



**Generation Interconnection  
Feasibility Study Report  
for  
Queue Project AG1-539  
GRIT DP-PERTH 115 KV  
32 MW Capacity / 75 MW Energy**

January 2021

## Table of Contents

|        |                                                                   |    |
|--------|-------------------------------------------------------------------|----|
| 1      | Introduction.....                                                 | 4  |
| 2      | Preface.....                                                      | 4  |
| 3      | General .....                                                     | 5  |
| 4      | Point of Interconnection.....                                     | 6  |
| 4.1    | Primary Point of Interconnection .....                            | 6  |
| 4.2    | Secondary Point of Interconnection.....                           | 6  |
| 5      | Cost Summary .....                                                | 6  |
| 6      | Transmission Owner Scope of Work.....                             | 7  |
| 7      | Schedule.....                                                     | 8  |
| 8      | Transmission Owner Analysis.....                                  | 8  |
| 8.1    | Power Flow Analysis .....                                         | 8  |
| 9      | Interconnection Customer Requirements.....                        | 9  |
| 9.1    | System Protection.....                                            | 9  |
| 9.2    | Compliance Issues and Interconnection Customer Requirements ..... | 9  |
| 9.3    | Power Factor Requirements.....                                    | 9  |
| 10     | Revenue Metering and SCADA Requirements .....                     | 10 |
| 10.1   | PJM Requirements .....                                            | 10 |
| 10.2   | Interconnected Transmission Owner Requirements.....               | 10 |
| 11     | Summer Peak - Load Flow Analysis .....                            | 11 |
| 11.1   | Generation Deliverability .....                                   | 11 |
| 11.2   | Multiple Facility Contingency .....                               | 11 |
| 11.3   | Contribution to Previously Identified Overloads.....              | 11 |
| 11.4   | Potential Congestion due to Local Energy Deliverability.....      | 13 |
| 11.5   | System Reinforcements - Summer Peak Load Flow - Primary POI.....  | 18 |
| 11.6   | Flow Gate Details.....                                            | 22 |
| 11.6.1 | Index 1 .....                                                     | 23 |
| 11.6.2 | Index 2 .....                                                     | 24 |
| 11.6.3 | Index 3 .....                                                     | 26 |
| 11.6.4 | Index 4 .....                                                     | 28 |
| 11.6.5 | Index 5 .....                                                     | 30 |
| 11.6.6 | Index 6 .....                                                     | 32 |

|         |                                            |    |
|---------|--------------------------------------------|----|
| 11.6.7  | Index 7 .....                              | 34 |
| 11.6.8  | Index 8 .....                              | 36 |
| 11.6.9  | Index 9 .....                              | 38 |
| 11.6.10 | Index 10.....                              | 40 |
| 11.6.11 | Index 11.....                              | 42 |
| 11.6.12 | Index 12.....                              | 44 |
| 11.6.13 | Index 13.....                              | 47 |
| 11.6.14 | Index 14.....                              | 50 |
| 11.6.15 | Index 15.....                              | 54 |
| 11.6.16 | Index 16.....                              | 55 |
| 11.6.17 | Index 17.....                              | 57 |
| 11.6.18 | Index 18.....                              | 61 |
| 11.7    | Queue Dependencies .....                   | 63 |
| 11.8    | Contingency Descriptions.....              | 66 |
| 12      | Short Circuit Analysis.....                | 73 |
| 12.1    | System Reinforcements - Short Circuit..... | 73 |
| 13      | Affected Systems .....                     | 74 |
| 13.1    | TVA.....                                   | 74 |
| 13.2    | Duke Energy Progress.....                  | 74 |
| 14      | Attachment 1: One Line Diagram .....       | 75 |

## 1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Dominion.

## 2 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

### 3 General

The Interconnection Customer (IC), has proposed a Storage generating facility located in Pittsylvania County, Virginia. The installed facilities will have a total capability of 75 MW with 32 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is October 01, 2024. This study does not imply a TO commitment to this in-service date.

|                            |                      |
|----------------------------|----------------------|
| <b>Queue Number</b>        | <b>AG1-539</b>       |
| <b>Project Name</b>        | GRIT DP-PERTH 115 KV |
| <b>State</b>               | Virginia             |
| <b>County</b>              | Pittsylvania         |
| <b>Transmission Owner</b>  | Dominion             |
| <b>MFO</b>                 | 75                   |
| <b>MWE</b>                 | 75                   |
| <b>MWC</b>                 | 32                   |
| <b>Fuel</b>                | Storage              |
| <b>Basecase Study Year</b> | 2024                 |

Any new service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

## 4 Point of Interconnection

### 4.1 Primary Point of Interconnection

AG1-539 "Grit DP-Perth 115 kV" will interconnect with the Dominion transmission system. The primary POI is a direct connect to the new substation to be constructed for the AE2-291 & AE1-292 project.

The IC is responsible for securing right-of-way, permits, and constructing the proposed attachment line from the generating facility site to the Point of Interconnection. The IC may not install any facilities on Dominion's right-of-way without first obtaining the necessary approval from Dominion Energy.

Costs provided are contingent on the AE2-291 & AE1-292 project being built. Should the AE2-291 & AE1-292 project withdraw from the Interconnection Queue, the AG1-539 project will assume the Attachment, Direct Connection, and Non-Direct Connection costs identified in the AE2-291 & AE1-292 study report for connection to the Dominion system.

Attachment 1 shows a one-line diagram of the proposed interconnection facilities.

### 4.2 Secondary Point of Interconnection

There is no secondary point of interconnection specified for AG1-539.

## 5 Cost Summary

The AG1-539 project will be responsible for the following costs:

| Description                                 | Total Cost                 |
|---------------------------------------------|----------------------------|
| <b>Total Physical Interconnection Costs</b> | \$2,700,000                |
| <b>Total System Network Upgrade Costs</b>   | \$114,600,200 <sup>1</sup> |
| <b>Total Costs</b>                          | \$117,300,200              |

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 2016-36, 2016-25 I.R.B. (6/20/2016). If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

<sup>1</sup> This project currently causes and/or contributes to overloads of the Transmission System (see Summer Peak Load Flow Analysis section below) and therefore has potential to have cost allocation for the system reinforcements listed in the report. This will be re-evaluated in the System Impact phase. The results may vary with queue customers withdrawing from the queue and other generators deactivating over time. If a customer is the first to cause the need for a project (causes loading to exceed 100% of rating), then the customer is responsible. If a customer contributes to a facility that is already overloaded by a prior queue, then they may receive cost allocation.

## 6 Transmission Owner Scope of Work

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of AG1-539 to the Dominion Transmission System is detailed in the following sections. The associated one-line showing the generation project attachment facilities and primary direct and non-direct connection is shown in Attachment 1.

Note that the ITO findings were made from a conceptual review of this project. A more detailed review of the connection facilities and their cost will be identified in a future study phase. Further note that the cost estimate data contained in this document should be considered high level estimates since it was produced without a detailed engineering review. The applicant will be responsible for the actual cost of construction. ITO herein reserves the right to return to any issues in this document and, upon appropriate justification, request additional monies to complete any reinforcements to the transmission systems.

The total physical interconnection costs are given in the table below:

| Description                                 | Total Cost  |
|---------------------------------------------|-------------|
| <b><i>Attachment Facilities</i></b>         | \$1,700,000 |
| <b><i>New Breaker</i></b>                   | \$1,000,000 |
| <b>Total Physical Interconnection Costs</b> | \$2,700,000 |

AG1-539 "Grit DP-Perth 115 kV" will interconnect with the Dominion transmission system. The primary POI is a direct connect to the new substation to be constructed for the AE2-291 & AE1-292 project.

To accommodate the proposed Project, Dominion Energy will add one new 115 kV breaker to the AE2-291 & AE1-292 substation to allow for the proposed interconnection. Dominion will install one span of overhead 115 kV line to the point of interconnection ("POI") including 115 kV interconnection metering.

It is estimated to take 18-30 months to complete this work upon execution of an Interconnection Construction Service Agreement (ICSA). These preliminary cost estimates are based on typical engineering costs. A more detailed engineering cost estimates are normally done when the IC provides an exact site plan location for the generation substation during the Facility Study phase.

