



GENERATOR INTERCONNECTION AFFECTED SYSTEM IMPACT STUDY REPORT

ASGI-2017-009

Published October 2017

By SPP Generator Interconnections Dept.

REVISION HISTORY

| Date | Author | Change Description |
|------------|--------|---|
| 10/11/2017 | SPP | Affected System Impact Study for ASGI-2017-009 Report Revision 0 Issued |
| | | |
| | | |

EXECUTIVE SUMMARY

An Affected System Interconnection Customer has requested an Affected System Impact Study (ASIS) consistent with Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT) for interconnection requests into the system of Associated Electric Cooperative Inc. (AECI). AECI request GI-57/SIS-28, 200 MW wind generating facility, has been assigned the SPP queue identifier ASGI-2017-009.

This ASIS addresses the effects to the SPP system of interconnecting the generators to the AECI transmission system for the system topology and requests included in SPP DISIS-2016-001. ASGI-2017-009 is requesting the interconnection of one-hundred-three (103) Vestas V110 2.0 MW wind turbines for a total of 200MW injection at the Point of Interconnection (POI) and associated facilities interconnecting to AECI at the Fairfax 138 kV substation in Osage County, OK.

The ASIS analysis has determined that the ASGI-2017-009 request can interconnect 200.0 MW of generation with Energy Resource Interconnection Service (ERIS) with the study dispatch assumption listed in **Table 1** after the completion of the required Network Upgrades, listed within **Table 2A or Table 2B** of this report depending on the which higher queued AECI upgrade set is assigned to ASGI-2017-005 (AECI GIA-052). AECI upgrade sets are listed in **Table 6 and Table 7**.

It should be noted that although this ASIS 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 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 for this ASIS has determined that issues were observed as listed in **Table 4** for the transmission system for the thirty-five (35) selected faults for the interconnection of ASGI-2017-009 and the analysis shows that the generators will meet Low Voltage Ride-Through (LVRT) requirements of FERC Order #661A. As discussed above, this amount may be reduced further dependent upon system conditions.

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

TABLE OF CONTENTS

| | |
|--|-----------|
| Revision History | i |
| Executive Summary | i |
| Table of Contents | ii |
| Purpose | 3 |
| Facilities | 8 |
| Generating Facility | 8 |
| Interconnection Facilities..... | 8 |
| Base Case Network Upgrades..... | 8 |
| Power Flow Analysis | 9 |
| Model Preparation | 9 |
| Study Methodology and Criteria..... | 10 |
| Thermal Overloads | 10 |
| Voltage | 11 |
| Results..... | 12 |
| Curtailment and System Reliability | 12 |
| Stability Analysis | 13 |
| Model Preparation | 13 |
| Disturbances..... | 13 |
| Results..... | 19 |
| FERC LVRT Compliance | 20 |
| Short Circuit Analysis | 21 |
| Conclusion | 26 |
| AECI Upgrade Sets | 27 |
| Thermal and Steady State Voltage Constraints Tables Base On AECI Upgrade Set #1 | 28 |
| Thermal and Steady State Voltage Constraints Tables Base On AECI Upgrade Set #2 | 47 |

PURPOSE

An Affected System Interconnection Customer has requested an Affected System Impact Study (ASIS) consistent with the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT) for interconnection requests into the system of Associated Electric Cooperative Inc. (AECI).

The purpose of this study is to evaluate the impacts of interconnecting the AECI GI-52/SIS-28 request assigned the SPP queue identifier ASGI-2017-009. ASGI-2017-009 is requesting the interconnection of one-hundred-three (103) Vestas V110 2.0 MW wind turbines for a total of 200MW injection at the Point of Interconnection (POI) and associated facilities interconnecting to AECI at the Remington 138 kV substation in Osage County, OK.

The ASIS 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 ASIS 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 ASIS 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) or that of the applicable transmission provider.

This ASIS 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 in-service for this ASIS. Also listed in **Table 1** are both the amount of MW of interconnection service expected at the effective time of this study and the total MW 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 ASIS

| Project | MW | Fuel Source | POI | Status |
|---------------|-------|-------------|---|--------------------------------------|
| ASGI-2010-006 | 150 | Wind | Remington 138kV | Commercial Operation |
| ASGI-2014-014 | 56.4 | Thermal | Ferguson 69kV | Commercial Operation |
| ASGI-2015-004 | 56.36 | Thermal | Coffeyville City 69kV | Commercial Operation |
| GEN-2002-004 | 200 | Wind | Latham 345kV | Commercial Operation |
| GEN-2005-013 | 201 | Wind | Caney River 345kV | Commercial Operation |
| GEN-2007-025 | 300 | Wind | Viola 345kV | Commercial Operation |
| GEN-2008-013 | 300 | Wind | Hunter 345kV | Commercial Operation |
| GEN-2008-021 | 42 | Nuclear | Wolf Creek 345kV | Commercial Operation |
| GEN-2008-098 | 100.8 | Wind | Waverly 345kV | Commercial Operation |
| GEN-2009-025 | 59.8 | Wind | Nardins 69kV | Commercial Operation |
| GEN-2010-003 | 100.8 | Wind | Waverly 345kV | Commercial Operation |
| GEN-2010-005 | 299.2 | Wind | Viola 345kV | Commercial Operation |
| GEN-2010-055 | 4.5 | Gas | Wekiwa 138kV | Commercial Operation |
| GEN-2011-057 | 150.4 | Wind | Creswell 138kV | Commercial Operation |
| GEN-2012-032 | 300 | Wind | Open Sky 345kV | Commercial Operation |
| GEN-2012-033 | 98.1 | Wind | Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV | Commercial Operation |
| GEN-2012-041 | 121.5 | CT | Ranch Road 345kV | Commercial Operation |
| GEN-2013-012 | 147 | Gas | Redbud 345kV | Commercial Operation |
| GEN-2013-028 | 559.5 | Gas | Tap N Tulsa - GRDA 1 345kV | IA Executed/On schedule for 2017 COD |
| GEN-2013-029 | 300 | Wind | Renfrow 345kV | Commercial Operation |
| GEN-2014-001 | 200.6 | Wind | Tap Wichita - Emporia Energy Center (GEN-2014-001 Tap) 345kV | IA Executed/On Suspension |
| GEN-2014-028 | 35 | CC | Riverton 161kV | Commercial Operation |
| GEN-2014-064 | 248.4 | Wind | Otter 138kV | IA Executed/On Suspension |
| GEN-2015-001 | 200 | Wind | Ranch Road 345kV | Commercial Operation |
| GEN-2015-015 | 154.6 | Wind | Tap Medford Tap - Coyote 138kV | IA Executed/On schedule for 2017 COD |
| GEN-2015-016 | 200 | Wind | Tap Marmaton - Centerville 161kV | IA Executed/On schedule for 2018 COD |
| GEN-2015-024 | 220 | Wind | Tap Thistle - Wichita 345kV Dbl CKT | Commercial Operation |
| GEN-2015-025 | 220 | Wind | Tap Thistle - Wichita 345kV Dbl CKT | Commercial Operation |
| GEN-2015-030 | 200.1 | Wind | Sooner 345kV | IA Executed/On Suspension |
| GEN-2015-034 | 200 | Wind | Ranch Road 345kV | Facility Study Stage |
| GEN-2015-047 | 300 | Wind | Sooner 345kV | Facility Study Stage |
| GEN-2015-052 | 300 | Wind | Tap Open Sky - Rose Hill 345kV | Facility Study Stage |
| GEN-2015-062 | 4.5 | Wind | Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV | Facility Study Stage |
| GEN-2015-063 | 300 | Wind | Tap Woodring - Mathewson 345kV | Facility Study Stage |
| GEN-2015-066 | 248.4 | Wind | Tap Cleveland - Sooner 345kV | Facility Study Stage |

Table 1: Generation Requests Included within ASIS

| Project | MW | Fuel Source | POI | Status |
|---------------|---|-------------|---|----------------------|
| GEN-2015-069 | 300 | Wind | Union Ridge 230kV | Facility Study Stage |
| GEN-2015-073 | 200.1 | Wind | Emporia Energy Center 345kV | Facility Study Stage |
| GEN-2015-083 | 125 | Wind | Belle Plain 138kV | Facility Study Stage |
| GEN-2015-090 | 220 | Wind | Tap Thistle - Wichita 345kV Dbl CKT | Facility Study Stage |
| GEN-2016-009 | 29 | Thermal | Osage 69kV (514742) | Facility Study Stage |
| GEN-2016-022 | 151.8 | Wind | Ranch Road 345kV (515576) | Facility Study Stage |
| GEN -2016-024 | 55.86 | Wind | Midian 138kV (532990) | Facility Study Stage |
| GEN-2016-031 | 1.5MW uprate of GEN-2015- 001 (total = 201.3MW) | Wind | Ranch Road 345kV (515576) | Facility Study Stage |
| GEN-2016-032 | 200 | Wind | Tap Marshall (514733)- Cottonwood Creek (514827) 138kV, (G16-032-TAP, 560077) | Facility Study Stage |
| GEN -2016-048 | 82.32 | Solar | Sooner 138kV (514802) | Facility Study Stage |
| GEN-2016-060 | 25.3 | Wind | Belle Plain 138kV (533063) | Facility Study Stage |
| GEN-2016-061 | 250.7 | Wind | Tap Woodring (514715) – Sooner (514803) 345kV (G16- 061-TAP, 560084) | Facility Study Stage |
| GEN-2016-068 | 250 | Wind | Woodring 345kV (514715) | Facility Study Stage |
| GEN-2016-071 | 200.1 | Wind | Chilocco 138kV (521198) | Facility Study Stage |
| ASGI-2017-009 | 200 | Wind | Fairfax (AECI) 138 kV | Current Study |

This ASIS was required because the Affected System Interconnection Customer(s) are requesting interconnection at a location electrically close to the SPP system.

Table 2A and Table 2B below lists the higher queued required upgrade projects for which these requests have cost responsibility. DISIS-2016-001 Group 08 Impact Study was posted February 28, 2017.

DISIS-2016-001 reports can be located at the following Generation Interconnection Study URL:
http://sppoasis.spp.org/documents/swpp/transmission/GenStudies.cfm?YearType=2016_Impact_Studies

Table 2A: Upgrade Projects Required for Interconnection Service under AECI Upgrade Set #1

| Upgrade Project | Type | Description | Status | Study Assignment |
|---|------------------------|---|--|---|
| GEN-2015-063 Tap – Mathewson 345 kV CKT 1 | Structure Replacements | Replace terminal equipment and structures to achieve conductor limit | IA Pending | DISIS-2015-002 |
| Farber – Belle Plains 138kV CKT 1 | Rebuild | Rebuild approximately 10 miles of 138kV from Farber – Belle Plains | Facility Study | DISIS-2016-001 |
| Collinsville (GRDA)* – Skiatook Tap (AECI/KAMO)** 138kV CKT 1 | Terminal Equipment | Replace terminal equipment to achieve at least 158MVA Summer Peak Emergency (Rate B) | Assigned to AECI Higher Queued Impact Study Assignment | Assigned to ASGI-2017-005 (AECI GIA-052) cost allocation of \$250,000 |
| Remington (AECI/KAMO) – Shidler (AEP)* 138kV CKT 1 | Rebuild | Rebuild approximately 8.6 miles of 138kV | Assigned to AECI Higher Queued Impact Study Assignment | Assigned to ASGI-2017-005 (AECI-052) per AECI Impact Study |
| Shidler – West Pawhuska – Pawhuska Tap – Domes – Mound Road – Bartlesville 138kV CKT 1* | Rebuild | Rebuild approximately 45 miles of 138kV from Shidler – Bartlesville 138kV to achieve at least 161MVA Summer Peak Normal (Rate A) and 234 Summer Peak Emergency (Rate B) | Assigned to AECI Higher Queued Impact Study Assignment | Assigned to ASGI-2017-005 (AECI GIA-052) cost allocation of \$37,000,000 |
| Remington (AECI/KAMO) – Barnsdall (AEP)* 138kV CKT 1 | Build | Build approximately 35 miles of 138kV to mitigate power flow Fairfax Pawnee 138kV constraints and unstable results from the transient stability analysis | Current Study | Current Study Affected System, AEP-PSO, Barnsdall Upgrade cost allocation of \$5,000,000. Cost assumes new line is built and owned by AECI. |

Table 2B: Upgrade Projects Required for Interconnection Service under AECI Upgrade Set #2

| Upgrade Project | Type | Description | Status | Study Assignment |
|---|------------------------|--|--|---|
| Remington (AECI/KAMO) – Barnsdall (AEP)* 138kV CKT 1 | Build | Build approximately 35 miles of 138kV | Assigned to AECI Higher Queued Impact Study Assignment | Assigned to ASGI-2017-005 (AECI-052) per AECI Impact Study. Current Study Affect System, AEP-PSO, Barnsdall Upgrade cost allocation of \$5,000,000 |
| GEN-2015-063 Tap – Mathewson 345 kV CKT 1 | Structure Replacements | Replace terminal equipment and structures to achieve conductor limit | IA Pending | DISIS-2015-002 |
| Farber – Belle Plains 138kV CKT 1 | Rebuild | Rebuild approximately 10 miles of 138kV from Farber – Belle Plains | Facility Study | DISIS-2016-001 |
| Collinsville (GRDA)* – Skiatook Tap (AECI/KAMO)** 138kV CKT 1 | Terminal Equipment | Replace terminal equipment to achieve at least 158MVA Summer Peak Emergency (Rate B) | Assigned to AECI Higher Queued Impact Study Assignment | ASGI-2017-005 (AECI GIA-052) cost allocation of \$250,000 |
| Shidler – West Pawhuska – Pawhuska Tap 138kV CKT 1* | Rebuild | Rebuild approximately 21 miles of 138kV from Shidler – Pawhuska Tap 138kV to achieve at least 155 Summer Peak Emergency (Rate B) | Assigned to AECI Higher Queued Impact Study Assignment | ASGI-2017-005 (AECI GIA-052) cost allocation of \$25,200,000 |
| Mound Road – Bartlesville 138kV CKT 1* | Rebuild | Rebuild approximately 3 miles of 138kV from Mound Road – Bartlesville 138kV to achieve at least 155 Summer Peak Normal (Rate A) and 200 Summer Peak Emergency (Rate B) | Assigned to AECI Higher Queued Impact Study Assignment | ASGI-2017-005 (AECI GIA-052) cost allocation of \$2,500,000 |
| Bartlesville Comanche – Bartlesville Southeast 138kV CKT 1* | Rebuild | Rebuild approximately 5 miles of 138kV from Mound Road – Bartlesville 138kV to achieve at least 157 Summer Peak Emergency (Rate B) | Current Study | ASGI-2017-009 (AECI GIA-057) cost allocation of \$5,000,000 |

* Upgrades denoted will require an SPP Affected System Facilities Study agreement and deposit. These upgrades could require the need for a Construction Agreement (CA) as a result of the Affected System Facilities Study.

** Upgrades denoted also require AECI review for AECI facility mitigations.

Any changes to these assumptions may require a re-study of this ASIS at the expense of the Customer(s).

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

FACILITIES

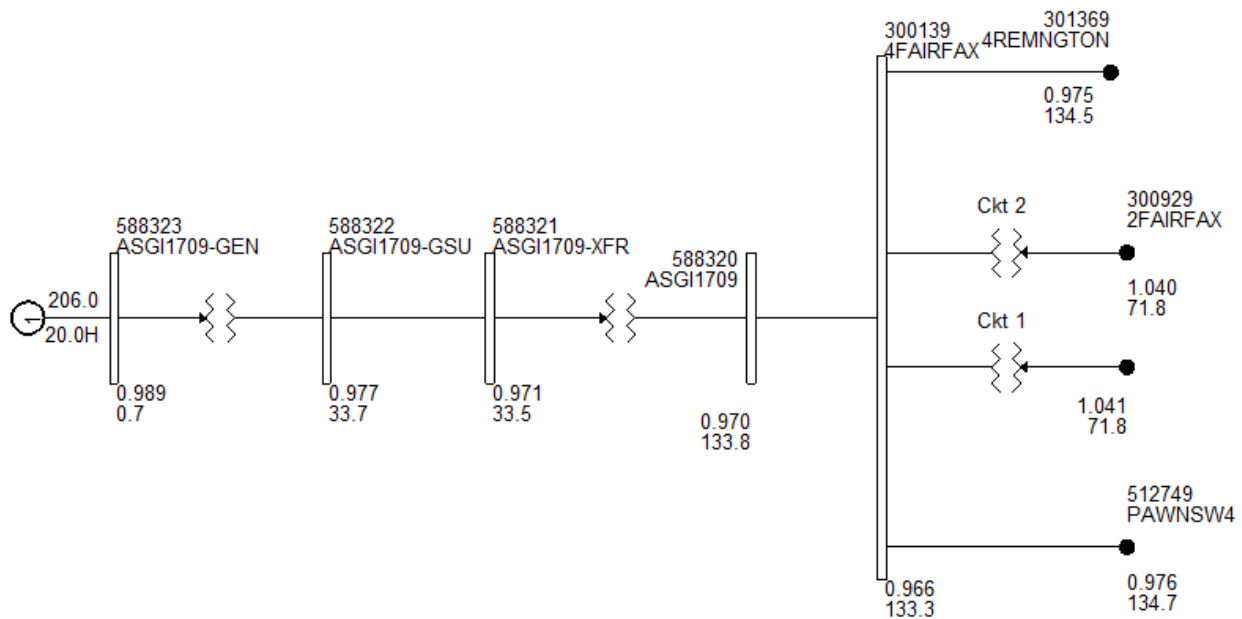
GENERATING FACILITY

The Affected System Interconnection Customers' request is the interconnection of one-hundred-three (103) Vestas V110 2.0 MW wind turbines for a total of 200MW injection at the Point of Interconnection (POI) and associated facilities interconnecting to AECl at the Remington 138 kV substation in Osage County, OK.

