



DPA-2025-SEPTEMBER-2207
Delivery Point Network Study

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By SPP Engineering, Transmission Services

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
1/23/2026	SPP	Original	
3/4/2026	SPP	Stability Section and Table 3-4 Update	Added the results of the FFS into the Stability section and added the new Sailor 115 kV substation into Table 3-4.

CONTENTS

Revision History i

Section 1: Introduction 1

Section 2: Study Methodology 2

 Objective 2

 Study Process 2

Section 3: Results of Analysis 4

 Potential Thermal and Voltage Violations 4

 Short Circuit 13

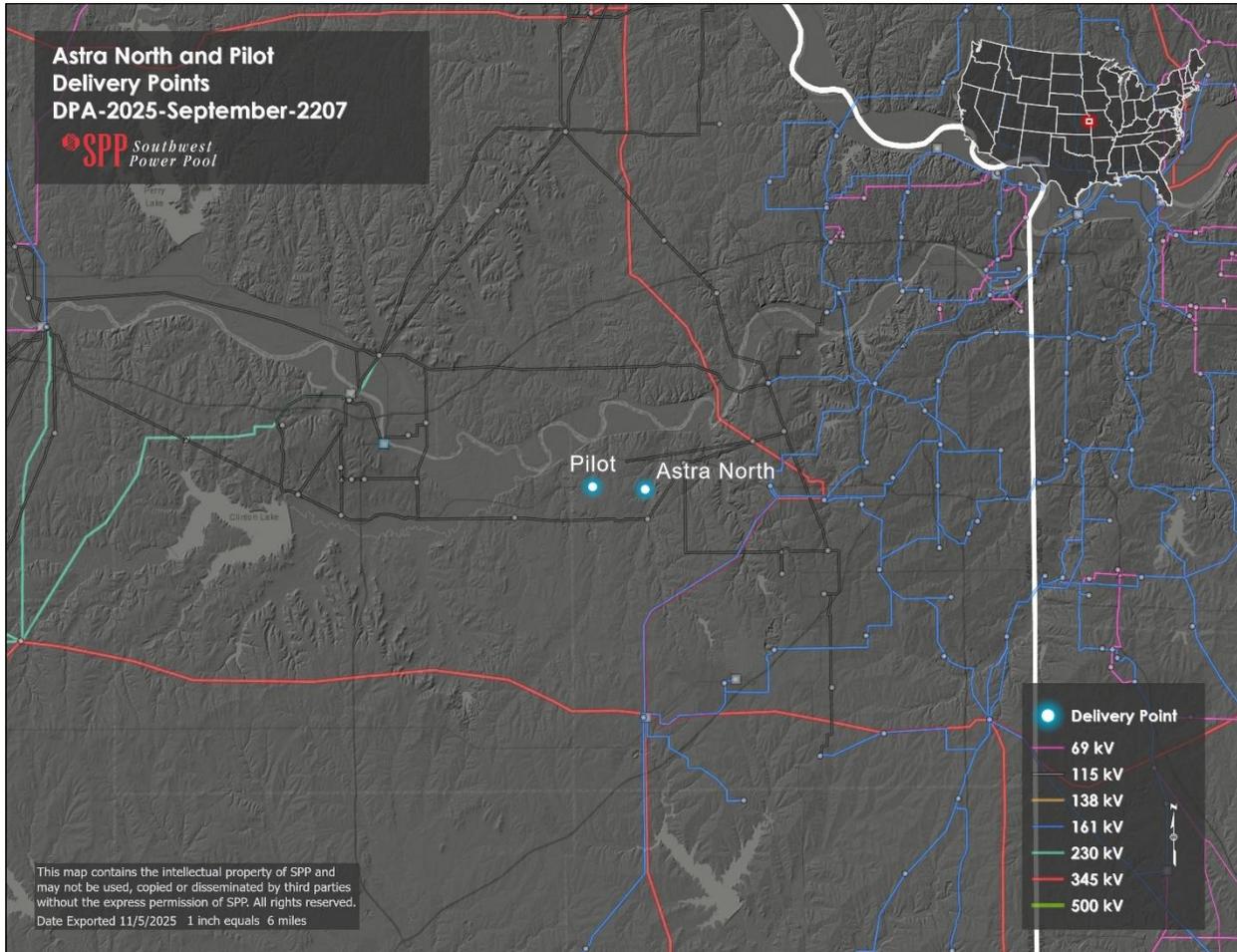
 Stability 16

 Transmission Solutions 16

Section 4: Conclusion 20

SECTION 1: INTRODUCTION

This report outlines the results of an evaluation of regional transmission impacts from delivery point request DPA-2025-September-2207. The requesting entity plans to add load to new delivery points called Pilot with an in-service date of 10/1/2026 and Astra North with an in-service date of 9/1/2028. The new delivery points are in the Evergy Transmission System.



The load flow models used for the evaluation were 2025 Integrated Transmission Planning (ITP) base reliability models. Southwest Power Pool (SPP) performed an Alternating Current (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 Evergy Kansas Central. SPP performed a Delivery Point Network Study (DPNS) with the configurations shown in Table 2-1 below.

STUDY PROCESS

- Model Assumptions
 - 2025 ITP Base Reliability Model Series
 - Model years 2026, 2029, and 2034
 - Summer Peak (2029S and 2034S), Winter Peak (2026W, 2029W, and 2034W), and Light Load (2029L and 2034L)
 - 2025 ITP Short Circuit Model Series
 - 2029 Summer Max Fault

Table 2-1: Study Cases

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
2025ITPFinal-26W.sav	2026	Winter Peak	Base Reliability	Base Case
2025ITPFinal-29L.sav	2029	Light Load	Base Reliability	Base Case
2025ITPFinal-29S.sav	2029	Summer Peak	Base Reliability	Base Case
2025ITPFinal-29W.sav	2029	Winter Peak	Base Reliability	Base Case
2025ITPFinal-34L.sav	2034	Light Load	Base Reliability	Base Case
2025ITPFinal-34S.sav	2034	Summer Peak	Base Reliability	Base Case
2025ITPFinal-34W.sav	2034	Winter Peak	Base Reliability	Base Case
2025ITPFinal-26W_2207.sav	2026	Winter Peak	Base Reliability	Pilot = 100/32.87
2025ITPFinal-29L_2207.sav	2029	Light Load	Base Reliability	Pilot = 600/197.22 Astra North = 408/134.1
2025ITPFinal-29S_2207.sav	2029	Summer Peak	Base Reliability	Pilot = 600/197.22 Astra North = 408/134.1
2025ITPFinal-29W_2207.sav	2029	Winter Peak	Base Reliability	Pilot = 600/197.22 Astra North = 408/134.1
2025ITPFinal-34L_2207.sav	2034	Light Load	Base Reliability	Pilot = 600/197.22 Astra North = 600/197.22
2025ITPFinal-34S_2207.sav	2034	Summer Peak	Base Reliability	Pilot = 600/197.22 Astra North = 600/197.22
2025ITPFinal-34W_2207.sav	2034	Winter Peak	Base Reliability	Pilot = 600/197.22 Astra North = 600/197.22

- 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 National American Electric Reliability Corporation (NERC) reliability standards
 - Compare thermal and voltage violations that occur with and without the delivery point changes to determine thermal and voltage violations resulting from the load addition to the Transmission System.
- Short Circuit Analysis
 - Assumptions
 - Used 2025 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 AND VOLTAGE VIOLATIONS

The analysis identified potential thermal and voltage violations resulting from the new loads at the Pilot and Astra North delivery points. Table 3-1 details the worst potential thermal violations and Table 3-2 details the worst potential voltage violations resulting from the load addition.

