



Screening Study

SPP-LTSR-2013-009

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SPP Engineering, SPP Transmission Service Studies



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Executive Summary

Southwestern Public Service Company has requested a Screening Study to determine the impacts on SPP facilities due to the Long Term Service Requests for 250 MW. The service type requested for this screening study is Long Term Service Request (LTSR). OASIS# 78509752 was studied as one request from 12/1/2014 to 12/1/2034.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the LTSR request while maintaining system reliability. The LTSR request was studied using two system scenarios. The service was modeled by the transfers from SPS to SPS. The two scenarios were studied to capture system limitations caused or impacted by the requested service. An analysis was conducted on the planning horizon from 12/1/2014 to 12/1/2034.

The service was modeled from SPS to SPS. Facilities on the SPP system were identified for the requested service due to the SPP Study Methodology criteria. Tables 1 and 2 summarize the results of the screening study analysis for the transfers for the scenarios listed in the table. Table 1 lists SPP thermal transfer limitations identified. Table 2 lists SPP voltage transfer limitations identified. Table 3 lists the network upgrades required to mitigate the limitations impacted by this request.

Introduction

Southwestern Public Service Company has requested a screening study to determine the impacts on SPP facilities for the Long Term Service Requests for 250 MW.

The purpose of the LTSR Option Screening Study is to provide the Eligible Customer with an approximation of the transmission remediation costs of each potential LTSR and a reasonable cost differential between alternatives for the purpose of an Eligible Customer's ranking of its potential LTSRs. The results of the Screening Study are not binding and the Eligible Customer retains the rights to enter the Aggregate Transmission Service Study. The Screening Study results will not assess the third party impacts and upgrades required. Service will not be granted based on the Screening Study for potential LTSRs on the Transmission System. To obtain a Service Agreement, Eligible Customers must apply for service and follow the application process set forth in Parts II and III of the Tariff.

This study includes steady-state contingency analysis (PSS/E function ACCC). The steady-state analysis considers the impact of the request on transmission line and transformer loadings for outages of single transmission lines, transformers, and generating units, and selected multiple transmission lines and transformers on the SPP and first-tier third party systems.

The LTSR request was studied using two system scenarios. The service was modeled by a transfer from SPS to SPS. The two scenarios were studied to capture the system limitations caused or impacted by the requested service. Scenario 0 includes projected usage of transmission service included in the SPP 2012 Series Cases. Scenario 5 includes transmission service not already included in the SPP 2012 Series Cases.

Study Methodology

Description

The facility study analysis was conducted to determine the steady-state impact of the requested service on the SPP system. The steady-state analysis was performed to ensure current SPP Criteria and NERC Reliability Standards requirements are fulfilled. SPP conforms to NERC Reliability Standards, which provide strict requirements related to voltage violations and thermal overloads during normal conditions and during a contingency. NERC Standards require all facilities to be within normal operating ratings for normal system conditions and within emergency ratings after a contingency.

Normal operating ratings and emergency operating ratings monitored are Rate A and B in the SPP Model Development Working Group (MDWG) models, respectively. The upper bound and lower bound of the normal voltage range monitored is 105% and 95%. The upper bound and lower bound of the emergency voltage range monitored is 105% and 90%. Transmission Owner voltage monitoring criteria is used if more restrictive. The SPS Tuco 230 kV bus voltage is monitored at 92.5% due to pre-determined system stability limitations. The WERE Wolf Creek 345 kV bus voltage is monitored at 103.5% and 98.5% due to transmission operating procedure.

The contingency set includes all SPP control area branches and ties 69 kV and above; first tier non-SPP control area branches and ties 115 kV and above; any defined contingencies for these control areas; and generation unit outages for the control areas with SPP reserve share program redispatch. The monitor elements include all SPP control area branches, ties, and buses 69 kV. and above,. Voltage monitoring was performed for SPP control area buses 69 kV and above.