**Remote Terminal Work:** During the Facilities Study, ITO's System Protection Engineering Department will review transmission line protection as well as anti-islanding required to accommodate the new generation and interconnection substation. System Protection Engineering will determine the minimal acceptable protection requirements to reliably interconnect the proposed generating facility with the transmission system. The review is based on maintaining system reliability by reviewing ITO's protection requirements with the known transmission system configuration which includes generating facilities in the area. This review may determine that transmission line protection and communication upgrades are required at remote substations.

## 7 Schedule

The estimated schedule for the Attachment Facilities, Direct Connection and Non-Direct Connection work is identified in the “Transmission Owner Scope of Work” section of this report.

The estimated schedule for the required Network Impact Reinforcements is identified in the “System Reinforcements” section of this report.

If the customer is ultimately responsible for network upgrades, then the schedule for those upgrades will be refined in future study phases. The customer would need to wait for those upgrades to be completed prior to commercial operation unless determined deliverable by an interim deliverability study. The elapsed time to complete any network upgrades is provided in the System Reinforcements table of this report.

## 8 Transmission Owner Analysis

Dominion assessed the impact of the proposed AG1-539 for compliance with NERC Reliability Criteria on the Dominion Transmission System. The system was assessed using the summer 2024 AG1 case provided to Dominion by PJM.

When performing a generation analysis, Dominion’s main analysis includes load flow study results following a single contingency event for both normal and stressed system conditions. Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. A full listing of Dominion’s Planning Criteria and interconnection requirements can be found in the Company’s Facility Connection Requirements which are publicly available at:  
<http://www.dominionenergy.com>.

The results of these studies evaluate the system under a limited set of operating conditions and do not guarantee the full delivery of the capacity and associated energy of this proposed generation facility under all operating conditions. NERC Planning and Operating Reliability Criteria allow for the re-dispatch of generating units to resolve projected and actual deficiencies in real time and planning studies. Specifically, in Planning Studies, NERC Planning Event 3 and 6 Contingency Conditions (Loss of generator, transmission circuit, transformer, shunt device, or Single Pole of a DC line followed by the loss of a generator, transmission circuit, transformer, shunt device or single pole of a DC line) allow for re-dispatch of generating units to resolve potential reliability deficiencies. For Dominion Planning Criteria the re-dispatch of generating units for these contingency conditions is allowed as long as the projected loading does not exceed 100% of a facility Load Dump Rating.

### 8.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2024 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system and no further deficiencies were identified.

## 9 Interconnection Customer Requirements

### 9.1 System Protection

The IC must design its Customer Facilities in accordance with all applicable standards, including the standards in Dominion's "Dominion Energy Electric Transmission Generator Interconnection Requirements" documented in Dominion's Facility Interconnection Requirements "Exhibit C" located at:

<https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>. Preliminary Protection requirements will be provided as part of the Facilities Study. Detailed Protection Requirements will be provided once the project enters the construction phase.

### 9.2 Compliance Issues and Interconnection Customer Requirements

The proposed Customer Facilities must be designed in accordance with Dominion's "Dominion's Facility Interconnection Requirements" document located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>. In particular, the IC is responsible for the following:

1. The purchase and installation of a fully rated protection device (circuit breaker, circuit switcher, fuse) to protect the IC's GSU transformer(s).
1. The purchase and installation of the minimum required Dominion generation interconnection relaying and control facilities as described in the System Protection section noted above. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.
2. The purchase and installation of supervisory control and data acquisition ("SCADA") equipment to provide information in a compatible format to the Dominion Transmission System Control Center.
3. Compliance with the Dominion and PJM generator power factor and voltage control requirements.

The GSU(s) associated with the IC queue request shall meet the grounding requirements as noted in Dominion's "Dominion's Facility Interconnection Requirements" document located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>.

The IC will also be required to meet all PJM, SERC, and NERC reliability criteria and operating procedures for standards compliance. For example, the IC will need to properly locate and report the over and under voltage and over and under frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and SERC audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the Dominion system.

### 9.3 Power Factor Requirements

The IC shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformer(s) connected to the Dominion transmission system.

## **10 Revenue Metering and SCADA Requirements**

### **10.1 PJM Requirements**

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

### **10.2 Interconnected Transmission Owner Requirements**

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

<http://www.pjm.com/planning/design-engineering/to-tech-standards/>

## 11 Summer Peak - Load Flow Analysis

The Queue Project AG1-539 was evaluated as a 75.0 MW (Capacity 32.0 MW) injection tapping the Grit to Perth 115 kV line in the Dominion area. Project AG1-539 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-539 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

### 11.1 Generation Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

| ID        | FROM BUS# | FROM BUS | kV    | FROM BUS AREA | TO BUS# | TO BUS    | kV   | TO BUS AREA | CK T ID | CONT NAME                                   | Type   | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC DC | MW IMPACT |
|-----------|-----------|----------|-------|---------------|---------|-----------|------|-------------|---------|---------------------------------------------|--------|------------|------------------------|-------------------------|-------|-----------|
| 163932999 | 314861    | 3SKIMMER | 115.0 | DVP           | 242886  | 05SKIMMER | 69.0 | AEP         | 1       | AEP_P2-1_24274105OTTER1383146674ALTVSTA1381 | single | 53.0       | 98.94                  | 102.32                  | DC    | 1.79      |

### 11.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

| ID        | FROM BUS# | FROM BUS   | kV    | FROM BUS AREA | TO BUS# | TO BUS     | kV    | TO BUS AREA | CK T ID | CONT NAME                       | Type | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC DC | MW IMPACT |
|-----------|-----------|------------|-------|---------------|---------|------------|-------|-------------|---------|---------------------------------|------|------------|------------------------|-------------------------|-------|-----------|
| 161949141 | 242701    | 05LEESVI   | 138.0 | AEP           | 242802  | 05SMITHMTN | 138.0 | AEP         | 1       | AEP_P2-2_#10292_05NEWL DN 138_1 | bus  | 255.0      | 98.9                   | 109.45                  | DC    | 26.92     |
| 164140030 | 314688    | 3CRSTLHILL | 115.0 | DVP           | 927260  | AC1-222TAP | 115.0 | DVP         | 1       | AEP_P2-2_#10292_05NEWL DN 138_1 | bus  | 350.0      | 92.56                  | 103.92                  | DC    | 39.75     |
| 164140025 | 314714    | 3PERTH     | 115.0 | DVP           | 964470  | AG1-310TAP | 115.0 | DVP         | 1       | AEP_P2-2_#10292_05NEWL DN 138_1 | bus  | 350.0      | 92.92                  | 104.28                  | DC    | 39.75     |
| 164140001 | 964470    | AG1-310TAP | 115.0 | DVP           | 314688  | 3CRSTLHILL | 115.0 | DVP         | 1       | AEP_P2-2_#10292_05NEWL DN 138_1 | bus  | 350.0      | 97.47                  | 108.83                  | DC    | 39.75     |

### 11.3 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

| ID        | FROM BUS# | FROM BUS  | kV    | FROM BUS AREA | TO BUS# | TO BUS   | kV    | TO BUS AREA | CK T ID | CONT NAME                                      | Type   | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC DC | MW IMPACT |
|-----------|-----------|-----------|-------|---------------|---------|----------|-------|-------------|---------|------------------------------------------------|--------|------------|------------------------|-------------------------|-------|-----------|
| 168045842 | 242549    | 05BANS TR | 138.0 | AEP           | 242632  | 05EDAN 2 | 138.0 | AEP         | 1       | AEP_P2-1_24272005MONETA13824277505ROCKCASS1381 | single | 296.0      | 105.65                 | 106.73                  | DC    | 3.2       |
| 168045843 | 242549    | 05BANS TR | 138.0 | AEP           | 242632  | 05EDAN 2 | 138.0 | AEP         | 1       | AEP_P1-2_#5419_105                             | single | 296.0      | 101.07                 | 102.15                  | DC    | 3.2       |