Table 3-1: Potential Thermal Violations (not full list)

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
29L	TECHILW3 - MIDLADN3 - 1	115	HOYT 7 - STRANGR7 - 1	104/104	107.016	102.9
29S	LWRNCHL3 - WREN 3 - 1	115	MOCKBRD3 - SWLWRNC3 - 1	109/109	141.482	129.8
29S	LWRNCHL3 - WREN 3 - 1	115	ATLNTIC7 - W.GRDNR7 - 1	109/109	137.122	125.8
29S	LWRNCHL3 - WREN 3 - 1	115	LWRNCHL3 - 6TH ST 3 - 1	109/109	129.274	118.6
29S	LWRNCHL3 - WREN 3 - 1	115	BALDCRK3 - LWRNCHL3 - 1	109/109	128.838	118.2
29S	LWRNCHL3 - WREN 3 - 1	115	SWISVAL7 - W.GRDNR7 - 1	109/109	122.625	112.5
29S	AUBURN 6 - JEC 6 - 1	230	HOYT 7 - JEC N 7 - 1	580/580	585.22	100.9
29S	LWRNCHL3 - WREN 3 - 1	115	W.GRDNR7 - SWISVAL7 - 1	109/109	122.625	112.5
29S	54&MERI3 - HOYT 3 - 1	115	HOYT 7 - STRANGR7 - 1	172/172	174.752	101.6
29S	HOYT 7 - JEC N 7 - 1	345	AUBURN 6 - JEC 6 - 1	1074/1075	1124.45	104.6
29S	LWRNCHL3 - WREN 3 - 1	115	LWRNCHL3 - MOCKBRD3 - 1	109/109	122.516	112.4
29S	ATLNTIC7 - W.GRDNR7 - 1	345	STRANGR7 - 87TH 7 - 1	1183/1195	1405.32	117.6
29S	BISMARCK3 - FAIRGDS3 - 1	115	ATLNTIC7 - W.GRDNR7 - 1	117/117	141.921	121.3
29S	HOYT 7 - JEC N 7 - 1	345	ATLNTIC7 - W.GRDNR7 - 1	1074/1075	1098.65	102.2
29S	MIDLAND6 - MIDJ TX-1 - 1	230/115	LAWHILL6 - LWRNCHL3 - 1	280/308	316.932	102.9
29S	MIDLADN3 - MIDJ TX-1 - 1	230/115	LAWHILL6 - LWRNCHL3 - 1	280/308	312.004	101.3
29S	ATLNTIC3 - - 1	345/115	ATLNTIC3 - ATLNTIC7 - 2	400/440	464.2	105.5
29S	ATLNTIC7 - - 1	345/115	ATLNTIC3 - ATLNTIC7 - 2	400/440	489.28	111.2
29S	ATLNTIC3 - - 2	345/115	ATLNTIC3 - ATLNTIC7 - 1	400/440	464.2	105.5
29S	ATLNTIC7 - - 2	345/115	ATLNTIC3 - ATLNTIC7 - 1	400/440	489.28	111.2
29S	HOYT 7 - JEC N 7 - 1	345	EMPEC 7 - SWISVAL7 - 1	1074/1075	1097.575	102.1
29S	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - JEC N 7 - 1	1183/1195	1333.62	111.6
29S	HOYT 7 - JEC N 7 - 1	345	JEC N 7 - GEARY 7 - 1	1074/1075	1087.9	101.2
29S	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - STRANGR7 - 1	1183/1195	1314.5	110
29S	WGARDNR5 - CEDRCRK5 - 1	161	ATLNTIC7 - W.GRDNR7 - 1	334/334	386.104	115.6
29S	WGARDNR5 - BNSF 5 - 1	161	ATLNTIC7 - W.GRDNR7 - 1	311/334	344.02	103
29S	ATLNTIC3 - - 1	345/115	ATLNTIC7 - ATLNTIC3 - 2	400/440	464.2	105.5
29S	ATLNTIC7 - - 1	345/115	ATLNTIC7 - ATLNTIC3 - 2	400/440	489.28	111.2
29S	ATLNTIC3 - - 2	345/115	ATLNTIC7 - ATLNTIC3 - 1	400/440	464.2	105.5
29S	ATLNTIC7 - - 2	345/115	ATLNTIC7 - ATLNTIC3 - 1	400/440	489.28	111.2
29S	BISMARCK3 - FAIRGDS3 - 1	115	LWRNCHL3 - WREN 3 - 1	117/117	131.859	112.7
29S	FAIRGDS3 - SWLWRNC3 - 1	115	19THST 3 - FREESTATE3 - 1	70/70	78.89	112.7

