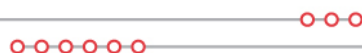


Feasibility Cluster Study for Generator Interconnection Requests (FCS-2015-002)

June 2015

Generator Interconnection Studies



Revision History

Date or Version Number	Author	Change Description	Comments
6/30/2015	Southwest Power Pool	N/A	Report Issued

Executive Summary

Generator Interconnection customers have requested a Feasibility Study under the Generator Interconnection Procedures (GIP) in the Southwest Power Pool Open Access Transmission Tariff (OATT). The Interconnection Customers' requests have been clustered together for the following Feasibility Cluster Study (FCS) window which closed March 31st, 2015. This Feasibility Cluster Study analyzes generation interconnection requests totaling approximately 172 MW which would be located within the transmission systems of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The generation interconnection requests have various proposed in-service dates¹. The generation interconnection requests included in this Feasibility Cluster Study are listed in Appendix A by queue number, amount, requested interconnection service, area, requested interconnection point, proposed interconnection point, and the requested in-service date.

Power flow analysis has indicated that for the power flow cases studied, 172 MW of nameplate generation may be interconnected with transmission system reinforcements within the SPP transmission system. The need for reactive compensation in accordance with Order No. 661-A for wind farm interconnection requests will be evaluated in the Preliminary Interconnection System Impact Study (PISIS) and Definitive Interconnection System Impact Study (DISIS) based on the dynamic stability models and type requested by the Customer. Dynamic stability studies performed as part of the PISIS and DISIS Cluster Studies will provide additional guidance as to whether required reactive compensation can be static (capacitors and/or reactors) or a portion must be dynamic (such as a SVC).

In no way does this study guarantee operation for all periods of time. This interconnection study identifies and assigns transmission reinforcements for Energy Resource (ER) interconnection injection constraints and Network Resource (NR) constraints if requested by the Customer. This interconnection study does not assign transmission reinforcements for all potential transmission constraints. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

The total estimated minimum cost for interconnecting the studied generation interconnection request is \$38,700,000. These costs are shown in Appendices E and F. GEN-2015-011 requested an additional analysis to exclude Interconnection Request GEN-2015-012, which is to be studied in the Preliminary Interconnection System Impact Study (PISIS-2015-001). Separate Cost allocations are included for the analysis with and without GEN-2015-012. These are shown in appendix G. The interconnection costs for the analysis without GEN-2015-012 are estimated at \$4,500,000. These costs do not include the Interconnection Customer Interconnection Facilities as defined by the SPP

¹ The generation interconnection requests in-service dates will need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customer's that proceed to the Facility Study will be provided a new in-service date based on the competition of the Facility Study.

Open Access Transmission Tariff (OATT). This cost does not include the possible need for reactive compensation or additional interconnection facilities or network upgrades that may be identified through additional analyses performed in the PISIS and DISIS. Most importantly, these costs do not include potential costs from upgrades that are identified for the DISIS-2015-001 Cluster Study. If any Interconnection Requests are withdrawn from the DISIS-2015-001 study, then potential upgrades tentatively assigned to DISIS-2015-001 Interconnection Requests may be assigned to the Interconnection Requests in this FCS-2015-002 study once these Interconnection Requests execute a Definitive Interconnection System Impact Study Agreement.

Network Constraints listed in Appendix I are located in the local area of the new generation when this generation is injected throughout the SPP footprint for the Energy Resource (ER) Interconnection Request. Certain interconnection requests have been studied for Network Resource (NR) Interconnection Service. Those constraints are also listed in Appendix I. Additional Network constraints will have to be verified with a Transmission Service Request (TSR) and associated studies. With a defined source and sink in a TSR, this list of Network Constraints will be refined and expanded to account for all Network Upgrade requirements.

The required interconnection costs listed in Appendix E and F do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT.

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Introduction

Generator Interconnection customers have requested a Feasibility Study under the Generator Interconnection Procedures (GIP) in the Southwest Power Pool Open Access Transmission Tariff (OATT). The Interconnection Customers' requests have been clustered together for the following Feasibility Cluster Study (FCS) window which closed March 31st, 2015. This Feasibility Cluster Study analyzes generation interconnection requests totaling approximately 172 MW which would be located within the transmission system of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The generation interconnection requests have various proposed in-service dates². The generation interconnection requests included in this Feasibility Cluster Study are listed in Appendix A by queue number, amount, area, requested interconnection service, requested interconnection point, proposed interconnection point, and the requested in-service date.

The primary objective of this Feasibility Cluster Study is to identify the system constraints associated with connecting the generation to the area transmission system. The Feasibility and other subsequent Interconnection Studies are designed to identify attachment facilities, Network Upgrades and other Direct Assignment Facilities needed to accept power into the grid at each specific interconnection receipt point.

Model Development

Interconnection Requests Included in the Cluster

SPP has included all interconnection requests that submitted a Feasibility Study Agreement no later than March 31, 2015 and were subsequently accepted by Southwest Power Pool under the terms of the Generator Interconnection Procedures (GIP) effective at the time of this study. The interconnection requests that are included in this study are listed in Appendix A.

Previously Queued Interconnection Requests

The previously queued requests included in this study are listed in Appendix B. In addition to the Base Case Upgrades, the previously queued requests and associated upgrades were assumed to be in-service and added to the Base Case models. These projects were dispatched as Energy Resources and or Network Resources (in accordance with the individual Generator Interconnection Requests) with equal distribution across the SPP footprint.

² The generation interconnection requests in-service dates will need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customer's that proceed to the Facility Study will be provided a new in-service date based on the competition of the Facility Study.

Development of Base Cases

The 2014 series Integrated Transmission Planning models (used in the 2015ITPNT) including the 2015 spring, 2015 summer peak, 2020 summer and winter peak, and 2025 summer peak scenario 0 cases were used for this study. After the cases were developed, each of the control areas' resources were then re-dispatched to account for the new generation requests using current dispatch orders.

Base Case Upgrades

The following facilities are part of the SPP Transmission Expansion Plan or the Balanced Portfolio or recently approved Priority Projects. These facilities, have an approved Notice to Construct (NTC), or are in construction stages and were assumed to be in-service at the time of dispatch and added to the base case models. The FCS-2015-002 Customers have not been assigned cost for the below listed projects. The FCS-2015-002 Customers Generation Facilities in service dates may need to be delayed until the completion of the following upgrades. If for some reason, construction on these projects is discontinued, additional restudies will be needed to determine the interconnection needs of the Feasibility Study customers.

- 2012 Integrated Transmission Plan (2012 ITP10) Projects
 - Woodward-Tatonga-Mathewson-Cimarron 345kV transmission line, scheduled for 2021 in-service³
 - Chisholm – Gracemont 345kV transmission line, and Chisholm 345/230kV transformer circuit #1, scheduled for 3/1/2018 in-service⁴
- 2015 Integrated Transmission Plan Near Term (2015 ITPNT) Projects
 - China Draw 115kV Reactive Power Support
 - 200Mvar Capacitive and 50Mvar Inductive Static Var Compensator (SVC)
 - Road Runner 115kV Reactive Power Support
 - 200Mvar Capacitive and 50Mvar Inductive Static Var Compensator (SVC)
 - Agave Hill 115kV reactive Power Support
 - 28.8Mvar Capacitor Bank(s)
 - Potash Junction – Intrepid – IMC #1 – Livingston Ridge 115kV rebuild
- Balanced Portfolio Projects⁵:
 - Iatan – Nashua 345/161kV Project, scheduled for 6/1/2015 in-service
 - Iatan – Nashua 345kV circuit #1 and associated terminal equipment
 - Nashua 345/161/13kV autotransformer circuit #1
- Nebraska City – Mullin Creek – Sibley 345kV circuit #1 build scheduled for 6/1/2017 in-service⁶
- Northwest 345/138/13.8kV circuit #3 autotransformer, scheduled for 6/1/2017 in-service⁷
- Hoskins – Neligh East 345/115kV Project⁸
 - Neligh East 345/115kV substation and transformer

³ SPP Notification to Construct (NTC) 200223

⁴ SPP Notification to Construct (NTC) 200240 and 200255

⁵ Notification to Construct (NTC) issued June 2009

⁶ SPP Notification to Construct (NTC) 20097 and 20098

⁷ SPP Transmission Service Project identified in SPP 2009-AG2-AFS6. Per SPP NTC 20137

