 6 - YOAKUM 7 - 1	120/120	130.56	108.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	RED_BLUFF 3 - TARGA HV - 1	120/120	130.32	108.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MONUMENT 3 - W_HOBBS 3 - 1	120/120	130.2	108.5
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_S 6 - HOBBS_INT 6 - 1	120/120	130.08	108.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MEDANOS 3 - CHEVRON_DAGG - 1	120/120	129.96	108.3
2032	Summer	CUNNINHAM 3 - QUAHADA 3 - 1	'P12:115:SPS:U38.1.MADDX.LYNCH:::HV:'	158/159	172.356	108.4
2032	Summer	CUNNINHAM 3 - QUAHADA 3 - 1	ENRON_TP 3 - LYNCH_TP 3 - 1	158/159	161.226	101.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	EDDY_NORTH 6 - 7-RIVERS 6 - 1	120/120	129.84	108.2
2032	Summer	MADDOX 3 - PEARLE 3 - 1	DRINKARD 3 - NA_ENRICH 3 - 1	120/120	129.72	108.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	KIOWA 7 - RDRUNNER 7 - 1	120/120	129.6	108
2032	Summer	MADDOX 3 - PEARLE 3 - 1	W_BENDER 3 - N_HOBBS 3 - 1	120/120	129.48	107.9
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SWITCHED_SHUNT-528013	120/120	129.36	107.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	PHANTOM 3 - PHANTOM 7 - 1	120/120	129.24	107.7
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SWITCHED_SHUNT-528220	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CD_SVC_HV 3 - CHDRAW_SVC 1 - 1	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LE-WAITS 3 - LE-WAITS 2 - 1	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SWITCHED_SHUNT-528021	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LE-ERF 3 - LE-TALLCOTN3 - 1	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	RR_SVC_HV 3 - RDRUNNR_SVC1 - 1	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SWITCHED_SHUNT-527953	120/120	129.12	107.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CHINA_DRAW 3 - CHINA_DRAW 7 - 1	120/120	129.12	107.6

Year	Season	Facility Name	Contingencies	RATE A, RATE B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
2032	Summer	MADDOX 3 - PEARLE 3 - 1	BASE CASE	120/120	128.04	106.7
2032	Summer	MADDOX 3 - PEARLE 3 - 1	NEEDMORE 6 - YOAKUM 6 - 1	120/120	127.08	105.9
2032	Summer	MADDOX 3 - PEARLE 3 - 1	INK_BASIN 3 - INK_BASIN 6 - 1	120/120	126.96	105.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_N 6 - CUNINGHAM3 1 - 1	120/120	126.96	105.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	SEMINOLE 3 - GAINES 3 - 1	120/120	126.96	105.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - BATTLE_AXE 3 - 1	120/120	126.96	105.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	PECOS 3 - HOPI_SUB 3 - 1	120/120	126.96	105.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	JOHNSON_DRW3 - TAYLOR 3 - 1	120/120	126.84	105.7
2032	Summer	MADDOX 3 - PEARLE 3 - 1	OXY_PALINDM3 - LIVSTNRIDGE3 - 1	120/120	126.72	105.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - AGAVE_RHIL23 - 1	120/120	126.6	105.5
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MULTIGEN528331	120/120	126.48	105.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	ANDREWS 3 - NA_ENRICH 3 - 1	120/120	126.36	105.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	POTASH_JCT 2 - MISSCHEM#2 2 - 1	120/120	126.36	105.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MISSCHEM#2 2 - IMC_#2 2 - 1	120/120	126.36	105.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MUSTANG 3 - MUSTANG_1 1 - 1	120/120	126.24	105.2
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CHINA_DRAW 3 - CHVRN_EDDYS3 - 1	120/120	126.12	105.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:U27.1.NLVNG.MLGBND:::HV:'	120/120	126	105
2032	Summer	MADDOX 3 - PEARLE 3 - 1	QUAHADA 3 - LEA_NATIONL3 - 1	120/120	125.76	104.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	DENVER_N 3 - HIGGEAST 3 - 1	120/120	125.64	104.7
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LE-NRTH_INT3 - LE-LOVINTON2 - 1	120/120	125.52	104.6
2032	Summer	MADDOX 3 - PEARLE 3 - 1	CUNNINHAM 3 - CUNINGHAM1 1 - 1	120/120	125.4	104.5
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MIDSPRON_TP3 - ENRON 3 - 1	120/120	125.16	104.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	PCA 3 - CV-LUSK_TP 3 - 1	120/120	125.04	104.2
2032	Summer	MADDOX 3 - PEARLE 3 - 1	INK_BASIN 3 - LE-WAITS 3 - 1	120/120	124.8	104
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MUSTANG 6 - GS-MUSTANG 6 - @1	120/120	124.68	103.9
2032	Summer	MADDOX 3 - PEARLE 3 - 1	LIVSTNRIDGE3 - XTO_DI9_TP 3 - 1	120/120	124.56	103.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MALJMAR1&2 3 - ZIA 3 - 1	120/120	124.08	103.4
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MADDOXG23 3 - MADDOX_2 1 - 1	120/120	123.96	103.3
2032	Summer	MADDOX 3 - PEARLE 3 - 1	INTREPDW_TP3 - IMC_#1_TP 3 - 1	120/120	123.84	103.2
2032	Summer	MADDOX 3 - PEARLE 3 - 1	POTASH_JCT 3 - INTREPDW_TP3 - 1	120/120	123.72	103.1
2032	Summer	MADDOX 3 - PEARLE 3 - 1	HOBBS_INT 3 - MADDOX 3 - 1	120/120	122.16	101.8
2032	Summer	MADDOX 3 - PEARLE 3 - 1	QUAHADA 3 - DCP_ZIA TP 3 - 1	120/120	121.8	101.5
2032	Summer	MADDOX 3 - PEARLE 3 - 1	MADDOX 3 - MADDOX_1 1 - 1	120/120	120.36	100.3
2032	Winter	MADDOX 3 - PEARLE 3 - 1	PCA 3 - XTO_BIGEDDY3 - 1	120/120	149.64	124.7

Year	Season	Facility Name	Contingencies	RATE A, RATE B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
2032	Winter	MADDOX 3 - PEARLE 3 - 1	PCA 3 - POTASH_JCT 3 - 1	120/120	141.72	118.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:W26.1.CUNGHM.OILCNTR:::HV:'	120/120	141.12	117.6
2032	Winter	MADDOX 3 - PEARLE 3 - 1	SAGE_BRUSH 3 - CHEVRON_DAGG - 1	120/120	139.32	116.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:T84.1.WHOBBS.NEF:::HV:'	120/120	139.08	115.9
2032	Winter	MADDOX 3 - PEARLE 3 - 1	DRINKARD_TP3 - DRINKARD 3 - 1	120/120	138.84	115.7
2032	Winter	MADDOX 3 - PEARLE 3 - 1	W_HOBBS 3 - DRINKARD_TP3 - 1	120/120	138.84	115.7
2032	Winter	MADDOX 3 - PEARLE 3 - 1	YOAKUM 6 - YOAKUM 7 - 1	120/120	138.72	115.6
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:T42.1.WHOBBS.MADDOX:::HV:'	120/120	138.48	115.4
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MADDOX 3 - MONUMENT 3 - 1	120/120	138.24	115.2
2032	Winter	MADDOX 3 - PEARLE 3 - 1	DRINKARD 3 - NA_ENRICH 3 - 1	120/120	138.12	115.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MEDANOS 3 - CHEVRON_DAGG - 1	120/120	138	115
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MONUMENT 3 - W_HOBBS 3 - 1	120/120	138	115
2032	Winter	MADDOX 3 - PEARLE 3 - 1	CUNNIGHM_S 6 - HOBBS_INT 6 - 1	120/120	137.76	114.8
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MAGNUM 3 - CARLSBAD 3 - 1	120/120	137.64	114.7
2032	Winter	MADDOX 3 - PEARLE 3 - 1	PECOS 3 - PECOS 6 - 1	120/120	137.52	114.6
2032	Winter	MADDOX 3 - PEARLE 3 - 1	EDDY_NORTH 6 - 7-RIVERS 6 - 1	120/120	137.4	114.5
2032	Winter	MADDOX 3 - PEARLE 3 - 1	EDDY_STH 3 - PECOS 3 - 1	120/120	137.28	114.4
2032	Winter	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - CUSTERMTN 3 - 1	120/120	137.16	114.3
2032	Winter	MADDOX 3 - PEARLE 3 - 1	PCA 3 - MAGNUM 3 - 1	120/120	136.92	114.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	W_BENDER 3 - N_HOBBS 3 - 1	120/120	136.8	114
2032	Winter	MADDOX 3 - PEARLE 3 - 1	TOLK 6 - TOLK 7 - 2	120/120	136.68	113.9
2032	Winter	MADDOX 3 - PEARLE 3 - 1	BASE CASE	120/120	135.72	113.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:W22.1.EGLECK.NAV4&5:::HV:'	120/120	134.64	112.2
2032	Winter	MADDOX 3 - PEARLE 3 - 1	FIESTA 3 - CARLSBAD 3 - 1	120/120	134.52	112.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	OXY_ACSR 3 - RED_BLUFF 3 - 1	120/120	134.4	112
2032	Winter	MADDOX 3 - PEARLE 3 - 1	NORTH_LOVNG3 - AGAVE_PDURO3 - 1	120/120	134.28	111.9
2032	Winter	MADDOX 3 - PEARLE 3 - 1	JOHNSON_DRW3 - TAYLOR 3 - 1	120/120	134.16	111.8
2032	Winter	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - BATTLE_AXE 3 - 1	120/120	134.04	111.7
2032	Winter	MADDOX 3 - PEARLE 3 - 1	YOAKUM 6 - INK_BASIN 6 - 1	120/120	134.04	111.7
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:W38.1.WIPP.RDBLUFF:::HV:'	120/120	133.92	111.6
2032	Winter	MADDOX 3 - PEARLE 3 - 1	INK_BASIN 3 - LE-WAITS 3 - 1	120/120	133.8	111.5
2032	Winter	MADDOX 3 - PEARLE 3 - 1	RDRUNNER 3 - AGAVE_RHIL23 - 1	120/120	133.8	111.5
2032	Winter	MADDOX 3 - PEARLE 3 - 1	GAINES 3 - OXY_WSEM_TP3 - 1	120/120	133.68	111.4
2032	Winter	MADDOX 3 - PEARLE 3 - 1	DENVER_N 3 - HIGGEAST 3 - 1	120/120	133.56	111.3