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
29S	ATLNTIC7 - W.GRDNR7 - 1	345	87TH 7 - CRAIG 7 - 1	1183/1195	1257.14	105.2
29S	ATLNTIC7 - W.GRDNR7 - 1	345	CRAIG 7 - 87TH 7 - 1	1183/1195	1257.14	105.2
29S	BISMAR3 - FAIRGDS3 - 1	115	19THST 3 - FREESTATE3 - 1	117/117	124.371	106.3
29W	BISMAR3 - FAIRGDS3 - 1	115	ATLNTIC7 - W.GRDNR7 - 1	117/117	133.263	113.9
29W	BISMAR3 - FAIRGDS3 - 1	115	LWRNCHL3 - WREN 3 - 1	117/117	129.987	111.1
29W	BISMAR3 - FAIRGDS3 - 1	115	19THST 3 - FREESTATE3 - 1	117/117	129.519	110.7
29W	BISMAR3 - FAIRGDS3 - 1	115	STRANGR7 - 87TH 7 - 1	117/117	122.148	104.4
29W	BISMAR3 - FAIRGDS3 - 1	115	W.GRDNR7 - SWISVAL7 - 1	117/117	121.095	103.5
29W	FAIRGDS3 - SWLWRNC3 - 1	115	19THST 3 - FREESTATE3 - 1	91/91	93.275	102.5
34L	TECHILW3 - MIDLADN3 - 1	115	HOYT 7 - STRANGR7 - 1	104/104	107.64	103.5
34L	ATLNTIC7 - W.GRDNR7 - 1	345	STRANGR7 - 87TH 7 - 1	1195/1195	1223.68	102.4
34L	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - STRANGR7 - 1	1195/1195	1212.925	101.5
34L	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - JEC N 7 - 1	1195/1195	1200.975	100.5
34S	-	-	Atlantic 345/115kV Transformer	-	-	Non-converged
34S	-	-	ATLNTIC7 - W.GRDNR7 - 1	-	-	Non-converged
34S	ATLNTIC7 - W.GRDNR7 - 1	345	STRANGR7 - 87TH 7 - 1	1183/1195	1505.7	126
34S	BISMAR3 - FAIRGDS3 - 1	115	LWRNCHL3 - WREN 3 - 1	117/117	142.857	122.1
34S	FAIRGDS3 - SWLWRNC3 - 1	115	19THST 3 - FREESTATE3 - 1	70/70	88.13	125.9
34S	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - JEC N 7 - 1	1183/1195	1401.735	117.3
34S	ATLNTIC7 - W.GRDNR7 - 1	345	HOYT 7 - STRANGR7 - 1	1183/1195	1388.59	116.2
34S	ATLNTIC7 - W.GRDNR7 - 1	345	CRAIG 7 - 87TH 7 - 1	1183/1195	1349.155	112.9
34S	ATLNTIC7 - W.GRDNR7 - 1	345	87TH 7 - CRAIG 7 - 1	1183/1195	1349.155	112.9
34S	ATLNTIC7 - W.GRDNR7 - 1	345	WGARDNR5 - CEDRCRK5 - 1	1183/1195	1318.085	110.3
34S	BISMAR3 - FAIRGDS3 - 1	115	19THST 3 - FREESTATE3 - 1	117/117	136.071	116.3
34S	BISMAR3 - FAIRGDS3 - 1	115	W.GRDNR7 - SWISVAL7 - 1	117/117	129.636	110.8
34S	BISMAR3 - FAIRGDS3 - 1	115	SWISVAL7 - W.GRDNR7 - 1	117/117	129.636	110.8
34S	BISMAR3 - FAIRGDS3 - 1	115	FREESTATE3 - WREN 3 - 1	117/117	128.232	109.6
34S	HOYT 7 - JEC N 7 - 1	345	AUBURN 6 - JEC 6 - 1	1074/1075	1213.675	112.9
34S	LWRNCHL3 - WREN 3 - 1	115	LWRNCHL3 - 6TH ST 3 - 1	109/109	136.795	125.5
34S	HOYT 7 - JEC N 7 - 1	345	EMPEC 7 - SWISVAL7 - 1	1074/1075	1206.15	112.2
34S	ATLNTIC7 - W.GRDNR7 - 1	345	BASE CASE	1183/1195	1245.699	105.3
34S	HOYT 7 - JEC N 7 - 1	345	W.GRDNR7 - SWISVAL7 - 1	1074/1075	1198.625	111.5
34S	HOYT 7 - JEC N 7 - 1	345	SWISVAL7 - W.GRDNR7 - 1	1074/1075	1198.625	111.5
34S	STRANGR7 - 87TH 7 - 1	345	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1182/1329	1346.277	101.3
34S	LWRNCHL3 - WREN 3 - 1	115	W.GRDNR7 - SWISVAL7 - 1	109/109	132.435	121.5
34S	LWRNCHL3 - WREN 3 - 1	115	SWISVAL7 - W.GRDNR7 - 1	109/109	132.435	121.5
34S	LWRNCHL3 - WREN 3 - 1	115	LWRNCHL3 - MOCKBRD3 - 1	109/109	128.729	118.1
34S	LWRNCHL3 - WREN 3 - 1	115	STRANGR7 - 87TH 7 - 1	109/109	128.62	118
34S	SWISVAL7 - W.GRDNR7 - 1	345	HOYT 7 - STRANGR7 - 1	829/829	877.082	105.8

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
34S	FAIRGDS3 - SWLWRNC3 - 1	115	BISMAR3 - FAIRGDS3 - 1	70/70	77.91	111.3
34S	SWISVAL7 - W.GRDNR7 - 1	345	HOYT 7 - JEC N 7 - 1	829/829	864.647	104.3
34S	AUBURN 6 - JEC 6 - 1	230	HOYT 7 - JEC N 7 - 1	580/580	613.06	105.7
34S	54&MERI3 - HOYT 3 - 1	115	HOYT 7 - STRANGR7 - 1	172/172	183.696	106.8
34S	LWRNCHL3 - WREN 3 - 1	115	BASE CASE	109/109	114.886	105.4
34S	MOCKBRD3 - SWLWRNC3 - 1	115	LWRNCHL3 - WREN 3 - 1	119/119	123.879	104.1
34S	MIDLAND6 - MIDJ TX-1 - 1	230/115	LAWHILL6 - LWRNCHL3 - 1	280/308	334.796	108.7
34S	MIDLADN3 - MIDJ TX-1 - 1	230/115	LAWHILL6 - LWRNCHL3 - 1	280/308	328.636	106.7
34S	SWISVAL6 - MORRIS 6 - 1	230	EMPEC 7 - SWISVAL7 - 1	361/362	397.114	109.7
34S	INDIANH3 - 17&FAIR3 - 1	115	AUBURN 3 - SHERWOD3 - 1	140/156	157.872	101.2
34W	BISMAR3 - FAIRGDS3 - 1	115	ATLNTIC7 - W.GRDNR7 - 1	117/117	140.049	119.7
34W	BISMAR3 - FAIRGDS3 - 1	115	LWRNCHL3 - WREN 3 - 1	117/117	134.199	114.7
34W	BISMAR3 - FAIRGDS3 - 1	115	19THST 3 - FREESTATE3 - 1	117/117	133.731	114.3
34W	BISMAR3 - FAIRGDS3 - 1	115	W.GRDNR7 - SWISVAL7 - 1	117/117	126.828	108.4
34W	BISMAR3 - FAIRGDS3 - 1	115	SWISVAL7 - W.GRDNR7 - 1	117/117	126.828	108.4
34W	ATLNTIC7 - W.GRDNR7 - 1	345	STRANGR7 - 87TH 7 - 1	1195/1195	1240.41	103.8
34W	FAIRGDS3 - SWLWRNC3 - 1	115	19THST 3 - FREESTATE3 - 1	91/91	95.55	105
34W	PENTAGN3 - MNTCLLO3 - 1	115	STRANGR7 - 87TH 7 - 1	212/230	233.91	101.7

Table 3-2: Potential Voltage Violations (not full list)