| ID         | FROM BUS# | FROM BUS     | kV     | FROM BUS ARE A | TO BUS# | TO BUS       | kV     | TO BUS ARE A | CK T ID | CONT NAME                                              | Type     | Rating MVA     | PRE PROJE CT LOADI NG % | POST PROJE CT LOADI NG % | AC  DC | MW IMPA CT |
|------------|-----------|--------------|--------|----------------|---------|--------------|--------|--------------|---------|--------------------------------------------------------|----------|----------------|-------------------------|--------------------------|--------|------------|
| 161949 175 | 2425 75   | 05CAMD LM    | 138 .0 | AEP            | 2427 37 | 05OPOSSU MCK | 138 .0 | AEP          | 1       | AEP_P2-2_#10292_05NEWL DN 138_1                        | bus      | 284.0          | 113.86                  | 114.65                   | DC     | 4.93       |
| 161949 054 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P2-2_#13260_05SKIM MR 69.0_1                       | bus      | 240.0          | 150.42                  | 158.18                   | DC     | 18.61      |
| 161949 055 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P2-2_#10163_05EDAN 2 138_2                         | bus      | 240.0          | 148.38                  | 155.37                   | DC     | 16.77      |
| 161949 421 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P7-1_#10778                                        | towe r   | 240.0          | 148.38                  | 155.37                   | DC     | 16.77      |
| 161949 422 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P7-1_#10830                                        | towe r   | 240.0          | 144.54                  | 151.45                   | DC     | 16.6       |
| 167486 925 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P4_#2914_05J. FERR                                 | break er | 240.0          | 140.2                   | 146.71                   | DC     | 15.63      |
| 167486 926 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P4_#311_05CL OV RD                                 | break er | 240.0          | 140.2                   | 146.71                   | DC     | 15.63      |
| 168281 974 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | Base Case                                              | single   | 167.0          | 144.34                  | 148.46                   | DC     | 6.89       |
| 168281 976 | 2426 87   | 05JOHN MT    | 138 .0 | AEP            | 2427 34 | 05NEWLDN     | 138 .0 | AEP          | 1       | AEP_P1-2_#3174_6                                       | single   | 240.0          | 102.39                  | 104.7                    | DC     | 5.54       |
| 161949 049 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P2-2_#13260_05SKIM MR 69.0_1                       | bus      | 245.0          | 150.88                  | 158.48                   | DC     | 18.61      |
| 161949 050 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P2-2_#10163_05EDAN 2 138_2                         | bus      | 245.0          | 146.24                  | 153.09                   | DC     | 16.77      |
| 161949 431 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P7-1_#10778                                        | towe r   | 245.0          | 146.24                  | 153.09                   | DC     | 16.77      |
| 161949 432 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P7-1_#10830                                        | towe r   | 245.0          | 144.23                  | 151.0                    | DC     | 16.6       |
| 167486 933 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P4_#2914_05J. FERR                                 | break er | 245.0          | 137.84                  | 144.22                   | DC     | 15.63      |
| 167486 934 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P4_#311_05CL OV RD                                 | break er | 245.0          | 137.84                  | 144.22                   | DC     | 15.63      |
| 168281 966 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | Base Case                                              | single   | 167.0          | 146.29                  | 150.42                   | DC     | 6.89       |
| 168281 968 | 2427 41   | 05OTTE R     | 138 .0 | AEP            | 2426 87 | 05JOHNMT     | 138 .0 | AEP          | 1       | AEP_P2-1_242515 05JOSHUA 765 247669 05JOSHUA 1EQ 999 1 | single   | 245.0          | 101.78                  | 104.04                   | DC     | 5.54       |
| 163932 802 | 3146 67   | 4ALT VST A   | 138 .0 | DVP            | 2427 41 | 05OTTER      | 138 .0 | AEP          | 1       | Base Case                                              | single   | 167.0          | 148.21                  | 152.33                   | DC     | 6.89       |
| 163932 803 | 3146 67   | 4ALT VST A   | 138 .0 | DVP            | 2427 41 | 05OTTER      | 138 .0 | AEP          | 1       | DVP_P1-2: LN 1016-A                                    | single   | 245.0          | 121.14                  | 126.45                   | DC     | 13.02      |
| 164139 957 | 3146 67   | 4ALT VST A   | 138 .0 | DVP            | 3146 66 | 3ALT VSTA    | 115 .0 | DVP          | 2       | AEP_P2-2_#10292_05NEWL DN 138_1                        | bus      | 146.60000 6104 | 101.88                  | 113.22                   | DC     | 16.62      |
| 169288 342 | 3146 96   | 3SE DGE HILL | 115 .0 | DVP            | 3146 97 | 6SE DGE HILL | 230 .0 | DVP          | 1       | DVP_P1-3: 6SE DGE HILL-TX#2                            | single   | 226.72799 6826 | 175.09                  | 179.54                   | DC     | 10.09      |
| 169288 344 | 3146 96   | 3SE DGE HILL | 115 .0 | DVP            | 3146 97 | 6SE DGE HILL | 230 .0 | DVP          | 1       | DVP_P1-2: LN 31-A                                      | single   | 226.72799 6826 | 129.88                  | 135.43                   | DC     | 12.59      |
| 169288 345 | 3146 96   | 3SE DGE HILL | 115 .0 | DVP            | 3146 97 | 6SE DGE HILL | 230 .0 | DVP          | 1       | Base Case                                              | single   | 223.53199 7681 | 100.77                  | 103.45                   | DC     | 5.98       |
| 169288 358 | 3146 96   | 3SE DGE HILL | 115 .0 | DVP            | 3146 97 | 6SE DGE HILL | 230 .0 | DVP          | 2       | DVP_P1-3: 6SE DGE HILL-TX#1                            | single   | 256.05599 9756 | 154.57                  | 158.5                    | DC     | 10.06      |
| 169288 360 | 3146 96   | 3SE DGE HILL | 115 .0 | DVP            | 3146 97 | 6SE DGE HILL | 230 .0 | DVP          | 2       | DVP_P1-2: LN 31-A                                      | single   | 256.05599 9756 | 113.87                  | 118.74                   | DC     | 12.47      |
| 169288 320 | 3146 97   | 6SE DGE HILL | 230 .0 | DVP            | 9272 50 | AC1-221 TAP  | 230 .0 | DVP          | 1       | DVP_P1-2: LN 556-D                                     | single   | 674.91998 291  | 219.69                  | 220.9                    | DC     | 8.18       |
| 169288 321 | 3146 97   | 6SE DGE HILL | 230 .0 | DVP            | 9272 50 | AC1-221 TAP  | 230 .0 | DVP          | 1       | DVP_P1-2: LN 556-C                                     | single   | 674.91998 291  | 206.05                  | 207.26                   | DC     | 8.18       |
| 169288 323 | 3146 97   | 6SE DGE HILL | 230 .0 | DVP            | 9272 50 | AC1-221 TAP  | 230 .0 | DVP          | 1       | Base Case                                              | single   | 509.48001 0986 | 103.14                  | 104.16                   | DC     | 5.2        |
| 163932 998 | 3148 61   | 3SKIMM ER    | 115 .0 | DVP            | 2428 86 | 05SKIMMR     | 69. 0  | AEP          | 1       | DVP_P1-3: 3SKIMMER-3SKIMMER-CK2                        | single   | 53.0           | 109.53                  | 113.29                   | DC     | 1.99       |

