Limited Operation Impact Study for Generator Interconnection

GEN-2014-033
GEN-2014-034

April 2016
Generator Interconnection

SPP Southwest Power Pool

Revision History

Date	Author	Change Description
4/22/2016	SPP	Limited Operation Impact Study (LOIS) for Gen-2014-033 and GEN-2014-034 Report Revision 0 Issued

Executive Summary

<OMITTED TEXT> (Interconnection Customer) has requested a Limited Operation System Impact Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for 140 MW of solar generation to be interconnected with Energy Resource Interconnection Service (ERIS) into the Transmission System of Southwest Public Service (SPS) in Chaves County, Texas. GEN-2014-033 and GEN-2014-034 under GIA Section 5.9, has requested this Limited Operation Interconnection Study (LOIS) to determine the impacts of interconnecting to the transmission system before all required Network Upgrades identified in the DISIS-2014-002 (or most recent iteration) Impact Study can be placed into service.

This LOIS addresses the effects of interconnecting the generators to the rest of the transmission system for the system topology and conditions as expected on November 1, 2016 and prior to the completion of the required Network Upgrades listed in Table 2, which are expected to be in service by December 31, 2017. GEN-2014-033 and GEN-2014-034 combined are requesting the interconnection of two hundred-eighty (280) SMA 0.5 MW SC 500HE/CP 0.5MVA solar inverters and associated facilities interconnecting at the Chaves 115kV substation in Chaves County, Texas. SPP GI has completed the Interconnection Customer(s) previously requested Material Modification study for inverter changes from SMA to General Electric (G.E.) LV5 1.0MW photovoltaic solar inverters[1]. The Interconnection Customer(s) has requested an additional modification study that is currently under analysis. For this LOIS, power flow analysis was conducted. The LOIS assumes that only the higher queued projects listed within Table 1 of this study might go into service before the completion of all Network Upgrades identified within Table 2 of this report. If additional generation projects, listed within Table 3, with queue priority equal to or higher than the study project request rights to go into commercial operation before all Network Upgrades identified within Table 2 of this report are completed, this LOIS may need to be restudied to ensure that interconnection service remains for the customer's request.

Power flow analysis from this LOIS has determined that the GEN-2014-033 and GEN-2014-034 request can interconnect 140 MW of generation with ERIS only prior to the completion of the required Network Upgrades, listed within Table 2 of this report, provided the Network Upgrades are able to be placed in service prior to December 31, 2017. Should any other projects, other than those listed within Table 1 of this report, come into service an additional study may be required to determine if any limited operation service is available. It should be noted that although this LOIS analyzed many of the most probable contingencies, it is not an all-inclusive list that can account for every operational situation. Additionally, the generator may not be able to inject any power onto

[1] GEN-2014-033 Material Modification Study:
http://sppoasis.spp.org/documents/swpp/transmission/studies/files/2014_Generation_Studies/Impact%20Restudy_GEN-2014-033_%20Modification_Study_final.pdf
GEN-2014-034 Material Modification Study:
http://sppoasis.spp.org/documents/swpp/transmission/studies/files/2014_Generation_Studies/Impact%20Restudy_GEN-2014-034_%20Modification_Study_final.pdf

the Transmission System due to constraints that fall below the threshold of mitigation for a Generator Interconnection request. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to **0 MW** under certain system conditions to allow system operators to maintain the reliability of the transmission network.

Transient stability analysis was not performed for this LOIS study. The results from DISIS 2014-002 or latest iteration remain valid.

Nothing in this study should be construed as a guarantee of delivery or transmission service. If the customer(s) wishes to sell power from the facility, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the Customer(s).

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Purpose

<OMITTED TEXT> (Interconnection Customer) has requested a Limited Operation System Impact Study (LOIS) under the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT) for interconnection requests into the Transmission System of Southwest Public Service (SPS).