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
29L	ATLNTIC3	115	BASE CASE	1.05	0.95	0.92798
29L	EUDORA 3	115	BASE CASE	1.05	0.95	0.94736
29L	CLEARVW3	115	BASE CASE	1.05	0.95	0.93908
29L	PACIFIC3	115	BASE CASE	1.05	0.95	0.93151
29L	EUDORA 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88044
29L	WAVERLY3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88077
29L	ATLNTIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.85049
29L	CLEARVW3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.86596
29L	PACIFIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.85569
29L	ATLNTIC7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87307
29S	ATLNTIC7	345	BASE CASE	1.05	0.95	0.94333
29S	ATLNTIC3	115	BASE CASE	1.05	0.95	0.91621
29S	CLEARVW3	115	BASE CASE	1.05	0.95	0.92541
29S	PACIFIC3	115	BASE CASE	1.05	0.95	0.9184
29S	EUDORA 3	115	BASE CASE	1.05	0.95	0.93392
29S	MOONLIT3	115	BASE CASE	1.05	0.95	0.94279
29S	WAVERLY3	115	BASE CASE	1.05	0.95	0.93433

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
29S	EUDORA 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87724
29S	MOONLIT3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89354
29S	WAVERLY3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87679
29S	ATLNTIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.84843
29S	CLEARVW3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.86351
29S	PACIFIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.85321
29S	ATLNTIC7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87237
29S	ATLNTIC3	115	ATLNTIC7 - ATLNTIC3 - 2	1.05	0.9	0.89573
29S	ATLNTIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.89034
29S	CLEARVW3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.898
29S	PACIFIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.8915
29W	ATLNTIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88206
29W	CLEARVW3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.8969
29W	PACIFIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88721
29W	EUDORA 3	115	BASE CASE	1.05	0.95	0.94885
29W	ATLNTIC3	115	BASE CASE	1.05	0.95	0.93099
29W	CLEARVW3	115	BASE CASE	1.05	0.95	0.94112
29W	PACIFIC3	115	BASE CASE	1.05	0.95	0.934
34L	ATLNTIC7	345	BASE CASE	1.05	0.95	0.93409
34L	W.GRDNR7	345	BASE CASE	1.05	0.95	0.94912
34L	ATLNTIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.78928
34L	CLEARVW3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.80792
34L	PACIFIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.79561
34L	PACIFIC3	115	JEC N 7 - JEC U3 - 1	1.05	0.9	0.87493
34L	CLEARVW3	115	JEC N 7 - JEC U3 - 1	1.05	0.9	0.88381
34L	PACIFIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88625
34L	PACIFIC3	115	STRANGR7 - SLDR_CK_WF7 - 1	1.05	0.9	0.88729
34L	PACIFIC3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89131
34L	EUDORA 3	115	BASE CASE	1.05	0.95	0.93268
34L	WAVERLY3	115	BASE CASE	1.05	0.95	0.93511
34L	ATLNTIC3	115	JEC N 7 - JEC U3 - 1	1.05	0.9	0.87082
34L	ATLNTIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88314
34L	ATLNTIC3	115	STRANGR7 - SLDR_CK_WF7 - 1	1.05	0.9	0.88379
34L	ATLNTIC3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.8872
34L	ATLNTIC3	115	STILWEL7 - LACYGNE7 - 1	1.05	0.9	0.8889
34L	EUDORA 3	115	FAIRGDS3 - EUDORA 3 - 1	1.05	0.9	0.8988
34L	ATLNTIC3	115	W.GRDNR7 - LACYGNE7 - 1	1.05	0.9	0.88906
34L	ATLNTIC3	115	ATLNTIC3 - ATLNTIC7 - 1	1.05	0.9	0.89147
34L	ATLNTIC3	115	HOYT 7 - STRANGR7 - 1	1.05	0.9	0.89194
34L	EMPEC 7	345	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89796
34L	LANG 7	345	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89794
34L	READWF 7	345	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89873
34L	EUDORA 3	115	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89177

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
34L	WAVERLY3	115	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89666
34L	ATLNTIC7	345	JEC N 7 - JEC U3 - 1	1.05	0.9	0.89568
34L	CLEARVW3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.89408
34L	CLEARVW3	115	STRANGR7 - SLDR_CK_WF7 - 1	1.05	0.9	0.89547
34L	EUDORA 3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.88497
34L	WAVERLY3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.887
34L	ATLNTIC7	345	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.88073
34L	W.GRDNR7	345	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.8891
34L	CLEARVW3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89994
34L	87TH 7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87114
34L	BALDCRK3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89982
34L	BISMARCK3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89211
34L	FAIRGDS3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87988
34L	EUDORA 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.82832
34L	FMC 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89456
34L	JAGGARD3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89929
34L	MOONLIT3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.85939
34L	19THST 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88978
34L	FREESTATE3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89339
34L	PENTAGN3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88893
34L	BONITA 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89125
34L	6TH ST 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89755
34L	SOUTH TN3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.8787
34L	SWLWRNC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89645
34L	TIMBRLN3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87167
34L	WAVERLY3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.82562
34L	WREN 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89475
34L	MNTCLLO3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.86981
34L	87TH 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.85722
34L	CLEARVW3	115	BASE CASE	1.05	0.95	0.92335
34L	ATLNTIC7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.81227
34L	CRAIG_CAP 5	161	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89688
34L	CRAIG 7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.86457
34L	CRAIG 5	161	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89688
34L	WOODLND5	161	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89783
34L	PACIFIC3	115	BASE CASE	1.05	0.95	0.91528
34L	ATLNTIC3	115	BASE CASE	1.05	0.95	0.91144
34S	ATLNTIC7	345	BASE CASE	1.05	0.95	0.92665
34S	W.GRDNR7	345	BASE CASE	1.05	0.95	0.9475