| ID         | FROM BUS# | FROM BUS    | kV     | FROM BUS AREA | TO BUS# | TO BUS        | kV     | TO BUS AREA | CK T ID | CONT NAME                       | Type    | Rating MVA | PRE PROJE CT LOADI NG % | POST PROJE CT LOADI NG % | AC  DC | MW IMPA CT |
|------------|-----------|-------------|--------|---------------|---------|---------------|--------|-------------|---------|---------------------------------|---------|------------|-------------------------|--------------------------|--------|------------|
| 163933 010 | 3148 61   | 3SKIMMER    | 115 .0 | DVP           | 2428 86 | 05SKIMMR      | 69. 0  | AEP         | 2       | DVP_P1-3: 3SKIMMER-3SKIMMER     | single  | 53.0       | 108.78                  | 112.52                   | DC     | 1.98       |
| 161949 165 | 9265 20   | AC1-123 TAP | 138 .0 | AEP           | 2425 75 | 05CAMDLM      | 138 .0 | AEP         | 1       | AEP_P2-2_#10292_05NEWL DN 138_1 | bus     | 255.0      | 115.05                  | 115.92                   | DC     | 4.93       |
| 163932 766 | 9272 50   | AC1-221 TAP | 230 .0 | DVP           | 3040 70 | 6PERSON2 30 T | 230 .0 | CPL E       | 1       | DVP_P1-2: LN 556-D              | single  | 718.0      | 218.48                  | 219.62                   | DC     | 8.18       |
| 163932 767 | 9272 50   | AC1-221 TAP | 230 .0 | DVP           | 3040 70 | 6PERSON2 30 T | 230 .0 | CPL E       | 1       | DVP_P1-2: LN 556-C              | single  | 718.0      | 205.66                  | 206.79                   | DC     | 8.18       |
| 161949 205 | 9465 90   | AF1-323 TAP | 138 .0 | AEP           | 2427 92 | 05SCOTSV      | 138 .0 | AEP         | 1       | AEP_P2-2_#1372_05JOSHUA 765_1   | bus     | 167.0      | 109.84                  | 110.93                   | DC     | 4.04       |
| 167232 486 | 9465 90   | AF1-323 TAP | 138 .0 | AEP           | 2427 92 | 05SCOTSV      | 138 .0 | AEP         | 1       | AEP_P4_#3174_05C LOVRD          | breaker | 167.0      | 109.84                  | 110.93                   | DC     | 4.04       |

#### 11.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

| ID         | FROM BUS# | FROM BUS | kV     | FROM BUS AREA | TO BUS# | TO BUS      | kV     | TO BUS AREA | CK T ID | CONT NAME                                              | Type       | Rating MVA | PRE PROJE CT LOADI NG % | POST PROJE CT LOADI NG % | AC  DC | MW IMPA CT |
|------------|-----------|----------|--------|---------------|---------|-------------|--------|-------------|---------|--------------------------------------------------------|------------|------------|-------------------------|--------------------------|--------|------------|
| 168045 839 | 2425 49   | 05BANSTR | 138 .0 | AEP           | 2426 32 | 05EDAN 2    | 138 .0 | AEP         | 1       | AEP_P2-1_242720 05MONETA 138 242775 05ROCKCAS SS 138 1 | operati on | 296.0      | 148.4                   | 149.54                   | DC     | 7.5        |
| 168045 841 | 2425 49   | 05BANSTR | 138 .0 | AEP           | 2426 32 | 05EDAN 2    | 138 .0 | AEP         | 1       | Base Case                                              | operati on | 296.0      | 117.8                   | 118.64                   | DC     | 5.51       |
| 168046 077 | 2425 50   | 05BEARSK | 138 .0 | AEP           | 9400 80 | AE1-250 TAP | 138 .0 | AEP         | 1       | AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1     | operati on | 392.0      | 108.68                  | 109.54                   | DC     | 7.5        |
| 168282 203 | 2426 32   | 05EDAN 2 | 138 .0 | AEP           | 2426 31 | 05EDAN 1    | 138 .0 | AEP         | Z1      | AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1     | operati on | 296.0      | 108.66                  | 109.56                   | DC     | 5.92       |
| 168281 973 | 2426 87   | 05JOHNMT | 138 .0 | AEP           | 2427 34 | 05NEWLD N   | 138 .0 | AEP         | 1       | Base Case                                              | operati on | 167.0      | 182.26                  | 191.92                   | DC     | 16.14      |
| 168281 975 | 2426 87   | 05JOHNMT | 138 .0 | AEP           | 2427 34 | 05NEWLD N   | 138 .0 | AEP         | 1       | AEP_P1-2_#3174_6                                       | operati on | 240.0      | 132.41                  | 137.81                   | DC     | 12.98      |
| 163932 974 | 2427 01   | 05LEESVI | 138 .0 | AEP           | 3146 67 | 4ALTVSTA    | 138 .0 | DVP         | 1       | Base Case                                              | operati on | 205.0      | 126.97                  | 135.66                   | DC     | 17.81      |

| ID         | FROM BUS# | FROM BUS      | kV     | FROM BUS AREA | TO BUS# | TO BUS      | kV     | TO BUS AREA | CK T ID | CONT NAME                                                  | Type       | Rating MVA | PRE PROJE CT LOADI NG % | POST PROJE CT LOADI NG % | AC  DC | MW IMPA CT |
|------------|-----------|---------------|--------|---------------|---------|-------------|--------|-------------|---------|------------------------------------------------------------|------------|------------|-------------------------|--------------------------|--------|------------|
| 163932 975 | 2427 01   | 05LEESVI      | 138 .0 | AEP           | 3146 67 | 4ALTVSTA    | 138 .0 | DVP         | 1       | AEP_P2-1_242575 05CAMDLM 138 242737 05OPOSSUMCK 138 1      | operati on | 284.0      | 121.78                  | 127.87                   | DC     | 17.29      |
| 168282 168 | 2427 01   | 05LEESVI      | 138 .0 | AEP           | 2428 02 | 05SMITH MTN | 138 .0 | AEP         | 1       | AEP_P2-1_242687 05JOHNMT 138 242734 05NEWLDN 138 1         | operati on | 255.0      | 98.66                   | 109.22                   | DC     | 26.92      |
| 168282 266 | 2427 20   | 05MONET A     | 138 .0 | AEP           | 2438 92 | 05MEADS 8   | 138 .0 | AEP         | 1       | AEP_P1-2_#5366_42-A                                        | operati on | 409.0      | 103.16                  | 105.24                   | DC     | 8.47       |
| 168282 107 | 2427 34   | 05NEWLD N     | 138 .0 | AEP           | 2425 69 | 05BRUSHT    | 138 .0 | AEP         | 1       | AEP_P2-1_242641 05FOREST 138 242734 05NEWLDN 138 1         | operati on | 207.0      | 118.27                  | 124.73                   | DC     | 13.37      |
| 168282 200 | 2427 34   | 05NEWLD N     | 138 .0 | AEP           | 2426 41 | 05FOREST    | 138 .0 | AEP         | 1       | AEP_P2-1_242569 05BRUSHT 138 242734 05NEWLDN 138 1         | operati on | 240.0      | 104.91                  | 110.7                    | DC     | 13.9       |
| 168281 965 | 2427 41   | 05OTTER       | 138 .0 | AEP           | 2426 87 | 05JOHNMT    | 138 .0 | AEP         | 1       | Base Case                                                  | operati on | 167.0      | 190.28                  | 199.94                   | DC     | 16.14      |
| 168282 228 | 2427 75   | 05ROCKCA S SS | 138 .0 | AEP           | 2427 20 | 05MONET A   | 138 .0 | AEP         | 1       | AEP_P2-1_242549 05BANSTR 138 940080 AE1-250 TAP 138 1-A    | operati on | 409.0      | 107.1                   | 109.18                   | DC     | 8.47       |
| 168282 229 | 2427 75   | 05ROCKCA S SS | 138 .0 | AEP           | 2427 20 | 05MONET A   | 138 .0 | AEP         | 1       | AEP_P1-2_#5366_42-A                                        | operati on | 409.0      | 107.1                   | 109.18                   | DC     | 8.47       |
| 163933 040 | 2427 92   | 05SCOTSV      | 138 .0 | AEP           | 9388 20 | AE1-108 TAP | 138 .0 | DVP         | 1       | AEP_P2-1_242515 05JOSHUA 765 247669 05JOSHUA 1EQ 999 1     | operati on | 167.0      | 103.85                  | 104.94                   | DC     | 4.04       |
| 163933 041 | 2427 92   | 05SCOTSV      | 138 .0 | AEP           | 9388 20 | AE1-108 TAP | 138 .0 | DVP         | 1       | AEP_P2-1_247670 05JOSHUA_XFL 138 247669 05JOSHUA 1EQ 999 1 | operati on | 167.0      | 103.85                  | 104.94                   | DC     | 4.04       |
| 163933 042 | 2427 92   | 05SCOTSV      | 138 .0 | AEP           | 9388 20 | AE1-108 TAP | 138 .0 | DVP         | 1       | AEP_P2-1_242688 05JOSHUA 138 247670 05JOSHUA_XFL 138 1     | operati on | 167.0      | 103.85                  | 104.94                   | DC     | 4.04       |
| 163933 043 | 2427 92   | 05SCOTSV      | 138 .0 | AEP           | 9388 20 | AE1-108 TAP | 138 .0 | DVP         | 1       | AEP_P1-3_#1372_05JO SHUA 765_1                             | operati on | 167.0      | 103.85                  | 104.94                   | DC     | 4.04       |
| 168282 121 | 2428 02   | 05SMITH MTN   | 138 .0 | AEP           | 9260 50 | AC1-083 TAP | 138 .0 | AEP         | 1       | AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1         | operati on | 296.0      | 123.62                  | 124.76                   | DC     | 7.5        |