Year	Season	Facility Name	Contingencies	RATE A, RATE B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
2032	Winter	MADDOX 3 - PEARLE 3 - 1	CHINA_DRAW 3 - CHVRN_EDDYS3 - 1	120/120	133.32	111.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:W87.1.CHINA.CHVRN:::HV:'	120/120	133.32	111.1
2032	Winter	MADDOX 3 - PEARLE 3 - 1	DCP_ZIA TP 3 - DCP_ZIA 3 - 1	120/120	133.08	110.9
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:U27.1.NLVNG.MLGBND:::HV:'	120/120	132.96	110.8
2032	Winter	MADDOX 3 - PEARLE 3 - 1	PCA 3 - CV-LUSK_TP 3 - 1	120/120	132.48	110.4
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MIDSPRON_TP3 - ENRON 3 - 1	120/120	131.88	109.9
2032	Winter	MADDOX 3 - PEARLE 3 - 1	ZIA 3 - DCP_ZIA TP 3 - 1	120/120	131.76	109.8
2032	Winter	MADDOX 3 - PEARLE 3 - 1	MALJMAR1&2 3 - ZIA 3 - 1	120/120	131.76	109.8
2032	Winter	MADDOX 3 - PEARLE 3 - 1	HOBBS_INT 3 - MADDOX 3 - 1	120/120	129.6	108
2032	Winter	MADDOX 3 - PEARLE 3 - 1	'P12:115:SPS:T94.1.MADDOX.HOBBG:::HV:'	120/120	129.6	108
2032	Winter	MADDOX 3 - PEARLE 3 - 1	QUAHADA 3 - DCP_ZIA TP 3 - 1	120/120	129.12	107.6

Table 3-1: Potential Thermal Overloads

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2027	Light Load	PHANTOM 3	115	SWITCHED_SHUNT-528015	1.05	0.9	0.87367
2027	Light Load	PHANTOM 3	115	GEN527903 1	1.05	0.9	0.88117
2027	Light Load	RED_BLUFF 3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.89182
2027	Light Load	INK_BASIN 6	230	BASE CASE	1.05	0.95	0.94279
2027	Light Load	OXY_PALINDM3	115	OXY_PALINDM3 - LIVSTNRIDGE3 - 1	1.05	0.9	0.75443
2027	Light Load	BOPCO_PKRLK3	115	SWITCHED_SHUNT-528222	1.05	0.9	0.89934
2027	Light Load	BOPCO_PKRLK3	115	BASE CASE	1.05	0.95	0.94886
2027	Light Load	BOPCO_PKRLK3	115	SWITCHED_SHUNT-528015	1.05	0.9	0.87423
2027	Light Load	SEMINOLE 6	230	BASE CASE	1.05	0.95	0.94044
2027	Light Load	BOPCO_PKRLK3	115	GEN527903 1	1.05	0.9	0.88158
2027	Light Load	EDDY_CNTY 7	345	BASE CASE	1.05	0.95	0.94689
2027	Light Load	WOLFCAMP_TP3	115	PHANTOM 7 - CHINA_DRAW 7 - 1	1.05	0.9	0.87458
2027	Light Load	WOLFCAMP_TP3	115	BASE CASE	1.05	0.95	0.94904
2027	Light Load	PHANTOM 3	115	EDDY_CNTY 7 - KIOWA 7 - 1	1.05	0.9	0.88891
2027	Light Load	OXY_ACSR 3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.88899
2027	Light Load	EDDY_CNTY 7	345	GEN527903 1	1.05	0.9	0.89063
2027	Light Load	WOLFCAMP_TP3	115	SWITCHED_SHUNT-528015	1.05	0.9	0.8766
2027	Light Load	BOPCO_PKRLK3	115	EDDY_CNTY 7 - KIOWA 7 - 1	1.05	0.9	0.88931
2027	Light Load	BOPCO_PKRLK3	115	PHANTOM 7 - CHINA_DRAW 7 - 1	1.05	0.9	0.87221
2027	Light Load	WOLFCAMP_TP3	115	EDDY_CNTY 7 - KIOWA 7 - 1	1.05	0.9	0.89104
2027	Light Load	PHANTOM 3	115	PHANTOM 7 - CHINA_DRAW 7 - 1	1.05	0.9	0.87165
2027	Light Load	PHANTOM 3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.89958
2027	Light Load	BOPCO_PKRLK3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.89917

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2027	Light Load	SEMINOLE 6	230	GEN527903 1	1.05	0.9	0.87983
2027	Light Load	WOLFCAMP_TP3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.89768
2027	Light Load	AMOCO_SS 6	230	SUNDOWN 6 - AMOCO_SS 6 - 1	1.05	0.9	0.84877
2027	Light Load	SEMINOLE 6	230	SUNDOWN 6 - AMOCO_SS 6 - 1	1.05	0.9	0.88343
2027	Light Load	SEMINOLE 6	230	SN_JUAN_TAP6 - CHAVES_CNTY6 - 1	1.05	0.9	0.89625
2027	Light Load	PHANTOM 3	115	BASE CASE	1.05	0.95	0.94885
2027	Light Load	WOLFCAMP_TP3	115	GEN527903 1	1.05	0.9	0.88334
2027	Light Load	TARGA HV	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.88443
2027	Light Load	PHANTOM 3	115	SWITCHED_SHUNT-528222	1.05	0.9	0.89902
2027	Summer	POTASH_JCT 6	230	BASE CASE	1.05	0.95	0.94825
2032	Light Load	XTO_BIGEDDY3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89925
2032	Light Load	ENRON 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86823
2032	Light Load	ENRON_TP 3	115	BASE CASE	1.05	0.95	0.94686
2032	Light Load	CAPROCK 3	115	SWITCHED_SHUNT-524492	1.05	0.9	0.89963
2032	Light Load	ODC 3	115	BASE CASE	1.05	0.95	0.94808
2032	Light Load	LEA_NATIONL3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.87211
2032	Light Load	MIDSPRON_TP3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86843
2032	Light Load	MIDS_PRONTO3	115	BASE CASE	1.05	0.95	0.94057
2032	Light Load	QUAHADA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.87009
2032	Light Load	ENRON 3	115	BASE CASE	1.05	0.95	0.94322
2032	Light Load	EL_PASO 3	115	BASE CASE	1.05	0.95	0.94941
2032	Light Load	CV-MALJAMAR3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89824
2032	Light Load	ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8692
2032	Light Load	OXY_WILRD1 3	115	BASE CASE	1.05	0.95	0.94672
2032	Light Load	CV-SKELLY 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89893
2032	Light Load	SHELL_CO2 3	115	BASE CASE	1.05	0.95	0.9491
2032	Light Load	DCP_ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86937
2032	Light Load	MALJMAR1&2 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86503
2032	Light Load	MIDSPRON_TP3	115	BASE CASE	1.05	0.95	0.9434
2032	Light Load	ENRON_TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8722
2032	Light Load	CV-MALJAMAR3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89824
2032	Light Load	ARCO_TP 3	115	BASE CASE	1.05	0.95	0.94935
2032	Light Load	XTO_BIGEDDY3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.84212
2032	Light Load	MIDS_PRONTO3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.89801
2032	Light Load	LEA_NATIONL3	115	BASE CASE	1.05	0.95	0.94705
2032	Light Load	CAPROCK 3	115	SWITCHED_SHUNT-524493	1.05	0.9	0.89963
2032	Light Load	CV-SKELLY 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89893
2032	Light Load	MALJMAR1&2 3	115	BASE CASE	1.05	0.95	0.94684
2032	Light Load	XTO_BIGEDDY3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89925
2032	Light Load	MIDS_PRONTO3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86535
2032	Light Load	DCP_ZIA TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86943
2032	Light Load	MIDS_PRONTO3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.89803
2032	Light Load	ODC_TP 3	115	BASE CASE	1.05	0.95	0.94913
2032	Light Load	BENNETT 3	115	BASE CASE	1.05	0.95	0.94915
2032	Summer	ZIAHILS13 3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.8783
2032	Summer	ENRON 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.87007