⁸ SPP Regional Reliability 2012 ITP 10 Project Per SPP-NTC-200220

- Neligh East Area 115kV upgrades to support new station
 - Hoskins – Neligh East 345kV circuit #1
- High Priority Incremental Loads (HPILs) Projects⁹:
 - TUCO Interchange – Yoakum – Hobbs Interchange 345/230kV Project
 - TUCO Interchange – Yoakum – Hobbs Interchange 345kV circuit #1 and associated terminal equipment upgrades
 - Hobbs 345/230/13kV transformer circuit #1
 - Yoakum 345/230/13kV transformer circuit #1
 - Battle Axe – Road Runner 115kV circuit #1
 - Chaves County – Price – CV Pines – Capitan 115kV circuit #1
 - China Draw – Yeso Hills 115kV circuit #1
 - Dollarhide – Toboso Flats 115kV circuit #1
 - Hobbs Interchange – Kiowa 345kV circuit #1
 - Kiowa – North Loving – China Draw 345/115kV Projects
 - Kiowa – North Loving – China Draw circuit #1 and associated terminal equipment upgrades
 - China Draw 345/115/13kV transformer circuit #1
 - North Loving 345/115/13kV transformer circuit #1
 - Kiowa – Road Runner 345/230/115kV Projects
 - Kiowa 345/230kV transformer circuit #1
 - Road Runner 345/115/13kV transformer circuit #1
 - Livingston Ridge – Sage Brush – Lagarto – Cardinal 115kV circuit #1
 - North Loving – South Loving 115kV circuit #1
 - Ponderosa – Ponderosa Tap 115kV circuit #1 Potash 230/115/13kV Transformer circuit #1 replacement
 - Potash 230/115/13kV Transformer circuit #1 replacement

Contingent Upgrades

The following facilities do not yet have approval. These facilities have been assigned to higher queued interconnection customers. These facilities have been included in the models for the FCS-2015-002 study and are assumed to be in service. This list may not be all inclusive. The FCS-2015-002 Customers at this time do not have responsibility for these facilities but may later be assigned the cost of these facilities if higher queued customers terminate their GIA or withdraw from the interconnection queue. The FCS-2015-002 Customer Generation Facilities in service dates may need to be delayed until the completion of the following upgrades.

- Upgrades assigned to DISIS-2009-001 Interconnection Customers:
 - Spearville Project
 - Spearville 345/115kV transformer circuit #1 addition
 - Spearville – North Ft. Dodge 115kV addition
 - Ft Dodge – North Ft. Dodge circuit #2 addition
 - Move Fort Dodge terminal of Shooting Star 115kV at North Ft Dodge
 - Fort Randall – Meadow Grove – Kelly 230kV circuit #1 rerate (320MVA)

⁹ Per Network Upgrades assigned in High Priority Incremental Loads (HPILs) study, Including Direct Assigned Upgrades, Projects in SPP-NTC-200256 and SPP-NTC-200283.

- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
 - Switch 2749 – Wildorado 69kV circuit # 1 rebuild
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
 - Twin Church – Dixon County 230kV circuit #1 rerate (320MVA)
 - Buckner – Spearville 345kV terminal equipment
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
 - Hoskins – Dixon County – Twin Church 230kV circuit #1 conductor clearance increase
 - (NRIS only) Woodward – FPL Switch – Mooreland – Glass Mountain 138kV circuit #1 rebuild
- Upgrades assigned to DISIS-2011-002 Interconnection Customers:
 - none at this time
- Upgrades assigned to DISIS-2012-001 Interconnection Customers:
 - None at this time
- Upgrades assigned to DISIS-2012-002 Interconnection Customers:
 - Amoco Wasson – Oxy Tap 230kV circuit #1 replace line traps
 - Associated Electric Cooperatives Inc. (AECI) Fairfax 138/69kV transformer replacement
 - Lake Creek – Lone Wolf 69kV circuit #1 reset CT
 - Remington – Fairfax 138kV circuit #1 conductor clearance increase
 - (NRIS only) Arkansas City – Paris –Creswell – Oak – Rainbow – City of Winfield 69kV circuit #1 rebuild
 - (NRIS only) Creswell 138/69/13kV Transformer circuit #1 and #2, replacements
- Upgrades assigned to DISIS-2013-001 Interconnection Customers:
 - None at this time
- Upgrades assigned to DISIS-2013-002 Interconnection Customers:
 - Battle Creek – County Line – Neligh East 115kV circuit #1 rebuild
- Upgrades assigned to DISIS 2014-001 Interconnection Customers
 - National Enrichment Plant – Targa – Cardinal 115kV circuit #1 rebuild
- Upgrades assigned to DISIS 2014-002 Interconnection Customers
 - TUCO 2 345kV project
 - TUCO 2 345kV Bus
 - TUCO – TUCO 2 – Tolk 345kV circuit #1 build
 - Arnold – Ransom 115kV circuit #1 replace terminal equipment
 - Beaver County 345kV Reactive Power support
 - Border 200Mvar Static VAR Compensator (SVC) and 200Mvar Capacitor Bank(s)
 - Carlisle 230/115/13kV transformer circuit #1 replacement
 - Clark County 100 Mvar Static VAR Compensator (SVC)
 - Deaf Smith – Plant X circuit #1 replace wave trap
 - Harper – Milan tap 138kV circuit #1 rebuild
 - Knoll – Postrock 230kV circuit #1 rebuild
 - Milan Tap – Clearwater 138kV circuit #1 rebuild
 - Norton – Pleasant Hill 230kV circuit #1 230kV conversion
 - Oklaunioun 150Mvar Capacitor Bank(s) and 150Mvar Static VAR Compensator (SVC)
 - Tolk – Plant X 230kV CKT 3
- Upgrades assigned to DISIS 2015-001 Interconnection Customers
 - Mingo 345/115/13kV transformer circuit #2

Other upgrades to be determined in DISIS 2015-001 Potential Upgrades Not in the Base Case

Any potential upgrades that do not have a Notification to Construct (NTC) have not been included in the base case. These upgrades include any identified in the SPP Extra-High Voltage (EHV) overlay plan, or any other SPP planning study other than the upgrades listed above in the previous section.

Regional Groupings

The interconnection requests listed in Appendix A were grouped together in two regional groups based on geographical and electrical impacts. These groupings are shown in Appendix C.

For each group, the various wind generating plants were modeled at 100% nameplate of maximum generation while the wind generating plants in the other areas were modeled at 20% nameplate of maximum generation. These projects were dispatched as Energy Resources with a load factor by area distribution across the SPP footprint. Certain projects that requested Network Resource Interconnection Service were dispatched as an additional analysis into the balancing authority of the interconnecting transmission owner. This method allowed for the identification of network constraints that were common to the regional groupings that could then in turn have the mitigating upgrade cost allocated throughout the entire cluster. Other sensitivity analyses are also performed with all interconnection requests in each group being dispatched at 100% nameplate.

Peaking units were not dispatched in the 2015 spring model. To study peaking units' impacts, the 2015 summer and 2020 summer and winter, and 2025 summer seasonal models were chosen and peaking units were modeled at 100% of the nameplate rating and wind generating facilities were modeled at 10% of the nameplate rating. Each interconnection request was also modeled separately at 100% nameplate for certain analyses.

Identification of Network Constraints

The initial set of network constraints were found by using PSS® MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels mentioned above. The Energy Resource Interconnection Service (ERIS) constraints were then screened to determine which of the generation interconnection requests had at least a 20% Distribution Factor (DF) upon outage based constraints (N-1) and 3% DF upon system intact constraints (N-0). Interconnection Requests that have requested Network Resource Interconnection Service (NRIS) were studied in the NRIS analysis to determine if any constraint measured at least a 3% DF. If so, these constraints were also considered for mitigation under NRIS.

Other network constraints which do not require transmission reinforcements are shown in Appendix H. With a defined source and sink in a Transmission Service Request, this list of network constraints can be refined and expanded to account for all Network Upgrade requirements for firm transmission service.

In no way does the list of constraints in Appendix G identify all potential constraints that guarantee operation for all periods of time. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational

situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

Identification of Electrically Isolated Groups and Requests

From the FCITC analysis, it may be determined that some of the regional groups had no common impacts with the other groups. However, this determination may change as the Interconnection Customers depending upon the time at which the interconnection customers enter either the Preliminary Interconnection System Impact Study (PISIS) or the Definitive Interconnection System Impact Study (DISIS).

Determination of Cost Allocated Network Upgrades

Cost Allocated Network Upgrades of wind generation interconnection requests were determined using the 2015 spring model. Cost Allocated Network Upgrades of peaking units was determined using the 2020 summer peak model. A PSSE® MUST sensitivity analysis was performed to determine the Distribution Factors (DF), a distribution factor with no contingency that each generation interconnection request had on each new upgrade. The impact each generation interconnection request had on each upgrade project was weighted by the size of each request. Finally the costs due by each request for a particular project were then determined by allocating the portion of each request's impact over the impact of all affecting requests.

For example, assume that there are three Generator Interconnection requests, X, Y, and Z that are responsible for the costs of Upgrade Project '1'. Given that their respective DF for the project have been determined, the cost allocation for Generator Interconnection request 'X' for Upgrade Project 1 is found by the following set of steps and formulas:

- Determine an Impact Factor on a given project for all responsible GI requests:

$$\text{Request X Impact Factor on Upgrade Project 1} = \text{DF}(\%)(\text{X}) * \text{MW}(\text{X}) = \text{X1}$$

$$\text{Request Y Impact Factor on Upgrade Project 1} = \text{DF}(\%)(\text{Y}) * \text{MW}(\text{Y}) = \text{Y1}$$

$$\text{Request Z Impact Factor on Upgrade Project 1} = \text{DF}(\%)(\text{Z}) * \text{MW}(\text{Z}) = \text{Z1}$$

- Determine each request's Allocation of Cost for that particular project:

$$\text{Request X's Project 1 Cost Allocation (\$)} = \frac{\text{Network Upgrade Project 1 Cost(\$)} * \text{X1}}{\text{X1} + \text{Y1} + \text{Z1}}$$

- Repeat previous for each responsible GI request for each Project

The cost allocation of each needed Network Upgrade is determined by the size of each request and its impact on the given project. This allows for the most efficient and reasonable mechanism for sharing the costs of upgrades.