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
34S	CRAIG 7	345	BASE CASE	1.05	0.95	0.9452
34S	EUDORA 3	115	BASE CASE	1.05	0.95	0.91958
34S	MOONLIT3	115	BASE CASE	1.05	0.95	0.92858
34S	WAVERLY3	115	BASE CASE	1.05	0.95	0.9197
34S	87TH 7	345	BASE CASE	1.05	0.95	0.94971
34S	EDWRDVL5	161	METRO 5 - EDWRDVL5 - 1	1.05	0.9	0.89964
34S	JEC N 7	345	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.8962
34S	JEC 6	230	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89057
34S	SWISVAL6	230	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89842
34S	TECHILL6	230	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89248
34S	FAIRGDS3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89668
34S	EUDORA 3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.87677
34S	MOONLIT3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89917
34S	WAVERLY3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.88882
34S	ATLNTIC7	345	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.89161
34S	EUDORA 3	115	HOYT 7 - STRANGR7 - 1	1.05	0.9	0.88836
34S	ATLNTIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.84741
34S	87TH 7	345	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88955
34S	EUDORA 3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.87506
34S	MOONLIT3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.87588
34S	BONITA 3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.89765
34S	SOUTH TN3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88788
34S	TIMBRLN3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88525
34S	WAVERLY3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.8661
34S	MNTCLLO3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.89465
34S	87TH 3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.88424
34S	ATLNTIC7	345	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.87862
34S	CRAIG 7	345	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.89085
34S	PACIFIC3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.84896
34S	EUDORA 3	115	LAWHILL6 - LEC U5 6 - 1	1.05	0.9	0.88729
34S	WAVERLY3	115	LAWHILL6 - LEC U5 6 - 1	1.05	0.9	0.89736
34S	ATLNTIC3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.86353
34S	CLEARVW3	115	STRANGR7 - 87TH 7 - 1	1.05	0.9	0.85648
34S	MOONLIT3	115	MOONLIT3 - TIMBRLN3 - 1	1.05	0.9	0.89816
34S	WAVERLY3	115	WAVERLY3 - 87TH 3 - 1	1.05	0.9	0.898
34S	ATLNTIC3	115	LAWHILL6 - LEC U5 6 - 1	1.05	0.9	0.87526
34S	PACIFIC3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.86767
34S	ATLNTIC3	115	LEC U5 6 - LEC U5 - 1	1.05	0.9	0.87529
34S	ATLNTIC3	115	HOYT 7 - STRANGR7 - 1	1.05	0.9	0.87636
34S	EUDORA 3	115	LEC U5 6 - LEC U5 - 1	1.05	0.9	0.88733
34S	WAVERLY3	115	LEC U5 6 - LEC U5 - 1	1.05	0.9	0.89739
34S	PACIFIC3	115	LAWHILL6 - LEC U5 6 - 1	1.05	0.9	0.87838
34S	CLEARVW3	115	HOYT 7 - JEC N 7 - 1	1.05	0.9	0.87708

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
34S	FAIRGDS3	115	BASE CASE	1.05	0.95	0.94507
34S	19THST 3	115	BASE CASE	1.05	0.95	0.94976
34S	BONITA 3	115	BASE CASE	1.05	0.95	0.94443
34S	SOUTH TN3	115	BASE CASE	1.05	0.95	0.93807
34S	TIMBRLN3	115	BASE CASE	1.05	0.95	0.93729
34S	MNTCLLO3	115	BASE CASE	1.05	0.95	0.9441
34S	87TH 3	115	BASE CASE	1.05	0.95	0.93848
34S	EUDORA 3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.87009
34S	MOONLIT3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.8869
34S	TIMBRLN3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.89773
34S	WAVERLY3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.87276
34S	87TH 3	115	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.89722
34S	PACIFIC3	115	HOYT 7 - STRANGR7 - 1	1.05	0.9	0.8803
34S	ATLNTIC7	345	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.87239
34S	W.GRDNR7	345	P23:345:KCPL:WGARDNER-R10-12:::EHV:	1.05	0.9	0.88376
34S	87TH 7	345	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.88715
34S	EUDORA 3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.87198
34S	MOONLIT3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.87318
34S	BONITA 3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.89522
34S	SOUTH TN3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.88531
34S	TIMBRLN3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.8826
34S	WAVERLY3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.86333
34S	MNTCLLO3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.89179
34S	87TH 3	115	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.88154
34S	ATLNTIC7	345	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.87618
34S	CRAIG 7	345	P23:345:WERE:STRA-345-643:::EHV:	1.05	0.9	0.88851

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
34S	ATLNTIC3	115	SWITCHED_SHUNT-533285	1.05	0.9	0.88654
34S	CLEARVW3	115	LAWHILL6 - LEC U5 6 - 1	1.05	0.9	0.88675
34S	ATLNTIC3	115	W.GRDNR7 - SWISVAL7 - 1	1.05	0.9	0.8868
34S	ATLNTIC3	115	SWISVAL7 - W.GRDNR7 - 1	1.05	0.9	0.8868
34S	CLEARVW3	115	HOYT 7 - STRANGR7 - 1	1.05	0.9	0.88934
34S	EUDORA 3	115	FAIRGDS3 - EUDORA 3 - 1	1.05	0.9	0.88447
34S	LAWHILL6	230	GEN532663 1	1.05	0.9	0.8969
34S	LEC U5 6	230	GEN532663 1	1.05	0.9	0.89683
34S	MIDLAND6	230	GEN532663 1	1.05	0.9	0.8972
34S	BALDCRK3	115	GEN532663 1	1.05	0.9	0.89575
34S	BISMARCK3	115	GEN532663 1	1.05	0.9	0.89404
34S	FAIRGDS3	115	GEN532663 1	1.05	0.9	0.88722
34S	EUDORA 3	115	GEN532663 1	1.05	0.9	0.87165
34S	FMC 3	115	GEN532663 1	1.05	0.9	0.89468
34S	MOCKBRD3	115	GEN532663 1	1.05	0.9	0.89778
34S	MOONLIT3	115	GEN532663 1	1.05	0.9	0.89389
34S	19THST 3	115	GEN532663 1	1.05	0.9	0.89009
34S	FREESTATE3	115	GEN532663 1	1.05	0.9	0.89177
34S	6TH ST 3	115	GEN532663 1	1.05	0.9	0.89606
34S	SWLWRNC3	115	GEN532663 1	1.05	0.9	0.89307
34S	WAVERLY3	115	GEN532663 1	1.05	0.9	0.88342
34S	WREN 3	115	GEN532663 1	1.05	0.9	0.89252
34S	ATLNTIC7	345	GEN532663 1	1.05	0.9	0.89154
34S	EUDORA 3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.88161
34S	MOONLIT3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.88676
34S	SOUTHTN3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.89772
34S	TIMBRLN3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.89586
34S	WAVERLY3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.87764
34S	87TH 3	115	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	1.05	0.9	0.89612
34S	AUBURN 6	230	P23:345:WERE:STRA-345-634:EHV:	1.05	0.9	0.8934
34S	FAIRGDS3	115	P23:345:WERE:STRA-345-634:EHV:	1.05	0.9	0.89959
34S	EUDORA 3	115	P23:345:WERE:STRA-345-634:EHV:	1.05	0.9	0.87996
34S	WAVERLY3	115	P23:345:WERE:STRA-345-634:EHV:	1.05	0.9	0.89252