| ID            | FRO<br>M<br>BUS# | FROM<br>BUS     | kV        | FRO<br>M<br>BUS<br>ARE<br>A | TO<br>BUS# | TO BUS          | kV        | TO<br>BUS<br>ARE<br>A | CK<br>T<br>ID | CONT NAME                                                             | Type          | Rating<br>MVA     | PRE<br>PROJE<br>CT<br>LOADI<br>NG % | POST<br>PROJE<br>CT<br>LOADI<br>NG % | AC/<br>DC | MW<br>IMPA<br>CT |
|---------------|------------------|-----------------|-----------|-----------------------------|------------|-----------------|-----------|-----------------------|---------------|-----------------------------------------------------------------------|---------------|-------------------|-------------------------------------|--------------------------------------|-----------|------------------|
| 168282<br>131 | 2428<br>02       | 05SMITH<br>MTN  | 138<br>.0 | AEP                         | 2427<br>01 | 05LEESVI        | 138<br>.0 | AEP                   | 1             | AEP_P2-<br>1_242575<br>05CAMDLM<br>138 242737<br>05OPOSSUMCK<br>138 1 | operati<br>on | 255.0             | 119.43                              | 126.2                                | DC        | 17.28            |
| 168282<br>133 | 2428<br>02       | 05SMITH<br>MTN  | 138<br>.0 | AEP                         | 2427<br>01 | 05LEESVI        | 138<br>.0 | AEP                   | 1             | Base Case                                                             | operati<br>on | 205.0             | 106.91                              | 115.59                               | DC        | 17.8             |
| 168282<br>278 | 2428<br>02       | 05SMITH<br>MTN  | 138<br>.0 | AEP                         | 2427<br>75 | 05ROCKCA<br>SS  | 138<br>.0 | AEP                   | 1             | AEP_P1-<br>2_#5366_42-A                                               | operati<br>on | 409.0             | 101.81                              | 103.89                               | DC        | 8.47             |
| 168282<br>163 | 2438<br>92       | 05MEADS<br>8    | 138<br>.0 | AEP                         | 2426<br>07 | 05CLOVRD        | 138<br>.0 | AEP                   | 1             | AEP_P1-<br>2_#5366_42-A                                               | operati<br>on | 407.0             | 116.27                              | 118.36                               | DC        | 8.47             |
| 168282<br>165 | 2438<br>92       | 05MEADS<br>8    | 138<br>.0 | AEP                         | 2426<br>07 | 05CLOVRD        | 138<br>.0 | AEP                   | 1             | Base Case                                                             | operati<br>on | 348.0             | 101.03                              | 101.9                                | DC        | 6.68             |
| 168579<br>416 | 3138<br>02       | 6PRINCE<br>EDW  | 230<br>.0 | DVP                         | 3146<br>92 | 6FARMVIL        | 230<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>556-C                                                 | operati<br>on | 571.520019<br>531 | 198.89                              | 199.38                               | DC        | 6.31             |
| 168579<br>553 | 3138<br>25       | 3PLYWOOD        | 115<br>.0 | DVP                         | 3146<br>96 | 3SEEDGE<br>HILL | 115<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>33                                                    | operati<br>on | 141.0             | 138.95                              | 140.61                               | DC        | 4.41             |
| 168885<br>964 | 3142<br>67       | 3CHASCTY<br>2   | 115<br>.0 | DVP                         | 3146<br>69 | 3BARNES J       | 115<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>40-A                                                  | operati<br>on | 331.820007<br>324 | 127.33                              | 128.01                               | DC        | 4.27             |
| 168885<br>966 | 3142<br>67       | 3CHASCTY<br>2   | 115<br>.0 | DVP                         | 3146<br>69 | 3BARNES J       | 115<br>.0 | DVP                   | 1             | Base Case                                                             | operati<br>on | 331.820007<br>324 | 108.02                              | 108.76                               | DC        | 4.68             |
| 168579<br>411 | 3142<br>68       | 6BRIERY         | 230<br>.0 | DVP                         | 3138<br>02 | 6PRINCE<br>EDW  | 230<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>556-C                                                 | operati<br>on | 571.520019<br>531 | 198.94                              | 199.44                               | DC        | 6.31             |
| 169288<br>504 | 3146<br>66       | 3ALTVSTA        | 115<br>.0 | DVP                         | 3146<br>67 | 4ALTVSTA        | 138<br>.0 | DVP                   | 2             | DVP_P1-2: LN<br>1016-D                                                | operati<br>on | 130.472000<br>122 | 137.06                              | 167.79                               | DC        | 40.1             |
| 169288<br>504 | 3146<br>66       | 3ALTVSTA        | 115<br>.0 | DVP                         | 3146<br>67 | 4ALTVSTA        | 138<br>.0 | DVP                   | 1             | DVP_P1-3:<br>4ALTVSTA-TX#4                                            | operati<br>on | 126.524002<br>075 | 113.17                              | 137.45                               | DC        | 30.7             |
| 163932<br>797 | 3146<br>67       | 4ALTVSTA        | 138<br>.0 | DVP                         | 2427<br>41 | 05OTTER         | 138<br>.0 | AEP                   | 1             | Base Case                                                             | operati<br>on | 167.0             | 192.2                               | 201.86                               | DC        | 16.14            |
| 163932<br>798 | 3146<br>67       | 4ALTVSTA        | 138<br>.0 | DVP                         | 2427<br>41 | 05OTTER         | 138<br>.0 | AEP                   | 1             | DVP_P1-2: LN<br>1016-A                                                | operati<br>on | 245.0             | 165.83                              | 178.29                               | DC        | 30.51            |
| 169288<br>503 | 3146<br>67       | 4ALTVSTA        | 138<br>.0 | DVP                         | 3146<br>66 | 3ALTVSTA        | 115<br>.0 | DVP                   | 1             | DVP_P1-3:<br>4ALTVSTA-TX#4                                            | operati<br>on | 126.524002<br>075 | 107.62                              | 131.88                               | DC        | 30.7             |
| 169288<br>523 | 3146<br>67       | 4ALTVSTA        | 138<br>.0 | DVP                         | 3146<br>66 | 3ALTVSTA        | 115<br>.0 | DVP                   | 2             | AEP_P2-<br>1_242687<br>05JOHNMT 138<br>242734<br>05NEWLDN<br>138 1    | operati<br>on | 130.472000<br>122 | 114.3                               | 127.04                               | DC        | 16.62            |
| 169288<br>574 | 3146<br>69       | 3BARNES J       | 115<br>.0 | DVP                         | 3146<br>84 | 3MT LREL        | 115<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>40-A                                                  | operati<br>on | 331.820007<br>324 | 126.28                              | 126.96                               | DC        | 4.27             |
| 169288<br>576 | 3146<br>69       | 3BARNES J       | 115<br>.0 | DVP                         | 3146<br>84 | 3MT LREL        | 115<br>.0 | DVP                   | 1             | Base Case                                                             | operati<br>on | 331.820007<br>324 | 106.96                              | 107.71                               | DC        | 4.68             |
| 169288<br>543 | 3146<br>84       | 3MT LREL        | 115<br>.0 | DVP                         | 3161<br>15 | AC1-105<br>TAP  | 115<br>.0 | DVP                   | 1             | Base Case                                                             | operati<br>on | 331.820007<br>324 | 111.86                              | 112.61                               | DC        | 4.68             |
| 169288<br>428 | 3146<br>86       | 6CLOVER         | 230<br>.0 | DVP                         | 9624<br>90 | AG1-098<br>TAP  | 230<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>556-D                                                 | operati<br>on | 571.520019<br>531 | 179.38                              | 179.88                               | DC        | 6.31             |
| 169288<br>557 | 3146<br>88       | 3CRSTL<br>HILL  | 115<br>.0 | DVP                         | 9272<br>60 | AC1-222<br>TAP  | 115<br>.0 | DVP                   | 1             | AEP_P1-<br>2_#375_5201                                                | operati<br>on | 285.760009<br>766 | 112.96                              | 126.87                               | DC        | 39.75            |
| 169288<br>649 | 3146<br>88       | 3CRSTL<br>HILL  | 115<br>.0 | DVP                         | 9644<br>70 | AG1-310<br>TAP  | 115<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>556-D                                                 | operati<br>on | 285.760009<br>766 | 94.61                               | 106.8                                | DC        | 34.82            |
| 169288<br>635 | 3146<br>90       | 6BLACK<br>WALNU | 230<br>.0 | DVP                         | 3146<br>86 | 6CLOVER         | 230<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>296-A                                                 | operati<br>on | 814.979980<br>469 | 108.93                              | 111.94                               | DC        | 24.64            |
| 169288<br>484 | 3146<br>94       | 3GRIT           | 115<br>.0 | DVP                         | 3147<br>12 | 3OTTER R        | 115<br>.0 | DVP                   | 1             | DVP_P1-2: LN<br>1016-D                                                | operati<br>on | 285.760009<br>766 | 126.42                              | 152.66                               | DC        | 74.98            |
| 169288<br>486 | 3146<br>94       | 3GRIT           | 115<br>.0 | DVP                         | 3147<br>12 | 3OTTER R        | 115<br>.0 | DVP                   | 1             | Base Case                                                             | operati<br>on | 285.760009<br>766 | 91.47                               | 105.2                                | DC        | 39.23            |
| 169288<br>340 | 3146<br>96       | 3SEEDGE<br>HILL | 115<br>.0 | DVP                         | 3146<br>97 | 6SEEDGE<br>HILL | 230<br>.0 | DVP                   | 1             | DVP_P1-3:<br>6SEEDGE HILL-<br>TX#2                                    | operati<br>on | 226.727996<br>826 | 250.92                              | 261.31                               | DC        | 23.64            |
| 169288<br>343 | 3146<br>96       | 3SEEDGE<br>HILL | 115<br>.0 | DVP                         | 3146<br>97 | 6SEEDGE<br>HILL | 230<br>.0 | DVP                   | 1             | Base Case                                                             | operati<br>on | 223.531997<br>681 | 145.0                               | 151.27                               | DC        | 14.01            |
| 169288<br>356 | 3146<br>96       | 3SEEDGE<br>HILL | 115<br>.0 | DVP                         | 3146<br>97 | 6SEEDGE<br>HILL | 230<br>.0 | DVP                   | 2             | DVP_P1-3:<br>6SEEDGE HILL-<br>TX#1                                    | operati<br>on | 256.055999<br>756 | 221.51                              | 230.69                               | DC        | 23.57            |