Credits for Amounts Advanced for Network Upgrades

Interconnection Customer shall be entitled either to credits or potentially Long Term Congestion Rights (LTCR) in accordance with Attachment Z2 of the SPP Tariff for any Network Upgrades including any tax gross-up or any other tax-related payments associated with the Network Upgrades, and not refunded to the Interconnection Customer.

Interconnection and Network Upgrade Facilities

The generator interconnection customers requested interconnection within the transmission systems of Southwestern Public Service (SPS) and Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The requirement to interconnect the 172 MW of generation into the existing and proposed transmission systems in the affected areas of the SPP transmission footprint consist of the necessary cost allocated shared facilities listed in Appendices E and F with an approximate cost of \$38,700,000. For the scenario without GEN-2015-012, the total interconnection costs are approximately \$4,500,000. Appendices E and F also include Interconnection Facilities specific to each generation interconnection request.

For an explanation of how required Network Upgrades and Interconnection Facilities were determined, refer to the section on “Identification of Network Constraints” above.

A preliminary one-line drawing for each generation interconnection request are listed in Appendix D.

Power Flow Analysis

Power Flow Analysis Methodology

The FCITC function of PSS® MUST was used to simulate single element and special (i.e., breaker-to-breaker, multi-element, etc.) contingencies in portions or all of the modeled control areas of SPP, as well as, other control areas external to SPP and the resulting scenarios analyzed. This satisfies the “more probable” contingency testing criteria mandated by NERC and the SPP criteria.

Power Flow Analysis

A power flow analysis was conducted for each Interconnection Customer’s facility using modified versions of the 2015 (spring and summer) peak, the 2020 (summer and winter) peak and 2025 summer peak models. The output of the Interconnection Customer’s facility was offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ER) Interconnection Request. Certain requests that requested Network Resource Interconnection Service (NRIS) had an additional analysis conducted for displacing resources in the interconnecting Transmission Owner’s balancing authority.

This analysis was conducted assuming that previous queued requests in the immediate area of these interconnect requests were in-service. The analysis of the each Customer’s project indicates that criteria violations will occur on the SUNC/MKEC transmission system under steady state and contingency conditions in the peak seasons.

The need for reactive compensation will be determined during the Interconnection System Impact Study. The need for reactive compensation will be based on the Interconnection Customer’s choice of wind turbine make and manufacturer. Dynamic Stability studies performed as part of the System Impact Cluster Study will provide additional guidance as to whether the reactive compensation can be static (capacitors and/or reactors) or a portion must be dynamic (such as a SVC or STATCOM). It is possible that an SVC or STATCOM device will be required at the Customer facility because of FERC Order 661A Low Voltage Ride-Through Provisions (LVRT) which went into effect January 1, 2006. FERC Order 661A orders that wind farms stay on-line for 3-phase faults at the point of interconnection even if that requires the installation of a SVC or STATCOM device.

Cluster Group 4 (Mingo Area)

In addition to the 2305.03 MW of previously queued generation in the area, 172.0 MW of new interconnection service was studied. NRIS Constraints were seen on the Alexander – Nekoma 115kV, Alexander – Ness City 115kV, Atwood – Colby 115kV, Lacrosse Tap – Nekoma 115kV, and Hoxie – Seguin tap 115kV line. These constraints will require these lines to be rebuilt.

NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOA DING (% MVA)	CONTINGENCY
'ALEXANDER - NEKOMA 115KV CKT 1'	96	111.6477	'HOLCOMB - SETAB 345KV CKT 1'
'ALEXANDER - NESS CITY 115KV CKT 1'	96.2	113.2867	'HOLCOMB - SETAB 345KV CKT 1'
'ATWOOD - COLBY 115KV CKT 1'	76.7	102.7029	'HOXIE - SEGNT3 115.00 115KV CKT 1'
'LACROSSE TAP - NEKOMA 115KV CKT 1'	97.7	109.0872	HOLCOMB - SETAB 345KV CKT 1'

For the sensitivity analysis that excluded GEN-2015-012, no new constraints were identified.

ERIS and NRIS Constraints without GEN-2015-012			
MONITORED ELEMENT	RATE B (MVA)	TC%LOA DING (% MVA)	CONTINGENCY
None			

Curtailement and System Reliability

In no way does this study guarantee operation for all periods of time. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

Conclusion

The minimum cost of interconnecting 172 MW of new interconnection requests included in this Feasibility Cluster Study is estimated at \$38,700,000 including the Allocated Network Upgrades and Transmission Owner Interconnection Facilities, which are listed in Appendices E and F. The interconnection costs for the analysis excluding GEN-2015-012 are estimated at \$4,500,000. These costs include the cost of upgrades of other transmission facilities listed in Appendix H which are Network Constraints.

These interconnection costs do not include any cost of Network Upgrades determined to be required by AC power flow analysis, short circuit or transient stability analysis. These studies will be performed if the Interconnection Customer executes the appropriate Interconnection System Impact Study Agreement and provides the required data along with demonstration of Site Control and the appropriate deposit. At the time of the System Impact Cluster Study, a better determination of the interconnection facilities may be available.

The required interconnection costs listed in Appendices E and F, and other upgrades associated with Network Constraints do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request (TSR) through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP Open Access Transmission Tariff (OATT).

Appendix

A: Generator Interconnection Requests Considered for Study

A: Generation Interconnection Requests Considered for Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
GEN-2015-011	172.00	ER/NR	SUNCMKEC	Mingo 115kV	Mingo 115kV	8/1/2018	TBD
Total:		172.00					

*In-Service Date for each request is to be determined after the Interconnection Facility Study is completed.

B: Prior Queued Interconnection Requests

B: Prior Queued Interconnection Requests

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV	AECI queue Affected Study
ASGI-2010-010	42.20	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV	Lea County Affected Study
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV	Lea County Affected Study
ASGI-2011-001	27.30	SPS	Lovington 115kV	On-Line
ASGI-2011-002	20.00	SPS	Herring 115kV	On-Line
ASGI-2011-003	10.00	SPS	Hendricks 115kV	On-Line
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV	Under Study (DISIS-2011-002)
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV	Under Study (DISIS-2012-002)
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV	Under Study (DISIS-2012-001)
ASGI-2013-001	11.50	SPS	PanTex South 115kV	Under Study (DISIS-2013-001)
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV	Under Study (DISIS-2013-001)
ASGI-2013-003	18.40	SPS	FE Clovis 115kV	Under Study (DISIS-2013-001)
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV	Under Study (DISIS-2013-002)
ASGI-2013-005	1.65	SPS	FE Clovis 115kV	Under Study (DISIS-2013-002)
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV	
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV	TRANSITIONED TO IFS QUEUE
ASGI-2014-002	49.60	SPS	Tap Tucumcari - Santa Rosa 115kV	
ASGI-2014-005	10.00	SPS	Strata 69kV	
ASGI-2014-008	10.00	SPS	South Loving 69kV	
ASGI-2014-009	10.00	SPS	Wood Draw 115kV	
ASGI-2014-010	10.00	SPS	Ochoa 115kV	
ASGI-2014-012	10.00	SPS	Cooper Ranch 115kV	
ASGI-2014-014	56.40	GRDA	Ferguson 69kV	
ASGI-2015-001	6.13	SUNC	Ninnescah 115kV	DISIS STAGE
ASGI-2015-002	2.00	SPS	SP Yuma 69kV	DISIS STAGE
ASGI-2015-003	30.00	FEC/SWPS	FEC New POI 115kV; Equivalenced to the Tucumcari 115kV	DISIS STAGE
ASGI-2015-004	56.40	GRDA	Grand River Dam Authority – Coffeyville City 69kV	DISIS STAGE
GEN-2001-014	96.00	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74.25	WFEC	Washita 138kV	On-Line
GEN-2001-033	180.00	SPS	San Juan Tap 230kV	On-Line at 120MW
GEN-2001-036	80.00	SPS	Norton 115kV	On-Line
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV	On-Line
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV	On-Line
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200.00	WERE	Latham 345kV	On-Line at 150MW
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV	On-Line
GEN-2002-008	240.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2002-009	80.00	SPS	Hansford 115kV	On-Line
GEN-2002-022	240.00	SPS	Bushland 230kV	On-Line
GEN-2002-023N	0.80	NPPD	Harmony 115kV	On-Line
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV	On-Line
GEN-2003-004	100.00	WFEC	Washita 138kV	On-Line
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV	On-Line
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV	On-Line
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2003-020	160.00	SPS	Martin 115kV	On-Line
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV	On-Line
GEN-2003-022	120.00	AEPW	Washita 138kV	On-Line
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV	On-Line at 100MW
GEN-2004-020	27.00	AEPW	Washita 138kV	On-Line
GEN-2004-023	20.60	WFEC	Washita 138kV	On-Line
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV	On-Line
GEN-2005-003	30.60	WFEC	Washita 138kV	On-Line
GEN-2005-008	120.00	OKGE	Woodward 138kV	On-Line
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV	On-Line at 160MW
GEN-2005-013	201.00	WERE	Caney River 345kV	On-Line
GEN-2006-002	101.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-006	205.50	SUNCMKEC	Spearville 345kV	On Suspension
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV	On-Line
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV	On-Line
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV	On-Line
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV	On-Line
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV	On-Line
GEN-2006-026	502.00	SPS	Hobbs 230kV & Hobbs 115kV	On-Line
GEN-2006-031	75.00	MIDW	Knoll 115kV	On-Line
GEN-2006-035	225.00	AEPW	Sweetwater 230kV	On-Line at 132MW
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV	On-Line
GEN-2006-043	99.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-044	370.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV	On-Line
GEN-2006-046	131.00	OKGE	Dewey 138kV	On-Line
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV	On-Line
GEN-2007-021	201.00	OKGE	Tatonga 345kV	On-Line
GEN-2007-025	300.00	WERE	Viola 345kV	On-Line
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV	On Suspension
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV	On-Line at 132MW
GEN-2007-043	200.00	OKGE	Minco 345kV	On-Line
GEN-2007-044	300.00	OKGE	Tatonga 345kV	On-Line at 199MW
GEN-2007-046	200.00	SPS	Hitchland 115kV	On Schedule for 2015
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV	On-Line at 150MW
GEN-2007-052	150.00	WFEC	Anadarko 138kV	On-Line
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV	On Schedule for 2014
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-013	300.00	OKGE	Hunter 345kV	On-Line at 235MW
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV	On Schedule for 2015
GEN-2008-018	250.00	SPS	Finney 345kV	On-Line
GEN-2008-021	42.00	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300.00	SPS	Tap Tolk - Eddy County (Crossroads) 345kV	On Schedule for 2015
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV	On-Line
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV	On-Line
GEN-2008-044	197.80	OKGE	Tatonga 345kV	On-Line
GEN-2008-047	300.00	OKGE	Beaver County 345kV	On Schedule for 2014
GEN-2008-051	322.00	SPS	Potter County 345kV	On-Line at 161MW

