DPA-2025-SEPTEMBER-2193

Delivery Point Network Study

Published on 12/8/2025

By SPP Engineering, Transmission Services

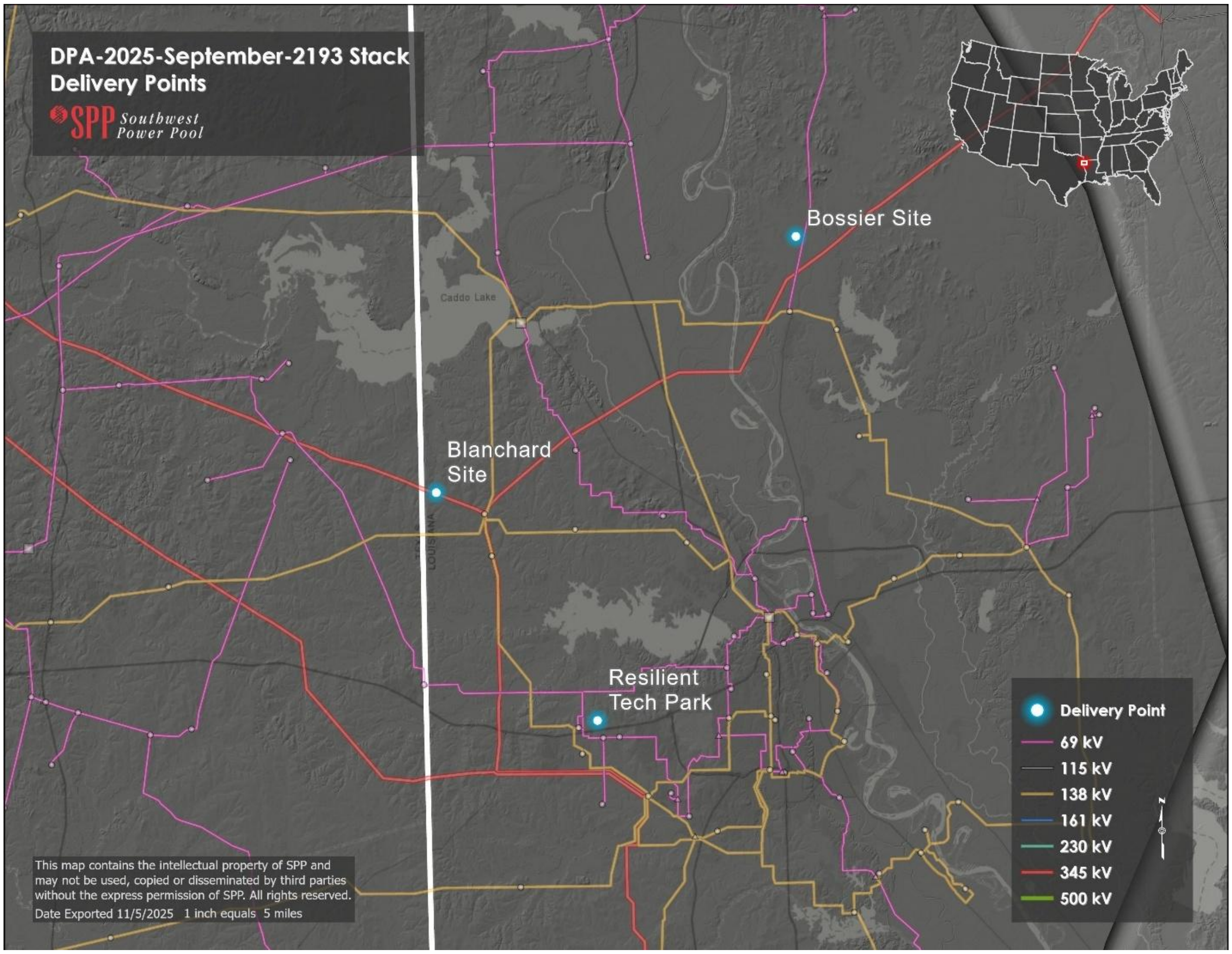
REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
12/8/2025	SPP	Original	

CONTENTS

SECTION 1: INTRODUCTION

This report outlines the results of an evaluation of regional transmission impacts from delivery point request DPA-2025-September-2193. The requesting entity plans to add new loads to three new delivery points (Resilient Tech Park, Blanchard Site, Bossier Site) with an in-service date of 9/1/2028. The delivery points are in the American Electric Power (AEP) 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 AEP. 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 2029 and 2034
    - Summer Peak (2029S and 2034S), Winter Peak (2029W and 2034W), and Light Load (2029L and 2034L)
  - 2025 ITP Short Circuit Model Series
    - 2029 Summer Max Fault
  - 2025 Transmission System Planning (TPL) Dynamic Model Series
    - 2034 Summer Peak Base and Change Cases