A 3 % transfer distribution factor (TDF) cutoff was applied to all SPP control area facilities. For voltage monitoring, a 0.02 per unit change in voltage must occur due to the transfer or modeling upgrades to be considered a valid limit to the transfer.

Model Development

SPP used four seasonal models to study the SPS to SPS 250 MW request for the requested service period. The following SPP Transmission Expansion Plan 2012 Build 1 Cases were used to study the impact of the requested service on the transmission system:

2014/15 Winter Peak (14WP)
2018 Summer Peak (18SP)
2018/19 Winter Peak (18WP)
2023 Summer Peak (23SP)
2023/24 Winter Peak (23WP)

The Summer Peak models apply to June through September, and the Winter Peak models apply to December through March.

The chosen base case models were modified to reflect the current modeling information. From the six seasonal models, two system scenarios were developed. Scenario 0 includes projected usage of transmission included in the SPP 2012 Series Cases. Scenario 5 includes transmission not already included in the SPP 2012 Series Cases.

Transmission Request Modeling

Network Integration Transmission Service requests are modeled as Generation to Load transfers in addition to Generation to Generation because the requested Network Integration Transmission Service is a request to serve network load with the new designated network resource, and the impacts on the Transmission System are determined accordingly. Generation to Generation transfers are accomplished by developing a post-transfer case for comparison by dispatching the request source and redispatching the request sink.

Transfer Analysis

Using the selected cases both with and without the requested transfer modeled, the PSS/E Activity ACCC was run on the cases and compared to determine the facility overloads caused or impacted by the transfer. Transfer distribution factor cutoffs and voltage threshold (0.02 change) were applied to determine the impacted facilities. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

Study Results

Study Analysis Results

Tables 1 and 2 contain the initial steady-state analysis results of the LTSR. The tables are attached to the end of this report, if applicable. The tables identify the scenario and season in which the event occurred, the transfer amount studied, the facility control area location, applicable ratings of the thermal transfer limitations and voltage transfer limitations, and the loading percentage and voltage per unit (pu).

Table 1 lists the SPP thermal transfer limitations caused or impacted by the 250 MW requested transfers for applicable scenarios. Solutions are identified for the limitations in this table.

Table 2 lists the SPP voltage transfer limitations caused or impacted by the 250 MW requested transfers for applicable scenarios. Solutions are identified for the violations in this table.

Table 3 lists the network upgrades required to mitigate the limitations caused or impacted by this request. Engineering and construction costs are provided for assigned upgrades in this table.

Conclusion

The results of the screening study show that limiting constraints exist within the SPP regional transmission system for the requested transfer of 250 MW. The next steps are to WITHDRAW the request on OASIS and, if desired, enter a new OASIS request into the aggregate study queue.

The results contained in this study are for informational purposes only. Service will not be granted based on the Screening Study results. To obtain a Service Agreement, Eligible Customers must apply for service and follow the application processes set forth in Parts II and III of the Tariff and enter the Aggregate Study process. The results of the Aggregate Study may vary from the results of this screening study.

As a final step in this process, it is requested that the customer WITHDRAW the LTSR screening study request on OASIS.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASE SETTINGS:

- Solutions: Fixed slope decoupled Newton-Raphson solution (FDNS)
- Tap adjustment: Stepping
- Area Interchange Control: Tie lines and loads
- Var limits: Apply immediately
- Solution Options:
 - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

ACCC CASE SETTINGS:

- Solutions: AC contingency checking (ACCC)
- MW mismatch tolerance: 0.5
- System intact rating: Rate A
- Contingency case rating: Rate B
- Percent of rating: 100
- Output code: Summary
- Min flow change in overload report: 3mw
- Excl'd cases w/ no overloads from report: YES
- Exclude interfaces from report: NO
- Perform voltage limit check: YES
- Elements in available capacity table: 60000
- Cutoff threshold for available capacity table: 99999.0
- Min. contng. Case Vltg chng for report: 0.02
- Sorted output: None
- Newton Solution:
- Tap adjustment: Stepping
- Area interchange control: Tie lines and loads (Disabled for generator outages)
- Var limits: Apply immediately
- Solution options:
 - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

