



DELIVERY POINT NETWORK STUDY DPA-2026-MAY-2350 SOFIDEL

By SPP Engineering, Transmission Services

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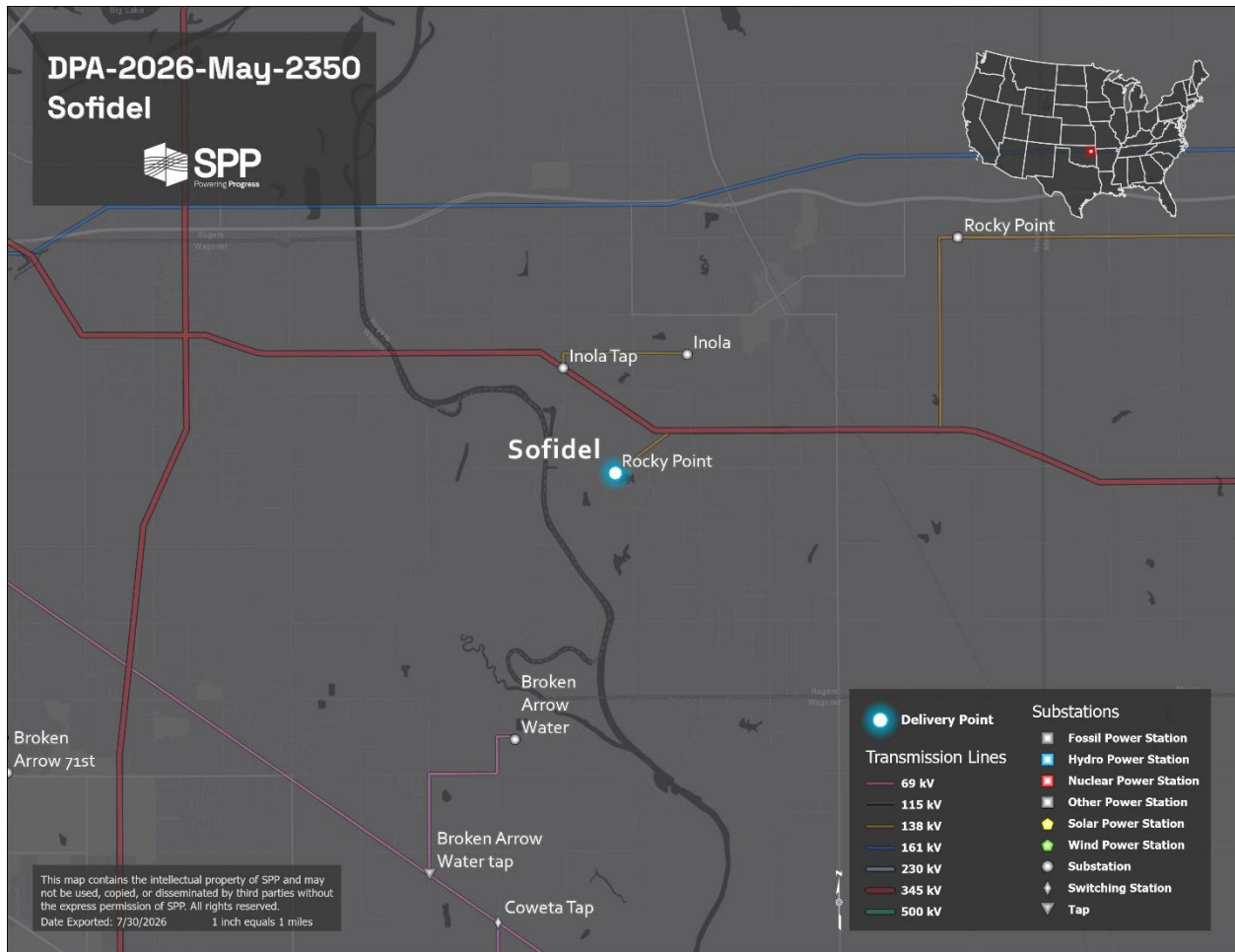
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SECTION 1: INTRODUCTION

This report outlines the results of an evaluation of regional transmission impacts from delivery point request DPA-2026-May-2350. The requesting entity plans to add new load (Sofidel) to the existing delivery point called Rocky Point with an in-service date of 6/1/2028. The Rocky Point delivery point is in the American Electric Power (AEP) Transmission System.