Table 2-1: Study Cases

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
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-29L_2193.sav	2029	Light Load	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31
2025ITPFinal-29S_2193.sav	2029	Summer Peak	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31
2025ITPFinal-29W_2193.sav	2029	Winter Peak	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31
2025ITPFinal-34L_2193.sav	2034	Light Load	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31
2025ITPFinal-34S_2193.sav	2034	Summer Peak	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31
2025ITPFinal-34W_2193.sav	2034	Winter Peak	Base Reliability	Resilient Tech Park = 500/125.31 Blanchard Site = 500/125.31 Bossier Site = 500/125.31

- 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.
- Dynamics Analysis
    - Assumptions
        - 2025 TPL Dynamics Model Series
            - 2034 Summer Peak Base and Change Cases
    - Analyses
        - Fast Fault Screening using Physical and Operational Margins Studio
- 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 VIOLATIONS

The analysis identified potential thermal violations resulting from the new load. Table 3-1 details the potential thermal violations resulting from the load addition.

Table 3-1: Potential Thermal Violations

Model	Facility Name	Facility Voltage (kV)	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
29S	CHEROKE4 - TATUM 4 - 1	138	BASE CASE	241/350	252.086	104.6
34S	CHEROKE4 - TATUM 4 - 1	138	BASE CASE	241/350	271.607	112.7
34S	CHEROKE4 - TATUM 4 - 1	138	P23:345:AEPW:DIANA CB 11910 NBTB::::	241/350	358.4	102.4
29S	KNOXLEE4 - CHEROKE4 - 1	138	BASE CASE	241/350	262.69	109
34S	KNOXLEE4 - CHEROKE4 - 1	138	BASE CASE	241/350	282.693	117.3
34S	KNOXLEE4 - CHEROKE4 - 1	138	NTAP2_345 - WILKES 7 - 1	241/350	356.3	101.8
34S	KNOXLEE4 - CHEROKE4 - 1	138	CROCKET7 - 7ROCKYCRK% - 1	241/350	357	102
34S	KNOXLEE4 - CHEROKE4 - 1	138	P23:345:AEPW:DIANA CB 11910 NBTB::::	241/350	371	106
34S	KNOXLEE4 - CHEROKE4 - 1	138	P23:345:EES::7ROCKYCRK%:1:EHV:	241/350	357.35	102.1
34S	KNOXLEE4 - CHEROKE4 - 1	138	7ROCKYCRK% - CROCKET7 - 1	241/350	357	102
29S	LIEBERM4 - IPCJEFF4 - 1	138	NTAP2_345 - WILKES 7 - 1	137/162	173.664	107.2
34S	LIEBERM4 - IPCJEFF4 - 1	138	NTAP2_345 - WILKES 7 - 1	137/162	190.026	117.3
34S	LIEBERM4 - IPCJEFF4 - 1	138	ARSHILL4 - STLGENS4 - 1	137/162	163.62	101
29S	ROKHILL4 - TATUM 4 - 1	138	BASE CASE	241/350	246.784	102.4
34S	ROKHILL4 - TATUM 4 - 1	138	BASE CASE	241/350	265.823	110.3
34S	ROKHILL4 - TATUM 4 - 1	138	P23:345:AEPW:DIANA CB 11910 NBTB::::	241/350	351.4	100.4
34S	SABMINT4 - SEMRSHL4 - 1	138	NTAP2_345 - WILKES 7 - 1	272/272	301.376	110.8
34S	SABMINT4 - SEMRSHL4 - 1	138	PIRKEY 7 - DIANA 7 - 1	272/272	290.768	106.9

SHORT CIRCUIT

SPP performed short circuit analysis for the 2029 Summer Peak with the new load addition. The analysis identified the currents listed in Table 3-2.