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV	On-Line
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV	On-Line
GEN-2008-092	201.00	MIDW	Post Rock 230kV	On Schedule for 2014
GEN-2008-098	100.80	WERE	Waverly 345kV	On Schedule for 2015
GEN-2008-1190	60.00	OPPD	S1399 161kV	On-Line
GEN-2008-123N	89.70	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV	On Schedule for 2014
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2016
GEN-2008-129	80.00	GMO	Pleasant Hill 161kV	On-Line
GEN-2009-008	199.50	MIDW	South Hays 230kV	On Schedule for 2015
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV	On Schedule for 2015
GEN-2009-025	60.00	OKGE	Nardins 69kV	On-Line
GEN-2009-040	73.80	WERE	Marshall 115kV	On Schedule for 2015
GEN-2010-001	300.00	OKGE	Beaver County 345kV	On Schedule for 2014 (204 MW) and 2015 (96 MW)
GEN-2010-003	100.80	WERE	Waverly 345kV	On Schedule for 2015
GEN-2010-005	300.00	WERE	Viola 345kV	On-Line at 170MW
GEN-2010-006	205.00	SPS	Jones 230kV	On-Line
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	29.70	OKGE	Tatonga 345kV	On-Line
GEN-2010-014	358.80	SPS	Hitchland 345kV	On Suspension
GEN-2010-036	4.60	WERE	6th Street 115kV	On-Line
GEN-2010-040	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2010-041	10.50	OPPD	S1399 161kV	On Schedule for 2015
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV	On Schedule for 2017
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-048	70.00	MIDW	Tap Beach - Redline 115kV	DISIS STAGE
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV	On Suspension
GEN-2010-055	4.50	AEPW	Wekiwa 138kV	On-Line
GEN-2010-057	201.00	MIDW	Rice County 230kV	On-Line
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV	On Schedule 2019
GEN-2011-010	100.80	OKGE	Minco 345kV	On-Line
GEN-2011-011	50.00	KACP	Iatan 345kV	On-Line
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	On Schedule 2016
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV	TRANSITIONED TO IFS QUEUE
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - Post Rock (GEN-2011-017T) 345kV	On Schedule 2018
GEN-2011-018	73.60	NPPD	Steele City 115kV	On-Line
GEN-2011-019	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-020	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-022	299.00	SPS	Hitchland 345kV	On Suspension
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV	IA FULLY EXECUTED/ON SCHEDULE
GEN-2011-027	120.00	NPPD	Hoskins 230kV	On Suspension
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV	On-Line
GEN-2011-040	111.00	OKGE	Carter County 138kV	On-Line
GEN-2011-045	205.00	SPS	Jones 230kV	On-Line
GEN-2011-046	27.00	SPS	Lopez 115kV	On-Line
GEN-2011-048	175.00	SPS	Mustang 230kV	On-Line
GEN-2011-049	250.00	OKGE	Border 345kV	On Schedule for 2016
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV	On Suspension
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV (GEN-2011-051 Tap)	On Suspension

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2011-054	300.00	OKGE	Cimarron 345kV	On Schedule for 2013 (200 MW) and 2014 (99 MW)
GEN-2011-056	3.60	NPPD	Jeffrey 115kV	On-Line
GEN-2011-056A	3.60	NPPD	John 1 115kV	On-Line
GEN-2011-056B	4.50	NPPD	John 2 115kV	On-Line
GEN-2011-057	150.40	WERE	Creswell 138kV	On Schedule for 2015
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV	On-Line
GEN-2012-004	41.40	OKGE	Carter County 138kV	On-Line
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV	On-Line
GEN-2012-009	15.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-010	15.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-020	478.00	SPS	TUCO 230kV	On Schedule for 2016
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV	On-Line
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV	TRANSITIONED TO IFS QUEUE
GEN-2012-027	136.00	AEPW	Shidler 138kV	On Suspension
GEN-2012-028	74.80	WFEC	Gotebo 69kV	On Schedule for 2015
GEN-2012-032	300.00	OKGE	Open Sky 345kV	On Schedule for 2015
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	On Schedule for 2015
GEN-2012-034	7.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-035	7.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-036	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-037	203.00	SPS	TUCO 345kV	On Schedule for 2015
GEN-2012-040	76.50	WFEC	Chilocco 138kV	On Suspension
GEN-2012-041	121.50	OKGE	Ranch Road 345kV	On-Line
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	TRANSITIONED TO IFS QUEUE
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV	On Schedule for 2015
GEN-2013-008	1.20	NPPD	Steele City 115kV	On-Line
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV	FACILITY STUDY STAGE
GEN-2013-011	30.00	AEPW	Turk 138kV	TRANSITIONED TO IFS QUEUE
GEN-2013-012	147.00	OKGE	Redbud 345kV	On-Line
GEN-2013-014	25.50	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV	On Suspension
GEN-2013-016	203.00	SPS	TUCO 345kV	TRANSITIONED TO IFS QUEUE
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	TRANSITIONED TO IFS QUEUE
GEN-2013-022	25.00	SPS	Norton 115kV	TRANSITIONED TO IFS QUEUE
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV	FACILITY STUDY STAGE
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV	TRANSITIONED TO IFS QUEUE
GEN-2013-029	300.00	OKGE	Renfrow 345kV	TRANSITIONED TO IFS QUEUE
GEN-2013-030	300.00	OKGE	Beaver County 345kV	TRANSITIONED TO IFS QUEUE
GEN-2013-032	204.00	NPPD	Neligh 115kV	TRANSITIONED TO IFS QUEUE
GEN-2013-033	28.00	MIDW	Goodman Energy Center 115kV	TRANSITIONED TO IFS QUEUE
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center 345kV	TRANSITIONED TO IFS QUEUE
GEN-2014-002	10.53	OKGE	Tatonga 345kV (GEN-2007-021 POI)	TRANSITIONED TO IFS QUEUE
GEN-2014-003	15.84	OKGE	Tatonga 345kV (GEN-2007-044 POI)	TRANSITIONED TO IFS QUEUE
GEN-2014-004	3.96	NPPD	Steele City 115kV (GEN-2011-018 POI)	TRANSITIONED TO IFS QUEUE
GEN-2014-005	5.67	OKGE	Minco 345kV (GEN-2011-010 POI)	TRANSITIONED TO IFS QUEUE
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV	TRANSITIONED TO IFS QUEUE
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV	TRANSITIONED TO IFS QUEUE
GEN-2014-020	100.00	AEPW	Tuttle 138kV	FACILITY STUDY STAGE