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	ZIAHILS13 3	115	CUNNINHAM 3 - BUCKEYE_TP 3 - 1	1.05	0.9	0.88229
2032	Summer	ZIAHILS13 3	115	CD_SVC_HV 3 - CHDRAW_SVC 1 - 1	1.05	0.9	0.87624
2032	Summer	BATTLE_AXE 3	115	RR_SVC_HV 3 - RDRUNNR_SVC1 - 1	1.05	0.9	0.88642
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528013	1.05	0.9	0.88774
2032	Summer	BATTLE_AXE 3	115	SAND_DUNES 3 - RED_BLUFF 3 - 1	1.05	0.9	0.8946
2032	Summer	ZIA 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89296
2032	Summer	ZIAHILS13 3	115	LIVSTNRIDGE3 - XTO_DI9_TP 3 - 1	1.05	0.9	0.87467
2032	Summer	ZIAHILS13 3	115	FIXED_SHUNT-528225 1	1.05	0.9	0.88041
2032	Summer	ZIAHILS13 3	115	POTASH_JCT 3 - KIOWA 3 - 1	1.05	0.9	0.87959
2032	Summer	ZIAHILS13 3	115	HOBBS_INT 6 - HOBBS_INT 7 - 1	1.05	0.9	0.89583
2032	Summer	MALJMAR1&2 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.8805
2032	Summer	ZIAHILS13 3	115	POTASH_JCT 3 - POTASH_JCT 6 - 1	1.05	0.9	0.87722
2032	Summer	MIDSPRON_TP3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89534
2032	Summer	BATTLE_AXE 3	115	BUCKEYE_TP 3 - LE-TXACO_TP3 - 1	1.05	0.9	0.89445
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:W83.1.NEF_.ANDR:::HV:'	1.05	0.9	0.89171
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:U03.1.CRDNL.NEF:::HV:'	1.05	0.9	0.8845
2032	Summer	GRAHAM 3	115	GRASSLAND 3 - GRASSLAND 6 - 1	1.05	0.9	0.85039
2032	Summer	MIDS_PRONTO3	115	LYNCH_TP 3 - PEARLE 3 - 1	1.05	0.9	0.89917
2032	Summer	BATTLE_AXE 3	115	RSVLT_CC_W 7 - RSVLT_CC_E 7 - 1	1.05	0.9	0.8919
2032	Summer	ZIAHILS13 3	115	RED_BLUFF 3 - CHVRN_JCKSN3 - 1	1.05	0.9	0.89873
2032	Summer	BATTLE_AXE 3	115	CARDINAL 3 - TARGA 3 - 1	1.05	0.9	0.88321
2032	Summer	BATTLE_AXE 3	115	CUNNINHAM 3 - MONUMNT_TP 3 - 1	1.05	0.9	0.89166
2032	Summer	ENRON_TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.81308
2032	Summer	MIDSPRON_TP3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.86838
2032	Summer	ZIAHILS13 3	115	KIOWA 7 - RDRUNNER 7 - 1	1.05	0.9	0.87445
2032	Summer	ZIAHILS13 3	115	PHANTOM 3 - PHANTOM 7 - 1	1.05	0.9	0.87372
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528018	1.05	0.9	0.87843
2032	Summer	ZIAHILS13 3	115	CUNNINHAM 3 - MONUMNT_TP 3 - 1	1.05	0.9	0.87993
2032	Summer	ZIAHILS13 3	115	MUSTANG 3 - MUSTANG_2 1 - 1	1.05	0.9	0.88223
2032	Summer	ENRON_TP 3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89874
2032	Summer	ZIA 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89296
2032	Summer	BATTLE_AXE 3	115	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	1.05	0.9	0.8863
2032	Summer	ENRON_TP 3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.87187
2032	Summer	MIDS_PRONTO3	115	BASE CASE	1.05	0.95	0.92343
2032	Summer	ENRON_TP 3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89874
2032	Summer	ENRON 3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.8682
2032	Summer	ZIA 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.88942
2032	Summer	QUAHADA 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89508
2032	Summer	CHEVRON_DAGG	115	POTASH_JCT 3 - INTREPDW_TP3 - 1	1.05	0.9	0.89643
2032	Summer	ENRON 3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89518
2032	Summer	ZIAHILS13 3	115	GEN527162 1	1.05	0.9	0.88224
2032	Summer	ZIAHILS13 3	115	YOAKUM 6 - INK_BASIN 6 - 1	1.05	0.9	0.87127
2032	Summer	ZIAHILS13 3	115	XTO_DI9_TP 3 - DI8_TP - 1	1.05	0.9	0.87507
2032	Summer	BATTLE_AXE 3	115	CUNNINHAM 3 - BUCKEYE_TP 3 - 1	1.05	0.9	0.89399
2032	Summer	MIDS_PRONTO3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89252
2032	Summer	BATTLE_AXE 3	115	KIOWA 7 - RDRUNNER 7 - 1	1.05	0.9	0.88625

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528194	1.05	0.9	0.88038
2032	Summer	ZIAHILS13 3	115	SAGA_SMEAS 7 - SAGA_NCOL 7 - 1	1.05	0.9	0.88083
2032	Summer	BATTLE_AXE 3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.88624
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:U10.1.KIOWA.POTJCT:::HV:'	1.05	0.9	0.89132
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528220	1.05	0.9	0.8762
2032	Summer	PEARLE 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.85075
2032	Summer	GRASSLAND 3	115	GRASSLAND 3 - GRASSLAND 6 - 1	1.05	0.9	0.8714
2032	Summer	BATTLE_AXE 3	115	NA_ENRICH 3 - TARGA 3 - 1	1.05	0.9	0.88324
2032	Summer	BATTLE_AXE 3	115	SAGA_NDCOL 7 - SAGA_NCOL 7 - 1	1.05	0.9	0.89352
2032	Summer	LEA_NATIONL3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.87449
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528021	1.05	0.9	0.87457
2032	Summer	ZIAHILS13 3	115	WARD 3 - WHITTEN 3 - 1	1.05	0.9	0.88177
2032	Summer	BATTLE_AXE 3	115	CUNNINHAM 3 - CUNINGHAM1 1 - 1	1.05	0.9	0.89529
2032	Summer	MIDSPRON_TP3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89534
2032	Summer	DCP_ZIA TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80792
2032	Summer	ZIAHILS13 3	115	GEN527881 1	1.05	0.9	0.88336
2032	Summer	MALJMAR1&2 3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89396
2032	Summer	DCP_ZIA 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.88976
2032	Summer	ZIAHILS13 3	115	CUSTERMTN 3 - WHITTEN 3 - 1	1.05	0.9	0.87836
2032	Summer	DCP_ZIA 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89331
2032	Summer	QUAHADA 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.89154
2032	Summer	ZIAHILS13 3	115	CUNNINHAM 3 - CUNINGHAM1 1 - 1	1.05	0.9	0.8836
2032	Summer	ZIAHILS13 3	115	CARDINAL 3 - TARGA 3 - 1	1.05	0.9	0.87136
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528021	1.05	0.9	0.88637
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:U10.1.KIOWA.POTJCT:::HV:'	1.05	0.9	0.87959
2032	Summer	ZIAHILS13 3	115	INTREPDW_TP3 - IMC_#1_TP 3 - 1	1.05	0.9	0.87246
2032	Summer	BATTLE_AXE 3	115	SAGA_SMEAS 7 - SAGA_NCOL 7 - 1	1.05	0.9	0.89256
2032	Summer	BATTLE_AXE 3	115	SUNDOWN 6 - AMOCO_SS 6 - 1	1.05	0.9	0.88564
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528182	1.05	0.9	0.88174
2032	Summer	BATTLE_AXE 3	115	SAGA_SDCOL 7 - SUB BUS #2 - 1	1.05	0.9	0.89337
2032	Summer	LYNCH_TP 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.85386
2032	Summer	MIDSPRON_TP3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.88843
2032	Summer	BATTLE_AXE 3	115	SAGA_SDCOL 7 - SUB BUS #1 - 1	1.05	0.9	0.89392
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528182	1.05	0.9	0.89344
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-528013	1.05	0.9	0.87595
2032	Summer	ENRON_TP 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89185
2032	Summer	MIDS_PRONTO3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89252
2032	Summer	ZIAHILS13 3	115	QUAHADA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.88331
2032	Summer	BATTLE_AXE 3	115	BOPCO_PKRLK3 - WOLFCAMP_TP3 - 1	1.05	0.9	0.89503
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:U18.1.NLOV.SLOV:::HV:'	1.05	0.9	0.88103
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:U09.1.LIVS.WIPP:::HV:'	1.05	0.9	0.8919
2032	Summer	ENRON_TP 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89185
2032	Summer	ZIAHILS13 3	115	AGAVE_RHILL3 - OCHOA 3 - 1	1.05	0.9	0.8959
2032	Summer	PEARLE 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8799
2032	Summer	BATTLE_AXE 3	115	CUSTERMTN 3 - WHITTEN 3 - 1	1.05	0.9	0.89012
2032	Summer	MIDSPRON_TP3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8093