The purpose of this study is to reevaluate the impacts of interconnecting GEN-2014-033 and GEN-2014-034 requests are a total of 140 MW comprised of two hundred-eighty (280) SMA 0.5 MW SC 500HE/CP 0.5MVA solar inverters and associated facilities interconnecting at the Chaves 115kV substation in Chaves County, Texas. The Customer(s) has requested this amount to be studied with Energy Resource Interconnection Service (ERIS) and Network Resource Interconnection Service (NRIS) to commence on or around November, 2016.

Only power flow analysis was conducted for this Limited Operation Interconnection Service. Limited Operation Studies are conducted under GIA Section 5.9.

The LOIS considers the Base Case as well as all Generating Facilities (and with respect to (b) below, any identified Network Upgrades associated with such higher queued interconnection) that, on the date the LOIS is commenced:

a) are directly interconnected to the Transmission System;
b) are interconnected to Affected Systems and may have an impact on the Interconnection Request;
c) have a pending higher queued Interconnection Request to interconnect to the Transmission System listed in Table 1; or
d) have no Queue Position but have executed an LGIA or requested that an unexecuted LGIA be filed with FERC.

Any changes to these assumptions, for example, one or more of the previously queued requests not included within this study execute an interconnection agreement and commencing commercial operation, may require a re-study of this LOIS at the expense of the Customer(s).

Nothing within this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer(s) any right to receive transmission service rights. Should the Customer(s) require transmission service, those rights should be requested through SPP's Open Access Same-Time Information System (OASIS).

This LOIS study included prior queued generation interconnection requests. Those listed within Table 1 are the generation interconnection requests that are assumed to have rights to either full or partial interconnection service prior to the requested November 2016 in-service for this LOIS. Also listed in Table 1 are both the amount of MWs of interconnection service expected at the effective time of this study and the total MWs requested of interconnection service, the fuel type, the point of interconnection (POI), and the current status of each particular prior queued request.

Table 1: Generation Requests Included within LOIS

Project	MW	Total MW	Fuel Source	POI	Status
ASGI-2010-010	42.2	42.2		Lovington 115kV	
ASGI-2010-020	30	30		Tap LE Tatum – LE Crossroads 69kV	
ASGI-2010-021	15	15		Tap LE-Saunders Tap – LE Anderson 69kV	
ASGI-2011-001	27.3	27.3		Lovington 115kV	
ASGI-2011-003	10	10		Hendricks 115kV	
ASGI-2011-004	20	20		Pleasant Hill 69kV	
ASGI-2012-002	18.15	18.15		FE-Clovis Interchange 115kV	
ASGI-2013-002	18.4	18.4		FE Tucumcari 115kV	
ASGI-2013-003	18.4	18.4		FE Clovis 115kV	
ASGI-2013-005	1.65	1.65		FE Clovis 115kV	
ASGI-2013-006	2	2		SP-Erskine 115kV	
ASGI-2014-001	2.5	2.5		SP-Erskine 115kV	
GEN-2001-033	180	180	Wind	San Juan Tap 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION (120MW)
GEN-2001-036	80	80	Wind	Norton 115kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2006-018	170	170	CT	TUCO Interchange 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2006-026	502	502	Gas	Hobbs 230kV & Hobbs 115kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2008-022	300	300	Wind	Tap Tolk - Eddy County (Crossroads) 345kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2010-006	205	205	Gas	Jones 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2011-025	80	80	Wind	Tap Floyd County - Crosby County 115kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2016
GEN-2011-046	27	27	Diesel CT	Lopez 115kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2011-048	175	175	CT	Mustang 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2012-001	61.2	61.2	Wind	Cirrus Tap 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2012-020	478	478	Wind	TUCO 230kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2016
GEN-2012-034	7	7	CT	Mustang 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2012-036	7	7	CT	Mustang 230kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2012-037	203	203	CT	TUCO 345kV	IA FULLY EXECUTED/COMMERCIAL OPERATION
GEN-2013-016	203	203	CT	TUCO 345kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2017
GEN-2013-022	25	25	Solar	Norton 115kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2016
GEN-2014-047	40	40	Solar	Tap Tolk - Eddy County (Crossroads) 345kV	IA PENDING