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2014-021	300.00	GMO	Tap Nebraska City - Mullin Creek 345kV	FACILITY STUDY STAGE
GEN-2014-023	79.90	NPPD	Tap Fort Randle - Meadow Grove 230kV	DISIS STAGE
GEN-2014-025	2.40	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV	FACILITY STUDY STAGE
GEN-2014-026	150.00	OKGE	Beaver County 345kV	FACILITY STUDY STAGE
GEN-2014-028	35.00	EMDE	Riverton 161kV	FACILITY STUDY STAGE
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV	FACILITY STUDY STAGE
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV	FACILITY STUDY STAGE
GEN-2014-033	70.00	SPS	Chaves County 115kV	FACILITY STUDY STAGE
GEN-2014-034	70.00	SPS	Chaves County 115kV	FACILITY STUDY STAGE
GEN-2014-035	30.00	SPS	Chaves County 115kV	FACILITY STUDY STAGE
GEN-2014-037	200.00	SWPS	Tap Hitchland - Beaver County (Optima) 345kV	DISIS STAGE
GEN-2014-038	200.00	SWPS	Tap Hitchland - Potter 345kV	DISIS STAGE
GEN-2014-039	73.40	NPPD	Friend 115kV	FACILITY STUDY STAGE
GEN-2014-040	320.00	SPS	Castro 115kV	IA PENDING
GEN-2014-041	120.80	SUNCMKEC	Arnold 115kV	FACILITY STUDY STAGE
GEN-2014-046	125.40	SWPS	Chaves County 115kV	DISIS STAGE
GEN-2014-047	40.00	SPS	Tap Tolk - Eddy County (Crossroads) 345kV	FACILITY STUDY STAGE
GEN-2014-049	200.00	SUNCMKEC	Thistle 345kV	FACILITY STUDY STAGE
GEN-2014-051	174.00	WERE	Jeffrey Energy Center 345kV	FACILITY STUDY STAGE
GEN-2014-053	80.00	SPS	Carlisle 230kV	FACILITY STUDY STAGE
GEN-2014-054	120.00	SPS	Carlisle 230kV	FACILITY STUDY STAGE
GEN-2014-056	250.00	OKGE	Minco 345kV	FACILITY STUDY STAGE
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside 345kV	FACILITY STUDY STAGE
GEN-2014-059	161.10	NPPD	Tap Ogallala - Sidney 230kV	DISIS STAGE
GEN-2014-060	125.80	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV	DISIS STAGE
GEN-2014-064	248.40	OKGE	Otter 138kV	FACILITY STUDY STAGE
GEN-2014-065	99.00	SWPS	115 kV Whitten sub	DISIS STAGE
GEN-2014-066	30.00	SPS	Norton 115kV	FACILITY STUDY STAGE
GEN-2014-068	203.00	SWPS	Deaf Smith - Plant X 230 kV	DISIS STAGE
GEN-2014-074	152.00	SWPS	Tap TUCO Interchange - OKU 345kV	DISIS STAGE
GEN-2015-001	200.00	OKGE	Ranch Road 345kV	DISIS STAGE
GEN-2015-003	200.00	OKGE	Renfrow 345kV substation	DISIS STAGE
GEN-2015-004	52.90	OKGE	Border 345kV	DISIS STAGE
GEN-2015-005	200.11	GMO	Nebraska City - Sibley 345kV (final), AECI Osbron161kV (temporary)	DISIS STAGE
GEN-2015-006	150.00	OKGE	Beaver County 345kV	DISIS STAGE
GEN-2015-007	160.00	NPPD	Hoskins 345kV	DISIS STAGE
GEN-2015-008	150.36	NPPD	Antelope 115kV	DISIS STAGE
GEN-2015-009	300.00	SWPS	Hobbs 230kV	DISIS STAGE
GEN-2015-010	250.70	SWPS	Tap South Roosevelt – Tolk 230kV	DISIS STAGE
GEN-2015-012	300.13	SUNCMKEC	Mingo 345kV	PISIS STAGE
GEN-2015-013	119.95	WFEC	Snyder 138kV	DISIS STAGE
GEN-2015-014	150.00	SWPS	Lehman 115kV	DISIS STAGE
GEN-2015-015	154.56	OKGE	Tap Medford Tap - Coyote 138kV	DISIS STAGE
GEN-2015-016	200.00	KCPL	Tap Centerville - Marmaton 161kV	DISIS STAGE
GEN-2015-017	172.00	SUNCMKEC	Mingo 115kV	DISIS STAGE
GEN-2015-018	80.00	SWPS	Tap Bailey-Curry Co. 115kV	DISIS STAGE
GEN-2015-019	60.00	AEPW	Fitzhugh 161kV	DISIS STAGE
GEN-2015-020	100.00	SWPS	Oasis 115kV	DISIS STAGE
GEN-2015-021	20.00	MKEC	Johnson Corner 115kV	DISIS STAGE

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2015-022	112.00	SWPS	Swisher 115kV	DISIS STAGE
GEN-2015-023	300.00	NPPD	Holt County 345kV	DISIS STAGE
GEN-2015-024	220.00	WERE	Tap on Thistle – Wichita 345kV double circuit	DISIS STAGE
GEN-2015-025	220.00	WERE	Tap on Thistle – Wichita 345kV double circuit	DISIS STAGE
GEN-2015-026	8.30	SUNCMKEC	Buckner 345kV	DISIS STAGE
GEN-2015-027	4.50	SUNCMKEC	Crooked Creek 115kV	DISIS STAGE
GEN-2015-028	3.00	OKGE	Nardins 69kV	DISIS STAGE
GEN-2015-029	161.00	OKGE	Tatonga 345kV	DISIS STAGE
GEN-2015-030	200.10	OKGE	Sooner 345kV	DISIS STAGE
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV	On-Line
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV	On-Line
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV	On-Line
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV	On-Line
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV	On-Line
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV	On-Line
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV	On-Line
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV	On-Line
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV	On-Line
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV	On-Line
SPS Distributed (Etter)	20.00	SPS	Etter 115kV	On-Line
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV	On-Line
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV	On-Line
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV	On-Line
SPS Distributed (Monument)	10.00	SPS	Monument 115kV	On-Line
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV	On-Line
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV	On-Line
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV	On-Line
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV	On-Line
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV	On-Line
Total:	33,329.7			

C: Study Groupings

C. Study Groups

GROUP 1: WOODWARD AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-014	96.00	WFEC	Ft Supply 138kV
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.00	OKGE	Woodward 138kV
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.00	OKGE	Dewey 138kV
GEN-2007-021	201.00	OKGE	Tatonga 345kV
GEN-2007-043	200.00	OKGE	Minco 345kV
GEN-2007-044	300.00	OKGE	Tatonga 345kV
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV
GEN-2008-044	197.80	OKGE	Tatonga 345kV
GEN-2010-011	29.70	OKGE	Tatonga 345kV
GEN-2010-040	300.00	OKGE	Cimarron 345kV
GEN-2011-010	100.80	OKGE	Minco 345kV
GEN-2011-019	299.00	OKGE	Woodward 345kV
GEN-2011-020	299.00	OKGE	Woodward 345kV
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV (GEN-2011-051 Tap)
GEN-2011-054	300.00	OKGE	Cimarron 345kV
GEN-2014-002	10.53	OKGE	Tatonga 345kV (GEN-2007-021 POI)
GEN-2014-003	15.84	OKGE	Tatonga 345kV (GEN-2007-044 POI)
GEN-2014-005	5.67	OKGE	Minco 345kV (GEN-2011-010 POI)
GEN-2014-020	100.00	AEPW	Tuttle 138kV
GEN-2014-056	250.00	OKGE	Minco 345kV
GEN-2015-029	161.00	OKGE	Tatonga 345kV
PRIOR QUEUED SUBTOTAL	4,377.54		
AREA TOTAL	4,377.54		

GROUP 2: HITCHLAND AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	20.00	SPS	Herring 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
GEN-2003-020	160.00	SPS	Martin 115kV
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV
GEN-2006-044	370.00	SPS	Hitchland 345kV
GEN-2007-046	200.00	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Beaver County 345kV
GEN-2010-001	300.00	OKGE	Beaver County 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV
GEN-2011-022	299.00	SPS	Hitchland 345kV
GEN-2013-030	300.00	OKGE	Beaver County 345kV
GEN-2014-026	150.00	OKGE	Beaver County 345kV
GEN-2014-037	200.00	SWPS	Tap Hitchland - Beaver County (Optima) 345kV
GEN-2014-038	200.00	SWPS	Tap Hitchland - Potter 345kV
GEN-2015-006	150.00	OKGE	Beaver County 345kV
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV
SPS Distributed (Etter)	20.00	SPS	Etter 115kV
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV
PRIOR QUEUED SUBTOTAL	3,662.70		
AREA TOTAL	3,662.70		

GROUP 3: SPEARVILLE AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV
ASGI-2015-001	6.13	SUNC	Ninnescah 115kV
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV
GEN-2006-006	205.50	SUNCMKEC	Spearville 345kV
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV
GEN-2008-018	250.00	SPS	Finney 345kV
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - Post Rock (GEN-2011-017T) 345kV
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV
GEN-2014-049	200.00	SUNCMKEC	Thistle 345kV
GEN-2015-021	20.00	MKEC	Johnson Corner 115kV
GEN-2015-026	8.30	SUNCMKEC	Buckner 345kV
GEN-2015-027	4.50	SUNCMKEC	Crooked Creek 115kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	3,948.23		
AREA TOTAL	3,948.23		