Scenario	Season	From Area	To Area	Monitored Branch Over 100% Rate B	Transfer Case % Loading	TDF (%)	Outaged Branch Causing Overload	Upgrade Name	Solution
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	Indiana - Stanton 115 kV Ckt 1	Reconductor 1.5 miles line from Indiana to Stanton.
5	23WP	SPS	SPS	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	Indiana - Stanton 115 kV Ckt 1	Reconductor 1.5 miles line from Indiana to Stanton.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Indiana - Stanton 115 kV Ckt 1	Reconductor 1.5 miles line from Indiana to Stanton.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	Carlisle - SP Erskine 115 kV Ckt 1	Reconductor 1.49 miles from Carlisle to SP-Erskine.
5	23WP	SPS	SPS	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	Carlisle - SP Erskine 115 kV Ckt 1	Reconductor 1.49 miles from Carlisle to SP-Erskine.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	102.0	9.74%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	Replace Terminal Equipment
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	MULTI - Tucco-New Deal 345 kV	New 345/155kV transformer between Tucco and Stanton. Build new 345kV line between Tucco and high side of new transformer between Tucco and Stanton. Build new 115kV line between Stanton and low side of new transformer between Tucco and Stanton.
5	23WP	SPS	SPS	EDDY COUNTY INTERCHANGE - EDDY NORTH 6230.00 230KV CKT 1	102.9	31.78%	TOLK STATION WEST - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Carlisle - SP Erskine 115 kV Ckt 1	Reconductor 1.49 miles from Carlisle to SP-Erskine.
5	18SP	SPS	SPS	EDDY COUNTY INTERCHANGE (WH XHS70551) 230/115/13.2KV TRANSFORMER CKT 1	119.7	3.96%	EDDY COUNTY INTERCHANGE (UPDATE LATER) 230/115/13.2KV TRANSFORMER CKT 2	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23SP	SPS	SPS	EDDY COUNTY INTERCHANGE (WH XHS70551) 230/115/13.2KV TRANSFORMER CKT 1	137.0	3.96%	EDDY COUNTY INTERCHANGE (UPDATE LATER) 230/115/13.2KV TRANSFORMER CKT 2	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	EDDY COUNTY INTERCHANGE (WH XHS70551) 230/115/13.2KV TRANSFORMER CKT 1	127.0	3.65%	EDDY COUNTY INTERCHANGE (UPDATE LATER) 230/115/13.2KV TRANSFORMER CKT 2	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	EDDY COUNTY INTERCHANGE (WH XHS70551) 230/115/13.2KV TRANSFORMER CKT 1	102.5	4.66%	EDDY COUNTY INTERCHANGE - SEVEN RIVERS INTERCHANGE 230KV CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	14WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	103.6	4.28%	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	Carlisle Interchange - Wolfforth Interchange 230 kV Ckt 1	Build 15 miles of new 230 kV line from Carlisle to Wolfforth South and install necessary terminal equipment.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	115.6	4.18%	OCHILTREE (H TP80219401) 230/115/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	115.5	4.18%	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	113.5	4.19%	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	109.3	6.43%	SPP-SWPS-K31	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	105.8	4.19%	SPP-SWPS-04	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	103.1	3.60%	BASE CASE	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	121.1	4.20%	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	114.0	3.61%	OCHILTREE (H TP80219401) 230/115/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	113.8	3.61%	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	112.1	4.20%	SPP-SWPS-04	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	18WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	111.2	3.75%	SPP-SWPS-K31	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	140.8	4.18%	OCHILTREE (H TP80219401) 230/115/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	140.5	4.18%	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	133.9	4.18%	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	131.8	6.41%	SPP-SWPS-K31	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	125.3	4.18%	SPP-SWPS-04	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	111.1	4.00%	SPP-SWPS-02A	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	108.1	3.60%	BASE CASE	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23SP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	106.8	3.60%	BEAVER COUNTY SUB - Tri County REC-Anthony Sub Tap 115KV CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	118.4	4.19%	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	114.6	3.59%	OCHILTREE (H TP80219401) 230/115/13.2KV TRANSFORMER CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	114.4	3.59%	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	110.5	3.75%	SPP-SWPS-K31	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	109.4	4.19%	SPP-SWPS-04	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	132.6	27.19%	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	127.3	29.25%	PLANT X STATION - SUNDOWN INTERCHANGE 230KV CKT 1	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	118.4	25.81%	GEN525562 1-TOLK GEN #2 24 kV	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	111.4	25.81%	BASE CASE	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	107.4	26.11%	SPP-SWPS-V15	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	106.0	25.64%	SPP-AEPW-32	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	105.0	25.58%	SPP-SWPS-T71	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	100.7	25.81%	JOHNSON DRAW - Mid-America Pipeline Company Sub 115KV CKT 1	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1	Carlisle Interchange - Wolfforth Interchange 230 kV Ckt 1	Build 15 miles of new 230 kV line from Carlisle to Wolfforth South and install necessary terminal equipment.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Carlisle Interchange - Wolfforth Interchange 230 kV Ckt 1	Build 15 miles of new 230 kV line from Carlisle to Wolfforth South and install necessary terminal equipment.
5	23WP	SPS	SPS	LUBBOCK EAST INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	105.3	11.94%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23SP	SPS	SPS	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	108.9	32.76%	SPP-SWPS-K37	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	Indiana - SP Erskine 115 kV Ckt 1 Accelerate	Reconductor 4 miles from Indiana to SP-Erskine.
5	23SP	SPS	SPS	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	108.9	32.76%	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1	Amoco - Tucco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tucco to Amoco.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Potter to Tok 345 kV	Build 111 mile 345 kV line from Potter to Tok. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades.
5	23WP	SPS	SPS	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	Indiana - SP Erskine 115 kV Ckt 1 Accelerate	Reconductor 4 miles from Indiana to SP-Erskine.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Potter to Tok 345 kV	Build 111 mile 345 kV line from Potter to Tok. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades.
5	23WP	SPS	SPS	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	119.5	6.44%	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Indiana - SP Erskine 115 kV Ckt 1 Accelerate	Reconductor 4 miles from Indiana to SP-Erskine.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 2	124.1	4.87%	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1	MULTI - Tucco-New Deal 345 kV	New 345/155kV transformer between Tucco and Stanton. Build new 345kV line between Tucco and high side of new transformer between Tucco and Stanton. Build new 115kV line between Stanton and low side of new transformer between Tucco and Stanton.
5	23WP	SPS	SPS	TUCO INTERCHANGE (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1	121.5	4.76%	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 2	MULTI - Tucco-New Deal 345 kV	New 345/155kV transformer between Tucco and Stanton. Build new 345kV line between Tucco and high side of new transformer between Tucco and Stanton. Build new 115kV line between Stanton and low side of new transformer between Tucco and Stanton.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cimarron - Mathewson 345 kV Ckt 1 Accelerate	Build new 16 mile 345 kV line from Mathewson to Cimarron.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cimarron - Mathewson 345 kV Ckt 1 Accelerate	Build new 16 mile 345 kV line from Mathewson to Cimarron.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Ek City 345/230 kV	Expand Ek City substation (or build new station). Install a 345/230 kV 675 MVA transformer at Ek City.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Ek City 345/230 kV	Expand Ek City substation (or build new station). Install a 345/230 kV 675 MVA transformer at Ek City.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Ek City to Gracemont 345KV AEPW	Build new 46.5 mile 345 kV line from Ek City to Gracemont (AEP portion).
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%			