Table 1: Generation Requests Included within LOIS

Project	MW	Total MW	Fuel Source	POI	Status
GEN-2014-033	70	70	Solar	Chaves County 115kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2016
GEN-2014-034	70	70	Solar	Chaves County 115kV	I IA FULLY EXECUTED/ON SCHEDULE FOR 2016

This LOIS was required because the Customer(s) are requesting interconnection prior to the completion of all of their required upgrades listed within the latest iteration of their Definitive Interconnection System Impact Study (DISIS).
Table *2* below lists the required upgrade projects for which these requests have cost responsibility. GEN-2014-033 and GEN-2014-034 were included within the DISIS-2014-002-6 Group 06 (South Texas Pan Handle/New Mexico Area) Impact Restudy that posted March 11, 2016[2]. The cluster has been restudied since the original posting. These reports can be located at the following Generation Interconnection Study URL:
http://sppoasis.spp.org/documents/swpp/transmission/GenStudies.cfm?YearType=2014_Impact_Studies

Table 2: Upgrade Projects not included but Required for Full Interconnection Service

Upgrade Project	Type	Description	Status
Tolk – Plant X 230kV circuit #3	New Line	Build a 3rd 230kV circuit between Tolk and Plant X	Interconnection Facilities Study Completion. Status pending executed GIAs.
TUCO 345/230/13kV Transformer replacement	Transformer Replacement	Replace existing TUCO 345/230/13kV 560MVA Rate B transformer circuit #1 with 644MVA Rate B transformer	Interconnection Facilities Study Completion. Status pending executed GIAs.

Any changes to these assumptions, for example, one or more of the previously queued requests not included within this study execute an interconnection agreement and commencing commercial operation, may require a re-study of this LOIS at the expense of the Customer(s).

The higher or equally queued projects that were not included in this study are listed in Table 3. While this list is not all inclusive it is a list of the most probable and affecting prior queued requests that were not included within this LOIS, either because no request for an LOIS has been made or the request is on suspension, etc.

[2] DISIS-2014-002-6 Group 6 Impact Restudy:
http://sppoasis.spp.org/documents/swpp/transmission/GenStudies.cfm?YearType=2014_Impact_Studies

Table 3: Higher or Equally Queued GI Requests not included within LOIS

Project	MW	Total MW	Fuel Source	POI	Status
GEN-2013-027	150.0	150.0	Wind	Tap Tolk-Yoakum 230kV	IA PENDING
GEN-2014-035	30.0	30.0	Wind	Chaves County 115kV	IA FULLY EXECUTED/ON SCHEDULE FOR 2018

Nothing in this System Impact Study constitutes a request for transmission service or grants the Interconnection Customer(s) any rights to transmission service.