INTERCONNECTION FACILITIES

The POI for ASGI-2017-009 Interconnection Customer connects to the Affected System Fairfax 138 kV substation in Osage County, OK. **Figure 1** depicts the one-line diagram for the POI and the Interconnection Request(s).

Figure 1: Proposed ASGI-2017-009 Configuration and Request Power Flow Model



BASE CASE NETWORK UPGRADES

The Network Upgrades included within the cases used for this Affected System Impact Study are those facilities that are a part of the SPP Transmission Expansion Plan or the Balanced Portfolio projects. 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 ASIS. 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 2016 ITP Near-Term study models including these seasonal models:

- Year 1 (2016) Winter Peak (16WP)
- Year 2 (2017) Spring (17G)
- Year 2 (2017) Summer Peak (17SP)
- Year 5 (2020) Light (20L)
- Year 5 (2020) Summer (20SP)
- Year 5 (2020) Winter (20WP) peak
- Year 10 (2025) Summer (25SP) peak

To incorporate the Interconnection Customers' request, a re-dispatch of existing generation within SPP and AECl was performed with respect to the amount of the Customers' injection.

For Variable Energy Resources (VER) (solar/wind) in each power flow case, 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. SPP projects are dispatched across the SPP footprint using load factor ratios. AECl projects are dispatched across the AECl footprint using load factor ratios.

Peaking units are not dispatched in the Year 2 spring and Year 5 light, or in the "High VER" summer and winter peaks. To study peaking units' impacts, the Year 1 winter peak, Year 2 summer peak, and Year 5 summer and winter peaks, and Year 10 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 ASIS, only the previous queued requests listed in **Table 1** were assumed to be in-service at 100% dispatch.

STUDY METHODOLOGY AND CRITERIA

THERMAL OVERLOADS

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.

For ERIS, thermal overloads are determined for system intact (n-0) (greater than or equal to 100% of Rate A - normal) and for contingency (n-1) (greater than or equal to 100% of Rate B - emergency) conditions.

The overloads are then screened to determine which of generator interconnection requests have at least

- 3% Distribution Factor (DF) for system intact conditions (n-0),
- 20% DF upon outage based conditions (n-1),
- or 3% DF on contingent elements that resulted in a non-converged solution.

Interconnection Requests that requested NRIS are also studied in a separate NRIS analysis to determine if any constraint measured greater than or equal to a 3% DF. If so, these constraints are also considered for transmission reinforcement 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 monitored 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.

VOLTAGE

For non-converged power flow solutions that are determined to be caused by lack of voltage support, appropriate transmission support will be determined to mitigate the constraint.

After all thermal overload and voltage support mitigations are determined; a full ACCC analysis is then performed to determine voltage constraints. The following voltage performance guidelines are used in accordance with the Transmission Owner local planning criteria.

SPP Areas (69kV+):

| Transmission Owner | Voltage Criteria (System Intact) | Voltage Criteria (Contingency) |
|---------------------------|---|---------------------------------------|
| AEPW | 0.95 – 1.05 pu | 0.92 – 1.05 pu |
| GRDA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SWPA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| OKGE | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| OMPA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| WFEC | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SWPS | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| MIDW | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SUNC | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| KCPL | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| INDN | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SPRM | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| NPPD | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| WAPA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| WERE L-V | 0.95 – 1.05 pu | 0.93 – 1.05 pu |
| WERE H-V | 0.95 – 1.05 pu | 0.95 – 1.05 pu |
| EMDE L-V | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| EMDE H-V | 0.95 – 1.05 pu | 0.92 – 1.05 pu |
| LES | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| OPPD | 0.95 – 1.05 pu | 0.90 – 1.05 pu |

SPP Buses with more stringent voltage criteria:

| Bus Name/Number | Voltage Criteria (System Intact) | Voltage Criteria (Contingency) |
|----------------------------|---|---------------------------------------|
| TUCO 230kV 525830 | 0.925 – 1.05 pu | 0.925 – 1.05 pu |
| Wolf Creek 345kV 532797 | 0.985 – 1.03 pu | 0.985 – 1.03 pu |
| FCS 646251 | 1.001 – 1.047 pu | 1.001 – 1.047 pu |

Affected System Areas (115kV+):

| Transmission Owner | Voltage Criteria (System Intact) | Voltage Criteria (Contingency) |
|---------------------------|---|---------------------------------------|
| AECI | 0.95 – 1.05 pu | 0.90 – 1.05 pu |

| | | |
|----------------|----------------|----------------|
| EES-EAI | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| LAGN | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| EES | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| AMMO | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| CLEC | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| LAFA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| LEPA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| XEL | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| MP | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SMMPA | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| GRE | 0.95 – 1.05 pu | 0.90 – 1.10 pu |
| OTP | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| OTP-H (115kV+) | 0.97 – 1.05 pu | 0.92 – 1.10 pu |
| ALTW | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| MEC | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| MDU | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| SPC | 0.95 – 1.05 pu | 0.95 – 1.05 pu |
| DPC | 0.95 – 1.05 pu | 0.90 – 1.05 pu |
| ALTE | 0.95 – 1.05 pu | 0.90 – 1.05 pu |

The constraints identified through the voltage scan are then screened for the following for each interconnection request. 1) 3% DF on the contingent element and 2) 2% change in pu voltage. In certain conditions, engineering judgement was used to determine whether or not a generator had impacts to voltage constraints.

RESULTS

The ASIS ACCC analysis indicates that the Affected System Interconnection Customer(s) can interconnect their generation into the AECI transmission system at the available MW listed in the results tables after all required upgrades listed within the DISIS-2016-001 studies or latest iteration can be placed into service. ACCC results in **Table 8**, **Table 9**, and **Table 10** are dependent on AECI Upgrade Set #1 and incremental SPP upgrades assigned to ASGI-2017-005. ACCC results **Table 11**, **Table 12**, and **Table 13** are dependent on AECI Upgrade Set #2 and incremental SPP upgrades assigned to ASGI-2017-005. Incremental SPP upgrades assigned to ASGI-2017-005 for each AECI upgrade set can be identified within **Table 2A** and **Table 2B**.

Constraints listed in **Table 9** and **Table 12** 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 AECI footprint for ERIS and 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.

STABILITY ANALYSIS

Transient stability analysis is used to determine if the transmission system can maintain angular stability and ensure bus voltages stay within planning criteria bandwidth during and after a disturbance while considering the addition of a generator interconnection request.

MODEL PREPARATION

Transient stability analysis was performed using modified versions of the 2015 series of Model Development Working Group (MDWG) dynamic study models including the 2016 winter, 2017 and 2025 summer peak dynamic cases. The cases were adapted to resemble the power flow study cases with regards to prior queued generation requests and topology. Finally the prior queued and study generation was dispatched into the SPP footprint. Initial simulations are then carried out for a no-disturbance run of twenty (20) seconds to verify the numerical stability of the model.

DISTURBANCES

The thirty-five (35) contingencies were identified for use in this ASIS. These faults are listed within **Table 3**. These contingencies included three-phase faults and single-phase line faults at locations defined by SPP. Single-phase line faults were simulated by applying fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice.

With the exception of transformers, the typical sequence of events for a three-phase and single-phase fault is as follows:

1. apply fault at particular location
2. continue fault for five (5) cycles, clear the fault by tripping the faulted facility
3. run for an additional twenty (20) cycles, reclose into fault
4. continue fault for five (5) cycles, clear the fault by tripping the faulted facility

Transformer faults are typically modeled as three-phase faults, unless otherwise noted. The sequence of events for a transformer fault is as follows:

1. apply fault for five (5) cycles
2. clear the fault by tripping the affected transformer facility (unless otherwise noted there will be no re-closing into a transformer fault)

Table 3: Contingencies Evaluated

| Contingency Number and Name | | Description |
|-----------------------------|---------------------------------------|--|
| 1 | FLT_01_4FAIRFAX_4REMINGTON_138kV_3PH | Fault on the Fairfax (300139) to Remington (301369) 138kV line, near Fairfax. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 2 | FLT_02_4FAIRFAX_2FAIRFAX_138_69kV_3PH | Fault on the Fairfax (300139) 138V to (300929) 69kV transformer circuit 1, near Fairfax 138kV. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. |
| 3 | FLT_03_4FAIRFAX_PAWNSW4_138kV_3PH | Fault on the Fairfax (300139) to Pawnee SW (512749) 138kV line, near Fairfax. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 4 | FLT_04_4REMINGTON_SHILDER4_138kV_3PH | Fault on the Remington (301369) to Shidler (510403) 138kV line, near Remington. a. Apply fault at the Remington 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 5 | FLT_05_SHILDER4_FAIRFXT4_138kV_3PH | Fault on the Shidler (510403) to Fairfax Tap (510377) 138kV line, near Shidler. a. Apply fault at the Shidler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 6 | FLT_06_SHILDER4_WPAWTHSK4_138kV_3PH | Fault on the Shidler (510403) to West Pawhuska (510382) 138kV line, near Shidler. a. Apply fault at the Shidler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 7 | FLT_07_WEBBTAP4_OSAGE4_138kV_3PH | Fault on the Webber Tap (510376) to Osage (514743) 138kV line, near Webber Tap. a. Apply fault at the Webber Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 8 | FLT_08_PAWHTP4_DOMES4_138kV_3PH | Fault on the Pawhuska Tap (510412) to Dome (510383) 138kV line, near Pawhuska Tap. a. Apply fault at the Pawhuska Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |

Table 3: Contingencies Evaluated

| Contingency Number and Name | | Description |
|-----------------------------|--|---|
| 9 | FLT_09_2FAIRFAX_2GETTYTAP_69kV_3PH | Fault on the Fairfax (300929) to Getty Tap (512758) 69kV line, near Fairfax. a. Apply fault at the Fairfax 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 10 | FLT_10_2FAIRFAX_2NAVLRES_69kV_3PH | Fault on the Fairfax (300929) to Naval Reserve (300937) 69kV line, near Fairfax. a. Apply fault at the Fairfax 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 11 | FLT_11_PAWNSW4_4CLEVLND_138kV_3PH | Fault on the Pawnee SW (512749) to Cleveland (300138) 138kV line, near Pawnee SW. a. Apply fault at the Pawnee SW 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 12 | FLT_12_PAWNSW4_4GLENCOE_138kV_3PH | Fault on the Pawnee SW (512749) to Glencoe (301425) 138kV line, near Pawnee SW. a. Apply fault at the Pawnee SW 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 13 | FLT_13_4CLEVLND_4JAVINE_138kV_3PH | Fault on the Cleveland (300138) to Javine (300996) 138kV line, near Cleveland. a. Apply fault at the Cleveland 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 14 | FLT_14_4CLEVLND_4CLEVLNDXFMR_138kV_3PH | Fault on the Cleveland (300138) to Cleveland XFMR (301429) 138kV line, near Cleveland. a. Apply fault at the Cleveland 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 15 | FLT_15_4CLEVLND_CLEVLND4_138kV_3PH | Fault on the Cleveland (300138) to GRDA Cleveland (512729) 138kV line, near Cleveland. a. Apply fault at the Cleveland 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |

Table 3: Contingencies Evaluated

| Contingency Number and Name | | Description |
|-----------------------------|------------------------------------|---|
| 16 | FLT_16_4CLEVLND_4SILVCTY_138kV_3PH | Fault on the Cleveland (300138) to Silver City (300140) 138kV line, near Cleveland. a. Apply fault at the Cleveland 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 17 | FLT_17_4SFORKKTP_4SFORKK_138kV_3PH | Fault on the South Fork Tap (301339) to South Fork (300165) 138kV line, near South Fork Tap. a. Apply fault at the Fork Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 18 | FLT_18_MOUNDRD4_BVCOM4_138kV_3PH | Fault on the Mound Road (510395) to Bartlesville Comanche (510390) 138kV line, near Mound Road. a. Apply fault at the Mound Road 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 19 | FLT_19_OSAGE4_SNRPMPT4_138kV_3PH | Fault on the Osage (514743) to Sooner Pump Tap (514798) 138kV line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 20 | FLT_20_OSAGE4_MARLNDT4_138kV_3PH | Fault on the Osage (514743) to Marland Tap (514770) 138kV line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 21 | FLT_21_OSAGE4_STDBEAR4_138kV_3PH | Fault on the Osage (514743) to Standing Bear (514758) 138kV line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 22 | FLT_22_OSAGE4_WHEAGLE4_138kV_3PH | Fault on the Osage (514743) to White Eagle (514761) 138kV line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |

Table 3: Contingencies Evaluated

| Contingency Number and Name | | Description |
|-----------------------------|--|---|
| 23 | FLT_23_4STILWTR_4RAMSEY_138kV_3PH | Fault on the Stillwater (300141) to Ramsey (300844) 138kV line, near Stillwater. a. Apply fault at the Stillwater 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 24 | FLT_24_4STILWTR_NORTHTP4_138kV_3PH | Fault on the Stillwater (300141) to North Tap (512731) 138kV line, near Stillwater. a. Apply fault at the Stillwater 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 25 | FLT_25_OSAGE4_OSAGE2_138_69kV_3PH | Fault on the Osage (514743) 138kV to (514742) 69kV transformer circuit 1, near Osage 138kV. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. |
| 26 | FLT_26_4STILWTR_2WILLIAMS_138_69kV_3PH | Fault on the Stillwater (300141) 138kV to Williams (301413) 69kV transformer circuit 1, near Stillwater 138kV. a. Apply fault at the Stillwater 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. |
| 27 | FLT_27_TNO4_SKIATOK4_138kV_3PH | Fault on the Tulsa North (509817) to Skiatook Tap (509884) 138kV line, near Tulsa North. a. Apply fault at the Tulsa North 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 28 | FLT_28_TNO4_NES4_138kV_3PH | Fault on the Tulsa North (509817) to Northeastern (510396) 138kV line, near Tulsa North. a. Apply fault at the Tulsa North 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 29 | FLT_29_4FAIRFAX_4REMINGTONPO_138kV_3PH | Prior outage on the Fairfax Tap (300139) to Pawnee Switch (512749) 138kV line: Fault on the Fairfax (300139) to Remington (301369) 138kV line, near Fairfax. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 30 | FLT_30_PAWNSW4_4FAIRFAXSB_138kV_1PH | Single phase fault with stuck breaker on the Pawnee SW (512749) to Fairfax (300139) 138kV line, near Pawnee SW. a. Apply fault at the Pawnee SW 138kV bus. b. At 16 cycles, clear the fault, open the faulted line, and open the Pawnee SW (512749) to Cleveland (300138) 138kV line. |

Table 3: Contingencies Evaluated

| Contingency Number and Name | | Description |
|-----------------------------|--|--|
| 31 | FLT_31_SHILDER4_4REMINGTONSB_138kV_1PH | <p>Single phase fault with stuck breaker on the Shidler (510403) to Remington (301369) 138kV line, near Shidler.</p> <p>a. Apply fault at the Shidler 138kV bus. b. At 16 cycles, clear the fault, open the faulted line, and open the Shidler (510403) to Fairfax (300139) 138kV line.</p> |
| 32 | FLT_32_4REMINGTON_SHILDER4PO_138kV_3PH | <p>Prior outage on the Pawnee SW (512749) to Glencoe (301425) 138kV line: Fault on the Remington (301369) to Shidler (510403) 138kV line, near Remington.</p> <p>a. Apply fault at the Remington 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.</p> |
| 33 | FLT_33_SHILDER4_4REMINGTONPO_138kV_3PH | <p>Prior outage on the Pawnee SW (512749) to Cleveland (300138) 138kV line: Fault on the Shidler (510403) to Remington (301369) 138kV line, near Shidler.</p> <p>a. Apply fault at the Shidler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.</p> |
| 34 | FLT_34_4FAIRFAX_PAWNSW4PO_138kV_3PH | <p>Prior outage on the Shidler (510403) to Fairfax Tap (510377) 138kV line: Fault on the Fairfax (300139) to Pawnee SW (512749) 138kV line, near Fairfax.</p> <p>a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.</p> |
| 35 | FLT_35_4FAIRFAX_PAWNSW4PO_138kV_3PH | <p>Prior outage on the Shidler (510403) to West Pawhuska (510382) 138kV line: Fault on the Fairfax (300139) to Pawnee SW (512749) 138kV line, near Fairfax.</p> <p>a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.</p> |

RESULTS

Results of the stability analysis are summarized in **Table 4**. These results are valid for ASGI-2017-009 interconnecting with a generation amount up to 200 MW. Unstable responses can be mitigated with upgrades mentioned in **Table 2A or Table 2B** are in-service.