| ID        | FROM BUS# | FROM BUS     | kV    | FROM BUS AREA | TO BUS# | TO BUS        | kV    | TO BUS AREA | CKT ID | CONT NAME                                          | Type      | Rating MVA    | PRE PROJE CT LOADING % | POST PROJE CT LOADING % | AC/DC | MW IMPACT |
|-----------|-----------|--------------|-------|---------------|---------|---------------|-------|-------------|--------|----------------------------------------------------|-----------|---------------|------------------------|-------------------------|-------|-----------|
| 169288359 | 314696    | 3SEEDGE HILL | 115.0 | DVP           | 314697  | 6SEEDGE HILL  | 230.0 | DVP         | 2      | Base Case                                          | operation | 253.235992432 | 126.71                 | 132.19                  | DC    | 13.87     |
| 169288318 | 314697    | 6SEEDGE HILL | 230.0 | DVP           | 927250  | AC1-221 TAP   | 230.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 674.91998291  | 300.83                 | 303.65                  | DC    | 19.16     |
| 169288322 | 314697    | 6SEEDGE HILL | 230.0 | DVP           | 927250  | AC1-221 TAP   | 230.0 | DVP         | 1      | Base Case                                          | operation | 509.480010986 | 144.56                 | 146.95                  | DC    | 12.19     |
| 169288642 | 314697    | 6SEEDGE HILL | 230.0 | DVP           | 314696  | 3SEEDGE HILL  | 115.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 226.727996826 | 101.81                 | 107.54                  | DC    | 12.97     |
| 169288476 | 314712    | 3OTTER R     | 115.0 | DVP           | 314666  | 3ALTIVSTA     | 115.0 | DVP         | 1      | DVP_P1-2: LN 1016-D                                | operation | 269.779998779 | 126.6                  | 154.4                   | DC    | 74.98     |
| 169288478 | 314712    | 3OTTER R     | 115.0 | DVP           | 314666  | 3ALTIVSTA     | 115.0 | DVP         | 1      | Base Case                                          | operation | 247.220001221 | 97.72                  | 113.6                   | DC    | 39.23     |
| 169288513 | 314714    | 3PERTH       | 115.0 | DVP           | 942750  | AE2-291 TAP   | 115.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 285.760009766 | 124.84                 | 137.05                  | DC    | 34.84     |
| 169288552 | 314714    | 3PERTH       | 115.0 | DVP           | 964470  | AG1-310 TAP   | 115.0 | DVP         | 1      | AEP_P1-2_#375_5201                                 | operation | 285.760009766 | 113.41                 | 127.32                  | DC    | 39.75     |
| 169288554 | 314714    | 3PERTH       | 115.0 | DVP           | 964470  | AG1-310 TAP   | 115.0 | DVP         | 1      | Base Case                                          | operation | 285.760009766 | 92.07                  | 104.58                  | DC    | 35.75     |
| 163932993 | 314861    | 3SKIMMER     | 115.0 | DVP           | 242886  | 05SKIMMER     | 69.0  | AEP         | 1      | DVP_P1-3: 3SKIMMER-3SKIMMER_CK2                    | operation | 53.0          | 124.97                 | 128.94                  | DC    | 4.67      |
| 163933009 | 314861    | 3SKIMMER     | 115.0 | DVP           | 242886  | 05SKIMMER     | 69.0  | AEP         | 2      | DVP_P1-3: 3SKIMMER-3SKIMMER                        | operation | 53.0          | 124.09                 | 128.04                  | DC    | 4.64      |
| 168045866 | 926050    | AC1-083 TAP  | 138.0 | AEP           | 242550  | 05BEARSK      | 138.0 | AEP         | 1      | AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1 | operation | 296.0         | 143.96                 | 145.1                   | DC    | 7.5       |
| 168045868 | 926050    | AC1-083 TAP  | 138.0 | AEP           | 242550  | 05BEARSK      | 138.0 | AEP         | 1      | Base Case                                          | operation | 296.0         | 110.7                  | 111.54                  | DC    | 5.51      |
| 163932761 | 927250    | AC1-221 TAP  | 230.0 | DVP           | 304070  | 6PERSON2 30 T | 230.0 | CPL E       | 1      | DVP_P1-2: LN 556-D                                 | operation | 718.0         | 298.57                 | 301.23                  | DC    | 19.16     |
| 163932771 | 927250    | AC1-221 TAP  | 230.0 | DVP           | 304070  | 6PERSON2 30 T | 230.0 | CPL E       | 1      | Base Case                                          | operation | 542.0         | 154.06                 | 156.31                  | DC    | 12.19     |
| 169288479 | 927260    | AC1-222 TAP  | 115.0 | DVP           | 314696  | 3SEEDGE HILL  | 115.0 | DVP         | 1      | DVP_P1-2: LN 31-A                                  | operation | 285.760009766 | 127.5                  | 153.74                  | DC    | 74.98     |
| 169288481 | 927260    | AC1-222 TAP  | 115.0 | DVP           | 314696  | 3SEEDGE HILL  | 115.0 | DVP         | 1      | Base Case                                          | operation | 285.760009766 | 101.37                 | 113.88                  | DC    | 35.75     |
| 169288631 | 927260    | AC1-222 TAP  | 115.0 | DVP           | 314688  | 3CRSTL HILL   | 115.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 285.760009766 | 100.63                 | 112.82                  | DC    | 34.82     |
| 169809108 | 934620    | AD1-088 TAP  | 230.0 | DVP           | 963270  | AG1-176 TAP   | 230.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 571.520019531 | 196.81                 | 197.31                  | DC    | 6.31      |
| 169809419 | 940080    | AE1-250 TAP  | 138.0 | AEP           | 242549  | 05BANSTR      | 138.0 | AEP         | 1      | AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1 | operation | 392.0         | 119.29                 | 120.16                  | DC    | 7.5       |
| 169809421 | 940080    | AE1-250 TAP  | 138.0 | AEP           | 242549  | 05BANSTR      | 138.0 | AEP         | 1      | Base Case                                          | operation | 335.0         | 106.53                 | 107.28                  | DC    | 5.51      |
| 169288628 | 942750    | AE2-291 TAP  | 115.0 | DVP           | 314714  | 3PERTH        | 115.0 | DVP         | 1      | AEP_P1-2_#375_5201                                 | operation | 285.760009766 | 96.5                   | 110.41                  | DC    | 39.77     |
| 169809220 | 942750    | AE2-291 TAP  | 115.0 | DVP           | 314694  | 3GRIT         | 115.0 | DVP         | 1      | DVP_P1-2: LN 1016-D                                | operation | 285.760009766 | 127.5                  | 153.74                  | DC    | 74.98     |
| 169809222 | 942750    | AE2-291 TAP  | 115.0 | DVP           | 314694  | 3GRIT         | 115.0 | DVP         | 1      | Base Case                                          | operation | 285.760009766 | 92.52                  | 106.25                  | DC    | 39.23     |
| 169809122 | 962490    | AG1-098 TAP  | 230.0 | DVP           | 934620  | AD1-088 TAP   | 230.0 | DVP         | 1      | DVP_P1-2: LN 556-D                                 | operation | 571.520019531 | 188.09                 | 188.58                  | DC    | 6.31      |
| 170084783 | 963270    | AG1-176 TAP  | 230.0 | DVP           | 964840  | AG1-347 TAP   | 230.0 | DVP         | 1      | DVP_P1-2: LN 556-C                                 | operation | 571.520019531 | 193.19                 | 193.69                  | DC    | 6.31      |
| 169288508 | 964470    | AG1-310 TAP  | 115.0 | DVP           | 314688  | 3CRSTL HILL   | 115.0 | DVP         | 1      | AEP_P1-2_#375_5201                                 | operation | 285.760009766 | 118.98                 | 132.89                  | DC    | 39.75     |
| 169288510 | 964470    | AG1-310 TAP  | 115.0 | DVP           | 314688  | 3CRSTL HILL   | 115.0 | DVP         | 1      | Base Case                                          | operation | 285.760009766 | 91.26                  | 103.77                  | DC    | 35.75     |