GROUP 4: NORTHWEST KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.00	MIDW	Knoll 115kV
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV
GEN-2008-092	201.00	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV
GEN-2010-048	70.00	MIDW	Tap Beach - Redline 115kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
GEN-2013-033	28.00	MIDW	Goodman Energy Center 115kV
GEN-2014-025	2.40	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV
GEN-2014-041	120.80	SUNCMKEC	Arnold 115kV
GEN-2015-012	300.13	SUNCMKEC	Mingo 345kV
GEN-2015-017	172.00	SUNCMKEC	Mingo 115kV
PRIOR QUEUED SUBTOTAL	2,305.03		
GEN-2015-011	172.00	SUNCMKEC	Mingo 115kV
CURRENT CLUSTER SUBTOTAL	172.00		
AREA TOTAL	2,477.03		

GROUP 5: AMARILLO AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-001	11.50	SPS	PanTex South 115kV
GEN-2002-022	240.00	SPS	Bushland 230kV
GEN-2008-051	322.00	SPS	Potter County 345kV
GEN-2014-040	320.00	SPS	Castro 115kV
GEN-2014-068	203.00	SWPS	Deaf Smith - Plant X 230 kV
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV
PRIOR QUEUED SUBTOTAL	1,176.50		
AREA TOTAL	1,176.50		

GROUP 6: SOUTH TEXAS PANHANDLE/NEW MEXICO AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-010	42.20	SPS	Lovington 115kV
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV
ASGI-2011-001	27.30	SPS	Lovington 115kV
ASGI-2011-003	10.00	SPS	Hendricks 115kV
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV
ASGI-2013-003	18.40	SPS	FE Clovis 115kV
ASGI-2013-005	1.65	SPS	FE Clovis 115kV
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV
ASGI-2014-002	49.60	SPS	Tap Tucumcari - Santa Rosa 115kV
ASGI-2014-005	10.00	SPS	Strata 69kV
ASGI-2014-008	10.00	SPS	South Loving 69kV
ASGI-2014-009	10.00	SPS	Wood Draw 115kV
ASGI-2014-010	10.00	SPS	Ochoa 115kV
ASGI-2014-012	10.00	SPS	Cooper Ranch 115kV
ASGI-2015-002	2.00	SPS	SP Yuma 69kV
ASGI-2015-003	30.00	FEC/SWPS	FEC New POI 115kV; Equivalenced to the Tucumcari 115kV
GEN-2001-033	180.00	SPS	San Juan Tap 230kV
GEN-2001-036	80.00	SPS	Norton 115kV
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV
GEN-2006-026	502.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-022	300.00	SPS	Tap Tolk - Eddy County (Crossroads) 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV
GEN-2011-045	205.00	SPS	Jones 230kV
GEN-2011-046	27.00	SPS	Lopez 115kV
GEN-2011-048	175.00	SPS	Mustang 230kV
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV
GEN-2012-009	15.00	SPS	Mustang 230kV
GEN-2012-010	15.00	SPS	Mustang 230kV
GEN-2012-020	478.00	SPS	TUCO 230kV
GEN-2012-034	7.00	SPS	Mustang 230kV
GEN-2012-035	7.00	SPS	Mustang 230kV
GEN-2012-036	7.00	SPS	Mustang 230kV
GEN-2012-037	203.00	SPS	TUCO 345kV
GEN-2013-016	203.00	SPS	TUCO 345kV
GEN-2013-022	25.00	SPS	Norton 115kV
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV
GEN-2014-033	70.00	SPS	Chaves County 115kV
GEN-2014-034	70.00	SPS	Chaves County 115kV
GEN-2014-035	30.00	SPS	Chaves County 115kV
GEN-2014-046	125.40	SWPS	Chaves County 115kV
GEN-2014-047	40.00	SPS	Tap Tolk - Eddy County (Crossroads) 345kV
GEN-2014-053	80.00	SPS	Carlisle 230kV
GEN-2014-054	120.00	SPS	Carlisle 230kV

GEN-2014-065	99.00	SWPS	115 kV Whitten sub
GEN-2014-066	30.00	SPS	Norton 115kV
GEN-2014-074	152.00	SWPS	Tap TUCO Interchange - OKU 345kV
GEN-2015-009	300.00	SWPS	Hobbs 230kV
GEN-2015-010	250.70	SWPS	Tap South Roosevelt – Tolk 230kV
GEN-2015-014	150.00	SWPS	Lehman 115kV
GEN-2015-018	80.00	SWPS	Tap Bailey-Curry Co. 115kV
GEN-2015-020	100.00	SWPS	Oasis 115kV
GEN-2015-022	112.00	SWPS	Swisher 115kV
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV
SPS Distributed (Monument)	10.00	SPS	Monument 115kV
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV
PRIOR QUEUED SUBTOTAL	5,572.50		
AREA TOTAL	5,572.50		

GROUP 7: SOUTHWEST OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.25	WFEC	Washita 138kV
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV
GEN-2003-004	100.00	WFEC	Washita 138kV
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.00	AEPW	Washita 138kV
GEN-2004-020	27.00	AEPW	Washita 138kV
GEN-2004-023	20.60	WFEC	Washita 138kV
GEN-2005-003	30.60	WFEC	Washita 138kV
GEN-2006-002	101.00	AEPW	Sweetwater 230kV
GEN-2006-035	225.00	AEPW	Sweetwater 230kV
GEN-2006-043	99.00	AEPW	Sweetwater 230kV
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.00	OKGE	Border 345kV
GEN-2012-028	74.80	WFEC	Gotebo 69kV
GEN-2015-004	52.90	OKGE	Border 345kV
GEN-2015-013	119.95	WFEC	Snyder 138kV
PRIOR QUEUED SUBTOTAL	2,073.10		
AREA TOTAL	2,073.10		

GROUP 8: NORTH OKLAHOMA/SOUTH CENTRAL KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Schilder (AEPW) 138kV
ASGI-2014-014	56.40	GRDA	Ferguson 69kV
ASGI-2015-004	56.40	GRDA	Grand River Dam Authority – Coffeyville City 69kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Caney River 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Hunter 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Waverly 345kV
GEN-2009-025	60.00	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Waverly 345kV
GEN-2010-005	300.00	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
GEN-2012-027	136.00	AEPW	Shidler 138kV
GEN-2012-032	300.00	OKGE	Open Sky 345kV
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2012-040	76.50	WFEC	Chilocco 138kV
GEN-2012-041	121.50	OKGE	Ranch Road 345kV
GEN-2013-012	147.00	OKGE	Redbud 345kV
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV
GEN-2013-029	300.00	OKGE	Renfrow 345kV
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center 345kV
GEN-2014-028	35.00	EMDE	Riverton 161kV
GEN-2014-064	248.40	OKGE	Otter 138kV

GEN-2015-001	200.00	OKGE	Ranch Road 345kV
GEN-2015-003	200.00	OKGE	Renfrow 345kV substation
GEN-2015-015	154.56	OKGE	Tap Medford Tap - Coyote 138kV
GEN-2015-016	200.00	KCPL	Tap Centerville - Marmaton 161kV
GEN-2015-024	220.00	WERE	Tap on Thistle – Wichita 345kV double circuit
GEN-2015-025	220.00	WERE	Tap on Thistle – Wichita 345kV double circuit
GEN-2015-028	3.00	OKGE	Nardins 69kV
GEN-2015-030	200.10	OKGE	Sooner 345kV
PRIOR QUEUED SUBTOTAL	5,643.26		
AREA TOTAL	5,643.26		

GROUP 9: NEBRASKA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-023N	0.80	NPPD	Harmony 115kV
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV
GEN-2008-1190	60.00	OPPD	S1399 161kV
GEN-2008-123N	89.70	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV
GEN-2009-040	73.80	WERE	Marshall 115kV
GEN-2010-041	10.50	OPPD	S1399 161kV
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV
GEN-2011-018	73.60	NPPD	Steele City 115kV
GEN-2011-027	120.00	NPPD	Hoskins 230kV
GEN-2011-056	3.60	NPPD	Jeffrey 115kV
GEN-2011-056A	3.60	NPPD	John 1 115kV
GEN-2011-056B	4.50	NPPD	John 2 115kV
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-008	1.20	NPPD	Steele City 115kV
GEN-2013-014	25.50	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-032	204.00	NPPD	Neligh 115kV
GEN-2014-004	3.96	NPPD	Steele City 115kV (GEN-2011-018 POI)
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV
GEN-2014-023	79.90	NPPD	Tap Fort Randle - Meadow Grove 230kV
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV
GEN-2014-039	73.40	NPPD	Friend 115kV
GEN-2014-059	161.10	NPPD	Tap Ogallala - Sidney 230kV
GEN-2014-060	125.80	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV
GEN-2015-007	160.00	NPPD	Hoskins 345kV
GEN-2015-008	150.36	NPPD	Antelope 115kV
GEN-2015-023	300.00	NPPD	Holt County 345kV
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV

NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	3,059.62		
AREA TOTAL	3,059.62		

GROUP 10: SOUTHEAST OKLAHOMA/NORTHEAST TEXAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
AREA TOTAL	0.00		

GROUP 12: NORTHWEST ARKANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2013-011	30.00	AEPW	Turk 138kV
GEN-2015-019	60.00	AEPW	Fitzhugh 161kV
PRIOR QUEUED SUBTOTAL	90.00		
AREA TOTAL	90.00		

GROUP 13: NORTHWEST MISSOURI AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2008-129	80.00	GMO	Pleasant Hill 161kV
GEN-2010-036	4.60	WERE	6th Street 115kV
GEN-2011-011	50.00	KACP	Iatan 345kV
GEN-2014-021	300.00	GMO	Tap Nebraska City - Mullin Creek 345kV
GEN-2014-051	174.00	WERE	Jeffrey Energy Center 345kV
GEN-2015-005	200.11	GMO	Nebrask City - Sibley 345kV (final), AECI Osbron161kV (temporary)
PRIOR QUEUED SUBTOTAL	808.71		
AREA TOTAL	808.71		

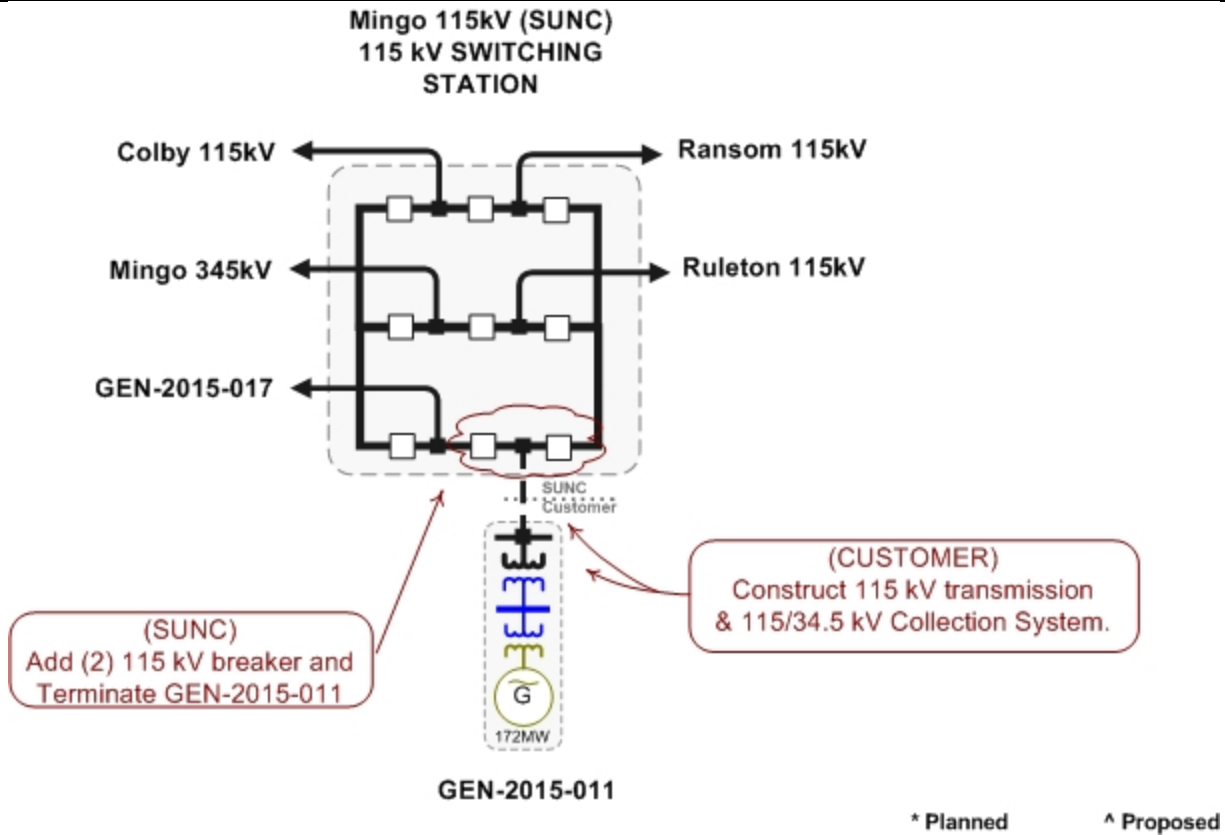
GROUP 14: SOUTH CENTRAL OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2011-040	111.00	OKGE	Carter County 138kV
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV
GEN-2012-004	41.40	OKGE	Carter County 138kV
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside 345kV
PRIOR QUEUED SUBTOTAL	612.50		
AREA TOTAL	612.50		

CLUSTER TOTAL (CURRENT STUDY)	172.0	MW
PQ TOTAL (PRIOR QUEUED)	33,329.7	MW
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	33,501.7	MW

D: Proposed Point of Interconnection One line Diagrams

GEN-2015-011



E: Cost Allocation per Interconnection Request (Including Prior Queued Upgrades)

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Generator Interconnection Request Customer, their current study impacted Network Upgrades, and the previously allocated upgrades upon which they rely to accommodate their interconnection to the transmission system.

The costs associated with the current study Network Upgrades are allocated to the Customers shown in this report.

In addition should a higher queued request, defined as one this study includes as a prior queued request, withdraw, the Network Upgrades assigned to the withdrawn request may be reallocated to the remaining requests that have an impact on the Network Upgrade under a restudy. Also, should an Interconnection Request choose to go into service prior to the operation date of any necessary Network Upgrades, the costs associated with those upgrades may be reallocated to the impacted Interconnection Request. The actual costs allocated to each Generator Interconnection Request Customer will be determined at the time of a restudy.

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2015-011			
Alexander - Ness City 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 18 miles of 115kV	Current Study	\$9,000,000	\$9,000,000
Atwood - Colby 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 27 miles of 115kV	Current Study	\$13,500,000	\$13,500,000
GEN 2015-011 Interconnection Costs See one-line diagram	Current Study	\$4,500,000	\$4,500,000
Hoxie - Seguin Tap CKT 1 NRIS only required upgrade: Rebuild approximately 9.4 miles of 115kV	Current Study	\$4,700,000	\$4,700,000
Lacrosse Tap - Nekoma 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 7 miles of 115kV	Current Study	\$3,500,000	\$3,500,000
Nekoma - Alexander 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 7 miles of 115kV	Current Study	\$3,500,000	\$3,500,000
Arnold - Ransom 115kV CKT 1 Replace terminal equipment to achieve at least a 600 amp rating.	Previously Allocated		\$3,000,000
Border 345kV Reactive Power Support Install 125Mvar SVC at Border Substation.	Previously Allocated		\$25,000,000
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$1,480,238
Mathewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Mathewson - Cimarron @ 3000 amps per ITP10.	Previously Allocated		\$42,903,753
Mingo 345/115/13kV Transformer CKT 2 Potential upgrade from DISIS-2015-001. Install second 345/115/13kV transformer at Mingo	Previously Allocated		\$5,000,000
Oklaunion 345kV Reactive Power Support Install 150Mvar Capacitor Bank(s) and 150Mvar SVC at Oklaunion.	Previously Allocated		\$30,000,000
Other upgrades that may be determined in DISIS 2015-001	Previously Allocated		\$TBD
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Mathewson @ 3000 amps per ITP10.	Previously Allocated		\$104,260,473

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
TUCO Interchange - TUCO 2 230kV CKT 1 Replace wave trap at TUCO	Previously Allocated		\$1,000,000
TUCO Interchange - Yoakum - Hobbs 345/230kV Projects Per HPILs SPP-NTC-200283 (Total Project E&C Cost Shown)	Previously Allocated		\$237,543,568
Woodward - GEN-2011-051 Tap - Tatonga 345kV CKT 2 Build second circuit from Woodward - Tatonga 345kV	Previously Allocated		\$71,876,622
	Current Study Total	\$38,700,000	
TOTAL CURRENT STUDY COSTS:		\$38,700,000	

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

F: Cost Allocation per Proposed Study Network Upgrade

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY
AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Direct Assigned Facility and Network Upgrade and the Generator Interconnection Request Customer(s) which have an impact in this study assuming all higher queued projects remain in the queue and achieve commercial operation.

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

There may be additional costs allocated to each Customer. See Appendix E for more details.