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
34S	ATLNTIC7	345	P23:345:WERE:STRA-345-634:EHV:	1.05	0.9	0.89738
34S	87TH 7	345	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.88715
34S	EUDORA 3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.87198
34S	MOONLIT3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.87318
34S	BONITA 3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.89522
34S	SOUTH TN3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.88531
34S	TIMBRLN3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.8826
34S	WAVERLY3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.86333
34S	MNTCLO3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.89179
34S	87TH 3	115	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.88154
34S	ATLNTIC7	345	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.87618
34S	CRAIG 7	345	P23:345:WERE:STRA-345-643:EHV:	1.05	0.9	0.88851
34S	ATLNTIC3	115	BASE CASE	1.05	0.95	0.89991
34S	CLEARVW3	115	BASE CASE	1.05	0.95	0.91011
34S	PACIFIC3	115	BASE CASE	1.05	0.95	0.90251
34W	ATLNTIC3	115	BASE CASE	1.05	0.95	0.92904
34W	EUDORA 3	115	BASE CASE	1.05	0.95	0.94565
34W	WAVERLY3	115	BASE CASE	1.05	0.95	0.94984
34W	CLEARVW3	115	BASE CASE	1.05	0.95	0.93924
34W	PACIFIC3	115	BASE CASE	1.05	0.95	0.93207
34W	NWARSAW5	161	5LOSTVALY - NWARSAW5 - 1	1.05	0.9	0.8773
34W	LANG 7	345	EMPEC 7 - LANG 7 - 1	1.05	0.9	0.88385
34W	EUDORA 3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89758
34W	WAVERLY3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.89947
34W	ATLNTIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.86729
34W	CLEARVW3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88401
34W	PACIFIC3	115	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.87335
34W	ATLNTIC7	345	ATLNTIC7 - W.GRDNR7 - 1	1.05	0.9	0.88746
34W	NWARSAW5	161	NWARSAW5 - 5LOSTVALY - 1	1.05	0.9	0.8773

SHORT CIRCUIT

SPP performed short circuit analysis for the 2029 Summer Peak with the new load additions. The analysis identified the currents listed in Table 3-3.

Table 3-3: Short Circuit Results

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	DFA-69 69.000	55,440
29S	Max Fault	Three Phase	DFA-161 161.00	28,383
29S	Max Fault	Three Phase	DAA-69-B2 69.000	87,729
29S	Max Fault	Three Phase	DAA-69 69.000	87,729
29S	Max Fault	Three Phase	DAY-69 69.000	57,378
29S	Max Fault	Three Phase	DFA-8T1-13.813.800	16,321
29S	Max Fault	Three Phase	DFA-8T2-13.813.800	17,317
29S	Max Fault	Three Phase	RIVERHILL TS69.000	62,278
29S	Max Fault	Three Phase	DAA-69-B1 69.000	87,729
29S	Max Fault	Three Phase	DFN-69 69.000	23,020
29S	Max Fault	Three Phase	DFP-69 69.000	28,471
29S	Max Fault	Three Phase	DAP-69 69.000	31,706
29S	Max Fault	Three Phase	SWTCH 623 NO69.000	62,278
29S	Max Fault	Three Phase	DAA-CT1-13.813.800	24,778
29S	Max Fault	Three Phase	DAA-GEN-1-2 13.800	24,778
29S	Max Fault	Three Phase	DAA-6T10-13 13.200	8,190
29S	Max Fault	Three Phase	DFP-6T1-13.213.200	6,423
29S	Max Fault	Three Phase	DAA-CT2-13.813.800	24,778
29S	Max Fault	Three Phase	DAA-GEN-3-4 13.800	24,723
29S	Max Fault	Three Phase	DFP-6T2-13.213.200	6,601
29S	Max Fault	Three Phase	DAA-CT3-13.813.800	24,723
29S	Max Fault	Three Phase	DAA-GEN-5-6 13.800	25,255
29S	Max Fault	Three Phase	DAA-6T3-13.213.200	8,957
29S	Max Fault	Three Phase	DAA-CT4-13.813.800	24,723
29S	Max Fault	Three Phase	DAA-GEN-7-8 13.800	24,882
29S	Max Fault	Three Phase	DAA-6T4-13-113.200	25,904
29S	Max Fault	Three Phase	DAA-6T4-13-213.200	25,847
29S	Max Fault	Three Phase	DAA-6T6-13.213.200	8,430
29S	Max Fault	Three Phase	DAA-6T7-1 13.200	26,403
29S	Max Fault	Three Phase	DAA-6T7-2 13.200	26,014
29S	Max Fault	Three Phase	DAA-6T8-13.213.200	12,066
29S	Max Fault	Three Phase	DAA-6T9-13.213.200	7,176
29S	Max Fault	Three Phase	EMPEC121 13.800	66,360
29S	Max Fault	Three Phase	EMPEC341 13.800	66,473
29S	Max Fault	Three Phase	EMPEC5 1 18.000	97,317
29S	Max Fault	Three Phase	EMPEC6 1 18.000	97,572
29S	Max Fault	Three Phase	EMPEC7 1 18.000	97,419
29S	Max Fault	Three Phase	SAILOR 7 345.00	20,558
29S	Max Fault	Three Phase	ASTRAN 7 345.00	19,423
29S	Max Fault	Three Phase	EMPEC 7 345.00	18,365
29S	Max Fault	Three Phase	LANG 7 345.00	18,237

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	MORRIS 7 345.00	13,210
29S	Max Fault	Three Phase	STRANGR7 345.00	25,878
29S	Max Fault	Three Phase	SWISVAL7 345.00	17,741
29S	Max Fault	Three Phase	87TH 7 345.00	21,240
29S	Max Fault	Three Phase	READWF 7 345.00	14,967
29S	Max Fault	Three Phase	NEOSHO 7 345.00	17,562
29S	Max Fault	Three Phase	WAVERLY7 345.00	16,222
29S	Max Fault	Three Phase	BURNS 7 345.00	10,440
29S	Max Fault	Three Phase	SWISV1X1 14.400	36,184
29S	Max Fault	Three Phase	87TH 1X1 14.400	79,264
29S	Max Fault	Three Phase	SWISV2X2 14.400	44,805
29S	Max Fault	Three Phase	87TH 2X1 14.400	52,711
29S	Max Fault	Three Phase	AUBURN 6 230.00	11,328
29S	Max Fault	Three Phase	LAWHILL6 230.00	11,033
29S	Max Fault	Three Phase	SWISVAL6 230.00	21,065
29S	Max Fault	Three Phase	TECHILL6 230.00	10,536
29S	Max Fault	Three Phase	MORRIS 6 230.00	14,730
29S	Max Fault	Three Phase	BALDCRK3 115.00	13,067
29S	Max Fault	Three Phase	BISMARCK3 115.00	18,261
29S	Max Fault	Three Phase	FAIRGDS3 115.00	18,659
29S	Max Fault	Three Phase	EUDORA 3 115.00	16,394
29S	Max Fault	Three Phase	FMC 3 115.00	16,731
29S	Max Fault	Three Phase	MOCKBRD3 115.00	16,403
29S	Max Fault	Three Phase	MOONLIT3 115.00	13,114
29S	Max Fault	Three Phase	19THST 3 115.00	16,072
29S	Max Fault	Three Phase	FREESTATE3 115.00	16,676
29S	Max Fault	Three Phase	MIDLADS3 115.00	23,354
29S	Max Fault	Three Phase	SWLWRNC3 115.00	17,347
29S	Max Fault	Three Phase	TIMBRLN3 115.00	15,624
29S	Max Fault	Three Phase	WAVERLY3 115.00	27,578
29S	Max Fault	Three Phase	ATLNTIC3 115.00	48,657
29S	Max Fault	Three Phase	MNTCLO3 115.00	29,397
29S	Max Fault	Three Phase	87TH 3 115.00	40,964
29S	Max Fault	Three Phase	CLEARVW3 115.00	26,829
29S	Max Fault	Three Phase	PACIFIC3 115.00	38,820
29S	Max Fault	Three Phase	PILOT 3 115.00	52,638
29S	Max Fault	Three Phase	SAILOR 3 115.00	52,638
29S	Max Fault	Three Phase	ATLNT1X1 14.400	54,379
29S	Max Fault	Three Phase	ATLNT2X1 14.400	54,379
29S	Max Fault	Three Phase	SAILOR11 14.400	55,052
29S	Max Fault	Three Phase	SAILOR21 14.400	55,052
29S	Max Fault	Three Phase	PECULR 7 345.00	20,905
29S	Max Fault	Three Phase	ATLNTIC7 345.00	21,980
29S	Max Fault	Three Phase	CRAIG_CAP 5 161.00	34,113
29S	Max Fault	Three Phase	LAC G1 1 22.000	43,289
29S	Max Fault	Three Phase	LAC G2 1 24.000	29,766
29S	Max Fault	Three Phase	W.GRDNR7 345.00	25,829