Table 4: Fault Results

| Contingency Number and Name | | 2016WP | 2017SP | 2025SP |
|-----------------------------|--|----------|----------|----------|
| 1 | FLT_01_4FAIRFAX_4REMINGTON_138kV_3PH | Stable | Stable | Stable |
| 2 | FLT_02_4FAIRFAX_2FAIRFAX_138_69kV_3PH | Stable | Stable | Stable |
| 3 | FLT_03_4FAIRFAX_PAWNSW4_138kV_3PH | Stable | Stable | Stable |
| 4 | FLT_04_4REMINGTON_SHILDER4_138kV_3PH | Unstable | Unstable | Unstable |
| 5 | FLT_05_SHILDER4_FAIRFXT4_138kV_3PH | Stable | Stable | Stable |
| 6 | FLT_06_SHILDER4_WPAWTHSK4_138kV_3PH | Stable | Stable | Stable |
| 7 | FLT_07_WEBBTAP4_OSAGE4_138kV_3PH | Stable | Stable | Stable |
| 8 | FLT_08_PAWHTP4_DOMES4_138kV_3PH | Stable | Stable | Stable |
| 9 | FLT_09_2FAIRFAX_2GETTYTAP_69kV_3PH | Stable | Stable | Stable |
| 10 | FLT_10_2FAIRFAX_2NAVLRES_69kV_3PH | Stable | Stable | Stable |
| 11 | FLT_11_PAWNSW4_4CLEVLND_138kV_3PH | Stable | Stable | Stable |
| 12 | FLT_12_PAWNSW4_4GLENCOE_138kV_3PH | Stable | Stable | Stable |
| 13 | FLT_13_4CLEVLND_4JAVINE_138kV_3PH | Stable | Stable | Stable |
| 14 | FLT_14_4CLEVLND_4CLEVLNDXFMR_138kV_3PH | Stable | Stable | Stable |
| 15 | FLT_15_4CLEVLND_CLEVLND4_138kV_3PH | Stable | Stable | Stable |
| 16 | FLT_16_4CLEVLND_4SILVCTY_138kV_3PH | Stable | Stable | Stable |
| 17 | FLT_17_4SFORKKTP_4SFORKK_138kV_3PH | Stable | Stable | Stable |
| 18 | FLT_18_MOUNDRD4_BVCOM4_138kV_3PH | Stable | Stable | Stable |
| 19 | FLT_19_OSAGE4_SNRPMPT4_138kV_3PH | Stable | Stable | Stable |
| 20 | FLT_20_OSAGE4_MARLNDT4_138kV_3PH | Stable | Stable | Stable |
| 21 | FLT_21_OSAGE4_STDBEAR4_138kV_3PH | Stable | Stable | Stable |
| 22 | FLT_22_OSAGE4_WHEAGLE4_138kV_3PH | Stable | Stable | Stable |
| 23 | FLT_23_4STILWTR_4RAMSEY_138kV_3PH | Stable | Stable | Stable |
| 24 | FLT_24_4STILWTR_NORTHTP4_138kV_3PH | Stable | Stable | Stable |
| 25 | FLT_25_OSAGE4_OSGE2_138_69kV_3PH | Stable | Stable | Stable |
| 26 | FLT_26_4STILWTR_2WILLIAMS_138_69kV_3PH | Stable | Stable | Stable |
| 27 | FLT_27_TNO4_SKIATOK4_138kV_3PH | Stable | Stable | Stable |
| 28 | FLT_28_TNO4_NES4_138kV_3PH | Stable | Stable | Stable |
| 29 | FLT_29_4FAIRFAX_4REMINGTONPO_138kV_3PH | Stable | Stable | Stable |
| 30 | FLT_30_PAWNSW4_4FAIRFAXSB_138kV_1PH | Unstable | Unstable | Unstable |
| 31 | FLT_31_SHILDER4_4REMINGTONSB_138kV_1PH | Unstable | Unstable | Unstable |
| 32 | FLT_32_4REMINGTON_SHILDER4PO_138kV_3PH | Unstable | Unstable | Unstable |
| 33 | FLT_33_SHILDER4_4REMINGTONPO_138kV_3PH | Unstable | Unstable | Unstable |
| 34 | FLT_34_4FAIRFAX_PAWNSW4PO_138kV_3PH | Unstable | Unstable | Unstable |
| 35 | FLT_35_4FAIRFAX_PAWNSW4PO_138kV_3PH | Unstable | Unstable | Unstable |

FERC LVRT COMPLIANCE

FERC Order #661A places specific requirements on wind farms through its Low Voltage Ride Through (LVRT) provisions. For Interconnection Agreements signed after December 31, 2006, wind farms shall stay on line for faults at the POI that draw the voltage down at the POI to 0.0 pu.

Fault contingencies were developed to verify that wind farms remain on line when the POI voltage is drawn down to 0.0 pu. These contingencies are shown in **Table 5**.

Table 5: LVRT Contingencies

| Contingency Number and Name | | Description |
|-----------------------------|---------------------------------------|--|
| 1 | FLT_01_4FAIRFAX_4REMINGTON_138kV_3PH | Fault on the Fairfax (300139) to Remington (301369) 138kV line, near Fairfax. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |
| 2 | FLT_02_4FAIRFAX_2FAIRFAX_138_69kV_3PH | Fault on the Fairfax (300139) 138V to (300929) 69kV transformer circuit 1, near Fairfax 138kV. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. |
| 3 | FLT_03_4FAIRFAX_PAWNSW4_138kV_3PH | Fault on the Fairfax (300139) to Pawnee SW (512749) 138kV line, near Fairfax. a. Apply fault at the Fairfax 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault. |

The required prior queued project wind farms remained online for the fault contingencies described in this section as well as the fault contingencies described in the Disturbances section of this report. ASGI-2017-009 is found to be in compliance with FERC Order #661A.

SHORT CIRCUIT ANALYSIS

A short circuit analysis was performed on the 2017 & 2025 Summer Peak power flow cases using the PSS/E ASCC program. Since the power flow model does not contain negative and zero sequence data, only three-phase symmetrical fault current levels were calculated at the point of interconnection up to and including five levels away. The results of the short circuit analysis are shown on the next page.

ASGI-2017-009 Short Circuit Analysis Results (2017SP)

PSS@E ASCC SHORT CIRCUIT CURRENTS WED, SEP 20 2017 8:55
 2015 MDWG FINAL WITH 2013 MMWG, UPDATED WITH 2014 SERC & MRO
 MDWG 17S WITH MMWG 15S, MRO 16W TOPO/16S PROF, SERC 16S

OPTIONS USED:

- FLAT CONDITIONS
- BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
- GENERATOR P=0, Q=0
- TRANSFORMER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
- LINE CHARGING=0.0 IN +/-/0 SEQUENCE
- LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
- LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0

SEQUENCE

- DC LINES AND FACTS DEVICES BLOCKED
- TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

THREE PHASE FAULT

| X----- | BUS -----X | /I+/ | AN(I+) |
|--------|----------------------|------|----------------|
| 300139 | [4FAIRFAX 138.00] | AMP | 10491.0 -82.67 |
| 300929 | [2FAIRFAX 69.000] | AMP | 10345.1 -83.51 |
| 301369 | [4REMNGTON 138.00] | AMP | 11161.0 -81.98 |
| 512749 | [PAWNSW4 138.00] | AMP | 10959.2 -84.02 |
| 588320 | [ASGI1709 138.00] | AMP | 7144.6 -82.91 |
| 300138 | [4CLEVLND 138.00] | AMP | 17108.2 -85.48 |
| 300919 | [4RALSTNBND 138.00] | AMP | 3535.7 -80.75 |
| 300922 | [2BURBANK 138.00] | AMP | 5856.1 -81.14 |
| 300937 | [2NAVLRES 69.000] | AMP | 4442.7 -70.20 |
| 301379 | [4OSAGEWIND 138.00] | AMP | 9641.6 -81.68 |
| 301425 | [4GLENCOE 138.00] | AMP | 10362.1 -83.01 |
| 510388 | [BARNSAL4 138.00] | AMP | 8284.3 -81.35 |
| 510403 | [SHIDLER4 138.00] | AMP | 9866.0 -80.14 |
| 512758 | [2GETTYTAP 69.000] | AMP | 5103.8 -81.94 |
| 588300 | [ASGI1705 138.00] | AMP | 6956.9 -82.59 |
| 300140 | [4SILVCTY 138.00] | AMP | 15881.7 -82.22 |
| 300141 | [4STILWTR 138.00] | AMP | 13842.2 -81.42 |
| 300644 | [2GETTY 69.000] | AMP | 4976.3 -81.59 |
| 300939 | [2PAWNEE 69.000] | AMP | 4235.3 -79.73 |
| 300940 | [2PAWYA 69.000] | AMP | 3245.5 -68.00 |
| 300996 | [4JAVINE 138.00] | AMP | 6577.8 -82.60 |
| 301429 | [4CLEVLNDXFMR138.00] | AMP | 17108.2 -85.48 |
| 509884 | [SKIATOK4 138.00] | AMP | 11068.4 -81.52 |

510377 [FAIRFXT4 138.00] AMP 9111.4 -79.22
 510382 [WPAWHSK4 138.00] AMP 6072.4 -77.59
 510433 [BARNPMP4 138.00] AMP 7728.3 -81.02
 512729 [CLEVLND 4 138.00] AMP 17104.6 -85.50
 300131 [4FISHERTP 138.00] AMP 14544.6 -80.86
 300137 [4BRISTOW 138.00] AMP 7128.9 -79.76
 300844 [4RAMSEY 138.00] AMP 10643.0 -79.82
 300934 [2HALETP 69.000] AMP 4969.2 -80.08
 300943 [2SILVCTY 69.000] AMP 10120.6 -79.21
 301337 [2PRSHNGTP 69.000] AMP 3174.2 -68.06
 301339 [4SFORKKTP 138.00] AMP 6871.9 -82.64
 301413 [2WILLIAMS 69.000] AMP 20828.9 -76.64
 301430 [2CLEVLNDXFMR69.000] AMP 10548.8 -83.52
 509817 [T.NO.--4 138.00] AMP 34817.7 -84.86
 510376 [WEBBTAP4 138.00] AMP 9027.7 -79.11
 510395 [MOUNDRD4 138.00] AMP 9550.4 -79.25
 510412 [PAWH-TP4 138.00] AMP 6023.0 -77.85
 512675 [PAWNEGR2 69.000] AMP 3901.9 -77.80
 512694 [CLEVLND7 345.00] AMP 15035.5 -86.35
 512726 [SILVCTYGR4 138.00] AMP 15723.6 -82.31
 512731 [NORTHTP4 138.00] AMP 11061.2 -82.80
 300143 [4VALLEY 138.00] AMP 7357.7 -79.65
 300145 [4FISHER 138.00] AMP 12298.7 -80.58
 300146 [4SKIAETP 138.00] AMP 6948.1 -82.87
 300165 [4SFORKK 138.00] AMP 4388.2 -80.64
 300686 [4WOODY 138.00] AMP 7308.8 -79.20
 300843 [2PERRYKM 69.000] AMP 4118.6 -77.85
 300889 [2BRIISTOW 69.000] AMP 9380.9 -78.14
 300927 [2CLEVLND 69.000] AMP 10548.8 -83.52
 300928 [2DIXIE 69.000] AMP 5065.3 -71.87
 300936 [2MANFORD 69.000] AMP 6220.2 -72.25
 300945 [2YALE 69.000] AMP 5208.6 -70.47
 301005 [2TALLANT 69.000] AMP 3462.6 -69.60
 301331 [2PERSHING 69.000] AMP 3145.9 -68.17
 505610 [KEYSTON4 138.00] AMP 21414.2 -81.36
 509757 [WEKIWA-4 138.00] AMP 31369.0 -84.87
 509837 [46ST--E4 138.00] AMP 14101.9 -78.36
 509839 [CDC-ET 4 138.00] AMP 18628.9 -79.86
 509842 [CDC-WT 4 138.00] AMP 19380.4 -84.17
 509844 [OWASOTP4 138.00] AMP 14975.1 -79.79
 509851 [P&P WTP4 138.00] AMP 14960.3 -82.08
 509852 [T.NO.--7 345.00] AMP 23586.7 -86.29
 509863 [PPTAP 4 138.00] AMP 10315.2 -83.75
 509895 [T.NO.2-4 138.00] AMP 34745.9 -84.96
 510383 [DOMES 4 138.00] AMP 6408.7 -78.59
 510390 [BV-COM-4 138.00] AMP 10385.3 -80.48
 510396 [N.E.S.-4 138.00] AMP 35638.8 -84.97
 510432 [SHIDWFC4 138.00] AMP 6074.6 -75.87
 510434 [HERITAGETRL4138.00] AMP 4360.0 -76.93
 512710 [KINZEGR4 138.00] AMP 14398.8 -79.76
 512712 [19TH ST4 138.00] AMP 12619.1 -79.78
 512732 [NORTHTP2 69.000] AMP 6016.4 -88.36

512809 [STILLWTR2 69.000] AMP 20941.3 -76.39
514743 [OSAGE 4 138.00] AMP 16657.7 -81.47
560056 [G15-066T 345.00] AMP 18465.4 -86.52

Short Circuit Analysis Results (2025SP)

PSS@E ASCC SHORT CIRCUIT CURRENTS WED, SEP 20 2017 8:55
 2015 MDWG FINAL WITH 2013 MMWG, UPDATED WITH 2014 SERC & MRO
 MDWG 2025S WITH MMWG 2024S, MRO & SERC 2025 SUMMER

OPTIONS USED:

- FLAT CONDITIONS
- BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
- GENERATOR P=0, Q=0
- TRANSFORMER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
- LINE CHARGING=0.0 IN +/- /0 SEQUENCE
- LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
- LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/- /0 SEQUENCE
- DC LINES AND FACTS DEVICES BLOCKED
- TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

THREE PHASE FAULT

| X----- | BUS | -----X | /I+ / | AN(I+) |
|--------|--------------|---------|-------|----------------|
| 300139 | [4FAIRFAX | 138.00] | AMP | 10527.0 -82.67 |
| 300929 | [2FAIRFAX | 69.000] | AMP | 10360.5 -83.51 |
| 301369 | [4REMNGTON | 138.00] | AMP | 11237.3 -82.00 |
| 512749 | [PAWNSW4 | 138.00] | AMP | 10984.5 -84.04 |
| 588320 | [ASGI1709 | 138.00] | AMP | 7156.9 -82.91 |
| 300138 | [4CLEVLND | 138.00] | AMP | 17149.7 -85.48 |
| 300919 | [4RALSTNBND | 138.00] | AMP | 3543.3 -80.75 |
| 300922 | [2BURBANK | 138.00] | AMP | 5877.0 -81.14 |
| 300937 | [2NAVLRES | 69.000] | AMP | 4445.0 -70.19 |
| 301379 | [4OSAGEWIND | 138.00] | AMP | 9697.3 -81.69 |
| 301425 | [4GLENCOE | 138.00] | AMP | 10392.7 -83.06 |
| 510388 | [BARNSAL4 | 138.00] | AMP | 8322.2 -81.37 |
| 510403 | [SHIDLER4 | 138.00] | AMP | 9970.8 -80.15 |
| 512758 | [2GETTYTAP | 69.000] | AMP | 5107.0 -81.95 |
| 588300 | [ASGI1705 | 138.00] | AMP | 6980.1 -82.59 |
| 300140 | [4SILVCTY | 138.00] | AMP | 15960.3 -82.23 |
| 300141 | [4STILWTR | 138.00] | AMP | 13908.9 -81.50 |
| 300644 | [2GETTY | 69.000] | AMP | 4979.3 -81.59 |
| 300939 | [2PAWNEE | 69.000] | AMP | 4237.2 -79.73 |
| 300940 | [2PAWYA | 69.000] | AMP | 3246.5 -67.99 |
| 300996 | [4JAVINE | 138.00] | AMP | 6584.0 -82.60 |
| 301429 | [4CLEVLNDXFM | 138.00] | AMP | 17149.7 -85.48 |
| 509884 | [SKIATOK4 | 138.00] | AMP | 11096.2 -81.52 |
| 510377 | [FAIRFXT4 | 138.00] | AMP | 9204.5 -79.22 |
| 510382 | [WPAWHSK4 | 138.00] | AMP | 6196.2 -77.77 |
| 510433 | [BARNPMP4 | 138.00] | AMP | 7768.5 -81.05 |
| 512729 | [CLEVLND 4 | 138.00] | AMP | 17146.1 -85.50 |
| 300131 | [4FISHERTP | 138.00] | AMP | 14599.9 -80.85 |
| 300137 | [4BRISTOW | 138.00] | AMP | 7205.5 -79.85 |
| 300844 | [4RAMSEY | 138.00] | AMP | 10656.2 -79.83 |