Appendix F. Cost Allocation by Upgrade

Nekoma - Alexander 115kV CKT 1		\$3,500,000
NRIS only required upgrade: Rebuild approximately 7 miles of 115kV		
	GEN-2015-011	\$3,500,000
	Total Allocated Costs	\$3,500,000
Alexander - Ness City 115kV CKT 1		\$9,000,000
NRIS only required upgrade: Rebuild approximately 18 miles of 115kV		
	GEN-2015-011	\$9,000,000
	Total Allocated Costs	\$9,000,000
Atwood - Colby 115kV CKT 1		\$13,500,000
NRIS only required upgrade: Rebuild approximately 27 miles of 115kV		
	GEN-2015-011	\$13,500,000
	Total Allocated Costs	\$13,500,000
GEN 2015-011 Interconnection Costs		\$4,500,000
See one-line diagram		
	GEN-2015-011	\$4,500,000
	Total Allocated Costs	\$4,500,000
Hoxie - Seguin Tap CKT 1		\$4,700,000
NRIS only required upgrade: Rebuild approximately 9.4 miles of 115kV		
	GEN-2015-011	\$4,700,000
	Total Allocated Costs	\$4,700,000
Lacrosse Tap - Nekoma 115kV CKT 1		\$3,500,000
NRIS only required upgrade: Rebuild approximately 7 miles of 115kV		
	GEN-2015-011	\$3,500,000
	Total Allocated Costs	\$3,500,000

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

G: Cost Allocation per Proposed Study Network Upgrade without GEN-2015-012

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Direct Assigned Facility and Network Upgrade and the Generator Interconnection Request Customer(s) which have an impact in this study assuming all higher queued projects remain in the queue and achieve commercial operation.

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

There may be additional costs allocated to each Customer. See Appendix E for more details.

Appendix G. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

(Without PISIS-2015-001 Request(s))

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2015-011			
GEN 2015-011 Interconnection Costs See one-line diagram	Current Study	\$4,500,000	\$4,500,000
Arnold - Ransom 115kV CKT 1 Replace terminal equipment to achieve at least a 600 amp rating.	Previously Allocated		\$3,000,000
Border 345kV Reactive Power Support Install 125Mvar SVC at Border Substation.	Previously Allocated		\$25,000,000
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$1,480,238
Mathewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Mathewson - Cimarron @ 3000 amps per ITP10.	Previously Allocated		\$42,903,753
Mingo 345/115/13kV Transformer CKT 2 Potential upgrade from DISIS-2015-001. Install second 345/115/13kV transformer at Mingo	Previously Allocated		\$5,000,000
Oklaunion 345kV Reactive Power Support Install 150Mvar Capacitor Bank(s) and 150Mvar SVC at Oklaunion.	Previously Allocated		\$30,000,000
Other upgrades that may be determined in DISIS 2015-001	Previously Allocated		\$TBD
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Mathewson @ 3000 amps per ITP10.	Previously Allocated		\$104,260,473
TUCO Interchange - TUCO 2 230kV CKT 1 Replace wave trap at TUCO	Previously Allocated		\$1,000,000
TUCO Interchange - Yoakum - Hobbs 345/230kV Projects Per HPILs SPP-NTC-200283 (Total Project E&C Cost Shown)	Previously Allocated		\$237,543,568
Woodward - GEN-2011-051 Tap - Tatonga 345kV CKT 2 Build second circuit from Woodward - Tatonga 345kV	Previously Allocated		\$71,876,622
	Current Study Total	\$4,500,000	
TOTAL CURRENT STUDY COSTS:		\$4,500,000	

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

H: Cost Allocation per Proposed Study Network Upgrade without GEN-2015-012

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Direct Assigned Facility and Network Upgrade and the Generator Interconnection Request Customer(s) which have an impact in this study assuming all higher queued projects remain in the queue and achieve commercial operation.

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

There may be additional costs allocated to each Customer. See Appendix E for more details.

Appendix H. Cost Allocation by Upgrade

(Without PISIS-2015-001 Request(s))

GEN 2015-011 Interconnection Costs		\$4,500,000
See one-line diagram		
	GEN-2015-011	\$4,500,000
	Total Allocated Costs	\$4,500,000

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

I: FCITC Analysis Constraints Requiring Reinforcement (ERIS)

Contingency								
Group	Season	Scenario	Source	Sink	Monitored Element	Rating	Loading %	Contingency
					None			

J: FCITC Analysis Constraints Requiring Reinforcement (NRIS)

Group	Season	Scenario	Source	Sink	Monitored Element	Contingency		
						Rating	Loading %	Contingency
04NR	15G	0	G15_011	SUNCNR	'ALEXANDER - NEKOMA 115KV CKT 1'	96	104.5038	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ALEXANDER - NEKOMA 115KV CKT 1'	96	111.6477	'HOLCOMB - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ALEXANDER - NESS CITY 115KV CKT 1'	96.2	106.1576	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ALEXANDER - NESS CITY 115KV CKT 1'	96.2	113.2867	'HOLCOMB - SETAB 345KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'ALEXANDER - NESS CITY 115KV CKT 1'	96.6	102.1635	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'ATWOOD - COLBY 115KV CKT 1'	76.7	101.9285	'BREWSTER - MINGO 115KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'ATWOOD - COLBY 115KV CKT 1'	76.7	102.7029	'HOXIE - SEGNT3 115.00 115KV CKT 1'
00NR	20SP	0	G15_011	SUNCNR	'ATWOOD - COLBY 115KV CKT 1'	76.7	101.6879	'BREWSTER - MINGO 115KV CKT 1'
00NR	20SP	0	G15_011	SUNCNR	'ATWOOD - COLBY 115KV CKT 1'	76.7	100.352	'HOXIE - SEGNT3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'HEIZER - LACROSSE TAP 115KV CKT 1'	80.7	109.0666	'HOLCOMB - SETAB 345KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'HOXIE - SEGNT3 115.00 115KV CKT 1'	98.5	100.0492	'ATWOOD SWITCH - HERNTAP3 115.00 115KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'HOXIE - SEGNT3 115.00 115KV CKT 1'	98.5	103.6864	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
00NR	15SP	0	G15_011	SUNCNR	'HOXIE - SEGNT3 115.00 115KV CKT 1'	98.5	101.055	'MINGO - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	110.5618	'BASE CASE'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	117.8551	'BEACH STATION - HOXIE 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	115.1298	'BUCKNER7 345.00 - HOLCOMB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	117.0142	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	116.3566	'DIGHTON TAP - MANNING TAP 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	116.0894	'G09201425 69.000 - G09201425 69.000 69KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	116.0894	'G09201425 69.000 69/34.5KV TRANSFORMER CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	115.3354	'G10-48T 115.00 - REDLINE 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	114.6708	'GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	126.4411	'HOLCOMB - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	120.1164	'HOXIE - SEGNT3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	114.7072	'KNOLL - REDLINE 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	119.3717	'MANNING TAP - SCOTT CITY 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	120.242	'MIDW-CATB01'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	119.8848	'MIDW-CATB01B'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	125.5805	'MINGO - RED WILLOW 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	139.6117	'MINGO - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	117.0182	'MULLERGREN - SOUTH HAYS 230KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	119.6336	'PHEASANT RUN - SEGUIN 3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	120.4331	'SCOTT CITY - SETAB 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	79.6	118.8798	'SEGNT3 115.00 - SEGUIN 3 115.00 115KV CKT 1'
04NR	15G	2	G15_011	SUNCNR	'LACROSSE TAP - NEKOMA 115KV CKT 1'	97.7	109.0872	'HOLCOMB - SETAB 345KV CKT 1'

K: FCITC Analysis Constraints Not Requiring Reinforcement

Group	Season	Scenario	Source	Sink	Monitored Element	Rating	Contingency Loading %	Contingency
					None			

L: FCITC Constraints Excluding GEN-2015-012

Group	Season	Scenario	Source	Sink	Monitored Element	Direction	TDF	Rating	Contingency	
									Loading %	Contingency
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06942	79.6	110.6033	'HOLCOMB - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06238	79.6	108.454	'MINGO - RED WILLOW 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05646	79.6	108.1798	'MIDW-CATB01B'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.1214	79.6	108.1417	'MINGO - SETAB 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05646	79.6	108.0542	'PHEASANT RUN - SEGUIN 3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06452	79.6	108.037	'SCOTT CITY - SETAB 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06099	79.6	107.6511	'MIDW-CATB01'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06099	79.6	107.5255	'HOXIE - SEGNTP 3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05646	79.6	107.1748	'SEGNTP 3 115.00 - SEGUIN 3 115.00 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.04329	79.6	106.8416	'MANNING TAP - SCOTT CITY 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05426	79.6	106.1969	'MULLERGREN - SOUTH HAYS 230KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05346	79.6	105.5215	'G09201425 69.000 - G09201425 69.000 69KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05346	79.6	105.5215	'G09201425 69.000 69/34.5KV TRANSFORMER CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.0704	79.6	105.4131	'MINGO (MINGO) 345/115/13.8KV TRANSFORMER CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.0704	79.6	105.4131	'MINGO (MINGO2) 345/115/13.8KV TRANSFORMER CKT 2'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.0704	79.6	105.4131	'SPP-SEPC-10'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.06099	79.6	105.3898	'BEACH STATION - HOXIE 115KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.05348	79.6	105.2746	'BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1'
04NR	15G	0	G15_011	SUNCNR	'ARNOLD - RANSOM 115KV CKT 1'	FROM->TO	0.04329	79.6	103.8265	'DIGHTON TAP - MANNING TAP 115KV CKT 1'