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	WGARDNR5 161.00	28,867
29S	Max Fault	Three Phase	STILWEL7 345.00	25,826
29S	Max Fault	Three Phase	STILWEL5 161.00	43,302
29S	Max Fault	Three Phase	CRAIG 7 345.00	22,112
29S	Max Fault	Three Phase	CRAIG 5 161.00	43,034
29S	Max Fault	Three Phase	PFLUMM 5 161.00	29,317
29S	Max Fault	Three Phase	LACYGNE7 345.00	26,488
29S	Max Fault	Three Phase	LENEXA 5 161.00	36,512
29S	Max Fault	Three Phase	COLLEGE5 161.00	30,176
29S	Max Fault	Three Phase	CEDRCRK5 161.00	28,655
29S	Max Fault	Three Phase	CEDARNL5 161.00	10,358
29S	Max Fault	Three Phase	PLSTVAL5 161.00	9,752
29S	Max Fault	Three Phase	BULLCRK5 161.00	27,983
29S	Max Fault	Three Phase	BNSF 5 161.00	16,028
29S	Max Fault	Three Phase	WGARDNR1 34.500	4,715
29S	Max Fault	Three Phase	WOODLND5 161.00	39,168
29S	Max Fault	Three Phase	LACYGNE11_7 345.00	25,786
29S	Max Fault	Three Phase	LACYGNE22_7 345.00	25,786
29S	Max Fault	Three Phase	CRAI T11 13.800	12,255
29S	Max Fault	Three Phase	CRAI T22 13.800	19,186
29S	Max Fault	Three Phase	CRAI T33 13.800	18,850
29S	Max Fault	Three Phase	STIL T11 13.800	18,508
29S	Max Fault	Three Phase	STIL T22 13.800	19,929
29S	Max Fault	Three Phase	WGAR T11 13.800	16,077
29S	Max Fault	Three Phase	LACYGNE2 69.000	2,682
29S	Max Fault	Three Phase	LACYGN7_TER16.9000	80,951
29S	Max Fault	Three Phase	LACYG_AQC3_16.9000	54,863
29S	Max Fault	Three Phase	LC_AQC3TER_13.9800	49,196
29S	Max Fault	Three Phase	LACYG_AQC8_16.9000	54,863
29S	Max Fault	Three Phase	LC_AQC8TER_13.9800	29,773
29S	Max Fault	Three Phase	5CLINTN 161.00	15,781
29S	Max Fault	Three Phase	7BLACKBERRY 345.00	15,473
29S	Max Fault	Three Phase	DELWARE7 345.00	11,214
29S	Max Fault	Three Phase	HOYT 7 345.00	11,868
29S	Max Fault	Three Phase	NRSS7 345.00	11,740
29S	Max Fault	Three Phase	SLDR_CK_WF7 345.00	5,921
29S	Max Fault	Three Phase	WOLFCRK7 345.00	18,455
29S	Max Fault	Three Phase	WAVERTX7 345.00	13,454
29S	Max Fault	Three Phase	STRAN1 1 14.400	33,305
29S	Max Fault	Three Phase	STRAN3 1 14.400	42,205
29S	Max Fault	Three Phase	N345 1 1 13.800	40,578
29S	Max Fault	Three Phase	N345 2 1 13.800	40,490
29S	Max Fault	Three Phase	N345 4 5 161.00	22,709
29S	Max Fault	Three Phase	N345 3 4 138.00	24,230
29S	Max Fault	Three Phase	STRANGR3 115.00	35,846
29S	Max Fault	Three Phase	PHILL 7 345.00	18,785
29S	Max Fault	Three Phase	S.HARP 5 161.00	25,226

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	PECULR 5 161.00	25,207
29S	Max Fault	Three Phase	PECULRT 13.800	59,236
29S	Max Fault	Three Phase	IATAN 7 345.00	29,951
29S	Max Fault	Three Phase	HICKMAN5 161.00	19,756
29S	Max Fault	Three Phase	LACYGNE_LK2 69.000	2,550
29S	Max Fault	Three Phase	PLSTVAL1 34.500	3,975
29S	Max Fault	Three Phase	SHWNMSN5 161.00	35,890
29S	Max Fault	Three Phase	OLATHE 5 161.00	27,855
29S	Max Fault	Three Phase	MOONLT 5 161.00	14,663
29S	Max Fault	Three Phase	OVERLPK5 161.00	32,170
29S	Max Fault	Three Phase	ANTIOCH5 161.00	23,254
29S	Max Fault	Three Phase	REEDER 5 161.00	20,874
29S	Max Fault	Three Phase	REDEL 5 161.00	25,370
29S	Max Fault	Three Phase	SEOTTWA5 161.00	7,166
29S	Max Fault	Three Phase	BUCYRUS5 161.00	20,951
29S	Max Fault	Three Phase	WG CT 1 13.800	65,319
29S	Max Fault	Three Phase	WG CT 2 13.800	65,064
29S	Max Fault	Three Phase	WG CT 3 13.800	65,315
29S	Max Fault	Three Phase	WG CT 4 13.800	65,022
29S	Max Fault	Three Phase	PLSTVL2_TER17.6210	8,891
29S	Max Fault	Three Phase	LACKMAN5 161.00	13,695
29S	Max Fault	Three Phase	CTY_BLDWN1 34.500	4,546
29S	Max Fault	Three Phase	LAC11_AQC1 13.800	28,136
29S	Max Fault	Three Phase	LAC11_TER1 13.800	19,041
29S	Max Fault	Three Phase	LAC22_AQC1 13.800	28,297
29S	Max Fault	Three Phase	LAC22_TER1 13.800	19,151

STABILITY

SPP performed a Fast Fault Screening (FFS) using the 2034 Summer Peak for the base case and change case models. The change case models include the Astra North and Pilot delivery point changes. SPP determined 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 addition of the load at the new Pilot and Astra North delivery points caused potential thermal and voltage issues on the transmission system around the new load and around the generation that was ramped up to serve this new load. SPP worked with Evergy to come up with different solutions for the violations in Tables 3-1 and 3-2. Two of the solutions are listed below.