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	ENRON 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80913
2032	Summer	MIDS_PRONTO3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.86733
2032	Summer	ZIAHILS13 3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.87443
2032	Summer	BATTLE_AXE 3	115	LIVSTNRIDGE3 - XTO_DI9_TP 3 - 1	1.05	0.9	0.88648
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.87443
2032	Summer	QUAHADA 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89508
2032	Summer	ZIAHILS13 3	115	NORTH_LOVNG3 - AGAVE_PDURO3 - 1	1.05	0.9	0.89904
2032	Summer	BATTLE_AXE 3	115	LYNCH_TP 3 - PEARLE 3 - 1	1.05	0.9	0.89374
2032	Summer	BATTLE_AXE 3	115	IMC_#1_TP 3 - DI8_TP - 1	1.05	0.9	0.88691
2032	Summer	ZIAHILS13 3	115	RDRUNNER 3 - CUSTERMTN 3 - 1	1.05	0.9	0.89793
2032	Summer	LYNN_CNTY 3	115	GRASSLAND 3 - GRASSLAND 6 - 1	1.05	0.9	0.88021
2032	Summer	BATTLE_AXE 3	115	NORTH_LOVNG3 - N_LOVING 7 - 1	1.05	0.9	0.88906
2032	Summer	ZIAHILS13 3	115	PHANTOM 3 - BOPCO_PKRLK3 - 1	1.05	0.9	0.88286
2032	Summer	MIDS_PRONTO3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.86546
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:U18.1.NLOV.SLOV:::HV:'	1.05	0.9	0.89275
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.88624
2032	Summer	BATTLE_AXE 3	115	QUAHADA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.89499
2032	Summer	BATTLE_AXE 3	115	RDRUNNER 3 - TARGA HV - 1	1.05	0.9	0.89005
2032	Summer	XTO_BIGEDDY3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.77928
2032	Summer	MALJMAR1&2 3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89396
2032	Summer	LEA_NATIONL3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89199
2032	Summer	MIDSPRON_TP3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.88843
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528018	1.05	0.9	0.89019
2032	Summer	ENRON 3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89518
2032	Summer	BATTLE_AXE 3	115	LIVSTNRIDGE3 - WIPP 3 - 1	1.05	0.9	0.8919
2032	Summer	LEA_NATIONL3	115	'P12:115:SPS:W75.1.CUNN.QUAH:::HV:'	1.05	0.9	0.89899
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:W89.1.CRDNL.SGEBR:::HV:'	1.05	0.9	0.87116
2032	Summer	BATTLE_AXE 3	115	CHINA_DRAW 3 - CHINA_DRAW 7 - 1	1.05	0.9	0.8862
2032	Summer	DCP_ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80773
2032	Summer	BUCKEYE_TP 3	115	LE-NRTH_INT3 - LE-LOVINTON2 - 1	1.05	0.9	0.87344
2032	Summer	BATTLE_AXE 3	115	'P12:115:SPS:W89.1.CRDNL.SGEBR:::HV:'	1.05	0.9	0.88301
2032	Summer	ENRON_TP 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.87374
2032	Summer	ZIAHILS13 3	115	FIXED_SHUNT-528024 1	1.05	0.9	0.87431
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-527953	1.05	0.9	0.88764
2032	Summer	ZIAHILS13 3	115	PHANTOM 3 - PHANTOM 7 - 2	1.05	0.9	0.87372
2032	Summer	ZIAHILS13 3	115	SAGA_SDCOL 7 - SUB BUS #1 - 1	1.05	0.9	0.88222
2032	Summer	MALJMAR1&2 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.88408
2032	Summer	ZIAHILS13 3	115	RSVLT_CC_W 7 - RSVLT_CC_E 7 - 1	1.05	0.9	0.88017
2032	Summer	ENRON 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.88827
2032	Summer	BATTLE_AXE 3	115	MONUMNT_TP 3 - BYRD_TP 3 - 1	1.05	0.9	0.89152
2032	Summer	MIDS_PRONTO3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80618
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:W83.1.NEF_.ANDR:::HV:'	1.05	0.9	0.87997
2032	Summer	BATTLE_AXE 3	115	MUSTANG 3 - MUSTANG_2 1 - 1	1.05	0.9	0.89393
2032	Summer	ZIAHILS13 3	115	SAGA_SDCOL 7 - SUB BUS #2 - 1	1.05	0.9	0.88166
2032	Summer	ZIAHILS13 3	115	SAND_DUNES 3 - RED_BLUFF 3 - 1	1.05	0.9	0.88291
2032	Summer	ZIAHILS13 3	115	WIPP 3 - SAND_DUNES 3 - 1	1.05	0.9	0.87346