The load flow models used for the evaluation were 2026 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
 - 2026 ITP Base Reliability Model Series
 - Model years 2028, 2030, and 2035
 - Summer Peak (2028S, 2030S, and 2035S), Winter Peak (2028W, 2030W, and 2035W), Summer Shoulder (2030SH)
 - 2026 ITP Short Circuit Model Series
 - 2030 Summer Max Fault
 - 2026 Transmission System Planning (TSP) Dynamic Model Series
 - 2028 and 2035 Summer Peak Base and Change Cases

Table 2-1: Study Cases

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
2026ITPFinal-28S.sav	2028	Summer Peak	Base Reliability	Base Case
2026ITPFinal-28W.sav	2028	Winter Peak	Base Reliability	Base Case
2026ITPFinal-30S.sav	2030	Summer Peak	Base Reliability	Base Case
2026ITPFinal-30SH.sav	2030	Summer Shoulder	Base Reliability	Base Case
2026ITPFinal-30W.sav	2030	Summer Peak	Base Reliability	Base Case
2026ITPFinal-35S.sav	2035	Summer Peak	Base Reliability	Base Case
2026ITPFinal-35W.sav	2035	Winter Peak	Base Reliability	Base Case
2026ITPFinal-28S_2350.sav	2028	Summer Peak	Base Reliability	Rocky Point = 45/14.79
2026ITPFinal-28W_2350.sav	2028	Winter Peak	Base Reliability	Rocky Point = 45/14.79
2026ITPFinal-30S_2350.sav	2030	Summer Peak	Base Reliability	Rocky Point = 45/14.79
2026ITPFinal-30SH_2350.sav	2030	Summer Shoulder	Base Reliability	Rocky Point = 45/14.79
2026ITPFinal-30W_2350.sav	2030	Winter Peak	Base Reliability	Rocky Point = 45/14.79
2026ITPFinal-35S_2350.sav	2035	Summer Peak	Base Reliability	Rocky Point = 45/14.79

Case Name	Study Year	Season	Scenario	Load (MW/MVAR)
2026ITPFinal-35W_2350.sav	2035	Winter Peak	Base Reliability	Rocky Point = 45/14.79

- 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 Rocky Point delivery point change to determine thermal and voltage violations resulting from the load addition to the Transmission System.
- Dynamics Analysis
 - Assumptions
 - 2026 TPL Dynamics Model Series
 - 2028 and 2035 Summer Peak Base and Change Cases
 - Analyses
 - Fast Fault Screening using Physical and Operational Margins Studio
- Short Circuit Analysis
 - Assumptions
 - Used 2026 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 load at the Rocky Point delivery point. Table 3-1 details the potential thermal violations and Table 3-2 details the potential voltage violations resulting from the load addition.