Table 3-2: Short Circuit Results

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	6815TP38 69.000	17,128
29S	Max Fault	Three Phase	6815TP98 69.000	12,754
29S	Max Fault	Three Phase	7200 STABUS 7.2000	26,454
29S	Max Fault	Three Phase	7200 STABUS 7.2000	38,807
29S	Max Fault	Three Phase	ARSHILL4 138.00	29,600
29S	Max Fault	Three Phase	AVINGER4 138.00	19,414
29S	Max Fault	Three Phase	AVINGTP4 138.00	19,822
29S	Max Fault	Three Phase	BRYANML4 138.00	7,445
29S	Max Fault	Three Phase	CARROLL6 230.00	12,013
29S	Max Fault	Three Phase	CASSTP4 138.00	7,624
29S	Max Fault	Three Phase	CBLUFFS3 345.00	38,386
29S	Max Fault	Three Phase	CBLUFFS5 161.00	70,366
29S	Max Fault	Three Phase	CEDARGR4 138.00	25,392
29S	Max Fault	Three Phase	CONST. PWR. 13.800	6,850
29S	Max Fault	Three Phase	CPA-161 161.00	8,232
29S	Max Fault	Three Phase	CSM2 115.00	12,646
29S	Max Fault	Three Phase	CULLEN 115.00	8,397
29S	Max Fault	Three Phase	CWK-161 161.00	42,207
29S	Max Fault	Three Phase	CWK-345 345.00	31,929
29S	Max Fault	Three Phase	CWK-345-B1 345.00	31,929
29S	Max Fault	Three Phase	CWK-9T1-13.813.800	39,353
29S	Max Fault	Three Phase	CWL CB4 24 24.000	27,493
29S	Max Fault	Three Phase	CWL GEN 3 2424.000	27,916
29S	Max Fault	Three Phase	CWL-161 161.00	70,366
29S	Max Fault	Three Phase	CWL-161-RAT4161.00	61,684
29S	Max Fault	Three Phase	CWL-345 345.00	38,386
29S	Max Fault	Three Phase	CWL-345-B1 345.00	38,386
29S	Max Fault	Three Phase	CWL-345-B2 345.00	38,386
29S	Max Fault	Three Phase	CWL-345-RAT4345.00	37,401
29S	Max Fault	Three Phase	CWL-3T3-13.813.800	18,882
29S	Max Fault	Three Phase	CWL-69 69.000	26,387
29S	Max Fault	Three Phase	CWL-69-B1 69.000	26,387
29S	Max Fault	Three Phase	CWL-69-B3 69.000	26,387
29S	Max Fault	Three Phase	CWL-8T1-13.813.800	14,239
29S	Max Fault	Three Phase	CWL-8T3-13.813.800	22,743
29S	Max Fault	Three Phase	CWL-8T6-14-114.150	17,926
29S	Max Fault	Three Phase	CWL-8T6-14-214.150	17,808
29S	Max Fault	Three Phase	CWL-8T7-14-114.150	17,827

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	CWL-8T7-14-214.150	17,746
29S	Max Fault	Three Phase	CWL-8T8-13.813.800	19,808
29S	Max Fault	Three Phase	CWL-8T9-13.813.800	19,693
29S	Max Fault	Three Phase	CWL-9T1-13.813.800	30,267
29S	Max Fault	Three Phase	CWL-9T2-13.813.800	36,996
29S	Max Fault	Three Phase	CWP-161 161.00	59,497
29S	Max Fault	Three Phase	CWP-8T1-13.213.200	7,967
29S	Max Fault	Three Phase	CWQ-161 161.00	11,477
29S	Max Fault	Three Phase	CWS-161 161.00	40,343
29S	Max Fault	Three Phase	CWS-8T1-13.213.200	6,977
29S	Max Fault	Three Phase	CWX-345 345.00	33,778
29S	Max Fault	Three Phase	CWX-345-B2 345.00	33,778
29S	Max Fault	Three Phase	CWX-345-B4 345.00	33,778
29S	Max Fault	Three Phase	CWY-345 345.00	33,755
29S	Max Fault	Three Phase	CWZ-161 161.00	31,774
29S	Max Fault	Three Phase	CWZ-161-B1 161.00	31,774
29S	Max Fault	Three Phase	DIANA 4 138.00	30,616
29S	Max Fault	Three Phase	DIANA 7 345.00	20,026
29S	Max Fault	Three Phase	DIANA-M1 13.800	24,970
29S	Max Fault	Three Phase	DIANA-N1 13.800	30,421
29S	Max Fault	Three Phase	DIANA-S1 13.800	16,434
29S	Max Fault	Three Phase	DIANASW4 138.00	13,128
29S	Max Fault	Three Phase	DIXIEMAZE4 138.00	10,952
29S	Max Fault	Three Phase	DOLHILL6 230.00	12,118
29S	Max Fault	Three Phase	DOLHILL7 345.00	8,465
29S	Max Fault	Three Phase	DUGLASV4 138.00	5,504
29S	Max Fault	Three Phase	EL DORADO 13.800	59,534
29S	Max Fault	Three Phase	ELDO EHV 115.00	27,578
29S	Max Fault	Three Phase	ELDORA 345.00	14,116
29S	Max Fault	Three Phase	ELDORA 500.00	29,478
29S	Max Fault	Three Phase	ELDORADO 13.800	85,262
29S	Max Fault	Three Phase	ELDORADO.AT313.800	77,515
29S	Max Fault	Three Phase	FLOURNY4 138.00	18,262
29S	Max Fault	Three Phase	G18-050-GSU134.500	21,485
29S	Max Fault	Three Phase	G18-050-XFM134.500	21,485
29S	Max Fault	Three Phase	G1DOLHIL 24.000	77,214
29S	Max Fault	Three Phase	GEN-2018-050345.00	18,742
29S	Max Fault	Three Phase	GENMOTR4 138.00	19,627
29S	Max Fault	Three Phase	HARTSIS4 138.00	18,012
29S	Max Fault	Three Phase	HAYNVL 115.00	5,804
29S	Max Fault	Three Phase	IPCJEFF4 138.00	14,605
29S	Max Fault	Three Phase	JEFFRSN4 138.00	15,938
29S	Max Fault	Three Phase	LAKEPIN4 138.00	8,608
29S	Max Fault	Three Phase	LBMN1-1 13.200	6,492
29S	Max Fault	Three Phase	LBMN2-1 13.200	6,492
29S	Max Fault	Three Phase	LBMN3-1 13.200	7,266
29S	Max Fault	Three Phase	LEASIDE 1-1 13.800	3,068