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80734
2032	Summer	ZIAHILS13 3	115	SWITCHED_SHUNT-527953	1.05	0.9	0.87585
2032	Summer	ZIAHILS13 3	115	SAGA_NDCOL 7 - SAGA_NCOL 7 - 1	1.05	0.9	0.88181
2032	Summer	MALJMAR1&2 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.79741
2032	Summer	ZIAHILS13 3	115	'P42:345:SPS:ROADRUNNER-CHR2_SLG:::EHV:'	1.05	0.9	0.87445
2032	Summer	ZIAHILS13 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.87072
2032	Summer	BATTLE_AXE 3	115	PHANTOM 3 - PHANTOM 7 - 1	1.05	0.9	0.88554
2032	Summer	DCP_ZIA TP 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.88994
2032	Summer	LYNCH_TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.86829
2032	Summer	DCP_ZIA 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89331
2032	Summer	BUCKEYE 3	115	LE-NRTH_INT3 - LE-LOVINTON2 - 1	1.05	0.9	0.87315
2032	Summer	BATTLE_AXE 3	115	POTASH_JCT 3 - POTASH_JCT 6 - 1	1.05	0.9	0.88898
2032	Summer	BATTLE_AXE 3	115	NORTH_LOVNG3 - SOUTH_LOVNG3 - 1	1.05	0.9	0.89275
2032	Summer	CHEVRON_DAGG	115	INTREPDW_TP3 - IMC_#1_TP 3 - 1	1.05	0.9	0.89685
2032	Summer	ZIAHILS13 3	115	RED_BLUFF 3 - TARGA HV - 1	1.05	0.9	0.88227
2032	Summer	ZIAHILS13 3	115	WOLFCAMP_TP3 - WOLFCAMP 3 - 1	1.05	0.9	0.89689
2032	Summer	ZIAHILS13 3	115	SAGA_SDCOL 7 - SAGA_SMEAS 7 - 1	1.05	0.9	0.88083
2032	Summer	BATTLE_AXE 3	115	CD_SVC_HV 3 - CHDRAW_SVC 1 - 1	1.05	0.9	0.88803
2032	Summer	MIDSPRON_TP3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.87024
2032	Summer	BATTLE_AXE 3	115	SAGA_SDCOL 7 - SAGA_SMEAS 7 - 1	1.05	0.9	0.89256
2032	Summer	MIDS_PRONTO3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.88558
2032	Summer	BATTLE_AXE 3	115	FIXED_SHUNT-528024 1	1.05	0.9	0.88612
2032	Summer	BATTLE_AXE 3	115	INTREPDW_TP3 - IMC_#1_TP 3 - 1	1.05	0.9	0.8843
2032	Summer	ZIAHILS13 3	115	CUNNIGHM_N 6 - CUNNIGHM_S 6 - *1	1.05	0.9	0.87449
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:U03.1.CRDNL.NEF:::HV:'	1.05	0.9	0.87267
2032	Summer	BATTLE_AXE 3	115	CHAVES_CNTY6 - EDDY_NORTH 6 - 1	1.05	0.9	0.89395
2032	Summer	ZIAHILS13 3	115	MONUMNT_TP 3 - BYRD_TP 3 - 1	1.05	0.9	0.87978
2032	Summer	BATTLE_AXE 3	115	WARD 3 - WHITTEN 3 - 1	1.05	0.9	0.89348
2032	Summer	ENRON_TP 3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.87188
2032	Summer	LEA_NATIONL3	115	CUNNINHAM 3 - QUAHADA 3 - 1	1.05	0.9	0.89899
2032	Summer	ZIAHILS13 3	115	SAGE_BRUSH 3 - CARDINAL 3 - 1	1.05	0.9	0.87116
2032	Summer	ZIAHILS13 3	115	LEA_ROAD 3 - WARD 3 - 1	1.05	0.9	0.88135
2032	Summer	ZIAHILS13 3	115	RDRUNNER 3 - AGAVE_RHILL3 - 1	1.05	0.9	0.89869
2032	Summer	DCP_ZIA TP 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89348
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528194	1.05	0.9	0.8921
2032	Summer	ZIAHILS13 3	115	NA_ENRICH 3 - TARGA 3 - 1	1.05	0.9	0.87139
2032	Summer	ZIAHILS13 3	115	BUCKEYE_TP 3 - LE-TXACO_TP3 - 1	1.05	0.9	0.88276
2032	Summer	BATTLE_AXE 3	115	POTASH_JCT 3 - INTREPDW_TP3 - 1	1.05	0.9	0.88951
2032	Summer	ZIAHILS13 3	115	LIVSTNRIDGE3 - WIPP 3 - 1	1.05	0.9	0.88017
2032	Summer	BATTLE_AXE 3	115	YOAKUM 6 - INK_BASIN 6 - 1	1.05	0.9	0.88312
2032	Summer	ZIAHILS13 3	115	OASIS 6 - SN_JUAN_TAP6 - 1	1.05	0.9	0.87336
2032	Summer	CHEVRON_DAGG	115	POTASH_JCT 3 - INTREPDW_TP3 - 1	1.05	0.9	0.89705
2032	Summer	ZIAHILS13 3	115	SUNDOWN 6 - AMOCO_SS 6 - 1	1.05	0.9	0.87382
2032	Summer	BATTLE_AXE 3	115	SWITCHED_SHUNT-528220	1.05	0.9	0.88799
2032	Summer	BATTLE_AXE 3	115	'P42:345:SPS:ROADRUNNER-CHR2_SLG:::EHV:'	1.05	0.9	0.88625
2032	Summer	BATTLE_AXE 3	115	FIXED_SHUNT-528225 1	1.05	0.9	0.89214

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	MIDSPRON_TP3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.86837
2032	Summer	ZIAHILS13 3	115	RR_SVC_HV 3 - RDRUNNR_SVC1 - 1	1.05	0.9	0.87462
2032	Summer	PEARLE 3	115	BASE CASE	1.05	0.95	0.94984
2032	Summer	ZIAHILS13 3	115	NORTH_LOVNG3 - N_LOVING 7 - 1	1.05	0.9	0.87729
2032	Summer	BATTLE_AXE 3	115	PHANTOM 3 - PHANTOM 7 - 2	1.05	0.9	0.88554
2032	Summer	ZIAHILS13 3	115	SAGA_NDCOL 7 - SUB BUS #3 1 - 1	1.05	0.9	0.88384
2032	Summer	MALJMAR1&2 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.88408
2032	Summer	ZIAHILS13 3	115	'P12:115:SPS:U09.1.LIVS.WIPP:::HV:'	1.05	0.9	0.88017
2032	Summer	LEA_NATIONL3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.87188
2032	Summer	ZIAHILS13 3	115	IMC_#1_TP 3 - DI8_TP - 1	1.05	0.9	0.8751
2032	Summer	MIDSPRON_TP3	115	BASE CASE	1.05	0.95	0.92615
2032	Summer	BATTLE_AXE 3	115	GEN527881 1	1.05	0.9	0.89504
2032	Summer	ENRON 3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.88827
2032	Summer	ZIAHILS13 3	115	LYNCH_TP 3 - PEARLE 3 - 1	1.05	0.9	0.88204
2032	Summer	BATTLE_AXE 3	115	SAGE_BRUSH 3 - CARDINAL 3 - 1	1.05	0.9	0.88301
2032	Summer	LEA_NATIONL3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.81293
2032	Summer	BATTLE_AXE 3	115	LEA_ROAD 3 - WARD 3 - 1	1.05	0.9	0.89306
2032	Summer	ZIAHILS13 3	115	CHINA_DRAW 3 - CHINA_DRAW 7 - 1	1.05	0.9	0.87439
2032	Summer	ENRON 3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.86821
2032	Summer	CHEVRON_DAGG	115	INTREPDW_TP3 - IMC_#1_TP 3 - 1	1.05	0.9	0.89747
2032	Summer	BATTLE_AXE 3	115	ANDREWS 3 - NA_ENRICH 3 - 1	1.05	0.9	0.89171
2032	Summer	ZIAHILS13 3	115	NORTH_LOVNG3 - SOUTH_LOVNG3 - 1	1.05	0.9	0.88103
2032	Summer	ZIAHILS13 3	115	PHANTOM 3 - PHANTOM 7 - 1	1.05	0.9	0.87372
2032	Summer	XTO_BIGEDDY3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89344
2032	Summer	BATTLE_AXE 3	115	INK_BASIN 6 - HOBBS_INT 6 - 1	1.05	0.9	0.88191
2032	Summer	LYNCH_TP 3	115	BASE CASE	1.05	0.95	0.94604
2032	Summer	BATTLE_AXE 3	115	PHANTOM 3 - BOPCO_PKRLK3 - 1	1.05	0.9	0.89456
2032	Summer	BATTLE_AXE 3	115	RED_BLUFF 3 - TARGA HV - 1	1.05	0.9	0.89397
2032	Summer	ZIAHILS13 3	115	CHVRN_EDDYS3 - CHVRN_JMPSP3 - 1	1.05	0.9	0.89437
2032	Summer	LEA_NATIONL3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89199
2032	Summer	BATTLE_AXE 3	115	POTASH_JCT 3 - KIOWA 3 - 1	1.05	0.9	0.89132
2032	Summer	BATTLE_AXE 3	115	GEN527162 1	1.05	0.9	0.89394
2032	Summer	MIDS_PRONTO3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.88558
2032	Summer	ZIAHILS13 3	115	BOPCO_PKRLK3 - WOLFCAMP_TP3 - 1	1.05	0.9	0.88334
2032	Summer	ZIAHILS13 3	115	ANDREWS 3 - NA_ENRICH 3 - 1	1.05	0.9	0.87997
2032	Summer	BATTLE_AXE 3	115	OASIS 6 - SN_JUAN_TAP6 - 1	1.05	0.9	0.88518
2032	Summer	XTO_BIGEDDY3	115	PCA 3 - POTASH_JCT 3 - 1	1.05	0.9	0.89344
2032	Summer	ZIAHILS13 3	115	CHAVES_CNTY6 - EDDY_NORTH 6 - 1	1.05	0.9	0.88225
2032	Summer	BATTLE_AXE 3	115	WIPP 3 - SAND_DUNES 3 - 1	1.05	0.9	0.88528
2032	Summer	ZIAHILS13 3	115	INK_BASIN 6 - HOBBS_INT 6 - 1	1.05	0.9	0.87004
2032	Summer	MIDS_PRONTO3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.86547
2032	Summer	ZIAHILS13 3	115	POTASH_JCT 3 - INTREPDW_TP3 - 1	1.05	0.9	0.87775
2032	Summer	QUAHADA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80971
2032	Summer	BATTLE_AXE 3	115	XTO_DI9_TP 3 - DI8_TP - 1	1.05	0.9	0.88687
2032	Summer	BATTLE_AXE 3	115	MADDOX 3 - PEARLE 3 - 1	1.05	0.9	0.88259
2032	Summer	BATTLE_AXE 3	115	PHANTOM 3 - PHANTOM 7 - 1	1.05	0.9	0.88554