Facilities

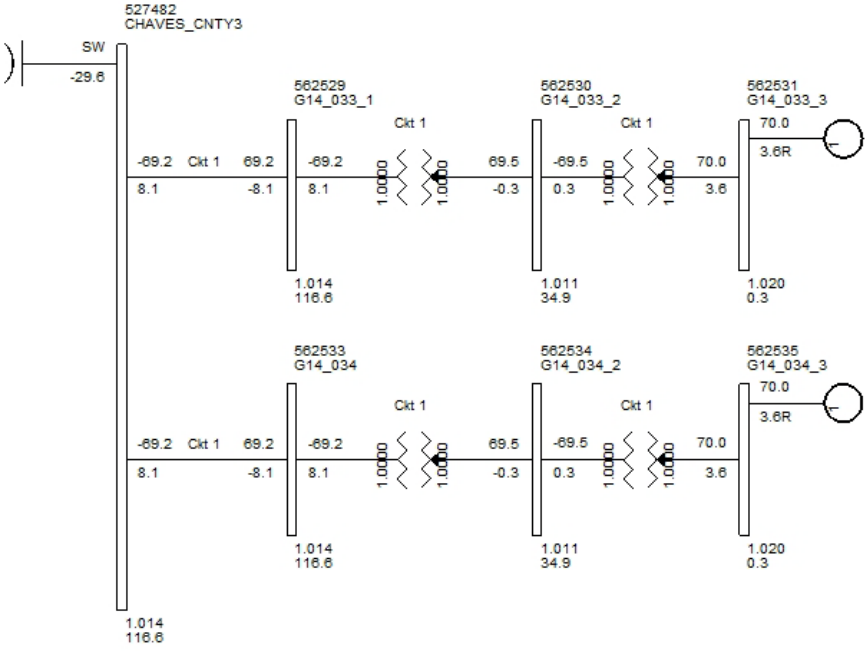
Generating Facility

The Interconnection Customers' request to interconnect a total of 140 MW comprised of two hundred-eighty (280) SMA 0.5 MW SC 500HE/CP 0.5MVA solar inverters s and associated facilities.

Interconnection Facilities

The POI for GEN-2014-033 and GEN-2014-034 Interconnection Customer(s) is the Chaves 115kV substation in Chaves County, Texas. *Figure 1* depicts the one-line diagram for the POI and the Interconnection Request(s).

Figure 1: Proposed POI Configuration and Request Power Flow Model



Base Case Network Upgrades

The Network Upgrades included within the cases used for this LOIS study are those facilities that are a part of the SPP Transmission Expansion Plan or the Balanced Portfolio projects that have in-service dates prior to the GEN-2014-033 and GEN-2014-034 LOIS requested in-service date of November 1, 2016. These facilities have an approved Notification to Construct (NTC), or are in construction stages and expected to be in-service at the effective time of this study. No other upgrades were included for this LOIS. If for some reason, construction on these projects is delayed or discontinued, a restudy may be needed to determine the interconnection service availability of the Customer(s).

Power Flow Analysis

Power flow analysis is used to determine if the transmission system can accommodate the injection from the request without violating thermal or voltage transmission planning criteria.

Model Preparation

Power flow analysis was performed using modified versions of the 2015 series of transmission service request study models including the 2016 Winter Peak (16WP), 2017 Spring (17G), and 2017(17SP) seasonal models. To incorporate the Interconnection Customers' request, a re-dispatch of existing generation within SPP was performed with respect to the amount of the Customers' injection.

For Variable Energy Resources (VER) (solar/wind) in each power flow case, Energy Resource Interconnection Service (ERIS), is evaluated for the generating plants within a geographical area of the interconnection request(s) for the VERs dispatched at 100% nameplate of maximum generation. The VERs in the remote areas is dispatched at 20% nameplate of maximum generation. These projects are dispatched across the SPP footprint using load factor ratios.

Peaking units are not dispatched in the 2017 spring, or in the "High VER" summer and winter peaks. To study peaking units' impacts, the 2016 winter peaks and 2017 summer peak, models are developed with peaking units dispatched at 100% of the nameplate rating and VERs dispatched at 20% of the nameplate rating. Each interconnection request is also modeled separately at 100% nameplate for certain analyses.

All generators (VER and peaking) that requested Network Resource Interconnection Service (NRIS) are dispatched in an additional analysis into the interconnecting Transmission Owner's (T.O.) area at 100% nameplate with Energy Resource Interconnection Service (ERIS) only requests at 80% nameplate. This method allows for identification of network constraints that are common between regional groupings to have affecting requests share the mitigating upgrade costs throughout the cluster.

For this LOIS, only the previous queued requests listed in Table 1 were assumed to be in-service at 100% dispatch.

Study Methodology and Criteria

Network constraints are found by using PSS/E AC Contingency Calculation (ACCC) analysis with PSS/E MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels previously mentioned. Thermal overloads are determined for system intact (n-0) (Rate A - Normal) and for contingency (n-1) (Rate B – emergency) conditions. The overloads are then screened to determine which of generator interconnection requests have at least a 3% Distribution Factor (DF) for system intact conditions (n-0) or a 20% Distribution Factor (DF) upon outage based constraints (n-1) and 3% DF upon system

intact constraints (n-0) or on non-converged case solutions during outage based constraints (n-1). Appropriate transmission support is then determined to mitigate the constraints.
Interconnection Requests that requested Network Resource Interconnection Service (NRIS) are also studied in the NRIS analysis to determine if any constraint measured greater than or equal to a 3% DF. If so, these constraints are also considered for mitigation under NRIS.