| ID            | FROM<br>BUS# | FROM<br>BUS    | kV        | FROM<br>BUS<br>AREA | TO<br>BUS# | TO BUS  | kV        | TO<br>BUS<br>AREA | CK<br>T<br>ID | CONT NAME             | Type          | Rating<br>MVA     | PRE<br>PROJE<br>CT<br>LOADI<br>NG % | POST<br>PROJE<br>CT<br>LOADI<br>NG % | AC <br>DC | MW<br>IMPA<br>CT |
|---------------|--------------|----------------|-----------|---------------------|------------|---------|-----------|-------------------|---------------|-----------------------|---------------|-------------------|-------------------------------------|--------------------------------------|-----------|------------------|
| 169288<br>621 | 9644<br>70   | AG1-310<br>TAP | 115<br>.0 | DVP                 | 3147<br>14 | 3PERTH  | 115<br>.0 | DVP               | 1             | DVP_P1-2: LN<br>556-D | operati<br>on | 285.760009<br>766 | 104.69                              | 116.88                               | DC        | 34.82            |
| 168885<br>663 | 9648<br>40   | AG1-347<br>TAP | 230<br>.0 | DVP                 | 3142<br>68 | 6BRIERY | 230<br>.0 | DVP               | 1             | DVP_P1-2: LN<br>556-C | operati<br>on | 571.520019<br>531 | 200.01                              | 200.5                                | DC        | 6.31             |

## 11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

| ID                                                                              | Idx | Facility                                          | Upgrade Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Cost         |
|---------------------------------------------------------------------------------|-----|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 163932803,163932802                                                             | 10  | 4ALTVSTA 138.0 kV - 05OTTER 138.0 kV Ckt 1        | <p><u>AEP</u><br/>           AEPA0014a (233) : Rebuild / reconductor 0.9 miles of overhead conductor (ACSR ~ 397.5 ~ 30/7 ~ LARK)<br/>           Project Type : FAC<br/>           Cost : \$1,350,000<br/>           Time Estimate : 24-36 Months</p> <p>AEPA0014b (234) : Replace 795 AAC station conductors at Altavista<br/>           Project Type : FAC<br/>           Cost : \$100,000<br/>           Time Estimate : 12-18 Months</p> <p><u>DVP</u><br/>           dom-001 (1344) : Relay Change Outs (Secondary) at Altavista Substation<br/>           Project Type : FAC<br/>           Cost : \$120,000<br/>           Time Estimate : 6-12 Months</p> | \$1,570,000  |
| 161949432,167486933,161949431,167486934,161949050,168281968,168281966,161949049 | 9   | 05OTTER 138.0 kV - 05JOHNMT 138.0 kV Ckt 1        | <p><u>AEP</u><br/>           AEPA0019a (247) : 2) Rebuild/reconductor JohnMt - Otter Line, ACSR ~ 397.5 ~ 30/7 ~ LARK Conductor Section 1, 7 Miles. \$10.5M<br/>           Project Type : FAC<br/>           Cost : \$10,500,000<br/>           Time Estimate : 24-36 Months</p> <p>AEPA0019b (248) : Replace 795 AAC station conductors at Otter<br/>           Project Type : FAC<br/>           Cost : \$10,670,000<br/>           Time Estimate : 18-24 Months</p> <p>AEPA0019c (249) : Replace 1200 A Switch at Otter<br/>           Project Type : FAC<br/>           Cost : \$100,000<br/>           Time Estimate : 12-18 Months</p>                      | \$21,270,000 |
| 164140001                                                                       | 5   | AG1-310 TAP 115.0 kV - 3CRSTL HILL 115.0 kV Ckt 1 | <p><u>DVP</u><br/>           dom-344 (1745) : Reconductor 1.005 miles of 115 kV Line 1016 from Crystal Hill to AG1-310 Tap with 768.2 ACSS 250<br/>           Project Type : FAC<br/>           Cost : \$603,000<br/>           Time Estimate : 30-36 Months</p>                                                                                                                                                                                                                                                                                                                                                                                                  | \$603,000    |

| ID                                                                                                  | Idx | Facility                                                | Upgrade Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cost         |
|-----------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 161949421,167<br>486925,167486<br>926,161949422,<br>161949054,161<br>949055,168281<br>976,168281974 | 8   | 05JOHNMT<br>138.0 kV -<br>05NEWLDN<br>138.0 kV Ckt 1    | <u>AEP</u><br>AEPA0020a (250) : Current Station Rating: S/N: 167, S/E: 240<br>1) Rebuild/reconductor ACSR ~ 397.5 ~ 30/7 ~ LARK ~ Fe Clamps 9 d,<br>Conductor Section 1, 14.43 miles<br>Project Type : FAC<br>Cost : \$21,650,000<br>Time Estimate : 12-18 Months<br><br>AEPA0020b (251) : Replace 1200 A Wavetrap at New London<br>Project Type : FAC<br>Cost : \$50,000<br>Time Estimate : 24-36 Months                                                                                                                                                                                                                                                                                                                                                           | \$21,700,000 |
| 168045843,168<br>045842                                                                             | 6   | 05BANSTR<br>138.0 kV -<br>05EDAN 2 138.0<br>kV Ckt 1    | <u>AEP</u><br>AEPA0010e (221) : A Sag Study will be required for the 10.7 miles of<br>overhead conductor (2 bundle ACSR ~ 556.5 ~ 26/7 ~ DOVE) to<br>mitigate the overload. Depending on the sag study results, the cost for<br>this upgrade is expected to be between \$42,800 (no remediation<br>required, just sag study) and \$21.4 million (complete line<br>reconductor/rebuild). New Rating after sag study is SN 298MVA,<br>SE:396MVA. Time Estimate: a) Sag Study: 6-12 months b) Rebuild: The<br>standard time required for construction differs from state to state. An<br>approximate construction time would be 24 to 36 months after signing an<br>interconnection agreement.<br>Project Type : FAC<br>Cost : \$42,800<br>Time Estimate : 6-12 Months | \$42,800     |
| 161949175                                                                                           | 7   | 05CAMDLM<br>138.0 kV -<br>05OPOSSUMCK<br>138.0 kV Ckt 1 | <u>AEP</u><br>AEPA0033a (268) : Reconductor/Rebuild 4.2 miles between Opossum<br>Creek-Candlers Mountain 138 kV which currently has 556.5 ACSR 26/7<br>Dove<br>Project Type : FAC<br>Cost : \$6,300,000<br>Time Estimate : 12-18 Months                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | \$6,300,000  |
| 164140025                                                                                           | 4   | 3PERTH 115.0<br>kV - AG1-310<br>TAP 115.0 kV<br>Ckt 1   | <u>DVP</u><br>dom-357 (1758) : Reconductor 11.56 miles of 115 kV Line 1016 from Perth<br>to AG1-310 Tap with 768.2 ACSS 250<br>Project Type : FAC<br>Cost : \$6,936,000<br>Time Estimate : 36-40 Months                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | \$6,936,000  |