300934 [2HALETPP 69.000] AMP 4971.3 -80.07
 300943 [2SILVCTY 69.000] AMP 10136.6 -79.21
 301337 [2PRSHNGTP 69.000] AMP 3175.1 -68.05
 301339 [4SFORKKTP 138.00] AMP 6878.7 -82.64
 301413 [2WILLIAMS 69.000] AMP 21611.6 -76.65
 301430 [2CLEVLNDXFM69.000] AMP 10557.5 -83.52
 509817 [T.NO.--4 138.00] AMP 34997.8 -84.86
 510376 [WEBBTAP4 138.00] AMP 9119.9 -79.12
 510395 [MOUNDRD4 138.00] AMP 9667.7 -79.34
 510412 [PAWH-TP4 138.00] AMP 6194.0 -78.15
 512675 [PAWNEGR2 69.000] AMP 3903.6 -77.80
 512694 [CLEVLND7 345.00] AMP 15089.2 -86.35
 512726 [SILVCTYGR4 138.00] AMP 15800.3 -82.33
 512731 [NORTHTP4 138.00] AMP 11080.1 -82.82
 300143 [4VALLEY 138.00] AMP 7364.3 -79.66
 300145 [4FISHER 138.00] AMP 12338.6 -80.58
 300146 [4SKIAETP 138.00] AMP 6955.1 -82.87
 300165 [4SFORKK 138.00] AMP 4391.0 -80.64
 300686 [4WOODY 138.00] AMP 7570.4 -79.57
 300843 [2PERRYKM 69.000] AMP 4136.3 -77.88
 300889 [2BRIISTOW 69.000] AMP 9427.7 -78.19
 300927 [2CLEVLND 69.000] AMP 10557.5 -83.52
 300928 [2DIXIE 69.000] AMP 5068.2 -71.86
 300936 [2MANFORD 69.000] AMP 6226.4 -72.24
 300945 [2YALE 69.000] AMP 5214.6 -70.46
 301005 [2TALLANT 69.000] AMP 3463.5 -69.59
 301331 [2PERSHING 69.000] AMP 3146.8 -68.16
 505610 [KEYSTON4 138.00] AMP 21528.6 -81.34
 509757 [WEKIWA-4 138.00] AMP 31617.4 -84.87
 509837 [46ST--E4 138.00] AMP 14131.5 -78.34
 509839 [CDC-ET 4 138.00] AMP 18681.7 -79.84
 509842 [CDC-WT 4 138.00] AMP 19437.1 -84.17
 509844 [OWASOTP4 138.00] AMP 15003.1 -79.78
 509851 [P&P WTP4 138.00] AMP 15003.7 -82.07
 509852 [T.NO.--7 345.00] AMP 23776.2 -86.30
 509863 [PPTAP 4 138.00] AMP 10331.7 -83.75
 509895 [T.NO.2-4 138.00] AMP 34925.0 -84.95
 510383 [DOMES 4 138.00] AMP 6541.2 -78.78
 510390 [BV-COM-4 138.00] AMP 10501.4 -80.54
 510396 [N.E.S.-4 138.00] AMP 35765.5 -84.96
 510432 [SHIDWFC4 138.00] AMP 6116.1 -75.85
 510434 [HERITAGETRL4138.00] AMP 4525.5 -77.39
 512710 [KINZEGR4 138.00] AMP 14424.7 -79.72
 512712 [19TH ST4 138.00] AMP 12636.8 -79.75
 512732 [NORTHTP2 69.000] AMP 6018.0 -88.37
 512809 [STILLWTR2 69.000] AMP 21757.2 -76.39
 514743 [OSAGE 4 138.00] AMP 17549.3 -81.74
 560056 [G15-066T 345.00] AMP 18537.8 -86.52

CONCLUSION

An Affected System Interconnection Customer has requested an Affected System Impact Study (ASIS) under the Southwest Power Pool Open Access Transmission Tariff (OATT) for ASGI-2017-009. ASGI-2017-009 (200 MW) wind generating facilities is to be interconnected into the system of AECL. ASGI-2017-009 has requested this ASIS to determine the impacts of interconnecting to the transmission system with all required Network Upgrades identified in the DISIS-2016-001 Impact Study placed into service.

The ASIS analysis has determined that the ASGI-2017-009 request can interconnect 200 MW of generation with ERIS and NRIS with the study dispatch assumption listed in **Table 1** provided the Network Upgrades listed in **Table 2A or Table 2B** are able to be placed in service.

It should be noted that although this ASIS 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 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 for this ASIS has determined that issues were observed as listed in **Table 4** for the transmission system for the thirty-five (35) selected faults for the interconnection of ASGI-2017-009 and the analysis shows that the generators will meet Low Voltage Ride-Through (LVRT) requirements of FERC Order #661A. As discussed above, this amount may be reduced further dependent upon system conditions.

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 ASIS 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.

AECI UPGRADE SETS

Table 6: AECI Upgrade Set #1

| Upgrades |
|--|
| Fairfax 138/69kV Transformers CKT 1 & 2 (84 MVA) |
| Remington - Shidler 138kV rebuild |
| Remington - Fairfax 138kV rebuild |
| Fairfax - Nava Reserve - Pawya - Pershing Tap 69kV |

Table 7: AECI Upgrade Set #2

| Upgrades |
|--|
| Fairfax 138/69kV Transformers CKT 1 & 2 (84 MVA) |
| Remington - Barnsdal 138kV build |
| Fairfax - Nava Reserve - Pawya - Pershing Tap 69kV |

THERMAL AND STEADY STATE VOLTAGE CONSTRAINTS TABLES BASE ON AECI UPGRADE SET #1

Table 8: Thermal Constraints Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80382 | 101.0768 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80382 | 101.0768 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80388 | 102.3235 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80388 | 102.3235 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.8051 | 104.3618 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.8051 | 104.3618 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80453 | 101.1255 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80453 | 101.1255 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80452 | 100.2643 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80452 | 100.2643 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 | 72 | 72 | 0.14239 | 103.5922 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 | 72 | 72 | 0.14239 | 103.5922 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03647 | 109.7146 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03647 | 109.6676 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03647 | 104.8487 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.04179 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.04179 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03774 | 106.503 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03502 | 101.1543 | GRACEMONT - MINCO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.034 | 105.1259 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.034 | 101.8331 | G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.04086 | 100.3257 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.16361 | 105.48 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.15237 | 104.3561 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.15237 | 104.2533 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.147 | 102.4866 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.147 | 102.461 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.147 | 100.6653 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.14565 | 103.5252 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.14565 | 100.5172 | G15063_T 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.14433 | 104.3436 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.14433 | 101.1623 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.06555 | 128.5979 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.06555 | 128.5979 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0509 | 105.8955 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0509 | 105.8875 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0509 | 101.3323 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04978 | 109.5004 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04859 | 101.502 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04859 | 101.4925 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04749 | 106.0883 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05281 | 119.1936 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05281 | 119.18 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05281 | 114.5915 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05154 | 129.8019 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04932 | 109.1463 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04921 | 117.2413 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04613 | 101.4386 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04613 | 101.4386 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04507 | 105.413 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04498 | 106.4121 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04469 | 105.3256 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04461 | 102.7598 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04461 | 102.1294 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0436 | 99.1 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0436 | 99.1 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04354 | 105.2937 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04354 | 103.123 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04354 | 100.8812 | LATHAMS7 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04351 | 100 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04344 | 99.6 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04344 | 99.6 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04321 | 100.2561 | 7JASPER 345.00 - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04318 | 99.3 | FT SMITH - MUSKOGEE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04311 | 99.4 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04311 | 99.4 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 102.2474 | P12:115:WERE:LANG-TECH_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 102.1705 | P12:115:WERE:FOUR-LANG_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 102.0697 | LANG - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 101.781 | OSAGE CITY JUNCTION SWITCHING STATION - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 101.233 | OSAGE CITY JUNCTION SWITCHING STATION - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 101.2319 | SCRANTON - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 100.923 | FOUR CORNERS - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 100.9229 | SCRANTON - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 100.5777 | P12:115:WERE:FOUR-TECH_115F:: |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 100.5228 | CARB-KW 3 - FOUR CORNERS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 100.297 | CARB-KW 3 - SHAWNEE HEIGHTS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04274 | 99.8 | SHAWNEE HEIGHTS - TECUMSEH HILL 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04273 | 100.7449 | DBL-SPRVL-IR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0427 | 100.3276 | RENO COUNTY - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04262 | 99.6 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04262 | 99.6 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04253 | 99.7 | P12:161:WERE:MARM-KCPL_161:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04253 | 99.7 | CENTERVILLE - G15-016T 161.00 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04253 | 99.4 | CENTERVILLE - PAOLA 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0425 | 99.2 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0425 | 99.2 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04247 | 99.2 | RENO COUNTY - SUMMIT 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04237 | 106.4856 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04224 | 99.9 | G13-010T 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04224 | 99.8 | G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04224 | 99.6 | G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04218 | 99.5 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04218 | 99.5 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04214 | 99.8 | AXTELL - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04214 | 99.1 | DELL 500 - INDEPENDENCE 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0421 | 100.6217 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0421 | 100 | G15063_T 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04208 | 99.6 | G15088_T 345.00 - MOORE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04208 | 99.3 | G15088_T 345.00 - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04208 | 99.1 | 7JASPER 345.00 - MORGAN 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04207 | 99.4 | 7MCCREDIE 345.00 - 7MONTGMRY 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 100 | P12:115:WERE:AUBN-SMAN_115F2:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 100 | P12:115:WERE:AUBN-SMAN_115F3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 100 | P12:115:WERE:AUBN-SMAN_115F1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 99.9 | SMAN_W_3 115.00 - SOUTH MANHATTAN 115KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 99.813 | SOUTH ALMA - SOUTH MANHATTAN 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 99.7 | CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 99.25755 | KEENE - SOUTH ALMA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04205 | 99.1 | AUBURN ROAD - OLDAUBU3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.042 | 99.4 | KEO EHV - WEST MEMPHIS 500 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04198 | 99.9 | GRAND ISLAND - SWEETWATER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04188 | 99.1 | 7SPORTSMAN - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.3 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.3 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.1 | P12:115:WERE-MKEC:CLIFTON-KNOBHILL:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.1 | P12:115:WERE:KNOB-MKEC_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.1 | GREENLEAF - KNOB HILL 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.1 | CLIFTON - GREENLEAF 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04184 | 99.3 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04184 | 99.1 | G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04177 | 99.2 | 5JASPER 161.00 - LAMAR 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04177 | 99.2 | 7JASPER 345.00 345/161KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04174 | 107.2666 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04174 | 107.2666 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04174 | 107.265 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04172 | 99.3 | AUBURN ROAD - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04166 | 99.2 | CIMARRON - DRAPER LAKE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04165 | 99.8 | P13:069-138:WERE:ALTO_TX-1OR3P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04163 | 99.1 | GRAND ISLAND - MCCOOL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04162 | 99.1 | HAWTHORN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04161 | 99.40984 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04161 | 99.40984 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04161 | 99.4 | DBL-HTCH-OTA |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0416 | 99.2 | IATAN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0416 | 99.10702 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0416 | 99.10702 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 99.5 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 99.5 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 99.5 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 99.5 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 101.4107 | DBL-THIS-G15 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.2 | P12:069:WERE:ALLE-TIOG_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04142 | 99.8 | P13:115-230:WERE:MCDO_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04142 | 99.8 | MCDOWELL CREEK (MCDO TX-1) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04142 | 99.8 | MCDOWELL CREEK - MORRIS COUNTY 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04142 | 99.2 | ALTOONA - BUTLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 99.2 | P13:069-138:WERE:BUTL_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0414 | 99.1 | P12:115:WERE:MCDO-WILD_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 105.6674 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 104.279 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 104.1932 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 103.586 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 103.4575 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 103.1893 | GEN542957 1-IATAN UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 102.5657 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 101.7339 | GEN640009 1-COOPER NUCLEAR STATION |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 101.6635 | GEN645012 2-NEBRASKA CITY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 101.4784 | GEN645011 1-NEBRASKA CITY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 101.2077 | GEN541151 3-SIBLEY GENERATING UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.4134 | GEN546702 1-NM GEN N1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.359 | GEN344225 1-1CAL G1 25.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.1928 | GEN300007 1-NEW MADRID UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.1818 | GEN300006 1-NEW MADRID UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.1754 | P12:115:WERE:EMAN-KSU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100.1014 | GEN635024 4-WALTER SCOTT UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100 | GEN659107 2-ANTELOPE VALLEY UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100 | GEN659103 1-ANTELOPE VALLEY UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100 | GEN300002 1-THOMAS HILL UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 100 | EASTDC - ERCOT EQUIVALENCE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.9 | GEN659111 2-LELAND OLDS UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.9 | GEN635023 3-WALTER SCOTT UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.9 | P12:115:WERE:PHLP-SALM_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.8 | GEN542954 3-MONTROSE UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.8 | GEN541162 1-ARIES STEAM TURBINE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | GEN542953 2-MONTROSE UNIT #2 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | GEN590011 2-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | GEN562694 1-G15_016_3 0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | P12:115:WERE:EUR-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | P12:115:WERE:3VAN-HEC_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.7 | P12:138:WERE:HARR-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.6 | GEN590010 1-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.6 | GEN532662 1-LAWRENCE ENERGY CENTER UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.5 | GEN532672 1-TECUMSEH ENERGY CENTER UNIT 8 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.5 | P12:069:WERE:HOOVN-RIPL_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN542967 9-HAWTHORN UNIT #9 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN546698 1-QN GEN2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN300001 1-THOMAS HILL UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN635214 4-NEAL UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN636641 1-LOUISA UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN541166 2-SHARPR#2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.4 | GEN541165 1-SHARPR#1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN542961 6-HAWTHORN COMBUSTION TURBINE #6 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN541163 1-ARIES COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN600002 3-SHERBURNE CNTY G3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN543106 1-BULL CREEK COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN505432 1-SIKESTON |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN645025 5-NORTH OMAHA 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN543107 2-BULL CREEK COMBUSTION TURBINE #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN543109 4-BULL CREEK COMBUSTION TURBINE #4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | GEN543108 3-BULL CREEK COMBUSTION TURBINE #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | P12:069:WERE:MEAD-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.3 | SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN344894 1-1LAB G1 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN344896 3-1LAB G3 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN300011 1-ST FRANCIS UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN344897 4-1LAB G4 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN600000 1-SHERBURNECNTY G1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN549893 2-SOUTHWEST 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN645042 2-CASS COUNTY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN659110 1-LELAND OLDS UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN645041 1-CASS COUNTY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | GEN300010 1-ST FRANCIS UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | P12:115:WERE:ANZI-FTJU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.2 | ABILENE ENERGY CENTER 115/34.5KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN344895 2-1LAB G2 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN300012 1-HOLDEN UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN300015 1-1SGPDEL 18.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN300013 1-HOLDEN UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN635213 3-NEAL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN543078 1-PAOLA COMBUSTION TURBINES |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN541170 4-LAKERD#4 13.800 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN532661 1-LAWRENCE ENERGY CENTER UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN600001 2-SHERBURNE CNTY G2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | GEN541154 3-RALPH GREEN GENERATING UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04139 | 99.1 | 4SIOUX 1 138.00 138/18.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 100.5381 | P12:138:WERE:BENT-NORT_138P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 100.1787 | P12:069:WERE:64TH-NORT_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 100.1589 | P12:069:WERE:COWS-HOOVS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 99.7 | P12:069:WERE:MACA-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 99.2 | P12:069:WERE:COWS-SUNS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 99.1 | P12:115:WERE:WMCP-MWE_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04138 | 99.1 | P12:115:MIDW::RICE-WHEATLANDS |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04136 | 101.1459 | HOYT (HOYT TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04136 | 99.6 | P12:069:WERE:MOUN-NEWT_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04135 | 99.8 | P12:138:WERE:HOOV-MURR_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04134 | 99.2 | P12:138:WERE:NORT-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04133 | 99.5 | P12:138:WERE:COWS-WACO_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04133 | 99.2 | P12:138:WERE:17TH-CANA_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04131 | 99.9 | P12:138:WERE:GECT-HOOV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04131 | 99.7 | P12:115:WERE:LANG-WEMP_115:: |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04131 | 99.3 | P13:069-138:WERE:HOOV_TX-3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0413 | 99.3 | P13:069-138:WERE:COWS_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04129 | 99.1 | P12:138:WERE:GORD-MAIZ_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04129 | 99.1 | MAIZE - MAIZEW 4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04129 | 99.1 | EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04127 | 99.1 | P12:115:WERE:INDA-HOYT_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04108 | 104.6393 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04101 | 99.6 | OVEXFRMCCOVE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04092 | 99.1 | MORISNT4 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.1 | P12:138:OKGE:3TERM2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04069 | 100.3634 | SUMMIT - UNIONRG6 230.00 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04067 | 99.7 | P12:115:WERE:MOUN-WEMP_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04067 | 99.2 | P12:115:WERE:SPCKJ-WEMP_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04041 | 99.2 | MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 100.6431 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04014 | 102.0337 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03992 | 99.3 | 7MCCREDIE 345.00 - 7OVERTON 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03969 | 101.1145 | BENTON - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03969 | 99.4 | DBL-THIS-WWR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03959 | 103.0432 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03959 | 101.9211 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03929 | 99.7 | RANCHRD7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0392 | 101.2535 | HUNTERS7 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0392 | 99.3 | G16-072-TAP 345.00 - RENFROW7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0392 | 99.3 | G16-072-TAP 345.00 - HUNTERS7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05705 | 107.6854 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05705 | 107.6725 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05705 | 103.2493 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05657 | 105.1912 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05419 | 113.0594 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05419 | 113.0576 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05419 | 108.5159 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05315 | 122.8779 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05084 | 103.8922 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05074 | 110.6492 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04636 | 99.9 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04627 | 101.1966 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04594 | 100 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0447 | 100 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04356 | 101.2321 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04292 | 102.353 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04292 | 102.3529 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04292 | 102.3516 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 100.3794 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 99.2 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 99.1 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04221 | 99.7 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05316 | 102.7406 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05316 | 102.7373 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05215 | 105.6699 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05208 | 102.3432 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05208 | 102.3412 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0511 | 112.251 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04874 | 100.0991 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80387 | 99.2 | 4REMINGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 | 304 | 357 | 0.80387 | 99.2 | 4REMINGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03956 | 126.2315 | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03956 | 126.2315 | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03638 | 126.3782 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03441 | 127.7398 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03441 | 127.6889 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03441 | 127.4849 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03441 | 127.4129 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03441 | 127.3335 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03237 | 134.1208 | G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03237 | 132.0974 | MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03237 | 118.4934 | CHIKASKIA - COYOTE 4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03237 | 118.4864 | COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03176 | 147.4578 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03176 | 136.776 | G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03176 | 126.2144 | OPENSKY7 345.00 - RANCHR7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03176 | 106.5467 | RANCHR7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03146 | 146.5379 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03146 | 124.9236 | RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03141 | 120.0361 | CHIKASKIA - KILDARE4 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03132 | 116.9483 | RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03042 | 135.1707 | TIMBER JUNCTION - UDALL 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03042 | 134.9396 | P12:069:WERE:TIMJ-WEAV_69:: |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03042 | 134.1814 | RICHLAND - UDALL 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03042 | 132.8775 | RICHLAND - ROSE HILL JUNCTION 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03042 | 131.3028 | ROSE HILL JUNCTION - WEAVER 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 135.9778 | CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 135.6473 | CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 135.4616 | P12:069:WERE:BELL-CRSW_69:: |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 132.6658 | CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 130.1881 | BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 128.8096 | BELL - PECK 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 128.683 | P12:069:WERE:BELL-MURR_69:: |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02965 | 127.2489 | GILL ENERGY CENTER WEST - PECK 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03931 | 124.4607 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03931 | 124.4607 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03612 | 125.1142 | SOONER (SOONERS) 345/138/13.8KV TRANSFORMER CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03415 | 126.2008 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03415 | 126.164 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03415 | 125.8994 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03415 | 125.787 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03415 | 125.7599 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 131.7973 | G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 129.9177 | MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 116.2612 | CHIKASKIA - COYOTE 4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 116.2537 | COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03139 | 146.1529 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03139 | 136.3186 | G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03139 | 125.9855 | OPENSKY7 345.00 - RANCHR7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03139 | 106.7313 | RANCHR7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03116 | 118.3471 | CHIKASKIA - KILDARE4 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03107 | 144.5825 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03107 | 123.9875 | RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03104 | 114.6635 | RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0304 | 119.1817 | OSAGE - SOONER PUMP TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0304 | 119.1114 | SOONER - SOONER PUMP TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03013 | 133.0941 | TIMBER JUNCTION - UDALL 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03013 | 132.8463 | P12:069:WERE:TIMJ-WEAV_69:: |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03013 | 131.8416 | RICHLAND - UDALL 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03013 | 130.4903 | RICHLAND - ROSE HILL JUNCTION 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03013 | 128.6767 | ROSE HILL JUNCTION - WEAVER 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02995 | 119.3633 | DMNCRKT4 - MILLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02995 | 119.2511 | MILLER - SOONER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03976 | 118.1307 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03976 | 118.1307 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0346 | 120.021 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0346 | 119.9661 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0346 | 119.6316 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0346 | 119.4562 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.0346 | 119.4523 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03259 | 124.5916 | G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03259 | 122.1643 | MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03259 | 109.0392 | CHIKASKIA - COYOTE 4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03259 | 109.0318 | COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03205 | 140.8797 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03205 | 131.0764 | G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03205 | 120.8266 | OPENSKY7 345.00 - RANCHR7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03205 | 99.5 | RANCHR7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03173 | 137.1373 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03162 | 112.2645 | CHIKASKIA - KILDARE4 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03153 | 105.7366 | RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03085 | 112.5528 | OSAGE - SOONER PUMP TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03085 | 112.4433 | SOONER - SOONER PUMP TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03064 | 128.2887 | TIMBER JUNCTION - UDALL 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03064 | 127.9325 | P12:069:WERE:TIMJ-WEAV_69:: |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03064 | 126.3311 | RICHLAND - UDALL 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03064 | 124.3431 | RICHLAND - ROSE HILL JUNCTION 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03064 | 121.7648 | ROSE HILL JUNCTION - WEAVER 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03039 | 112.9417 | DMNCRKT4 - WHITE EAGLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03039 | 112.6901 | DMNCRKT4 - MILLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03039 | 112.5276 | MILLER - SOONER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 127.8392 | CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 125.3849 | CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 125.2621 | P12:069:WERE:BELL-CRSW_69:: |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 124.9588 | CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 123.6494 | BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 121.4908 | BELL - PECK 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 121.3126 | P12:069:WERE:BELL-MURR_69:: |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.02987 | 118.9868 | GILL ENERGY CENTER WEST - PECK 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06911 | 108.7174 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06198 | 114.68 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06198 | 114.549 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.03398 | 102.5097 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.07094 | 106.1972 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06547 | 110.4589 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06547 | 110.3201 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.03641 | 99.9 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06159 | 109.0838 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06159 | 101.9533 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06522 | 106.2627 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06522 | 106.0297 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.03253 | 102.4121 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.0602 | 104.2732 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.0602 | 104.1369 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06077 | 119.6496 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06077 | 112.4489 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07398 | 99.6 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06968 | 104.0639 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06968 | 100 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06311 | 99.1 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06713 | 101.2265 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.08288 | 99.7 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07534 | 106.4701 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07534 | 102.2043 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07174 | 102.3545 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07398 | 99.6 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06968 | 104.0636 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06968 | 100 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06311 | 99.1 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06713 | 101.2264 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.08288 | 99.7 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07534 | 106.4702 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07534 | 102.2043 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07174 | 102.354 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05333 | 102.4653 | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05312 | 103.0023 | SWISSVALE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | NORTHWEST - SPRING CREEK 345KV CKT 1 | 1039 | 1195 | 0.0619 | 102.2847 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.0605 | 107.3893 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.0605 | 107.3893 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.0556 | 100.4768 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05248 | 99.2 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05124 | 115.8143 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04983 | 116.9474 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04983 | 116.9293 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04983 | 109.4665 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04682 | 112.4368 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04842 | 121.9317 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04716 | 120.1998 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04716 | 120.1923 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04716 | 113.0082 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04425 | 117.4529 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05388 | 134.9029 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0524 | 125.6875 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0524 | 125.6617 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0524 | 118.5532 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04927 | 131.7881 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04315 | 108.0353 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04288 | 99.6 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04288 | 99.6 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04094 | 100.1259 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04094 | 99.4 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04071 | 102.0899 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03996 | 103.3169 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03996 | 100.4793 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03865 | 99.1 | IATAN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03839 | 99.2 | SWISSVALE - TECUMSEH HILL 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03839 | 99.2 | TECUMSEH HILL (TECH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03818 | 100 | LAWRENCE HILL (LAWH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 104.8179 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 103.6259 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 100.65 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 99.9 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 99.8 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03604 | 99.1 | SUMMIT - UNIONRG6 230.00 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03542 | 101.8082 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03542 | 100.1441 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03403 | 104.6477 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03351 | 103.0512 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05637 | 117.1878 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05324 | 120.9893 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05324 | 120.9377 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05324 | 113.9419 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05097 | 110.8305 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05547 | 123.5074 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05338 | 115.6484 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05338 | 115.6344 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05338 | 108.6681 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05056 | 121.4464 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04407 | 99.4 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05418 | 113.8874 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05214 | 115.5155 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05214 | 115.5054 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05214 | 108.1685 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04937 | 110.8694 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05283 | 107.7654 | HOYT - STRANGER CREEK 345KV CKT 1 |