The contingency set includes all SPP control area branches and ties 69kV 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 SPP control areas with SPP reserve share program redispatch.

The monitor elements include all SPP control area branches, ties, and buses 69 kV and above, and all first tier Non-SPP control area branches and ties 69 kV and above. NERC Power Transfer Distribution Flowgates for SPP and first tier Non-SPP control area are monitored. Additional NERC Flowgates are monitored in second tier or greater Non-SPP control areas. Voltage monitoring was performed for SPP control area buses 69 kV and above.

Results

The LOIS ACCC analysis indicates that the Customer(s) can interconnect their generation into the SPS transmission system at a reduced rate before all required upgrades listed within the DISIS-2014-002 study or latest iteration can be placed into service. Should any other GI projects, other than those listed within Table 1 of this report, come into service an additional study may be required to determine if any limited operation service is available. ACCC results for the LOIS can be found in Table 4.

Constraints listed in Table 5 do not require additional transmission reinforcement for Interconnection Service, but could require Interconnection Customer to reduce generation in operational conditions. These transmission constraints occur when this study's generation is dispatched into the SPP footprint for Energy Resource Interconnection Service (ERIS) or when this study's generation is dispatched into the interconnecting Transmission Owner's (T.O.) area for Network Resource Interconnection Service (NRIS).

Curtailment 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** under certain system conditions to allow system operators to maintain the reliability of the transmission network.

Table 4: Interconnection Constraints for Mitigation of LOIS @ 140MW

Dispatch Group	Season	Source	Flow	Monitored Element	RATEA (MVA)	RATEB (MVA)	TDF	TC% LOADING	Max MW Available	Contingency
Group 06	n/a	n/a	n/a	Currently, no 3% System Intact or 20% N-1 transmission reinforcement mitigations	n/a	n/a	n/a	n/a	n/a	n/a

Table 5: Constraints that do not require additional Transmission Reinforcements LOIS @ 140MW

Dispatch Group	Season	Source	Flow	Monitored Element	RATEA (MVA)	RATEB (MVA)	TDF	TC% LOADING	Contingency
06ALL	17G	G14_034	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	143	0.03303	95.5	DBL-THIS-WIC
06ALL	17G	G14_033	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	143	0.03303	95.5	DBL-THIS-WIC
0	16WP	G14_033	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.0334	120.3231	DBL-THIS-WIC
0	16WP	G14_034	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.0334	120.3231	DBL-THIS-WIC
06ALL	16WP	G14_034	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03331	121.9951	DBL-THIS-WIC
06ALL	16WP	G14_033	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03331	121.9951	DBL-THIS-WIC
06ALL	17G	G14_033	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03303	134.3522	DBL-THIS-WIC
06ALL	17G	G14_034	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03303	134.3522	DBL-THIS-WIC
06ALL	17SP	G14_033	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03628	103.0804	DBL-THIS-WIC
06ALL	17SP	G14_034	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	110	0.03628	103.0804	DBL-THIS-WIC
06ALL	16WP	G14_033	FROM->TO	EDDY_NORTH 6230.00 (WAUK WT01134) 230/115/13.2KV TRANSFORMER CKT 2	273.8	311	0.08827	97.3	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
06ALL	16WP	G14_034	FROM->TO	EDDY_NORTH 6230.00 (WAUK WT01134) 230/115/13.2KV TRANSFORMER CKT 2	273.8	311	0.08827	97.3	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
06ALL	16WP	G14_034	FROM->TO	EDDY_NORTH 6230.00 (WAUK WT01134) 230/115/13.2KV TRANSFORMER CKT 2	273.8	311	0.08827	97.8	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
06ALL	16WP	G14_033	FROM->TO	EDDY_NORTH 6230.00 (WAUK WT01134) 230/115/13.2KV TRANSFORMER CKT 2	273.8	311	0.08827	97.8	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
0	16WP	G14_033	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	143.4	0.0334	99.1	DBL-THIS-WIC
0	16WP	G14_034	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	143.4	0.0334	99.1	DBL-THIS-WIC
06ALL	16WP	G14_034	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	143.4	0.03331	100.3969	DBL-THIS-WIC
06ALL	16WP	G14_033	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	143.4	0.03331	100.3969	DBL-THIS-WIC
06ALL	17G	G14_033	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	138.6	143.4	0.03303	111.1321	DBL-THIS-WIC
06ALL	17G	G14_034	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	138.6	143.4	0.03303	111.1321	DBL-THIS-WIC
0	17SP	G14_034	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04224	95.4	BUCKEYE TAP - LE-TXACO_TP3115.00 115KV CKT 1
0	17SP	G14_033	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04224	95.4	BUCKEYE TAP - LE-TXACO_TP3115.00 115KV CKT 1
0	17SP	G14_034	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04224	102.8421	BUCKEYE TAP - CUNNINGHAM STATION 115KV CKT 1