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2032	Summer	DCP_ZIA TP 3	115	'P12:115:SPS:T23.1.PCA.POTJCT:::HV:'	1.05	0.9	0.89348
2032	Winter	LEA_NATIONL3	115	BASE CASE	1.05	0.95	0.93751
2032	Winter	ZIA 3	115	BASE CASE	1.05	0.95	0.94106
2032	Winter	DCP_ZIA TP 3	115	BASE CASE	1.05	0.95	0.94151
2032	Winter	ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8312
2032	Winter	LYNCH_TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.88939
2032	Winter	MIDSPRON_TP3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88308
2032	Winter	ENRON 3	115	BASE CASE	1.05	0.95	0.93362
2032	Winter	ENRON_TP 3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88678
2032	Winter	MIDS_PRONTO3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88008
2032	Winter	MALJMAR1&2 3	115	BASE CASE	1.05	0.95	0.93335
2032	Winter	LEA_NATIONL3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88678
2032	Winter	MIDS_PRONTO3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.82868
2032	Winter	ENRON 3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88293
2032	Winter	ENRON 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83171
2032	Winter	MIDSPRON_TP3	115	QUAHADA 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88311
2032	Winter	MIDSPRON_TP3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.8319
2032	Winter	MALJMAR1&2 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.82235
2032	Winter	XTO_BIGEDDY3	115	BASE CASE	1.05	0.95	0.94909
2032	Winter	ENRON_TP 3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88676
2032	Winter	MIDSPRON_TP3	115	BASE CASE	1.05	0.95	0.93379
2032	Winter	QUAHADA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83336
2032	Winter	QUAHADA 3	115	BASE CASE	1.05	0.95	0.94293
2032	Winter	MIDS_PRONTO3	115	BASE CASE	1.05	0.95	0.93093
2032	Winter	ENRON_TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83581
2032	Winter	DCP_ZIA TP 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83172
2032	Winter	ENRON 3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.8829
2032	Winter	XTO_BIGEDDY3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.80395
2032	Winter	MIDS_PRONTO3	115	ENRON_TP 3 - LEA_NATIONL3 - 1	1.05	0.9	0.88006
2032	Winter	DCP_ZIA 3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83153
2032	Winter	ENRON_TP 3	115	BASE CASE	1.05	0.95	0.93726
2032	Winter	DCP_ZIA 3	115	BASE CASE	1.05	0.95	0.94134
2032	Winter	LEA_NATIONL3	115	PCA 3 - XTO_BIGEDDY3 - 1	1.05	0.9	0.83571

Table 3-2: Potential Voltage Violations

SHORT CIRCUIT

SPP performed short circuit analysis for the 2027 Summer Peak with the new load additions. The analysis identified the currents as listed in Table 3-3.

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	O.K.U.2-7 34	5,132
27S	Max Fault	Three Phase	BORDER 734	7,398
27S	Max Fault	Three Phase	SN_JUAN_TAP623	3,936

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	TOLK 623	32,129
27S	Max Fault	Three Phase	TOLK_TR 113	35,889
27S	Max Fault	Three Phase	TOLK_TR2Â Â 13	40,379
27S	Max Fault	Three Phase	TOLK 734	11,142
27S	Max Fault	Three Phase	NEEDMORE 623	11,006
27S	Max Fault	Three Phase	TUCO_TR1 113	31,527
27S	Max Fault	Three Phase	TUCO_TR2 113	23,695
27S	Max Fault	Three Phase	TUCO_INT 623	22,393
27S	Max Fault	Three Phase	TUCO_INT 734	12,487
27S	Max Fault	Three Phase	ELK_CT1 34	12,387
27S	Max Fault	Three Phase	AMOCO_SS 623	9,650
27S	Max Fault	Three Phase	YOAKUM_TR1 113	16,857
27S	Max Fault	Three Phase	YOAKUM_TR2 113	16,836
27S	Max Fault	Three Phase	YOAKUM 311	18,507
27S	Max Fault	Three Phase	YOAKUM 623	17,613
27S	Max Fault	Three Phase	YOAKUM 734	9,134
27S	Max Fault	Three Phase	YOAKUM_TR3 113	37,305
27S	Max Fault	Three Phase	BRU_SUB 623	13,775
27S	Max Fault	Three Phase	INKBASN_TR 113	14,764
27S	Max Fault	Three Phase	INK_BASIN 311	12,720
27S	Max Fault	Three Phase	INK_BASIN 623	10,778
27S	Max Fault	Three Phase	MUSTANG 623	15,047
27S	Max Fault	Three Phase	CHAVES_TR1 113	12,604
27S	Max Fault	Three Phase	CHAVES_TR2 113	14,664
27S	Max Fault	Three Phase	CHAVES_CNTY311	6,333
27S	Max Fault	Three Phase	CHAVES_CNTY623	4,070
27S	Max Fault	Three Phase	TWEEDY 311	4,989
27S	Max Fault	Three Phase	SAGA_SDCOL 734	7,862
27S	Max Fault	Three Phase	SAGA_SCOL 734	7,862
27S	Max Fault	Three Phase	MILO_WIND 134	17,307
27S	Max Fault	Three Phase	RSVLT_CC_W 734	7,029
27S	Max Fault	Three Phase	RSVLT_CC_E 734	7,713
27S	Max Fault	Three Phase	CROSSROADS 734	8,483
27S	Max Fault	Three Phase	EAGLE_CREEK311	7,662
27S	Max Fault	Three Phase	EDDY_SVC 18.	47,080
27S	Max Fault	Three Phase	EDDY_STH 311	12,079
27S	Max Fault	Three Phase	EDDY_TR3 113	15,724
27S	Max Fault	Three Phase	EDDY_TR 113	32,801
27S	Max Fault	Three Phase	EDDY_TR2 113	16,898
27S	Max Fault	Three Phase	EDDY_NTH 311	12,079
27S	Max Fault	Three Phase	EDDY_NORTH 623	9,560
27S	Max Fault	Three Phase	EDDY_CNTY 734	7,622
27S	Max Fault	Three Phase	CV-8_MILE 311	5,498
27S	Max Fault	Three Phase	CV-DAYTON +311	7,251
27S	Max Fault	Three Phase	CUNNHM_TR1 113	25,184

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	CUNNINHAM 311	29,095
27S	Max Fault	Three Phase	CUNNIGHM_N 623	17,663
27S	Max Fault	Three Phase	CUNNIGHM_S 623	17,663
27S	Max Fault	Three Phase	CUNINGHAM2 120	9,784
27S	Max Fault	Three Phase	CUNINGHAM3 113	82,007
27S	Max Fault	Three Phase	HOBBS_TR2 113	18,466
27S	Max Fault	Three Phase	HOBBS_TR1 113	26,771
27S	Max Fault	Three Phase	HOBBS_INT 311	32,825
27S	Max Fault	Three Phase	HOBBS_INT 623	19,204
27S	Max Fault	Three Phase	HOBBS_TR3 113	38,955
27S	Max Fault	Three Phase	HOBBS_INT 734	9,532
27S	Max Fault	Three Phase	HOBBS_PLT1 118	74,244
27S	Max Fault	Three Phase	HOBBS_PLT2 118	74,182
27S	Max Fault	Three Phase	HOBBS_PLT3 118	3,353
27S	Max Fault	Three Phase	PCA_TR1 113	6,107
27S	Max Fault	Three Phase	PCA 269	8,227
27S	Max Fault	Three Phase	PCA 311	13,784
27S	Max Fault	Three Phase	CV-SKELLY 311	3,401
27S	Max Fault	Three Phase	CV-MALJAMAR311	2,992
27S	Max Fault	Three Phase	CV-LUSK 269	2,447
27S	Max Fault	Three Phase	CV-LUSK 311	3,668
27S	Max Fault	Three Phase	CV-LUSK_TP 311	4,496
27S	Max Fault	Three Phase	POTASH_TR1 113	17,187
27S	Max Fault	Three Phase	POTASH_TR2 113	4,248
27S	Max Fault	Three Phase	POTASH_TR3 113	4,617
27S	Max Fault	Three Phase	POTASH_JCT 269	10,343
27S	Max Fault	Three Phase	POTASH_JCT 311	19,640
27S	Max Fault	Three Phase	POTASH_JCT 623	8,588
27S	Max Fault	Three Phase	KIOWA_TR1 113	29,247
27S	Max Fault	Three Phase	KIOWA 734	9,109
27S	Max Fault	Three Phase	KIOWA 311	19,465
27S	Max Fault	Three Phase	DUVAL_#1 269	6,383
27S	Max Fault	Three Phase	NMPOTASH 269	2,653
27S	Max Fault	Three Phase	KERMAC 269	3,106
27S	Max Fault	Three Phase	INTREPDW_TP311	15,658
27S	Max Fault	Three Phase	INTREPIDWST311	12,933
27S	Max Fault	Three Phase	OXY_ACSR 311	31,820
27S	Max Fault	Three Phase	PHANTOM TR1113	40,391
27S	Max Fault	Three Phase	PHANTOM TR2113	40,391
27S	Max Fault	Three Phase	PHANTOM 311	15,505
27S	Max Fault	Three Phase	PHANTOM 734	5,885
27S	Max Fault	Three Phase	SAND_DUNES 311	10,089
27S	Max Fault	Three Phase	RED_BLUFF 311	23,861
27S	Max Fault	Three Phase	BOPCO_PKRLK311	15,389
27S	Max Fault	Three Phase	RDRUNNR_SVC115	26,787