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	LEASIDE 2 69.000	14,034
29S	Max Fault	Three Phase	LEASIDE 4 138.00	25,167
29S	Max Fault	Three Phase	LEBROCK7 345.00	17,074
29S	Max Fault	Three Phase	LIEBERM2 69.000	9,479
29S	Max Fault	Three Phase	LIEBERM4 138.00	22,466
29S	Max Fault	Three Phase	LIEBR2-1 13.800	10,607
29S	Max Fault	Three Phase	LIEBR3-1 13.800	63,778
29S	Max Fault	Three Phase	LIEBR4-1 13.800	64,103
29S	Max Fault	Three Phase	LINWOOD4 138.00	25,548
29S	Max Fault	Three Phase	LONGW1-1 13.200	29,213
29S	Max Fault	Three Phase	LONGWD 4 138.00	30,454
29S	Max Fault	Three Phase	LONGWD 7 345.00	30,260
29S	Max Fault	Three Phase	LSS-1 12.470	3,365
29S	Max Fault	Three Phase	LSSOUTH2 69.000	11,818
29S	Max Fault	Three Phase	LSSOUTH4 138.00	17,732
29S	Max Fault	Three Phase	LYDIA 7 345.00	12,977
29S	Max Fault	Three Phase	MARSHL-4 138.00	16,670
29S	Max Fault	Three Phase	MCNEIL 500.00	14,492
29S	Max Fault	Three Phase	MINDEN 115.00	5,116
29S	Max Fault	Three Phase	MT OLIVE 500.00	11,898
29S	Max Fault	Three Phase	MUNZCTY4 138.00	7,595
29S	Max Fault	Three Phase	NGPLTAP4 138.00	12,224
29S	Max Fault	Three Phase	NORAM 4 138.00	18,083
29S	Max Fault	Three Phase	NSUB1_345 345.00	18,638
29S	Max Fault	Three Phase	NSUB2_345 345.00	32,838
29S	Max Fault	Three Phase	NSUB3_345 345.00	13,444
29S	Max Fault	Three Phase	NTAP-1_345 345.00	22,423
29S	Max Fault	Three Phase	NTAP2_345 345.00	32,819
29S	Max Fault	Three Phase	NTAP3_345 345.00	14,012
29S	Max Fault	Three Phase	NWTEX1-1 13.800	28,601
29S	Max Fault	Three Phase	NWTEX2-1 13.800	28,423
29S	Max Fault	Three Phase	NWTXARK4 138.00	25,171
29S	Max Fault	Three Phase	NWTXARK7 345.00	13,481
29S	Max Fault	Three Phase	OAKPH 4 138.00	22,667
29S	Max Fault	Three Phase	PERDUE 4 138.00	11,328
29S	Max Fault	Three Phase	PIRKEY 4 138.00	35,005
29S	Max Fault	Three Phase	PIRKEY 7 345.00	17,609
29S	Max Fault	Three Phase	PIRKY1-1 13.800	29,463
29S	Max Fault	Three Phase	PIRKY2-1 13.800	20,264
29S	Max Fault	Three Phase	PITTSB_4 138.00	9,451
29S	Max Fault	Three Phase	POWELL 4 138.00	21,611
29S	Max Fault	Three Phase	RAINES 4 138.00	17,336
29S	Max Fault	Three Phase	REDBAYOU_6 230.00	9,039
29S	Max Fault	Three Phase	S SHV 2 69.000	20,289
29S	Max Fault	Three Phase	S SHV 4 138.00	26,676
29S	Max Fault	Three Phase	S1201 5 161.00	32,967
29S	Max Fault	Three Phase	S1201T19 13.800	34,520