Table 9: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05083 | 100.7288 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05083 | 100.7093 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04813 | 107.3599 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | VIOLA 7 345.00 (VIOLA 1X) 345/138/13.8KV TRANSFORMER CKT 1 | 448 | 492.8 | 0.03906 | 99.7 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |

Table 10: Voltage Constraints Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Max MW Available | Contingency |
|----------------|--------|--------|------|-------------------|-------------|-------------|-----|-------------|------------------|-------------|
| | | | | Currently, None | | | | | | |

THERMAL AND STEADY STATE VOLTAGE CONSTRAINTS TABLES BASE ON AECI UPGRADE SET #2

Table 11: Thermal Constraints Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|------------|---|-------------|-------------|---------|-------------|--------------------------------------|
| 08ALL | 20L | ASGI_17_09 | 'FROM->TO' | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.19513 | 102.0882 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | 'FROM->TO' | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.19513 | 102.0882 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03303 | 109.503 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03243 | 118.8066 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 101.8052 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 100.9615 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 130.5685 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 116.7445 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 124.3499 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.4456 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.2941 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03157 | 102.6698 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 102.4446 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 101.8617 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 100.1821 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 99.6 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02961 | 101.7491 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 131.0749 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 118.1286 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 122.9706 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 103.2621 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 102.2094 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03129 | 102.6064 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 102.3668 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 101.7595 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 100.2754 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 111.9168 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 100.2982 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03155 | 104.5612 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 128.73 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 114.2254 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03178 | 116.6651 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03155 | 99.9 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.6 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.1 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1744 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1708 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.0014 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 104.1276 | BARTLESVILLE COMANCHE - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 102.0697 | BARTLESVILLE SOUTHEAST - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.9876 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.8412 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 104.1173 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03395 | 105.9919 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03145 | 100.6692 | GRACEMONT - MINCO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 104.6222 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 101.3296 | G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03707 | 99.8 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.13056 | 102.4879 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.402 | SOONER - SPRING CREEK 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.3412 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.5 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.4 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11323 | 100.5183 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11152 | 101.2891 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | DOMES - MOUND ROAD 138KV CKT 1 | 189 | 189 | 0.16471 | 105.3708 | 4REMINGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | DOMES - PAWHUSKA TAP 138KV CKT 1 | 189 | 189 | 0.16471 | 106.3667 | 4REMINGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.6947 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.5807 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 101.202 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04779 | 109.3352 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3107 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3028 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0455 | 105.9135 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9769 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9756 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 114.3991 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04955 | 129.6283 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04746 | 108.9917 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04729 | 117.0711 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04335 | 106.2871 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04324 | 105.265 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04302 | 105.194 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 102.6132 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 101.9835 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.9 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 100.1244 | 7JASPER 345.00 - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04151 | 99.2 | FT SMITH - MUSKOGEE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 105.0932 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 102.9267 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 100.6904 | LATHAMS7 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.1063 | P12:115:WERE:LANG-TECH_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.0292 | P12:115:WERE:FOUR-LANG_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.9284 | LANG - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.6395 | OSAGE CITY JUNCTION SWITCHING STATION - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0916 | OSAGE CITY JUNCTION SWITCHING STATION - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0905 | SCRANTON - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7816 | FOUR CORNERS - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7815 | SCRANTON - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.4367 | P12:115:WERE:FOUR-TECH_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.3819 | CARB-KW 3 - FOUR CORNERS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.1561 | CARB-KW 3 - SHAWNEE HEIGHTS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 99.6 | SHAWNEE HEIGHTS - TECUMSEH HILL 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.041 | 100.6044 | DBL-SPRVL-IR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04097 | 100.1854 | RENO COUNTY - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | P12:161:WERE:MARM-KCPL_161:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | CENTERVILLE - G15-016T 161.00 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.3 | CENTERVILLE - PAOLA 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04075 | 99 | RENO COUNTY - SUMMIT 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04063 | 106.3436 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.8 | G13-010T 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.7 | G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.4 | G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04045 | 99 | DELL 500 - INDEPENDENCE 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04044 | 99.7 | AXTELL - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0404 | 99.3 | 7MCCREDIE 345.00 - 7MONTGMRY 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.5 | G15088_T 345.00 - MOORE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.2 | G15088_T 345.00 - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04035 | 99.5 | CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F2:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.8 | SMAN_W_3 115.00 - SOUTH MANHATTAN 115KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.67502 | SOUTH ALMA - SOUTH MANHATTAN 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.11964 | KEENE - SOUTH ALMA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 100.4624 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 99.8 | G15063_T 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04031 | 99.2 | KEO EHV - WEST MEMPHIS 500 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04028 | 99.8 | GRAND ISLAND - SWEETWATER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04023 | 99 | 7SPORTSMAN - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE:KNOB-MKEC_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE-MKEC:CLIFTON-KNOBHILL:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | CLIFTON - GREENLEAF 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04012 | 99.2 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 5JASPER 161.00 - LAMAR 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 7JASPER 345.00 345/161KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1257 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04 | 99.1 | AUBURN ROAD - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | CIMARRON - DRAPER LAKE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | GRAND ISLAND - MCCOOL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 99 | HAWTHORN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.6 | P13:069-138:WERE:ALTO_TX-10R3P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.3 | DBL-HTCH-OTA |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.1 | IATAN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 101.2688 | DBL-THIS-G15 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 99.1 | P12:069:WERE:ALLE-TIOG_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | P13:115-230:WERE:MCDO_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK - MORRIS COUNTY 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK (MCDO TX-1) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 105.5185 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.141 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.0564 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.4483 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.3168 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.0529 | GEN542957 1-IATAN UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 102.427 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5974 | GEN640009 1-COOPER NUCLEAR STATION |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5263 | GEN645012 2-NEBRASKA CITY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.3423 | GEN645011 1-NEBRASKA CITY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.0707 | GEN541151 3-SIBLEY GENERATING UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.3996 | P12:138:WERE:BENT-NORT_138P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2772 | GEN546702 1-NM GEN N1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2207 | GEN344225 1-1CAL G1 25.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.0523 | GEN300007 1-NEW MADRID UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN635024 4-WALTER SCOTT UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN300006 1-NEW MADRID UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:115:WERE:EMAN-KSU_115:: |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|--------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:069:WERE:COWS-HOOVS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659103 1-ANTELOPE VALLEY UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659107 2-ANTELOPE VALLEY UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | EASTDC - ERCOT EQUIVALENCE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN659111 2-LELAND OLDS UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN300002 1-THOMAS HILL UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN635023 3-WALTER SCOTT UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN541162 1-ARIES STEAM TURBINE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | P12:115:WERE:PHLP-SALM_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542954 3-MONTROSE UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542953 2-MONTROSE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | P12:138:WERE:HARR-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590010 1-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590011 2-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN532662 1-LAWRENCE ENERGY CENTER UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN562694 1-G15_016_3 0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:3VAN-HEC_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:EEUR-WEMPL_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:069:WERE:MACA-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.4 | GEN532672 1-TECUMSEH ENERGY CENTER UNIT 8 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN542967 9-HAWTHORN UNIT #9 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN300001 1-THOMAS HILL UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN636641 1-LOUISA UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN546698 1-QN GEN2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | P12:069:WERE:HOOVN-RIPL_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN635214 4-NEAL UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN600002 3-SHERBURNE CNTY G3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541166 2-SHARPR#2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543108 3-BULL CREEK COMBUSTION TURBINE #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543106 1-BULL CREEK COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543107 2-BULL CREEK COMBUSTION TURBINE #2 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543109 4-BULL CREEK COMBUSTION TURBINE #4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN505432 1-SIKESTON |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541165 1-SHARPR#1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN542961 6-HAWTHORN COMBUSTION TURBINE #6 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN300011 1-ST FRANCIS UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN541163 1-ARIES COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN549893 2-SOUTHWEST 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN645025 5-NORTH OMAHA 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:MEAD-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:COWS-SUNS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344896 3-1LAB G3 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300012 1-HOLDEN UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN659110 1-LELAND OLDS UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN635213 3-NEAL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344894 1-1LAB G1 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300010 1-ST FRANCIS UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN543078 1-PAOLA COMBUSTION TURBINES |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600000 1-SHERBURNECNTY G1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300013 1-HOLDEN UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344895 2-1LAB G2 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645042 2-CASS COUNTY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600001 2-SHERBURNE CNTY G2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645041 1-CASS COUNTY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300015 1-1SGPDEL 18.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344897 4-1LAB G4 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | P12:115:WERE:ANZI-FITU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | ABILENE ENERGY CENTER 115/34.5KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | 4SIOUX 1 138.00 138/18.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03969 | 100 | P12:069:WERE:64TH-NORT_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 101.0077 | HOYT (HOYT TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 99.5 | P12:069:WERE:MOUN-NEWT_69:: |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03967 | 99.7 | P12:138:WERE:HOOV-MURR_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:17TH-CANA_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:NORT-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03964 | 99.3 | P12:138:WERE:COWS-WACO_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.8 | P12:138:WERE:GECT-HOOV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.5 | P12:115:WERE:LANG-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.1 | P13:069-138:WERE:HOOV_TX-3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99 | ALTOONA - BUTLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99.2 | P13:069-138:WERE:COWS_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99 | P13:069-138:WERE:BUTL_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03958 | 99 | P12:115:WERE:INDA-HOYT_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03941 | 104.5045 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03935 | 99.5 | OVEXFRMCCOVE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03903 | 100.2276 | SUMMIT - UNIONRG6 230.00 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.6 | P12:115:WERE:MOUN-WEMP_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.1 | P12:115:WERE:SPCKJ-WEMP_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03874 | 99 | MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0386 | 100.4994 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0384 | 101.8884 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03825 | 99.1 | 7MCCREDIE 345.00 - 7OVERTON 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03805 | 99.3 | DBL-THIS-WWR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03784 | 100.9513 | BENTON - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0377 | 99.5 | RANCHR7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 102.8606 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 101.7465 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 101.124 | HUNTERS7 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.2 | G16-072-TAP 345.00 - HUNTERS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.1 | G16-072-TAP 345.00 - RENFROW7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.3806 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.2914 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 102.9466 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05459 | 104.9541 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8729 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8701 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 108.3238 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05115 | 122.7053 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04896 | 103.7365 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04881 | 110.4837 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04464 | 101.0683 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04452 | 99.7 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04425 | 99.8 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 99.8 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04181 | 101.0892 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.211 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 100.2299 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04054 | 99.5 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5505 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5404 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05015 | 105.5003 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1669 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1649 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0491 | 112.0934 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04681 | 99.9 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17238 | 174.5054 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17238 | 174.5054 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17089 | 106.9083 | 4REMINGTON 138.00 - FAIRFAX 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11947 | 135.2455 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11947 | 135.2455 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11507 | 132.6854 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11507 | 132.6854 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10509 | 114.3917 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10223 | 136.7851 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10043 | 130.181 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10043 | 129.7489 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 131.6556 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 131.6556 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 128.8151 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.5664 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.5296 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.3874 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 130.7505 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 130.2724 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.5992 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.5967 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.529 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09188 | 127.9325 | CLEAVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09188 | 127.0573 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 114.431 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 107.4722 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 107.3964 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 106.7052 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 106.6263 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08982 | 137.614 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08982 | 133.0169 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08768 | 116.5349 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08768 | 115.378 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 116.4423 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 116.1289 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.106 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.106 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.1013 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08599 | 115.3708 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08519 | 127.7707 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08493 | 142.377 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08493 | 142.3751 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 126.8709 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 126.866 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 110.0706 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 104.4088 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 99.8 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04939 | 107.3428 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17239 | 161.1549 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17239 | 161.1549 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17084 | 99 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11944 | 125.0771 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11944 | 125.0771 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11503 | 122.1855 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11503 | 122.1855 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10507 | 102.886 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10219 | 126.0779 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10041 | 117.4907 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10041 | 117.2013 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 120.7157 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 120.7157 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 117.7336 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.6865 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.6568 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.576 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 119.7264 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 119.3686 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.3132 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.31 | P12:138:AEPW:BARNSAL4:T.NO.--4 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.2312 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08978 | 127.3064 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08978 | 122.4333 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08766 | 104.6337 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08766 | 103.4238 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 104.8065 | COLLINSVILLE (COLAUTO3) 161/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 104.8065 | COLLINSVILLE (COLAUTO3) 161/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 103.7526 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9276 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9276 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9275 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17232 | 181.7239 | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17232 | 181.7239 | FAIRFAX - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17085 | 120.5174 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11943 | 148.2471 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11943 | 148.2471 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.115 | 140.8777 | CLEVELAND - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.115 | 140.8777 | CLEVELAND - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10506 | 128.692 | FAIRFAX TAP - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10506 | 126.0548 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10216 | 148.79 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10038 | 142.0835 | 4GLENCOE 138.00 - PAWNWSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10038 | 141.5912 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 143.8599 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 143.8599 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 139.4966 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 144.1441 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 144.1406 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 143.9912 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 142.9332 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 142.3632 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09181 | 141.4308 | CLEVELAND - JAVINE 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09181 | 140.324 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 126.1995 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 119.6069 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 119.5073 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 118.8161 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 118.7122 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 105.4422 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 105.3103 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08974 | 149.854 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08974 | 145.3059 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08927 | 138.5622 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 128.6105 | RAMONA - WALMART TAP2 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 126.6087 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 124.9005 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08759 | 128.1036 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08759 | 127.6181 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND - CLEVLND 4 138.00 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08593 | 127.2877 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08548 | 139.2777 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08513 | 143.1714 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 161.522 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 161.5202 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 104.5005 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 0 | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 104.4948 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08481 | 142.1469 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08481 | 142.1281 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 123.9105 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 117.6453 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 108.6938 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 104.3098 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04934 | 126.402 | HALLETT TAP - PAWNEE 69KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04934 | 101.4286 | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17185 | 153.702 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17185 | 153.702 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1188 | 112.8775 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1188 | 112.8775 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11379 | 117.1189 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11379 | 117.1189 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10129 | 119.2457 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09993 | 106.3681 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09993 | 106.2312 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 113.8824 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 113.8824 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 112.593 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.8201 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.7848 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.7731 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.1143 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 111.9604 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9801 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9775 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9293 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09094 | 107.7161 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09094 | 107.486 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08883 | 121.4136 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08883 | 116.6966 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.889 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.889 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.6181 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08409 | 111.6519 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08409 | 111.5634 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17224 | 182.566 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17224 | 182.566 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17025 | 122.5632 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11915 | 150.3602 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11915 | 150.3602 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1144 | 141.9227 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1144 | 141.9227 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10486 | 128.1465 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10186 | 150.1646 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10032 | 144.6805 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10032 | 144.1761 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 145.244 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 145.244 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 140.8809 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.6201 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.6159 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.4604 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 144.3482 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 143.7641 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09156 | 143.3324 | CLEAVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09156 | 142.1738 | 4SFORKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 127.5684 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 121.5258 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 121.4276 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 120.6345 | 4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 120.59 | GEN301382 1-1OSAGEWINDG10.