Solution #1: Total cost \$574.4 M

- New Atlantic 345/115 kV transformer
- New Atlantic - Swissvale 345kV line (40 miles)
- Rebuild Atlantic – West Gardner 345 kV line (11.5 miles)
- Rebuild Bismark – Fairground 115 kV line (2.88 miles)
- New series reactor at Lawrence Hill 115 kV substation
- CT upgrades at West Gardner 161 kV substation
- Rebuild Midland 115 kV bus tie
- Replace Midland 230/115 kV transformer
- New series reactor on West Gardner – BNSF 115 kV substation
- Rebuild Fairgrounds – SW Lawrence 115 kV line (5.88 miles)
- Rebuild JEC – Hoyt 345kV line (24.3 miles)
- Rebuild Auburn – JEC 230kV line (29.76 miles)
- Rebuild Swissvale – Morris 230kV line (49.6 miles)
- Rebuild Indian Hills – 17&Fairway 115kV line (3 miles)
- New 300 MVAR Atlantic 345 kV capacitor bank
- New 300 MVAR Atlantic 115 kV capacitor bank

Solution #2: Total cost \$600.1 M

- New Sailor 345 kV substation
- New Sailor 115 kV substation
- Two new Sailor 345/115 kV transformers
- New Sailor - Swissvale 345kV line (35.5 miles)
- New Sailor - Atlantic 345kV line (2.38 miles)
- Rebuild Atlantic – West Gardner 345 kV line (11.5 miles)
- Rebuild Bismark – Fairground 115 kV line (2.88 miles)
- New series reactor at Lawrence Hill 115 kV substation
- CT upgrades at West Gardner 161 kV substation
- Rebuild Midland 115 kV bus tie
- Replace Midland 230/115 kV transformer
- New series reactor on West Gardner – BNSF 115 kV substation
- Rebuild JEC – Hoyt 345kV line (24.3 miles)
- Rebuild Auburn – JEC 230kV line (29.76 miles)
- Rebuild Swissvale – Morris 230kV line (49.6 miles)
- Rebuild Indian Hills – 17&Fairway 115kV line (3 miles)
- New 150 MVAR Atlantic 345 kV capacitor bank
- New 130 MVAR Atlantic 115 kV capacitor bank
- New 200 MVAR Sailor 115 kV capacitor bank

Solution #1 was not considered feasible due to limitations at the Atlantic substation and the inability to expand the substation to accommodate the upgrades. So SPP chose to move forward with Solution #2. This solution solves all issues identified in Table 3-1 and Table 3-2.

Table 3-4: Recommended Upgrade Solution 1

New Upgrade Description*	Mileage	MVA (Rate B)	Date Needed**	Host Transmission Owner	Estimated Cost***
New Sailor 345kV substation	-	-	9/1/2028	TBD	\$55,000,000
New Sailor 115kV substation	-	-	9/1/2028	TBD	\$20,000,000
Two new Sailor 345/115kV transformers	-	-	9/1/2028	TBD	\$14,000,000
New Sailor – Swissvale 345kV line	35.5	1792	9/1/2028	TBD	\$120,000,000
New Sailor – Atlantic 345kV line	2.38	1792	9/1/2028	TBD	\$5,000,000
Rebuild Atlantic – West Gardner 345kV line	5	1510	9/1/2028	Evergy	\$18,000,000
Rebuild Bismark – Fairground 115 kV line	3	145	9/1/2028	Evergy	\$8,000,000
New series reactor at Lawrence Hill 115 kV substation	-	-	6/1/2028	Evergy	\$2,000,000
CT upgrades at West Gardner 161 kV substation	-	-	9/1/2028	Evergy	\$1,000,000
Rebuild Midland 115 kV bus tie	-	-	6/1/2028	Evergy	\$152,568
Replace Midland 230/115 kV transformer	-	340	6/1/2028	Evergy	\$7,600,000
New series reactor on West Gardner – BNSF 115 kV substation	-	-	9/1/2028	Evergy	\$2,000,000
Rebuild JEC – Hoyt 345kV line	24.3	1215	9/1/2028	Evergy	\$56,239,874
Rebuild Auburn – JEC 230kV line	29.76	615	9/1/2028	Evergy	\$75,000,000
Rebuild Swissvale – Morris 230kV line	49.6	400	6/1/2032	Evergy	\$125,000,000
Rebuild Indian Hills – 17&Fairway 115kV line	3	160	6/1/2033	Evergy	\$9,000,000
New 150 MVAR Atlantic 345 kV Capacitor Bank	-	-	9/1/2028	Evergy	\$45,000,000
New 130 MVAR Atlantic 115 kV Capacitor Bank	-	-	4/1/2027	Evergy	\$14,625,000
New 200 MVAR Sailor 115 kV Capacitor Bank	-	-	9/1/2028	Evergy	\$22,500,000
TOTAL NEW UPGRADE COST					\$600,117,442

*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 Delivery Point Network Study (“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 a 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 Pilot and Astra North load additions. The study shows that the following upgrades are required to reliably serve the load addition:

- New Sailor 345 kV substation
- New Sailor 115 kV substation
- Two new Sailor 345/115 kV transformers
- New Sailor - Swissvale 345kV line (35.5 miles)
- New Sailor - Atlantic 345kV line (2.38 miles)
- Rebuild Atlantic – West Gardner 345 kV line (11.5 miles)
- Rebuild Bismark – Fairground 115 kV line (2.88 miles)
- New series reactor at Lawrence Hill 115 kV substation
- CT upgrades at West Gardner 161 kV substation
- Rebuild Midland 115 kV bus tie
- Replace Midland 230/115 kV transformer
- New series reactor on West Gardner – BNSF 115 kV substation
- Rebuild JEC – Hoyt 345kV line (24.3 miles)
- Rebuild Auburn – JEC 230kV line (29.76 miles)
- Rebuild Swissvale – Morris 230kV line (49.6 miles)
- Rebuild Indian Hills – 17&Fairway 115kV line (3 miles)
- New 150 MVAR Atlantic 345 kV capacitor bank
- New 130 MVAR Atlantic 115 kV capacitor bank
- New 200 MVAR Sailor 115 kV capacitor bank

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