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	S1206 5 161.00	48,641
29S	Max Fault	Three Phase	S1206T19 13.800	17,840
29S	Max Fault	Three Phase	S1206T29 13.800	30,450
29S	Max Fault	Three Phase	S1216 5 161.00	31,641
29S	Max Fault	Three Phase	S1217 5 161.00	34,539
29S	Max Fault	Three Phase	S1220 5 161.00	29,274
29S	Max Fault	Three Phase	S1229 5 161.00	29,558
29S	Max Fault	Three Phase	S1232 5 161.00	27,283
29S	Max Fault	Three Phase	S1244 5 161.00	22,504
29S	Max Fault	Three Phase	S1278 5 161.00	28,025
29S	Max Fault	Three Phase	S1286 5 161.00	27,217
29S	Max Fault	Three Phase	S1366 5 161.00	16,324
29S	Max Fault	Three Phase	S3455 3 345.00	35,527
29S	Max Fault	Three Phase	S3456 3 345.00	38,798
29S	Max Fault	Three Phase	S3456T49 13.800	25,466
29S	Max Fault	Three Phase	S3458 3 345.00	32,636
29S	Max Fault	Three Phase	S3459 3 345.00	26,731
29S	Max Fault	Three Phase	S901 8 69.000	26,196
29S	Max Fault	Three Phase	S904 8 69.000	8,512
29S	Max Fault	Three Phase	S906 N 8 69.000	32,141
29S	Max Fault	Three Phase	S906 S 8 69.000	32,551
29S	Max Fault	Three Phase	S916 8 69.000	23,080
29S	Max Fault	Three Phase	S924 8 69.000	24,010
29S	Max Fault	Three Phase	S928 8 69.000	16,722
29S	Max Fault	Three Phase	S938 8 69.000	21,249
29S	Max Fault	Three Phase	SAREPTA 115.00	20,082
29S	Max Fault	Three Phase	SAREPTA 24.000	27,100
29S	Max Fault	Three Phase	SAREPTA SS 345.00	10,948
29S	Max Fault	Three Phase	SARPTA 115.00	20,366
29S	Max Fault	Three Phase	SARPY 1G 13.800	39,841
29S	Max Fault	Three Phase	SARPY 2G 13.800	40,292
29S	Max Fault	Three Phase	SARPY 3G 13.800	77,025
29S	Max Fault	Three Phase	SARPY 4G 13.800	40,297
29S	Max Fault	Three Phase	SARPY 5G 13.800	40,382
29S	Max Fault	Three Phase	SCBSD G 4.2000	19,898
29S	Max Fault	Three Phase	SCOTTSV4 138.00	11,506
29S	Max Fault	Three Phase	SEMRSHL4 138.00	12,844
29S	Max Fault	Three Phase	SHERID 500.00	27,743
29S	Max Fault	Three Phase	SLM1 345.00	10,087
29S	Max Fault	Three Phase	SPP-CAP1 345.00	21,448
29S	Max Fault	Three Phase	SPP-CAP2 345.00	21,448
29S	Max Fault	Three Phase	SPP-CAP3 345.00	21,448
29S	Max Fault	Three Phase	SPPMAINBUS 345.00	21,448
29S	Max Fault	Three Phase	SPRHILL4 138.00	8,368
29S	Max Fault	Three Phase	SPRIDGE4 138.00	11,782
29S	Max Fault	Three Phase	SSHV1-1 13.200	7,605
29S	Max Fault	Three Phase	SSHV2-1 13.200	14,881