5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Clark County - Thistle 345 kv dbi Ckt	Build a new 86 mile double circuit 345 kv line with at least 3000 A capacity from the Thistle 345 kv substation to the new Clark County substation. Build a new 345 kv substation at Thistle with a ring bus and necessary terminal equipment.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Clark County - Thistle 345 kv dbi Ckt	Build a new 86 mile double circuit 345 kv line with at least 3000 A capacity from the Thistle 345 kv substation to the new Clark County substation. Build a new 345 kv substation at Thistle with a ring bus and necessary terminal equipment.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Hitchland - Woodward 345 kv dbi Ckt OKGE	Build a new 92 mile double circuit 345 kv line with at least 3000 A capacity from the Woodward District EHV substation to the SPS interception from the Hitchland substation. Upgrade the Woodward District EHV substation with the necessary breakers
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Hitchland - Woodward 345 kv dbi Ckt OKGE	Build a new 92 mile double circuit 345 kv line with at least 3000 A capacity from the Woodward District EHV substation to the SPS interception from the Hitchland substation. Upgrade the Woodward District EHV substation with the necessary breakers
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Hitchland - Woodward 345 kv dbi Ckt SPS	Build 30 mile double circuit 345 kv line with at least 3000 A capacity from the Hitchland substation to the OGE interception point from the Woodward District EHV substation. Upgrade the Hitchland substation with the necessary breakers and terminal
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Hitchland - Woodward 345 kv dbi Ckt SPS	Build 30 mile double circuit 345 kv line with at least 3000 A capacity from the Hitchland substation to the OGE interception point from the Woodward District EHV substation. Upgrade the Hitchland substation with the necessary breakers and terminal
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Spearville - Clark County 345 kv dbi Ckt	Build a new 36 mile double circuit 345 kv line with at least 3000 A capacity from the Spearville substation to the new Clark County substation. Build the Clark County 345 kv substation with a ring bus and necessary terminal equipment.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Spearville - Clark County 345 kv dbi Ckt	Build a new 36 mile double circuit 345 kv line with at least 3000 A capacity from the Spearville substation to the new Clark County substation. Build the Clark County 345 kv substation with a ring bus and necessary terminal equipment.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Wichita 345 kv dbi Ckt PW	Build a new 78 mile double circuit 345 kv line with at least 3000 A capacity from the Wichita substation to the new Thistle 345 kv substation.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Wichita 345 kv dbi Ckt PW	Build a new 78 mile double circuit 345 kv line with at least 3000 A capacity from the Wichita substation to the new Thistle 345 kv substation.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Wichita 345 kv dbi Ckt WERE	Upgrade the Wichita substation with the necessary breakers and terminal equipment to accommodate two new 345 kv circuits from the new Thistle 345 kv substation
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Wichita 345 kv dbi Ckt WERE	Upgrade the Wichita substation with the necessary breakers and terminal equipment to accommodate two new 345 kv circuits from the new Thistle 345 kv substation
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Woodward 345 kv dbi Ckt OKGE	Build a new 79 mile double circuit 345 kv line with at least 3000 A capacity from the Woodward District EHV substation to the Kansas/Oklahoma state border towards the Thistle substation. Upgrade the Woodward District EHV substation with the
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Woodward 345 kv dbi Ckt OKGE	Build a new 79 mile double circuit 345 kv line with at least 3000 A capacity from the Woodward District EHV substation to the Kansas/Oklahoma state border towards the Thistle substation. Upgrade the Woodward District EHV substation with the
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Woodward 345 kv dbi Ckt PW	Build a new 30 mile double circuit 345 kv line with at least 3000 A capacity from the Thistle substation to the Kansas/Oklahoma state border towards the Woodward District EHV substation.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Thistle - Woodward 345 kv dbi Ckt PW	Build a new 30 mile double circuit 345 kv line with at least 3000 A capacity from the Thistle substation to the Kansas/Oklahoma state border towards the Woodward District EHV substation.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Tuco - Woodward 345 kv line OKGE	Build new 345 kv line from Woodward EHV to Border - Project costs now include Border reactor substation
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Tuco - Woodward 345 kv line OKGE	Build new 345 kv line from Woodward EHV to Border - Project costs now include Border reactor substation
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Tuco - Woodward 345 kv line SPS	Build new 345 kv line from Tuco to OGE Border station near TX/OK StateLine. Install line reactor outside Border station and line reactors at Tuco
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Line - Tuco - Woodward 345 kv line SPS	Build new 345 kv line from Tuco to OGE Border station near TX/OK StateLine. Install line reactor outside Border station and line reactors at Tuco.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Mathewson - Tatonga 345 kv Ckt 2 Accelerate	Build new 61 mile Tatonga - Mathewson 345 kv line.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Mathewson - Tatonga 345 kv Ckt 2 Accelerate	Build new 61 mile Tatonga - Mathewson 345 kv line.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Mathewson 345 kv Accelerate	Build new Mathewson 345 kv substation at the intersection of the Woodring-Cimarron and the existing Northwest - Tatonga 345 kv lines.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Mathewson 345 kv Accelerate	Build new Mathewson 345 kv substation at the intersection of the Woodring-Cimarron and the existing Northwest - Tatonga 345 kv lines.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Tatonga - Woodward EHV 345 kv Ckt 2 Accelerate	Build new 49-mile Woodward EHV - Tatonga 345 kv Ckt 2 line.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Tatonga - Woodward EHV 345 kv Ckt 2 Accelerate	Build new 49-mile Woodward EHV - Tatonga 345 kv Ckt 2 line.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	XFR - Thistle 345/138 kv	Install a 400 MVA 345/138 kv transformer at the new 345 kv Thistle substation.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	XFR - Thistle 345/138 kv	Install a 400 MVA 345/138 kv transformer at the new 345 kv Thistle substation.
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co - Gentleman 345 kv Ckt1	Build new 345 kv Transmission Line from GGS 345 kv Substation to a new Cherry County 345 kv Substation (76 miles).
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co - Gentleman 345 kv Ckt1	Build new 345 kv Transmission Line from GGS 345 kv Substation to a new Cherry County 345 kv Substation (76 miles).
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co - Holt Co 345 kv Ckt1	Build new 345 kv Transmission Line from new Cherry County 345 kv Substation to new 345 kv Holt County Substation. (Estimated 146 miles).
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co - Holt Co 345 kv Ckt1	Build new 345 kv Transmission Line from new Cherry County 345 kv Substation to new 345 kv Holt County Substation. (Estimated 146 miles).
5	18WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	106.4	4.17%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co 345 kv Terminal Upgrades	Build new Cherry County 345 kv Substation.
5	23WP	SPS	SPS	POTTER COUNTY INTERCHANGE (WAIJK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	100.6	4.33%	G12-038 TAP 345.00 - TUCO INTERCHANGE 345KV CKT 1	Cherry Co 345 kv Terminal Upgrades	Build new Cherry County 345 kv Substation.