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	MISSCHEM#2 269	7,598
27S	Max Fault	Three Phase	RDRNNER_TR1113	24,341
27S	Max Fault	Three Phase	RR_SVC_HV 311	14,122
27S	Max Fault	Three Phase	RDRUNNER 311	14,122
27S	Max Fault	Three Phase	RDRUNNER 734	6,268
27S	Max Fault	Three Phase	IMC_#2 269	4,591
27S	Max Fault	Three Phase	IMC_#1_TP 311	10,738
27S	Max Fault	Three Phase	IMC_#1 311	9,471
27S	Max Fault	Three Phase	BATTLE_AXE 311	3,226
27S	Max Fault	Three Phase	UNITEDSALT 269	4,391
27S	Max Fault	Three Phase	XTO_DI9_TP 311	9,057
27S	Max Fault	Three Phase	DI8_TP 11	9,383
27S	Max Fault	Three Phase	DI8 11	8,424
27S	Max Fault	Three Phase	CV-AZMESA 311	7,658
27S	Max Fault	Three Phase	7-RIVER_TR1113	18,400
27S	Max Fault	Three Phase	7-RIVERS 311	8,595
27S	Max Fault	Three Phase	7-RIVERS 623	6,592
27S	Max Fault	Three Phase	OCOTILLO 311	6,349
27S	Max Fault	Three Phase	SISKO_TP 311	7,317
27S	Max Fault	Three Phase	CAVEMAN 311	7,122
27S	Max Fault	Three Phase	CAVEMAN_TP 311	8,475
27S	Max Fault	Three Phase	N_CANAL 311	9,028
27S	Max Fault	Three Phase	NATPOT_TP 269	10,293
27S	Max Fault	Three Phase	FIESTA 311	10,217
27S	Max Fault	Three Phase	CRLSBAD_TR1113	4,222
27S	Max Fault	Three Phase	CRLSBAD_TR2113	23,187
27S	Max Fault	Three Phase	CARLSBAD 269	4,490
27S	Max Fault	Three Phase	CARLSBAD 311	11,849
27S	Max Fault	Three Phase	PECOS_TR1 113	20,201
27S	Max Fault	Three Phase	PECOS 311	12,514
27S	Max Fault	Three Phase	PECOS 623	7,124
27S	Max Fault	Three Phase	NORTH_LOVNG311	12,921
27S	Max Fault	Three Phase	SENDERO +311	10,458
27S	Max Fault	Three Phase	N_LOVING 734	6,817
27S	Max Fault	Three Phase	N_LOVING TR113	32,324
27S	Max Fault	Three Phase	S_LOVING_TP269	2,846
27S	Max Fault	Three Phase	SOUTH_LOVNG311	9,738
27S	Max Fault	Three Phase	BLACKRIVER 311	10,649
27S	Max Fault	Three Phase	MALAGABEND 311	7,811
27S	Max Fault	Three Phase	AGAVE_PDURO311	8,241
27S	Max Fault	Three Phase	CB_WTRFLDTP269	2,513
27S	Max Fault	Three Phase	NAVAMAL_TP 269	1,966
27S	Max Fault	Three Phase	CHINA_DRAW 113	31,115
27S	Max Fault	Three Phase	CHINA_DRAW 311	11,471
27S	Max Fault	Three Phase	CHINA_DRAW 734	6,068

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	HOPI_SUB 112	13,870
27S	Max Fault	Three Phase	CD_SVC_HV 311	11,471
27S	Max Fault	Three Phase	HOPI_SUB 311	7,452
27S	Max Fault	Three Phase	WOOD_DRAW 311	8,822
27S	Max Fault	Three Phase	AGAVE_RHILL311	12,614
27S	Max Fault	Three Phase	AGAVE_RHIL2311	11,847
27S	Max Fault	Three Phase	OCHOA 311	11,905
27S	Max Fault	Three Phase	CUSTERMTN 311	7,789
27S	Max Fault	Three Phase	PONDEROSA 311	4,071
27S	Max Fault	Three Phase	CHVRN_EDDYS311	7,514
27S	Max Fault	Three Phase	LE-WEST_SUB311	8,981
27S	Max Fault	Three Phase	MADDOX 311	28,114
27S	Max Fault	Three Phase	QUAHADA 311	14,865
27S	Max Fault	Three Phase	XTO_BIGEDDY311	11,407
27S	Max Fault	Three Phase	LEA_NATIONL311	19,897
27S	Max Fault	Three Phase	DCP_ZIA TP 311	11,585
27S	Max Fault	Three Phase	BENSING 311	8,044
27S	Max Fault	Three Phase	MILLEN_TPW 311	11,820
27S	Max Fault	Three Phase	WHITTEN 311	7,742
27S	Max Fault	Three Phase	ANDREWS_TR2113	13,214
27S	Max Fault	Three Phase	ANDREWS_TR1113	67,386
27S	Max Fault	Three Phase	ANDREWS 311	9,921
27S	Max Fault	Three Phase	ANDREWS 623	6,113
27S	Max Fault	Three Phase	EPTNP-D6 23	9,560
27S	Max Fault	Three Phase	DFA-8T1-13.813	16,077
27S	Max Fault	Three Phase	DFA-8T2-13.813	17,046
27S	Max Fault	Three Phase	RIVERHILL TS69	44,381
27S	Max Fault	Three Phase	DAY-69 69	44,636
27S	Max Fault	Three Phase	DAA-69-B1 69	53,033
27S	Max Fault	Three Phase	DFN-69 69	20,846
27S	Max Fault	Three Phase	DFP-69 69	25,174
27S	Max Fault	Three Phase	DFA-69 69	44,088
27S	Max Fault	Three Phase	DAP-69 69	27,786
27S	Max Fault	Three Phase	DFA-161 16	26,204
27S	Max Fault	Three Phase	SWTCH 623 NO69	44,381
27S	Max Fault	Three Phase	DAA-CT1-13.813	24,641
27S	Max Fault	Three Phase	DAA-GEN-1-2 13	24,641
27S	Max Fault	Three Phase	DAA-6T10-13 13	8,097
27S	Max Fault	Three Phase	DFP-6T1-13.213	6,387
27S	Max Fault	Three Phase	DAA-CT2-13.813	24,641
27S	Max Fault	Three Phase	DAA-GEN-3-4 13	24,588
27S	Max Fault	Three Phase	DFP-6T2-13.213	6,563
27S	Max Fault	Three Phase	DAA-CT3-13.813	24,588
27S	Max Fault	Three Phase	DAA-GEN-5-6 13	25,107
27S	Max Fault	Three Phase	DAA-6T3-13.213	8,845