Season	Model	Fault	Bus	Current (Amps)
29S	Max Fault	Three Phase	STERL 500.00	21,306
29S	Max Fault	Three Phase	STONWAL4 138.00	11,092
29S	Max Fault	Three Phase	SW SHV 4 138.00	36,234
29S	Max Fault	Three Phase	SW SHV 7 345.00	19,698
29S	Max Fault	Three Phase	SWSHV1-1 13.800	29,821
29S	Max Fault	Three Phase	SWSHV2-1 13.800	39,315
29S	Max Fault	Three Phase	TILLRTP4 138.00	8,929
29S	Max Fault	Three Phase	TURK 7 345.00	8,980
29S	Max Fault	Three Phase	UNION SW STA500.00	29,392
29S	Max Fault	Three Phase	VALIANT7 345.00	13,837
29S	Max Fault	Three Phase	WALLAKE4 138.00	12,076
29S	Max Fault	Three Phase	WATL1-1 13.200	10,125
29S	Max Fault	Three Phase	WATL2-1 13.200	16,397
29S	Max Fault	Three Phase	WATLANT2 69.000	9,606
29S	Max Fault	Three Phase	WATLANT4 138.00	7,644
29S	Max Fault	Three Phase	WELSH 7 345.00	22,278
29S	Max Fault	Three Phase	WELSH1-1 18.000	80,478
29S	Max Fault	Three Phase	WELSH3-1 18.000	82,454
29S	Max Fault	Three Phase	WELSHDC1 345.00	21,448
29S	Max Fault	Three Phase	WELSHRE4 138.00	8,360
29S	Max Fault	Three Phase	WESTELC4 138.00	23,021
29S	Max Fault	Three Phase	WILKE1-1 20.000	78,164
29S	Max Fault	Three Phase	WILKE2-1 22.000	15,683
29S	Max Fault	Three Phase	WILKE3-1 22.000	12,526
29S	Max Fault	Three Phase	WILKES 4 138.00	32,421
29S	Max Fault	Three Phase	WILKES 7 345.00	17,833
29S	Max Fault	Three Phase	WILKES-1 13.200	29,481

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 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 delivery points caused potential thermal overloads on the 138 kV systems in the area mainly due to the Lieberman and Knox Lee generation that had to ramp up to serve portions of this new load. SPP considered the following solutions that are listed below.

Solution #1: Total cost $47.5 M

- Add series reactor to Knox Lee – Cherokee 138 kV line
- Rebuild Jefferson – Lieberman 138 kV line (27 miles)
- Rebuild Sabine Mining – SE Marshall 138 kV line (10.52 miles)

Solution #2: Total cost $62.9 M

- Rebuild Cherokee – Tatum 138 kV line (5.09 miles)
- Rebuild Knox Lee – Cherokee 138 kV line (3.35 miles)
- Rebuild Jefferson – Lieberman 138 kV line (27 miles)
- Rebuild Sabine Mining – SE Marshall 138 kV line (10.52 miles)
- Rebuild Rock Hill – Tatum 138 kV line (6.5 miles)

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

Table 3-3: Recommended Upgrade Solution 1

New Upgrade Description*	Mileage	MVA (Rate B)	Date Needed**	Host Transmission Owner	Estimated Cost***
Add series reactor to Knox Lee – Cherokee 138 kV line	-	-	9/1/2028	AEP	$2,500,000
Rebuild Jefferson – Lieberman 138 kV line	27	260	9/1/2028	AEP	$32,400,000
Rebuild Sabine Mining – SE Marshall 138 kV line	10.52	302	6/1/2030	AEP	$12,624,000
TOTAL NEW UPGRADE COST					**$47,524,000**

*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 3-3.

***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).

LIMITED OPERATIONAL IMPACT STUDY

SPP performed a limited operational impact study (LOIS) to determine how much of the load in this DPNS study could be added without the addition of any network upgrades. Since the DPNS included loads at multiple delivery points, the LOIS studied the impact of the new loads being scaled in a pro rata format. SPP determined that 600 MW (200 MW at each of the delivery points) could be added to the system before network upgrades would be required.

SECTION 4: CONCLUSION

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

- Add series reactor to Knox Lee – Cherokee 138 kV line
- Rebuild Jefferson – Lieberman 138 kV line (27 miles)
- Rebuild Sabine Mining – SE Marshall 138 kV line (10.52 miles)

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

SPP determined that 600 MW of the load in this study could be added to the SPP system before any network upgrades would be required. Once the upgrades in Table 3-3 are in-service, the full amount of the load in this DPNS study can be added to the system.