Scenario	Season	Area	Monitored Bus with Violation	Transfer Case Voltage (PU)	Outaged Branch Causing Overload	Upgrade Name	Solution
5	23SP	SPS	Tri County REC-Whiting Sub 115KV	0.80	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t
5	23SP	SPS	KEYES SUB 69KV	0.77	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t
5	23SP	SPS	EVA REGULATOR 69KV	0.73	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t
5	23SP	SPS	ELKHART SUB 69KV	0.75	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2
5	23SP	SPS	ELKHART TAP 69KV	0.79	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2
5	23SP	SPS	EVA REGULATOR 69KV	0.73	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2
5	23SP	SPS	KEYES SUB 69KV	0.77	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2
5	23SP	SPS	Tri County REC-Whiting Sub 115KV	0.80	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2
5	23SP	SPS	ELKHART TAP 69KV	0.79	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t
5	23SP	SPS	ELKHART SUB 69KV	0.75	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t
5	23SP	SPS	Tri County REC-Whiting Sub 115KV	0.80	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line
5	23SP	SPS	KEYES SUB 69KV	0.77	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line
5	23SP	SPS	EVA REGULATOR 69KV	0.73	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line
5	23SP	SPS	ELKHART TAP 69KV	0.79	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line
5	23SP	SPS	ELKHART SUB 69KV	0.75	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)	Estimated Engineering & Construction Cost
SPS	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	Rebuild 26.89 miles	10/1/2019	10/1/2021	\$40,904,962