Table 3-1: Potential Thermal Violations

Model	Voltage Level (kV)	Facility Name	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
28S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - CATOOSA4 - 1	140/140	149.66	106.9
28S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:503900-1 + P12:138:AEPW:509752-509790-1	140/140	149.46	106.7
28S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - GUAVA 4 - 1	140/140	142.52	101.8
28S	115	L GROVE3 - MOONLIGHTTP3	ROCKPT-4 - GUAVA 4 - 1	140/140	142.52	101.8
28S	115	L GROVE3 - MOONLIGHTTP3	OPEN BRANCH FROM BUS 512635 TO BUS 512648 CKT 1 OPEN BRANCH FROM BUS 512635 TO BUS 512648 CKT 2	140/140	140.14	100.1
28S	115	L GROVE3 - MOONLIGHTTP3	P11:18:AEPW:511955-G2+ P12:138:AEPW:509752-509790-1	140/140	149.46	106.7
28S	115	L GROVE3 - MOONLIGHTTP3	P11:18:AEPW:511957-G3 + P12:138:AEPW:509752-509790-1	140/140	149.46	106.7
28S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:511958-S3+ P12:138:AEPW:509752-509790-1	140/140	149.46	106.7
28S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:511956-S2+ P12:138:AEPW:509752-509790-1	140/140	149.46	106.7

Model	Voltage Level (kV)	Facility Name	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
30S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:503900-1 + P12:138:AEPW:509752-509790-1	140/140	151.59	108.2
30S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - CATOOSA4 - 1	140/140	151.2	108
30S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - GUAVA 4 - 1	140/140	143.92	102.8
30S	115	L GROVE3 - MOONLIGHTTP3	ROCKPT-4 - GUAVA 4 - 1	140/140	143.92	102.8
30S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:503900-1 + P12:138:AEPW:510437-510442-1	140/140	142.59	101.8
35S	115	L GROVE3 - MOONLIGHTTP3	P11:21:OKGE:514936-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - CATOOSA4 - 1	140/140	152.18	108.7
35S	115	L GROVE3 - MOONLIGHTTP3	INOLATP4 - GUAVA 4 - 1	140/140	144.9	103.5
35S	115	L GROVE3 - MOONLIGHTTP3	ROCKPT-4 - GUAVA 4 - 1	140/140	144.9	103.5
35S	115	L GROVE3 - MOONLIGHTTP3	P11:21:OKGE:514936-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514994-1T+ P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514994-1T+ P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-1T + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-1T + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-2T + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-2T + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2

Model	Voltage Level (kV)	Facility Name	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-3T + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:138:OKGE:514941-3T + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:23:OKGE:514939-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:23:OKGE:514939-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:515986-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:515986-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:345:OKGE:515045-5T + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:345:OKGE:515045-5T + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:1:OKGE:515907-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:1:OKGE:515907-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:516361-1+ P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:516361-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2

Model	Voltage Level (kV)	Facility Name	Contingency Name	Rate A, Rate B (MVA)	Max Flow (MVA)	Change Case Max Loading (%)
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:516360-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:18:OKGE:516360-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:503900-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:503900-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2
35S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:511854-1 + P12:138:AEPW:509752-509790-1	140/140	152.72	109
35S	115	L GROVE3 - MOONLIGHTTP3	P11:14:AEPW:511854-1 + P12:138:AEPW:510437-510442-1	140/140	144.59	103.2

Table 3-2: Potential Voltage Violations

Year	Season	Facility Name	Facility Voltage (kV)	Contingency Name	Voltage Maximum (pu)	Voltage Minimum (pu)	Bus Voltage (pu)
2035	Winter	ALTO 4	138	TENRUSK7 - CROCKET7 - 1	1.05	0.92	0.91999

SHORT CIRCUIT

SPP performed short circuit analysis for the 2030 Summer Peak with the new load addition. The analysis identified the currents as listed in Table 3-3.

Table 3-3: Short Circuit Results

Season	Model	Fault	Bus	Current (Amps)
30S	Max Fault	Three Phase	SPNKY CK4 138.00	28,313
30S	Max Fault	Three Phase	TER-NIT4 138.00	18,656
30S	Max Fault	Three Phase	LLANE-E4 138.00	20,049