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 107.2631 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 107.133 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08951 | 151.4752 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08951 | 146.9374 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0892 | 139.8244 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08906 | 140.5341 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 130.2764 | RAMONA - WALMART TAP2 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 130.1514 | WALMART TAP2 - WALMART2 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 129.1208 | RAMONA - WALMART2 69KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 127.0564 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.8963 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.8963 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.3814 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08572 | 128.979 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08528 | 141.4399 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08492 | 145.4435 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 165.174 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 164.272 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 108.8845 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 108.8832 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08461 | 144.4515 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08461 | 144.4412 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 126.4956 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 120.5026 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 110.5839 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 106.0576 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04918 | 129.6947 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04918 | 103.9857 | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17226 | 175.7747 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17226 | 175.7747 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17026 | 107.8133 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11917 | 136.5901 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11917 | 136.5901 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11442 | 131.9608 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11442 | 131.9608 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10487 | 115.4999 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10189 | 137.7797 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10034 | 132.0911 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10034 | 131.6273 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 132.6561 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 132.6561 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 129.813 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.5903 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.5556 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.4226 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 131.7691 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 131.2914 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.6629 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.6605 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.5944 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09158 | 129.3673 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09158 | 128.4566 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 115.6645 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 108.6142 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 108.5315 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 107.8428 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 107.7567 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08954 | 139.2905 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08954 | 134.6791 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08745 | 117.2165 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08745 | 116.4061 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08742 | 117.4132 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08742 | 117.0747 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9703 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9703 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9697 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08574 | 116.5419 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08494 | 129.2248 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08467 | 144.7089 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08467 | 144.7076 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08462 | 128.3081 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08462 | 128.302 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 111.0685 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 105.2818 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 100.8072 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04919 | 110.0885 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17229 | 175.8534 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17229 | 175.8534 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17027 | 115.011 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11918 | 144.2254 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11918 | 144.2254 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11444 | 132.6455 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11444 | 132.6455 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10191 | 141.0127 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10036 | 137.8136 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10036 | 137.3567 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09727 | 136.2177 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09727 | 136.2177 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.8155 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.7999 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.6624 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 135.5031 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 134.9507 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09161 | 134.5165 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09161 | 133.3986 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 119.5807 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 113.7217 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 113.61 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 112.9471 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 112.8304 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 99.8 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 99.7 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08957 | 141.3716 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08957 | 136.7344 | G15066_T 345.00 - SOONER 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0891 | 132.4144 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08747 | 121.2485 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08747 | 119.3783 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08744 | 122.5276 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08576 | 121.4013 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08532 | 133.219 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08496 | 137.0808 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 155.1825 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 155.1755 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 101.0039 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 101.0024 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 136.8898 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 136.8696 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 117.6732 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 111.6685 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 107.113 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 102.7122 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04921 | 121.6949 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03181 | 124.1416 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03155 | 122.7703 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06205 | 107.9944 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.9402 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.8065 | NORTHWEST - SPRING CREEK 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06389 | 105.4279 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.6743 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.5365 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.02963 | 99.1 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 108.312 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 101.2081 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.2867 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.1185 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.5741 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.4313 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 119.03 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 111.8395 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9393 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0876 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0882 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9392 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0873 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0881 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05165 | 102.3655 | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05135 | 102.8851 | SWISSVALE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | NORTHWEST - SPRING CREEK 345KV CKT 1 | 1039 | 1195 | 0.05669 | 101.8408 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.16471 | 110.52 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.16471 | 110.9191 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04879 | 115.4996 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.6035 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.4668 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 109.1779 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0445 | 112.1712 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04596 | 121.6376 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8446 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8389 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 112.6805 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04193 | 117.1723 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05142 | 134.6016 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3374 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3188 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 118.245 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04694 | 131.5041 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04127 | 107.8276 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.9 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.2 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03874 | 101.8732 | LACYGNE - STILLWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 103.0147 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 100.1891 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | TECUMSEH HILL (TECH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | SWISSVALE - TECUMSEH HILL 230KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03619 | 99.8 | LAWRENCE HILL (LAWH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 104.6101 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 103.4184 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 100.4388 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.7 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.6 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 101.4986 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 99.9 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03192 | 104.4065 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03134 | 102.8172 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05392 | 116.7958 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.6758 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.3491 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 113.4468 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04865 | 110.4556 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.053 | 123.2303 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3638 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3468 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 108.3561 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 121.1677 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04219 | 99.2 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05171 | 113.6272 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1769 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1748 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 107.858 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04703 | 110.6009 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05036 | 107.521 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.457 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.4376 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04579 | 107.1251 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | VIOLA 7 345.00 (VIOLA 1X) 345/138/13.8KV TRANSFORMER CKT 1 | 448 | 492.8 | 0.03674 | 99.4 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03303 | 109.503 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03243 | 118.8066 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 101.8052 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 100.9615 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 130.5685 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 116.7445 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 124.3499 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.4456 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.2941 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03157 | 102.6698 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 102.4446 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 101.8617 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 100.1821 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 99.6 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02961 | 101.7491 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 131.0749 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 118.1286 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 122.9706 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 103.2621 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 102.2094 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03129 | 102.6064 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 102.3668 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 101.7595 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 100.2754 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 111.9168 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20WP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 100.2982 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03155 | 104.5612 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 128.73 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 114.2254 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03178 | 116.6651 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03155 | 99.9 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.6 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.1 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1744 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1708 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.0014 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 104.1276 | BARTLESVILLE COMANCHE - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 102.0697 | BARTLESVILLE SOUTHEAST - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.9876 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.8412 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 104.1173 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03395 | 105.9919 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03145 | 100.6692 | GRACEMONT - MINCO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 104.6222 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 101.3296 | G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03707 | 99.8 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.13056 | 102.4879 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.402 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.3412 | NORTHWEST - SPRING CREEK 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.5 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.4 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11323 | 100.5183 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11152 | 101.2891 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | DOMES - MOUND ROAD 138KV CKT 1 | 189 | 189 | 0.16471 | 105.3708 | 4REMINGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | DOMES - PAWHUSKA TAP 138KV CKT 1 | 189 | 189 | 0.16471 | 106.3667 | 4REMINGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.6947 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.5807 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 101.202 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04779 | 109.3352 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3107 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3028 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0455 | 105.9135 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9769 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9756 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 114.3991 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04955 | 129.6283 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04746 | 108.9917 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04729 | 117.0711 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04335 | 106.2871 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04324 | 105.265 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04302 | 105.194 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 102.6132 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 101.9835 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.9 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 100.1244 | 7JASPER 345.00 - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04151 | 99.2 | FT SMITH - MUSKOGEE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 105.0932 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 102.9267 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 100.6904 | LATHAMS7 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.1063 | P12:115:WERE:LANG-TECH_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.0292 | P12:115:WERE:FOUR-LANG_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.9284 | LANG - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.6395 | OSAGE CITY JUNCTION SWITCHING STATION - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0916 | OSAGE CITY JUNCTION SWITCHING STATION - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0905 | SCRANTON - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7816 | FOUR CORNERS - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7815 | SCRANTON - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.4367 | P12:115:WERE:FOUR-TECH_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.3819 | CARB-KW 3 - FOUR CORNERS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.1561 | CARB-KW 3 - SHAWNEE HEIGHTS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 99.6 | SHAWNEE HEIGHTS - TECUMSEH HILL 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.041 | 100.6044 | DBL-SPRVL-IR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04097 | 100.1854 | RENO COUNTY - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | P12:161:WERE:MARM-KCPL_161:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | CENTERVILLE - G15-016T 161.00 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.3 | CENTERVILLE - PAOLA 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04075 | 99 | RENO COUNTY - SUMMIT 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04063 | 106.3436 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.8 | G13-010T 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.7 | G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.4 | G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04045 | 99 | DELL 500 - INDEPENDENCE 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04044 | 99.7 | AXTELL - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0404 | 99.3 | 7MCCREDIE 345.00 - 7MONTGMRY 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.5 | G15088_T 345.00 - MOORE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.2 | G15088_T 345.00 - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04035 | 99.5 | CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F2:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.8 | SMAN_W_3 115.00 - SOUTH MANHATTAN 115KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.67502 | SOUTH ALMA - SOUTH MANHATTAN 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.11964 | KEENE - SOUTH ALMA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 100.4624 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 99.8 | G15063_T 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04031 | 99.2 | KEO EHV - WEST MEMPHIS 500 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04028 | 99.8 | GRAND ISLAND - SWEETWATER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04023 | 99 | 7SPORTSMAN - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE:KNOB-MKEC_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE-MKEC:CLIFTON-KNOBHILL:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | CLIFTON - GREENLEAF 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04012 | 99.2 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 5JASPER 161.00 - LAMAR 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 7JASPER 345.00 345/161KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1257 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04 | 99.1 | AUBURN ROAD - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | CIMARRON - DRAPER LAKE 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | GRAND ISLAND - MCCOOL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 99 | HAWTHORN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.6 | P13:069-138:WERE:ALTO_TX-10R3P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.3 | DBL-HTCH-OTA |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.1 | IATAN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 101.2688 | DBL-THIS-G15 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 99.1 | P12:069:WERE:ALLE-TIOG_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | P13:115-230:WERE:MCDO_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK - MORRIS COUNTY 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK (MCDO TX-1) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 105.5185 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.141 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.0564 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.4483 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.3168 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.0529 | GEN542957 1-IATAN UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 102.427 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5974 | GEN640009 1-COOPER NUCLEAR STATION |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5263 | GEN645012 2-NEBRASKA CITY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.3423 | GEN645011 1-NEBRASKA CITY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.0707 | GEN541151 3-SIBLEY GENERATING UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.3996 | P12:138:WERE:BENT-NORT_138P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2772 | GEN546702 1-NM GEN N1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2207 | GEN344225 1-1CAL G1 25.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.0523 | GEN300007 1-NEW MADRID UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN635024 4-WALTER SCOTT UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN300006 1-NEW MADRID UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:115:WERE:EMAN-KSU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:069:WERE:COWS-HOOVS_69F:: |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|--------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659103 1-ANTELOPE VALLEY UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659107 2-ANTELOPE VALLEY UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | EASTDC - ERCOT EQUIVALENCE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN659111 2-LELAND OLDS UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN300002 1-THOMAS HILL UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN635023 3-WALTER SCOTT UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN541162 1-ARIES STEAM TURBINE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | P12:115:WERE:PHLP-SALM_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542954 3-MONTROSE UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542953 2-MONTROSE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | P12:138:WERE:HARR-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590010 1-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590011 2-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN532662 1-LAWRENCE ENERGY CENTER UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN562694 1-G15_016_3 0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:3VAN-HEC_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:EEUR-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:069:WERE:MACA-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.4 | GEN532672 1-TECUMSEH ENERGY CENTER UNIT 8 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN542967 9-HAWTHORN UNIT #9 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN300001 1-THOMAS HILL UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN636641 1-LOUISA UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN546698 1-QN GEN2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | P12:069:WERE:HOOVN-RIPL_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN635214 4-NEAL UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN600002 3-SHERBURNE CNTY G3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541166 2-SHARPR#2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543108 3-BULL CREEK COMBUSTION TURBINE #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543106 1-BULL CREEK COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543107 2-BULL CREEK COMBUSTION TURBINE #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543109 4-BULL CREEK COMBUSTION TURBINE #4 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN505432 1-SIKESTON |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541165 1-SHARPR#1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN542961 6-HAWTHORN COMBUSTION TURBINE #6 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN300011 1-ST FRANCIS UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN541163 1-ARIES COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN549893 2-SOUTHWEST 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN645025 5-NORTH OMAHA 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:MEAD-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:COWS-SUNS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344896 3-1LAB G3 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300012 1-HOLDEN UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN659110 1-LELAND OLDS UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN635213 3-NEAL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344894 1-1LAB G1 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300010 1-ST FRANCIS UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN543078 1-PAOLA COMBUSTION TURBINES |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600000 1-SHERBURNECNTY G1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300013 1-HOLDEN UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344895 2-1LAB G2 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645042 2-CASS COUNTY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600001 2-SHERBURNE CNTY G2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645041 1-CASS COUNTY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300015 1-1SGPDEL 18.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344897 4-1LAB G4 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | P12:115:WERE:ANZI-FITU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | ABILENE ENERGY CENTER 115/34.5KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | 4SIJOUX 1 138.00 138/18.