Season	Model	Fault	Bus	Current(Amps)
27S	Max Fault	Three Phase	DAA-CT4-13.813	24,588
27S	Max Fault	Three Phase	DAA-GEN-7-8 13	24,745
27S	Max Fault	Three Phase	DAA-6T4-13-113	25,761
27S	Max Fault	Three Phase	DAA-6T4-13-213	25,705
27S	Max Fault	Three Phase	DAA-6T6-13.213	8,331
27S	Max Fault	Three Phase	DAA-6T7-1 13	26,248
27S	Max Fault	Three Phase	DAA-6T7-2 13	25,870
27S	Max Fault	Three Phase	DAA-6T8-13.213	11,865
27S	Max Fault	Three Phase	DAA-6T9-13.213	7,105
27S	Max Fault	Three Phase	LIVSTNRIDGE311	8,954
27S	Max Fault	Three Phase	MIDS_PRONTO311	31,820
27S	Max Fault	Three Phase	MIDSPRON_TP311	23,978
27S	Max Fault	Three Phase	WIPP 311	8,823
27S	Max Fault	Three Phase	ENRON_TP 311	20,370
27S	Max Fault	Three Phase	ENRON 311	20,883
27S	Max Fault	Three Phase	LYNCH_TP 311	7,741
27S	Max Fault	Three Phase	PEARLE 311	7,655
27S	Max Fault	Three Phase	STALEY TS69	21,068
27S	Max Fault	Three Phase	DAR-69 69	26,942
27S	Max Fault	Three Phase	SWTCH 608 NO69	35,522
27S	Max Fault	Three Phase	SWTCH 613 NO69	30,243
27S	Max Fault	Three Phase	DFN-6T1-13.213	7,246
27S	Max Fault	Three Phase	DAP-6T1-4.164.	13,888
27S	Max Fault	Three Phase	DFN-6T2-13.213	6,756
27S	Max Fault	Three Phase	DAP-6T2-13.213	6,594
27S	Max Fault	Three Phase	DAA-CT5-13.813	25,107
27S	Max Fault	Three Phase	DAA-CT6-13.813	25,107
27S	Max Fault	Three Phase	DAA-CT7-13.813	24,745
27S	Max Fault	Three Phase	DAA-CT8-13.813	24,745
27S	Max Fault	Three Phase	DFP TEMP 13 13	6,387
27S	Max Fault	Three Phase	MEDANOS 311	6,073
27S	Max Fault	Three Phase	WARD 311	5,801
27S	Max Fault	Three Phase	S_JAL 311	6,666
27S	Max Fault	Three Phase	SAGE_BRUSH 311	4,565
27S	Max Fault	Three Phase	XTO_DI9 311	8,159
27S	Max Fault	Three Phase	CARDINAL 311	7,874

Table 3-3: Short Circuit Results

STABILITY

SPP performed a Fast Fault Screening (FFS) for the base case and change case models. The change case models include the delivery point changes. The FFS was performed for the 2025 and 2033 Summer Peaks. There were no significant differences in the critical clearing times between the base and change cases. Therefore, a transient stability analysis is not required.

TRANSMISSION SOLUTIONS

The new load caused thermal overloads on several 230 kV and 115 kV lines and low voltages on the 345 kV, 230 kV, and 115 kV systems around the areas of these delivery points.

SPP analyzed several possible solutions to address the violations. The two main solutions are listed below.

Solution #1: Total cost $29.2M

- Upgrade Maddox – Pearle 115 kV line (LIDAR issue)
- Add new 28.8 MVAR cap bank at Ponderosa 115 kV sub
- Add new 28.8 MVAR cap bank at Battle Axe 115 kV sub
- Add new 200 MVAR cap bank at Kiowa 345 kV sub
- Add new 150 MVAR cap bank at Yoakum 230 kV sub
- Add new 14.4 MVAR cap bank at Pearle 115 kV sub
- Upgrade Sundown – Wolfforth 230 kV line (LIDAR issue)
- Upgrade Cunningham – Quahada 115 kV line (Terminal Equipment) (Year 10 Only)
- Upgrade Wolfforth – Terry County 115 kV line (LIDAR issue) (Year 10 Only)
- Add an additional 14.4 MVAR cap bank at Pearle 115 kV sub (Year 10 only)

Solution #2: Total cost $54.6M

- Add new Lea National 230/115 kV transformer
- Add new Lynch – Medanos 115 kV line
- Upgrade Maddox – Pearle 115 kV line (LIDAR issue)
- Add new 28.8 MVAR cap bank at Ponderosa 115 kV sub
- Add new 28.8 MVAR cap bank at Battle Axe 115 kV sub
- Add new 200 MVAR cap bank at Kiowa 345 kV sub
- Add new 150 MVAR cap bank at Yoakum 230 kV sub
- Upgrade Sundown – Wolfforth 230 kV line (LIDAR issue)
- Upgrade Cunningham – Quahada 115 kV line (Terminal Equipment) (Year 10 Only)
- Upgrade Wolfforth – Terry County 115 kV line (LIDAR issue) (Year 10 Only)

SPP chose to move forward with Solution #1. This solution solves all issues identified in Table 3-1 and Table 3-2 in the most cost-effective manner.

New Upgrade Description*	Mileage	MVAR	Date Needed**	Estimated Cost***
Upgrade Maddox – Pearle 115 kV line (LIDAR issue)	15.33	-	4/1/2025	$383,947
Add new 28.8 MVAR cap bank at Ponderosa 115 kV sub	-	28.8	6/1/2025	$2,047,004
Add new 28.8 MVAR cap bank at Battle Axe 115 kV sub	-	28.8	6/1/2025	$2,047,004
Add new 200 MVAR cap bank at Kiowa 345 kV sub	-	200	6/1/2025	$11,816,549
Add new 150 MVAR cap bank at Yoakum 230 kV sub	-	150	6/1/2025	$8,862,412
Add new 14.4 MVAR cap bank at Pearle 115 kV sub	-	14.4	6/1/2025	$1,023,502
Upgrade Sundown – Wolfforth 230 kV line (LIDAR issue)	24.62	-	4/1/2026	$1,269,992
Upgrade Cunningham – Quahada 115 kV line (Terminal Equipment)	27.14	-	4/1/2031	$383,947
Upgrade Wolfforth – Terry County 115 kV line (LIDAR Issue)	20.54	-	4/1/2029	$383,947
Add an additional 14.4 MVAR cap bank at Pearle 115 kV sub	-	14.4	6/1/2032	$1,023,509
TOTAL NEW UPGRADE COST				**$29,241,813**

Table 3-4: Recommended Upgrades

*All requests with a Network Upgrade(s) identified in the DPNS will be subject to further evaluation in the soonest available Integrated Transmission Planning Assessment that is able to include the load changes, if it is determined that the Network Upgrade(s) will be able to meet the study timeframe requirements pursuant to the standardized project timelines in SPP Business Practices, based on the SPP determined Network Upgrade(s) need date. If it is determined that a Network Upgrade(s) identified from a DPNS is unable to be further evaluated pursuant to the Integrated Transmission Planning Assessment, the DPNS report will be posted on the SPP website once SPP is notified by the Transmission Customer to update the applicable Network Integration Transmission Service Agreement to reflect the changes in delivery points and the Network Upgrade(s).

Pursuant to Attachment AQ of the Tariff, the Transmission Provider is responsible for assessing the impacts on the Transmission System caused by modifying an existing delivery point or establishing the new delivery point through the DPNS. The DPNS may determine the need for a Network Upgrade(s) necessary for the modification of an existing delivery point or the establishment of a new delivery point. A Network Upgrade(s) that the Transmission Customer or Host Transmission Owner desires that exceeds the needed Network Upgrade(s) identified in the DPNS will need to be studied through the Transmission Provider's Sponsored Upgrade study process to evaluate the impacts of the desired changes on the Transmission System.

**If the project need date specified in this study cannot be met, the Transmission Owner will be required to submit mitigations pursuant to the SPP Project Tracking process. All upgrades or mitigations must be in place prior to the dates shown in Table 3-4.

***Note that the estimated new upgrade cost provided in this report is an SPP Conceptual Cost Estimate only; this is preliminary, and a more refined Study Cost Estimate will be developed after issuance of this report through a Standardized Cost Estimate Reporting Template (SCERT).

SECTION 4: CONCLUSION

The AC analysis revealed potential thermal and voltage violations associated with the Cluster B load additions. The study shows that the following upgrades are required to reliably serve the load additions:

- Upgrade Maddox – Pearle 115 kV line (LIDAR issue)
- Add new 28.8 MVAR cap bank at Ponderosa 115 kV sub
- Add new 28.8 MVAR cap bank at Battle Axe 115 kV sub
- Add new 200 MVAR cap bank at Kiowa 345 kV sub
- Add new 150 MVAR cap bank at Yoakum 230 kV sub
- Add new 14.4 MVAR cap bank at Pearle 115 kV sub
- Upgrade Sundown – Wolfforth 230 kV line (LIDAR issue)
- Upgrade Cunningham – Quahada 115 kV line (Terminal Equipment) (Year 10 Only)
- Upgrade Wolfforth – Terry County 115 kV line (LIDAR issue) (Year 10 Only)
- Add an additional 14.4 MVAR cap bank at Pearle 115 kV sub (Year 10 only)

The transmission upgrades in Table 3-4 are recommended to mitigate the thermal and voltage violations.

*If the delivery points listed in Section 2 are removed/not added to the service agreement, SPP will need to re-study the impacts of this request.