Season	Model	Fault	Bus	Current (Amps)
30S	Max Fault	Three Phase	INOLA 4 138.00	7,921
30S	Max Fault	Three Phase	INOLATP4 138.00	9,303
30S	Max Fault	Three Phase	LLAN WT4 138.00	27,147
30S	Max Fault	Three Phase	LLAN ET4 138.00	24,725
30S	Max Fault	Three Phase	BA.N-ST4 138.00	24,427
30S	Max Fault	Three Phase	CATOOSA4 138.00	37,246
30S	Max Fault	Three Phase	BCIRCLE2 69.000	9,739
30S	Max Fault	Three Phase	CATOOSA2 69.000	10,852
30S	Max Fault	Three Phase	E 11TH ST 4 138.00	29,603
30S	Max Fault	Three Phase	TERNITP4 138.00	20,347
30S	Max Fault	Three Phase	CDC-ET 4 138.00	25,208
30S	Max Fault	Three Phase	PCATSAT4 138.00	21,366
30S	Max Fault	Three Phase	OWASO2_4 138.00	15,216
30S	Max Fault	Three Phase	CLARTOK4 138.00	15,448
30S	Max Fault	Three Phase	CATOO1-1 13.800	17,800
30S	Max Fault	Three Phase	E41ST_W4 138.00	21,695
30S	Max Fault	Three Phase	OWAS88_4 138.00	17,884
30S	Max Fault	Three Phase	141PINE4 138.00	22,274
30S	Max Fault	Three Phase	BIRDCREE-4 138.00	20,961
30S	Max Fault	Three Phase	MCARBDE4 138.00	7,701
30S	Max Fault	Three Phase	CHOUTEA4 138.00	6,692
30S	Max Fault	Three Phase	COOYYAH4 138.00	6,874
30S	Max Fault	Three Phase	EXPCLAR4 138.00	4,909
30S	Max Fault	Three Phase	PRY-JCT4 138.00	9,001
30S	Max Fault	Three Phase	PRY_CRK4 138.00	7,075
30S	Max Fault	Three Phase	ROCKPT-4 138.00	8,194
30S	Max Fault	Three Phase	CATSAGD4 138.00	37,246
30S	Max Fault	Three Phase	CATSAGR4 138.00	37,246
30S	Max Fault	Three Phase	CATSAGR5 161.00	26,220
30S	Max Fault	Three Phase	CATTER1 1 13.800	5,988
30S	Max Fault	Three Phase	CATTER2 1 13.800	6,069
30S	Max Fault	Three Phase	CATTER3 1 13.800	10,079

STABILITY

SPP performed a Fast Fault Screening (FFS) using the 2028 and 2035 Summer Peak for the base case and change case models. The change case models include the Rocky Point 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 Sofidel load at the existing Rocky Point delivery point caused potential thermal overloads and low voltages on the 115 kV and 138 kV systems around Rocky Point. SPP worked with AEP on multiple solutions. The solutions are listed below.

Solution #1: Rebuild (Total cost \$3.35M)

- Rebuild Locust Grove to Moonlight 115 kV circuit 1
- Alto 138 kV 1 MVAR capacitor bank

Solution #2 New Line (Total cost \$6.39M)

- New Locust Grove to Moonlight 115 kV circuit 2
- Alto 138 kV 1 MVAR capacitor bank

SPP chose to move forward with Solution #1. This solution solves all issues identified in Table 3-1 and Table 3-2 in the lowest cost per relief score.

Table 3-4: Recommended Upgrade Solution 1

New Upgrade Description*	Mileage	MVA (Rate B)	Date Needed**	Host Transmission Owner	Estimated Cost***
Rebuild Locust Grove to Moonlight 115 kV circuit 1	4.25	> 152	6/1/2028	AEP	\$3,278,875
Alto 138 kV 1 MVAR capacitor bank	-	-	12/1/2035	East Texas Electric Cooperative	\$70,500
TOTAL NEW UPGRADE COST					\$3,349,375

*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 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 Sofidel load addition. The study shows that the following upgrades are required to reliably serve the load addition:

- Rebuild Locust Grove to Moonlight 115 kV circuit 1
- Alto 138 kV 1 MVAR capacitor bank

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