Construction Pending Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)	Estimated Engineering & Construction Cost
OKGE	Beaver County Substation Expansion	Expand Beaver County Substation to tap the Hitchland to Woodward circuit 2	6/1/2018	6/1/2018	\$ 14,630,926
OKGE	Cimarron - Mathewson 345 kV Ckt 1 Accelerate	Build new 16 mile 345 kV line from Mathewson to Cimarron.	10/1/2014	6/1/2015	\$ 32,780,617
OKGE	Mathewson - Tatonga 345 kV Ckt 2 Accelerate	Build new 61 mile Tatonga - Mathewson 345 kV line.	10/1/2014	6/1/2015	\$ 82,139,900
OKGE	Mathewson 345 kV Accelerate	Build new Mathewson 345 kV substation at the intersection of the Woodring-Cimarron and the existing Northwest - Tatonga 345 kV lines.	10/1/2014	6/1/2015	\$ 20,169,602
OKGE	Tatonga - Woodward EHV 345 kV Ckt 2 Accelerate	Build new 49-mile Woodward EHV - Tatonga 345 kV Ckt 2 line.	10/1/2014	6/1/2015	\$ 71,876,622
SPS	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	Replace Terminal Equipment	6/1/2015	6/1/2016	\$ 240,000
SPS	Carlisle - SP Erskine 115 kV Ckt 1	Reconductor 1.49 miles from Carlisle to SP-Erskine.	6/1/2018	6/1/2018	\$ 886,550
SPS	Indiana - SP Erskine 115 kV Ckt 1 Accelerate	Reconductor 4 miles from Indiana to SP-Erskine.	6/1/2018	6/1/2018	\$ 2,380,000
SPS	Potter to Tolk 345 kV	Build 111 mile 345 kV line from Potter to Tolk. Further study analysis will be performed with regard to the SPS North-South Stability Limit to determine whether its rating may be increased based on approved SPP Expansion Plan Network Upgrades scheduled t	10/1/2015	12/31/2018	\$ 168,852,765