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03969 | 100 | P12:069:WERE:64TH-NORT_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 101.0077 | HOYT (HOYT TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 99.5 | P12:069:WERE:MOUN-NEWT_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03967 | 99.7 | P12:138:WERE:HOOV-MURR_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:17TH-CANA_138:: |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:NORT-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03964 | 99.3 | P12:138:WERE:COWS-WACO_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.8 | P12:138:WERE:GECT-HOOV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.5 | P12:115:WERE:LANG-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.1 | P13:069-138:WERE:HOOV_TX-3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99 | ALTOONA - BUTLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99.2 | P13:069-138:WERE:COWS_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99 | P13:069-138:WERE:BUTL_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03958 | 99 | P12:115:WERE:INDA-HOYT_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03941 | 104.5045 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03935 | 99.5 | OVEXFRMCCOVE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03903 | 100.2276 | SUMMIT - UNIONRG6 230.00 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.6 | P12:115:WERE:MOUN-WEMP_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.1 | P12:115:WERE:SPCKJ-WEMP_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03874 | 99 | MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0386 | 100.4994 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0384 | 101.8884 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03825 | 99.1 | 7MCCREDIE 345.00 - 7OVERTON 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03805 | 99.3 | DBL-THIS-WWR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03784 | 100.9513 | BENTON - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0377 | 99.5 | RANCHRD7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 102.8606 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 101.7465 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 101.124 | HUNTERS7 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.2 | G16-072-TAP 345.00 - HUNTERS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.1 | G16-072-TAP 345.00 - RENFROW7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.3806 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.2914 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 102.9466 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05459 | 104.9541 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8729 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8701 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 108.3238 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05115 | 122.7053 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04896 | 103.7365 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04881 | 110.4837 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04464 | 101.0683 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04452 | 99.7 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04425 | 99.8 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 99.8 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04181 | 101.0892 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.211 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 100.2299 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04054 | 99.5 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5505 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5404 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05015 | 105.5003 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1669 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1649 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0491 | 112.0934 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04681 | 99.9 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17238 | 174.5054 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17238 | 174.5054 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17089 | 106.9083 | 4REMINGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11947 | 135.2455 | 4REMINGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11947 | 135.2455 | 4REMINGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11507 | 132.6854 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11507 | 132.6854 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10509 | 114.3917 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10223 | 136.7851 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10043 | 130.181 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10043 | 129.7489 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 131.6556 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 131.6556 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09756 | 128.8151 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.5664 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.5296 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 131.3874 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 130.7505 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0962 | 130.2724 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.5992 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.5967 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09605 | 126.529 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09188 | 127.9325 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09188 | 127.0573 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 114.431 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 107.4722 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 107.3964 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 106.7052 | GEN301382 1-1OSAGEWINDG10.6900 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09046 | 106.6263 | 4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08982 | 137.614 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08982 | 133.0169 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08768 | 116.5349 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08768 | 115.378 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 116.4423 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 116.1289 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.106 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.106 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08632 | 129.1013 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08599 | 115.3708 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08519 | 127.7707 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08493 | 142.377 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08493 | 142.3751 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 126.8709 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 126.866 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 110.0706 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 104.4088 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06183 | 99.8 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04939 | 107.3428 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17239 | 161.1549 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17239 | 161.1549 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17084 | 99 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11944 | 125.0771 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11944 | 125.0771 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11503 | 122.1855 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11503 | 122.1855 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10507 | 102.886 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10219 | 126.0779 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10041 | 117.4907 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10041 | 117.2013 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 120.7157 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 120.7157 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09752 | 117.7336 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.6865 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.6568 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 120.576 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 119.7264 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09616 | 119.3686 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.3132 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.31 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09602 | 115.2312 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08978 | 127.3064 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08978 | 122.4333 | G15066_T 345.00 - SOONER 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08766 | 104.6337 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08766 | 103.4238 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 104.8065 | COLLINSVILLE (COLAUTO3) 161/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 104.8065 | COLLINSVILLE (COLAUTO3) 161/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08762 | 103.7526 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9276 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9276 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0863 | 116.9275 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17232 | 181.7239 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17232 | 181.7239 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17085 | 120.5174 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11943 | 148.2471 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11943 | 148.2471 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.115 | 140.8777 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.115 | 140.8777 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10506 | 128.692 | FAIRFAX TAP - SHIDLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10506 | 126.0548 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10216 | 148.79 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10038 | 142.0835 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10038 | 141.5912 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 143.8599 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 143.8599 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0975 | 139.4966 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 144.1441 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 144.1406 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 143.9912 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 142.9332 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09613 | 142.3632 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09181 | 141.4308 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09181 | 140.324 | 4SFORKTAP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 126.1995 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 119.6069 | GEN588303 1-ASGI1705-GEN0.6900 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 119.5073 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 118.8161 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 118.7122 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 105.4422 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0904 | 105.3103 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08974 | 149.854 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08974 | 145.3059 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08927 | 138.5622 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 128.6105 | RAMONA - WALMART TAP2 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 126.6087 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08763 | 124.9005 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08759 | 128.1036 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08759 | 127.6181 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND - CLEVLND 4 138.00 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08626 | 143.7095 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08593 | 127.2877 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08548 | 139.2777 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08513 | 143.1714 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 161.522 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 161.5202 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 104.5005 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 0 | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08486 | 104.4948 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08481 | 142.1469 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08481 | 142.1281 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 123.9105 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 117.6453 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 108.6938 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0618 | 104.3098 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04934 | 126.402 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04934 | 101.4286 | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17185 | 153.702 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17185 | 153.702 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1188 | 112.8775 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1188 | 112.8775 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11379 | 117.1189 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11379 | 117.1189 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10129 | 119.2457 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09993 | 106.3681 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09993 | 106.2312 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 113.8824 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 113.8824 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0967 | 112.593 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.8201 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.7848 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.7731 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 112.1143 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09533 | 111.9604 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9801 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9775 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09519 | 107.9293 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09094 | 107.7161 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09094 | 107.486 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08883 | 121.4136 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08883 | 116.6966 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.889 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.889 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08557 | 105.6181 | CLEVELAND - CLEVIND 4 138.00 138KV CKT Z1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08409 | 111.6519 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08409 | 111.5634 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17224 | 182.566 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17224 | 182.566 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17025 | 122.5632 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11915 | 150.3602 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11915 | 150.3602 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1144 | 141.9227 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.1144 | 141.9227 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10486 | 128.1465 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10186 | 150.1646 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10032 | 144.6805 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10032 | 144.1761 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 145.244 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 145.244 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09723 | 140.8809 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.6201 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.6159 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 145.4604 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 144.3482 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09587 | 143.7641 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09156 | 143.3324 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09156 | 142.1738 | 4SFORKTPT 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 127.5684 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 121.5258 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 121.4276 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 120.6345 | 4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 120.59 | GEN301382 1-1OSAGEWINDG10.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 107.2631 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09019 | 107.133 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08951 | 151.4752 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08951 | 146.9374 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0892 | 139.8244 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08906 | 140.5341 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 130.2764 | RAMONA - WALMART TAP2 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 130.1514 | WALMART TAP2 - WALMART2 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 129.1208 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08743 | 127.0564 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.8963 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.8963 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08741 | 129.3814 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08607 | 145.6745 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08572 | 128.979 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08528 | 141.4399 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08492 | 145.4435 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 165.174 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 164.272 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 108.8845 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 108.8832 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08461 | 144.4515 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08461 | 144.4412 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 126.4956 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 120.5026 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 110.5839 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06169 | 106.0576 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04918 | 129.6947 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04918 | 103.9857 | 2GETTYTAP 69.000 - PAWNEE 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17226 | 175.7747 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17226 | 175.7747 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17026 | 107.8133 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11917 | 136.5901 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11917 | 136.5901 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11442 | 131.9608 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11442 | 131.9608 | CLEVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10487 | 115.4999 | OSAGE - WEBB CITY TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10189 | 137.7797 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10034 | 132.0911 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10034 | 131.6273 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 132.6561 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 132.6561 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|---|
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09725 | 129.813 | P12:138:AEPW:BV-COM-4:BV-SE--4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.5903 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.5556 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 132.4226 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 131.7691 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09589 | 131.2914 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.6629 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.6605 | P12:138:AEPW:BARNSAL4:T.NO.--4 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09575 | 127.5944 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09158 | 129.3673 | CLEVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09158 | 128.4566 | 4SFORKKTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 115.6645 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 108.6142 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 108.5315 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 107.8428 | GEN301382 1-1OSAGEWINDG10.6900 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09021 | 107.7567 | 4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08954 | 139.2905 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08954 | 134.6791 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08745 | 117.2165 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08745 | 116.4061 | RAMONA - SOUTH FORK 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08742 | 117.4132 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08742 | 117.0747 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9703 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9703 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08609 | 130.9697 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08574 | 116.5419 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08494 | 129.2248 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08467 | 144.7089 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08467 | 144.7076 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08462 | 128.3081 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08462 | 128.302 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 111.0685 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 105.2818 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0617 | 100.8072 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04919 | 110.0885 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17229 | 175.8534 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17229 | 175.8534 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.17027 | 115.011 | 4REMNGTON 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11918 | 144.2254 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11918 | 144.2254 | 4REMNGTON 138.00 - SHIDLER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11444 | 132.6455 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.11444 | 132.6455 | CLEAVELAND - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10191 | 141.0127 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10036 | 137.8136 | 4GLENCOE 138.00 - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.10036 | 137.3567 | 4GLENCOE 138.00 - STILLWATER 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09727 | 136.2177 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09727 | 136.2177 | BARTLESVILLE COMANCHE - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.8155 | SHIDLER - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.7999 | P12:138:AEPW:MOUNDRD4:SHIDLER4 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 136.6624 | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 135.5031 | DOMES - PAWHUSKA TAP 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09591 | 134.9507 | DOMES - MOUND ROAD 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09161 | 134.5165 | CLEAVELAND - JAVINE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09161 | 133.3986 | 4SFORKTTP 138.00 - JAVINE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 119.5807 | BURBANK - FAIRFAX 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 113.7217 | GEN588303 1-ASGI1705-GEN0.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 113.61 | 4REMNGTON 138.00 - ASGI1705 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 112.9471 | GEN301382 1-10SAGEWINDG10.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 112.8304 | 40SAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 99.8 | GEN588323 1-ASGI1709-GEN0.6900 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.09023 | 99.7 | ASGI1709 138.00 - FAIRFAX 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08957 | 141.3716 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08957 | 136.7344 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.0891 | 132.4144 | 4CLEVLNDXFMR138.00 138/69KV TRANSFORMER CKT 2 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08747 | 121.2485 | RAMONA - WALMART2 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08747 | 119.3783 | RAMONA - SOUTH FORK 69KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08744 | 122.5276 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND - CLEVELND 4 138.00 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08611 | 137.4823 | CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08576 | 121.4013 | CLEVELAND DIST - HALLETT TAP 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08532 | 133.219 | CLEVELAND - HALLETT TAP 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08496 | 137.0808 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 155.1825 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 155.1755 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 101.0039 | 2CLEVLNDXFMR69.000 - CLEVELAND 69KV CKT Z1 |
| 0 | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08469 | 101.0024 | 4CLEVLNDXFMR138.00 - CLEVELAND 138KV CKT Z1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 136.8898 | 4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.08464 | 136.8696 | 4SFORKK 138.00 138/69KV TRANSFORMER CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 117.6732 | SOUTH FORK - TALLANT 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 111.6685 | 2PRSHNGTP 69.000 - TALLANT 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 107.113 | 2PRSHNGTP 69.000 - PAWYA 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.06171 | 102.7122 | NAVAL RESERVE - PAWYA 69KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | FAIRFAX 138/69KV TRANSFORMER CKT 1 | 64 | 64 | 0.04921 | 121.6949 | HALLETT TAP - PAWNEE 69KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03181 | 124.1416 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03155 | 122.7703 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06205 | 107.9944 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.9402 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.8065 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06389 | 105.4279 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.6743 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.5365 | NORTHWEST - SPRING CREEK 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.02963 | 99.1 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 108.312 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 101.2081 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.2867 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.1185 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.5741 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.4313 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 119.03 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 111.8395 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9393 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0876 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0882 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9392 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0873 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0881 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05165 | 102.3655 | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05135 | 102.8851 | SWISSVALE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | NORTHWEST - SPRING CREEK 345KV CKT 1 | 1039 | 1195 | 0.05669 | 101.8408 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.16471 | 110.52 | 4REMINGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.16471 | 110.9191 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04879 | 115.4996 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.6035 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.4668 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 109.1779 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0445 | 112.1712 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04596 | 121.6376 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8446 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8389 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 112.6805 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04193 | 117.1723 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05142 | 134.6016 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3374 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3188 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 118.245 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04694 | 131.5041 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04127 | 107.8276 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.9 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.2 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03874 | 101.8732 | LACYGNE - STILLWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 103.0147 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 100.1891 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | TECUMSEH HILL (TECH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | SWISSVALE - TECUMSEH HILL 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03619 | 99.8 | LAWRENCE HILL (LAWH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 104.6101 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 103.4184 | GEN542956 2-LACYGNE UNIT #2 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 100.4388 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.7 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.6 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 101.4986 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 99.9 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03192 | 104.4065 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03134 | 102.8172 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05392 | 116.7958 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.6758 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.3491 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 113.4468 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04865 | 110.4556 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.053 | 123.2303 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3638 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3468 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 108.3561 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 121.1677 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04219 | 99.2 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05171 | 113.6272 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1769 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1748 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 107.858 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04703 | 110.6009 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05036 | 107.521 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.457 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.4376 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04579 | 107.1251 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | VIOLA 7 345.00 (VIOLA 1X) 345/138/13.8KV TRANSFORMER CKT 1 | 448 | 492.8 | 0.03674 | 99.4 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03303 | 109.503 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03243 | 118.8066 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 101.8052 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 100.9615 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 130.5685 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 0 | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03242 | 116.7445 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 124.3499 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.4456 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03173 | 103.2941 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03157 | 102.6698 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 102.4446 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03153 | 101.8617 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 100.1821 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03027 | 99.6 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02961 | 101.7491 | P12:138:GRDA:COLLINSVILLE-CLEVELAND |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 131.0749 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.0321 | 118.1286 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 122.9706 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 0 | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 103.2621 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03134 | 102.2094 | GREC TAP5 345.00 - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03129 | 102.6064 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 102.3668 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03125 | 101.7595 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 100.2754 | 4SFORKKTP 138.00 - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.02994 | 99.7 | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 111.9168 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03228 | 100.2982 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 158 | 158 | 0.03155 | 104.5612 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 128.73 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 0 | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03247 | 114.2254 | P12:138:AEPW:N.E.S.