Dispatch Group	Season	Source	Flow	Monitored Element	RATEA (MVA)	RATEB (MVA)	TDF	TC% LOADING	Contingency
0	17SP	G14_033	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04224	102.8421	BUCKEYE TAP - CUNNINGHAM STATION 115KV CKT 1
06ALL	17SP	G14_033	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04229	99.9209	BUCKEYE TAP - CUNNINGHAM STATION 115KV CKT 1
06ALL	17SP	G14_034	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04229	99.9209	BUCKEYE TAP - CUNNINGHAM STATION 115KV CKT 1
06ALL	17G	G14_033	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	478.05	501.55	0.04048	105.7443	P12:345:SPS:J02.1.TOLK.EDDY
06ALL	17G	G14_034	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	478.05	501.55	0.04048	105.7443	P12:345:SPS:J02.1.TOLK.EDDY
06ALL	17SP	G14_033	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	478.05	501.55	0.05363	96.6	P12:345:SPS:J02.1.TOLK.EDDY
06ALL	17SP	G14_034	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	478.05	501.55	0.05363	96.6	P12:345:SPS:J02.1.TOLK.EDDY

Stability Analysis

Transient stability analysis was not performed for this LOIS study. The results from DISIS 2014-002-6 or most recent iteration remain valid.

Conclusion

<OMITTED TEXT> (Interconnection Customer) has requested a Limited Operation System Impact Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for a total of 140MW of solar generation to be interconnected with Energy Resource Interconnection Service (ERIS) into the Transmission System of Southwest Public Service (SPS) in Chaves County, Texas. The point of interconnection will be the Chaves 115kV substation. GEN-2014-033 and GEN-2014-034 under GIA Section 5.9, have requested this Limited Operation Interconnection Study (LOIS) to determine the impacts of interconnecting to the transmission system before all required Network Upgrades identified in the DISIS-2014-002-6 Impact Restudy can be placed into service.

Power flow analysis from this LOIS has determined that GEN-2014-033 and GEN-2014-034 request can interconnect their generation at total of 140MW as an ERIS only prior to the completion of the required Network Upgrades, listed within Table 2 of this report. Should any other projects, other than those listed within Table 1 of this report, come into service an additional study may be required to determine if any limited operation service is available. Refer to Table 4 for the Limited Operation Interconnection Service available due to interconnection constraints.

Transient stability analysis was not performed for this LOIS study. The results from DISIS 2014-002-6 remain valid.

Any changes to these assumptions, for example, one or more of the previously queued requests not included within this study execute an interconnection agreement and commencing commercial operation, may require a re-study of this LOIS at the expense of the Customer.

Nothing in this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer any right to receive transmission service.