Expansion Plan Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)
ITCGP	Line - Clark County - Thistle 345 kV dbl Ckt	Build a new 86 mile double circuit 345 kV line with at least 3000 A capacity from the Thistle 345 kV substation to the new Clark County substation. Build a new 345 kV	6/1/2014	1/1/2015
ITCGP	Line - Spearville - Clark County 345 kV dbl Ckt	Build a new 36 mile double circuit 345 kV line with at least 3000 A capacity from the Spearville substation to the new Clark County substation. Build the Clark County 345 kV	6/1/2014	1/1/2015
ITCGP	XFR - Thistle 345/138 kV	Install a 400 MVA 345/138 kV transformer at the new 345 kV Thistle substation.	6/1/2014	1/1/2015
OKGE	Line - Hitchland - Woodward 345 kV dbl Ckt OKGE	Build a new 92 mile double circuit 345 kV line with at least 3000 A capacity from the Woodward District EHV substation to the SPS interception from the Hitchland substation.	6/1/2014	7/1/2014
OKGE	Line - Thistle - Woodward 345 kV dbl Ckt OKGE	Build a new 79 mile double circuit 345 kV line with at least 3000 A capacity from the Woodward District EHV substation to the Kansas/Oklahoma state border towards the	6/1/2014	1/1/2015
OKGE	Line - Tuco - Woodward 345 kV line OKGE	Build new 345 kV line from Woodward EHV to Border - Project costs now include Border reactor substation	6/1/2014	6/1/2014
PW	Line - Thistle - Wichita 345 kV dbl Ckt PW	Build a new 78 mile double circuit 345 kV line with at least 3000 A capacity from the Wichita substation to the new Thistle 345 kV substation.	6/1/2014	1/1/2015
PW	Line - Thistle - Woodward 345 kV dbl Ckt PW	Build a new 30 mile double circuit 345 kV line with at least 3000 A capacity from the Thistle substation to the Kansas/Oklahoma state border towards the Woodward District	6/1/2014	1/1/2015
SPS	Line - Hitchland - Woodward 345 kV dbl Ckt SPS	Build 30 mile double circuit 345 kV line with at least 3000 A capacity from the Hitchland substation to the OGE interception point from the Woodward District EHV substation.	6/1/2014	7/1/2014
SPS	Line - Tuco - Woodward 345 kV line SPS	Build new 345 kV line from Tuco to OGE Border station near TX/OK Stateline. Install line reactor outside Border station and line reactors at Tuco.	6/1/2014	6/1/2014
WERE	Line - Thistle - Wichita 345 kV dbl Ckt WERE	Upgrade the Wichita substation with the necessary breakers and terminal equipment to accommodate two new 345 kV circuits from the new Thistle 345 kV substation	6/1/2014	1/1/2015