-4:CATOOSA4 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03178 | 116.6651 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03155 | 99.9 | P12:138:AEPW-WERE:NBVILLE4:DEARING4 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.6 | BARTLESVILLE SOUTHEAST - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | 4OOLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1 | 143 | 143 | 0.03151 | 99.1 | COFFEYVILLE TAP - NORTH BARTLESVILLE 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1744 | BARNSDALL - SKIATOOK PUMP 138KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.1708 | P12:138:AEPW:BARNAL4:T.NO.--4 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.1663 | 110.0014 | SKIATOOK PUMP - TULSA NORTH 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 104.1276 | BARTLESVILLE COMANCHE - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | BARTLESVILLE COMANCHE - BARTLESVILLE SOUTHEAST 138KV CKT 1 | 153 | 153 | 0.14583 | 102.0697 | BARTLESVILLE SOUTHEAST - BLUESTEM 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.9876 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 108.8412 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 | 766 | 923 | 0.03046 | 104.1173 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03395 | 105.9919 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03145 | 100.6692 | GRACEMONT - MINCO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 104.6222 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03038 | 101.3296 | G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CIMARRON - DRAPER LAKE 345KV CKT 1 | 717 | 717 | 0.03707 | 99.8 | ARCADIA - SEMINOLE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06577 | 99.5 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06602 | 122.4773 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06549 | 119.8965 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06371 | 142.5648 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06513 | 117.9396 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 213 | 213 | 0.06527 | 101.654 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | CLEVELAND - SILVER CITY 138KV CKT 1 | 174 | 174 | 0.06541 | 102.4312 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.13056 | 102.4879 | G15052_T 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.402 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11974 | 101.3412 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.5 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11487 | 99.4 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11323 | 100.5183 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 20L | ASGI_17_09 | FROM->TO | CLEVELAND - TULSA NORTH 345KV CKT 1 | 1135 | 1195 | 0.11152 | 101.2891 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | COLLINSVILLE - SKIATOOK TAP 138KV CKT 1 | 143 | 143 | 0.05357 | 118.8064 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | DOMES - MOUND ROAD 138KV CKT 1 | 189 | 189 | 0.16471 | 105.3708 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | DOMES - PAWHUSKA TAP 138KV CKT 1 | 189 | 189 | 0.16471 | 106.3667 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.6947 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 105.5807 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04873 | 101.202 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04779 | 109.3352 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3107 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04642 | 101.3028 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0455 | 105.9135 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9769 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 118.9756 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05064 | 114.3991 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04955 | 129.6283 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04746 | 108.9917 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04729 | 117.0711 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0434 | 101.1519 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04335 | 106.2871 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04324 | 105.265 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04302 | 105.194 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 102.6132 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04284 | 101.9835 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04204 | 99 | DELAWARE - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04186 | 99.9 | GRDA1 - GREC TAP5 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0417 | 99.5 | MINGO - RED WILLOW 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04155 | 100.1244 | 7JASPER 345.00 - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04151 | 99.2 | FT SMITH - MUSKOGEE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04143 | 99.3 | DELAWARE - NORTHEAST STATION 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 105.0932 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 102.9267 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04141 | 100.6904 | LATHAMS7 345.00 - ROSE HILL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.1063 | P12:115:WERE:LANG-TECH_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 102.0292 | P12:115:WERE:FOUR-LANG_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.9284 | LANG - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.6395 | OSAGE CITY JUNCTION SWITCHING STATION - READING LAKE 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0916 | OSAGE CITY JUNCTION SWITCHING STATION - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 101.0905 | SCRANTON - SCRNTJS3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7816 | FOUR CORNERS - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.7815 | SCRANTON - SCRNTJN3 115.00 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.4367 | P12:115:WERE:FOUR-TECH_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.3819 | CARB-KW 3 - FOUR CORNERS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 100.1561 | CARB-KW 3 - SHAWNEE HEIGHTS 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04102 | 99.6 | SHAWNEE HEIGHTS - TECUMSEH HILL 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.041 | 100.6044 | DBL-SPRVL-IR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04097 | 100.1854 | RENO COUNTY - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | P12:161:WERE:MARM-KCPL_161:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.6 | CENTERVILLE - G15-016T 161.00 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04091 | 99.3 | CENTERVILLE - PAOLA 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0409 | 99.5 | MINGO - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04084 | 99 | BROOKLINE - FLINT CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04075 | 99 | RENO COUNTY - SUMMIT 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04063 | 106.3436 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.8 | G13-010T 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.7 | G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04053 | 99.4 | G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04047 | 99.3 | HOLCOMB - SETAB 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04045 | 99 | DELL 500 - INDEPENDENCE 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04044 | 99.7 | AXTELL - PAULINE 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0404 | 99.3 | 7MCCREDIE 345.00 - 7MONTGMRY 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.5 | G15088_T 345.00 - MOORE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04037 | 99.2 | G15088_T 345.00 - PAULINE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04035 | 99.5 | CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F3:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.9 | P12:115:WERE:AUBN-SMAN_115F2:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.8 | SMAN_W_3 115.00 - SOUTH MANHATTAN 115KV CKT Z1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.67502 | SOUTH ALMA - SOUTH MANHATTAN 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04034 | 99.11964 | KEENE - SOUTH ALMA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 100.4624 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04032 | 99.8 | G15063_T 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04031 | 99.2 | KEO EHV - WEST MEMPHIS 500 500KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04028 | 99.8 | GRAND ISLAND - SWEETWATER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04023 | 99 | 7SPORTSMAN - BLACKBERRY 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99.1 | CLIFTON - CONCORDIA 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE:KNOB-MKEC_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | P12:115:WERE-MKEC:CLIFTON-KNOBHILL:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04016 | 99 | CLIFTON - GREENLEAF 115KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04012 | 99.2 | G14-057T 345.00 - SUNNYSIDE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 5JASPER 161.00 - LAMAR 161KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0401 | 99.1 | 7JASPER 345.00 345/161KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1274 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04005 | 107.1257 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04 | 99.1 | AUBURN ROAD - SWISSVALE 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99.27483 | GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | CIMARRON - DRAPER LAKE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03994 | 99 | GRAND ISLAND - MCCOOL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 99 | HAWTHORN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03993 | 98.97136 | FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.6 | P13:069-138:WERE:ALTO_TX-1OR3P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.3 | DBL-HTCH-OTA |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03991 | 99.1 | IATAN - NASHUA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA (CONCORD6) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03986 | 99.4 | CONCORDIA - ELM CREEK 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 101.2688 | DBL-THIS-G15 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03975 | 99.1 | P12:069:WERE:ALLE-TIOG_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | P13:115-230:WERE:MCDO_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK - MORRIS COUNTY 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03974 | 99.7 | MCDOWELL CREEK (MCDO TX-1) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 105.5185 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.141 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 104.0564 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.4483 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.3168 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 103.0529 | GEN542957 1-IATAN UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 102.427 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5974 | GEN640009 1-COOPER NUCLEAR STATION |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.5263 | GEN645012 2-NEBRASKA CITY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.3423 | GEN645011 1-NEBRASKA CITY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 101.0707 | GEN541151 3-SIBLEY GENERATING UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.3996 | P12:138:WERE:BENT-NORT_138P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2772 | GEN546702 1-NM GEN N1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.2207 | GEN344225 1-1CAL G1 25.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100.0523 | GEN300007 1-NEW MADRID UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN635024 4-WALTER SCOTT UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | GEN300006 1-NEW MADRID UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:115:WERE:EMAN-KSU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 100 | P12:069:WERE:COWS-HOOVS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659103 1-ANTELOPE VALLEY UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | GEN659107 2-ANTELOPE VALLEY UNIT2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.9 | EASTDC - ERCOT EQUIVALENCE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN659111 2-LELAND OLDS UNIT2 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|--------|-------------|---|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.8 | GEN300002 1-THOMAS HILL UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN635023 3-WALTER SCOTT UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | GEN541162 1-ARIES STEAM TURBINE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.7 | P12:115:WERE:PHLP-SALM_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542954 3-MONTROSE UNIT #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | GEN542953 2-MONTROSE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.6 | P12:138:WERE:HARR-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590010 1-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN590011 2-ERCOT EQUIVALENCE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN532662 1-LAWRENCE ENERGY CENTER UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | GEN562694 1-G15_016_3 0.6900 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:3VAN-HEC_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:115:WERE:EUR-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.5 | P12:069:WERE:MACA-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.4 | GEN532672 1-TECUMSEH ENERGY CENTER UNIT 8 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN542967 9-HAWTHORN UNIT #9 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN300001 1-THOMAS HILL UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN636641 1-LOUISA UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | GEN546698 1-QN GEN2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.3 | P12:069:WERE:HOOVN-RIPL_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN635214 4-NEAL UNIT 4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN600002 3-SHERBURNE CNTY G3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541166 2-SHARPR#2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543108 3-BULL CREEK COMBUSTION TURBINE #3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543106 1-BULL CREEK COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543107 2-BULL CREEK COMBUSTION TURBINE #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN543109 4-BULL CREEK COMBUSTION TURBINE #4 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN505432 1-SIKESTON |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN541165 1-SHARPR#1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.2 | GEN542961 6-HAWTHORN COMBUSTION TURBINE #6 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN300011 1-ST FRANCIS UNIT 2 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN541163 1-ARIES COMBUSTION TURBINE #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN549893 2-SOUTHWEST 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | GEN645025 5-NORTH OMAHA 5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:MEAD-PLAZ_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | P12:069:WERE:COWS-SUNS_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99.1 | SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344896 3-1LAB G3 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300012 1-HOLDEN UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN659110 1-LELAND OLDS UNIT1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN635213 3-NEAL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344894 1-1LAB G1 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300010 1-ST FRANCIS UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN543078 1-PAOLA COMBUSTION TURBINES |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600000 1-SHERBURNECNTY G1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300013 1-HOLDEN UNIT 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344895 2-1LAB G2 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645042 2-CASS COUNTY 2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN600001 2-SHERBURNE CNTY G2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN645041 1-CASS COUNTY 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN300015 1-1SGPDEL 18.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | GEN344897 4-1LAB G4 20.000 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | P12:115:WERE:ANZI-FTJU_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | ABILENE ENERGY CENTER 115/34.5KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0397 | 99 | 4SIOUX 1 138.00 138/18.0KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03969 | 100 | P12:069:WERE:64TH-NORT_69F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 101.0077 | HOYT (HOYT TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03968 | 99.5 | P12:069:WERE:MOON-NEWT_69:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03967 | 99.7 | P12:138:WERE:HOOV-MURR_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:17TH-CANA_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03965 | 99 | P12:138:WERE:NORT-WEAV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03964 | 99.3 | P12:138:WERE:COWS-WACO_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.8 | P12:138:WERE:GECT-HOOV_138:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.5 | P12:115:WERE:LANG-WEMP_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99.1 | P13:069-138:WERE:HOOV_TX-3:: |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03963 | 99 | ALTOONA - BUTLER 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99.2 | P13:069-138:WERE:COWS_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03962 | 99 | P13:069-138:WERE:BUTL_TX-1:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03958 | 99 | P12:115:WERE:INDA-HOYT_115:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03941 | 104.5045 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03935 | 99.5 | OVEXFRMCCOVE |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03903 | 100.2276 | SUMMIT - UNIONRG6 230.00 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.6 | P12:115:WERE:MOUN-WEMP_115P:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03901 | 99.1 | P12:115:WERE:SPCKJ-WEMP_115F:: |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03874 | 99 | MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0386 | 100.4994 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0384 | 101.8884 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03825 | 99.1 | 7MCCREDIE 345.00 - 7OVERTON 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03805 | 99.3 | DBL-THIS-WWR |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03784 | 100.9513 | BENTON - WICHITA 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0377 | 99.5 | RANCHRD7 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 102.8606 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03759 | 101.7465 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 101.124 | HUNTERS7 345.00 - WOODRING 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.2 | G16-072-TAP 345.00 - HUNTERS7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.03752 | 99.1 | G16-072-TAP 345.00 - RENFROW7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.3806 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 107.2914 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05489 | 102.9466 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05459 | 104.9541 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8729 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 112.8701 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05201 | 108.3238 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05115 | 122.7053 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04896 | 103.7365 | EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04881 | 110.4837 | HOYT - STRANGER CREEK 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|---|-------------|-------------|---------|-------------|--|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04464 | 101.0683 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04452 | 99.7 | MORRIS COUNTY - SWISSVALE 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04425 | 99.8 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04256 | 99.8 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04181 | 101.0892 | AUBURN ROAD - JEFFREY ENERGY CENTER 230KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | P13:115-345:WERE:LANG_TX-1:: |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.2126 | LANG (LANG TX-1) 345/115/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04123 | 102.211 | EMPORIA ENERGY CENTER - LANG 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 100.2299 | GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04087 | 99 | GEN542962 2-IATAN UNIT #2 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04054 | 99.5 | MORRIS COUNTY (MORR TX-1) 345/230/14.4KV TRANSFORMER CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5505 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05099 | 102.5404 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.05015 | 105.5003 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1669 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0499 | 102.1649 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.0491 | 112.0934 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 | 717 | 717 | 0.04681 | 99.9 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06988 | 99.2 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | FAIRFAX - NAVAL RESERVE 69KV CKT 1 | 44 | 44 | 0.06982 | 99.3 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03238 | 123.5248 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03181 | 124.1416 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03212 | 121.6782 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03155 | 122.7703 | SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1 | 160 | 160 | 0.03258 | 115.5398 | FAIRFAX - PAWNSW4 138.00 138KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06205 | 107.9944 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|---|
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.9402 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05513 | 113.8065 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.06389 | 105.4279 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.6743 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05862 | 109.5365 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.02963 | 99.1 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 108.312 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05475 | 101.2081 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.2867 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05884 | 105.1185 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.5741 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05377 | 103.4313 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 119.03 | NORTHWEST - SPRING CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | G15063_T 345.00 - WOODRING 345KV CKT 1 | 956 | 956 | 0.05433 | 111.8395 | SOONER - SPRING CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9393 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0876 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0882 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07085 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 103.7918 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06563 | 99.7 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06308 | 100.9392 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.0798 | 99.4 | EMPORIA ENERGY CENTER - G14_001T 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 106.0873 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.07136 | 101.848 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | TO->FROM | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 | 1141 | 1195 | 0.06773 | 102.0881 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05165 | 102.3655 | EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | TO->FROM | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 | 1076 | 1076 | 0.05135 | 102.8851 | SWISSVALE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | TO->FROM | NORTHWEST - SPRING CREEK 345KV CKT 1 | 1039 | 1195 | 0.05669 | 101.8408 | G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.16471 | 110.52 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1 | 189 | 189 | 0.1129 | 99.8 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.16471 | 110.9191 | 4REMNGTON 138.00 - BARNSDALL 138KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SHIDLER - WEST PAWHUSKA 138KV CKT 1 | 181 | 189 | 0.1129 | 100.1719 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | TO->FROM | SPVALLY4 138.00 - STILLWATER 138KV CKT 1 | 194 | 222 | 0.05296 | 102.7363 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04879 | 115.4996 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.6035 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 116.4668 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04722 | 109.1779 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 16WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.0445 | 112.1712 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04596 | 121.6376 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8446 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 119.8389 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04456 | 112.6805 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17G | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04193 | 117.1723 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05142 | 134.6016 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3374 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 125.3188 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04979 | 118.245 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04694 | 131.5041 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04127 | 107.8276 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03971 | 99.1 | CLEVELAND - TULSA NORTH 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.9 | AXTELL - G16-050-TAP 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03888 | 99.2 | G16-050-TAP 345.00 - POST ROCK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03874 | 101.8732 | LACYGNE - STILWELL 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 103.0147 | CANEYRV7 345.00 - NEOSHO 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03746 | 100.1891 | CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--------------------------------------|-------------|-------------|---------|-------------|--|
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | TECUMSEH HILL (TECH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03641 | 99 | SWISSVALE - TECUMSEH HILL 230KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03619 | 99.8 | LAWRENCE HILL (LAWH TX-3) 230/115/13.8KV TRANSFORMER CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 104.6101 | GEN542955 1-LACYGNE UNIT #1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 103.4184 | GEN542956 2-LACYGNE UNIT #2 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 100.4388 | GEN542951 5-HAWTHORN UNIT #5 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.7 | GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03548 | 99.6 | GEN300003 1-THOMAS HILL UNIT 3 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 101.4986 | CLEVELAND - G15066_T 345.00 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03309 | 99.9 | G15066_T 345.00 - SOONER 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03192 | 104.4065 | 87th STREET - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 17SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.03134 | 102.8172 | 87th STREET - CRAIG 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05392 | 116.7958 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.6758 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 120.3491 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05065 | 113.4468 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20L | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04865 | 110.4556 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.053 | 123.2303 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3638 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 115.3468 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05077 | 108.3561 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 121.1677 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04219 | 99.2 | LACYGNE - WEST GARDNER 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05171 | 113.6272 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1769 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 115.1748 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04953 | 107.858 | WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1 |
| 08ALL | 20WP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04703 | 110.6009 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.05036 | 107.521 | HOYT - STRANGER CREEK 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.457 | G16-012-TAP 345.00 - WAVERLY7 345.00 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04822 | 100.4376 | G16-012-TAP 345.00 - LACYGNE 345KV CKT 1 |
| 08ALL | 25SP | ASGI_17_09 | FROM->TO | SWISSVALE - WEST GARDNER 345KV CKT 1 | 717 | 717 | 0.04579 | 107.1251 | HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 |

Table 12: Thermal Constraints Not Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Contingency |
|----------------|--------|------------|----------|--|-------------|-------------|---------|-------------|--------------------------------------|
| 08ALL | 20SP | ASGI_17_09 | FROM->TO | VIOLA 7 345.00 (VIOLA 1X) 345/138/13.8KV TRANSFORMER CKT 1 | 448 | 492.8 | 0.03674 | 99.4 | VIOLA 7 345.00 - WICHITA 345KV CKT 1 |

Table 13: Voltage Constraints Requiring Additional Transmission Reinforcements

| Dispatch Group | Season | Source | Flow | Monitored Element | RATEA (MVA) | RATEB (MVA) | TDF | TC% LOADING | Max MW Available | Contingency |
|----------------|--------|--------|------|-------------------|-------------|-------------|-----|-------------|------------------|-------------|
| | | | | Currently, None | | | | | | |