Reliability Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)
AEPW	Elk City 345/230 kV	Expand Elk City substation (or build new station). Install a 345/230 kV 675 MVA transformer at Elk City.	10/1/2014	3/1/2018
AEPW	Elk City to Gracemont 345kV AEPW	Build new 46.5 mile 345 kV line from Elk City to Gracemont (AEP portion).	10/1/2014	3/1/2018
NPPD	Cherry Co - Gentleman 345 kV Ckt1	Build new 345 kV Transmission Line from GGS 345 kV Substation to a new Cherry County 345 kV Substation (76 miles).	10/1/2014	1/1/2018
NPPD	Cherry Co - Holt Co 345 kV Ckt1	Build new 345 kV Transmission Line from new Cherry County 345 kV Substation to new 345 kV Holt County Substation. (Estimated 146 miles).	10/1/2014	1/1/2018
NPPD	Cherry Co 345 kV Terminal Upgrades	Build new Cherry County 345 kV Substation.	10/1/2014	1/1/2018
OKGE	Elk City to Gracemont 345kV OKGE	Build new 46.5 mile 345 kV line from Elk City to Gracemont (OGE portion).	10/1/2014	3/1/2018
SPS	Amoco - Tuco 345 kV Ckt 1	Build new 67-mile 345 kV line from Tuco to Amoco.	10/1/2018	1/1/2020
SPS	Carlisle Interchange - Wolfforth Interchange 230 kV Ckt 1	Build 15 miles of new 230 kV line from Carlisle to Wolfforth South and install necessary terminal equipment.	6/1/2018	6/1/2017
SPS	Hitchland 230/115/13.2 kV Transformer Ckt 2	Build a second 230/115/13.2 kV transformer at Hitchland.	6/1/2014	6/1/2017
SPS	Indiana - Stanton 115 kV Ckt 1	Reconductor 1.5 miles line from Indiana to Stanton.	6/1/2018	6/1/2018
SPS	MULTI - Tuco-New Deal 345 kV	New 345/155kV transformer between Tuco and Stanton, Build new 345kV line between Tuco and high side of new transformer between Tuco and Stanton, Build new 115kV line between Stanton and low side of new transformer between Tuco and Stanton	10/1/2019	1/1/2020
SPS	Optima 345/115 kV	New 345/115kV substation between Texas County to Cole 115kV line and Finney to Hitchland 345 kV line, Rebuild Texas County to Cole 115kV line	6/1/2015	6/1/2019