| ID                      | Idx | Facility                                                    | Upgrade Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cost        |
|-------------------------|-----|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 167232486,161<br>949205 | 18  | AF1-323 TAP<br>138.0 kV -<br>05SCOTSV 138.0<br>kV Ckt 1     | <u>AEP</u><br>AEP A0034a (593) : A sag study will be required on the 0.85 miles of ACSR ~ 397.5 ~ 30/7 ~ LARK - Conductor to determine what mitigation would be required (if any) to operate at the conductor's MOT. Depending on the sag study results, the cost for this upgrade is expected to be between \$3,400 (no remediation required, just sag study) and \$1.275 million (complete line reconductor/rebuild). Time Estimate: a) Sag Study: 6-12 months b) Rebuild: The standard time required for construction differs from state to state. An approximate construction time would be 24 to 36 months after signing an interconnection agreement<br>Project Type : FAC<br>Cost : \$3,400<br>Time Estimate : 6 - 12 months | \$3,400     |
| 163932766,163<br>932767 | 17  | AC1-221 TAP<br>230.0 kV -<br>6PERSON230 T<br>230.0 kV Ckt 1 | <u>DVP</u><br>n6449 (1350) : For DEV portion, rebuild 2 miles of 230 kV Line 296 from AC1-221 Tap to Persons DEP with 2-636 ACSR.<br>Project Type : FAC<br>Cost : \$3,000,000<br>Time Estimate : 30-36 Months<br><br>dom-259 (1657) : For DEV portion, rebuild 2 miles of 230 kV Line 296 from AC1-221 Tap to Persons DEP with 2-795 ACSR.<br>Project Type : FAC<br>Cost : \$3,000,000<br>Time Estimate : 30-36 Months<br><br>dom-387 (1785) : For DEV portion, rebuild 2 miles of 230 kV Line 296 from AC1-221 Tap to Persons DEP with 2-768.2 ACSS 250 C.<br>Project Type : FAC<br>Cost : \$3,000,000<br>Time Estimate : 30-36 Months                                                                                             | \$9,000,000 |
| 163932999,163<br>932998 | 1   | 3SKIMMER<br>115.0 kV -<br>05SKIMMR 69.0<br>kV Ckt 1         | <u>AEP</u><br>AEP A0016a (237) : Increase relay thermal limit above 80 MVA<br>Project Type : FAC<br>Cost : \$25,000<br>Time Estimate : 12-18 Months                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | \$25,000    |
| 163933010               | 15  | 3SKIMMER<br>115.0 kV -<br>05SKIMMR 69.0<br>kV Ckt 2         | <u>DVP</u><br>Limiting equipment owned by AEP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |
| 164140030               | 3   | 3CRSTL HILL<br>115.0 kV - AC1-<br>222 TAP 115.0<br>kV Ckt 1 | <u>DVP</u><br>dom-119 (1486) : Rebuild 0.5 miles of 115 kV Line 1016 from Crystal Hill DP to AC1-222 Tap with 768 ACSS.<br>Project Type : FAC<br>Cost : \$650,000<br>Time Estimate : 30-36 Months                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | \$650,000   |

| ID                            | Idx | Facility                                                  | Upgrade Description                                                                                                                                                                                                                                          | Cost          |
|-------------------------------|-----|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 169288320,169288321,169288323 | 14  | 6SEEDGE HILL<br>230.0 kV - AC1-221 TAP 230.0 kV Ckt 1     | <u>DVP</u><br>No upgrade needed on Dominion system. Need coordination with CPLE.<br><br><u>CPLE</u><br>The external (i.e. Non-PJM) Transmission Owner, CPLE, will not evaluate this violation until the impact study phase.                                  | \$0           |
| 169288344,169288345,169288342 | 12  | 3SEEDGE HILL<br>115.0 kV - 6SEEDGE HILL<br>230.0 kV Ckt 1 | <u>DVP</u><br>dom-046 (1399) : Add additional 230/115 kV transformer at Sedge Hill substation.<br>Project Type : CON<br>Cost : \$6,000,000<br>Time Estimate : 16-18 Months                                                                                   | \$6,000,000   |
| 169288360,169288358           | 13  | 3SEEDGE HILL<br>115.0 kV - 6SEEDGE HILL<br>230.0 kV Ckt 2 |                                                                                                                                                                                                                                                              |               |
| 164139957                     | 11  | 4ALTVSTA 138.0 kV - 3ALTVSTA<br>115.0 kV Ckt 2            | <u>DVP</u><br>dom-122 (1489) : Add additional 138/115 kV transformer at Altavista substation<br>Project Type : CON<br>Cost : \$6,000,000<br>Time Estimate : 16-18 Months                                                                                     | \$6,000,000   |
| 161949141                     | 2   | 05LEESVI 138.0 kV - 05SMITHMTN1<br>138.0 kV Ckt 1         | <u>AEP</u><br>AEPA0017e (244) : Replace Leesville & Smithmtn Riser Sub Cond 795 AAC 37 Str<br>Project Type : FAC<br>Cost : \$100,000<br>Time Estimate : 12-18 Months                                                                                         | \$100,000     |
| 161949165                     | 16  | AC1-123 TAP<br>138.0 kV - 05CAMDLM<br>138.0 kV Ckt 1      | <u>AEP</u><br>AEPA0027a (596) : Reconductor/ Rebuild 17.2 miles between Candiers Mountain - Redeye 138kV which currently has ACSR ~ 556 ACSR ~ 26/7 overhead conductor<br>Project Type : FAC<br>Cost : \$34,400,000<br>Time Estimate : 24 - 36 months Months | \$34,400,000  |
|                               |     |                                                           | TOTAL COST                                                                                                                                                                                                                                                   | \$114,600,200 |

## 11.6 Flow Gate Details

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

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### 11.6.1 Index 1

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                       | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|----------|-------------|--------|---------------------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 163932998 | 314861    | 3SKIMMER | DVP           | 242886  | 05SKIMMR | AEP         | 1      | DVP_P1-3: 3SKIMMER-3SKIMMER_CK2 | single | 53.0       | 109.53                | 113.29                 | DC    | 1.99      |

| Bus #      | Bus          | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|--------------|--------------------|---------------|----------------|
| 315156     | 1HALLBR1     | 0.7351             | 80/20         | 0.7351         |
| 316123     | AC1-075 C    | 0.3077             | 80/20         | 0.3077         |
| 925661     | AC1-042 C    | 1.0730             | 80/20         | 1.0730         |
| 926023     | AC1-080 C    | 0.1028             | 80/20         | 0.1028         |
| 926645     | AC1-145 C    | 0.2015             | 80/20         | 0.2015         |
| 939941     | AE1-230 C    | 0.4841             | 80/20         | 0.4841         |
| 941801     | AE2-185 C    | 2.4203             | 80/20         | 2.4203         |
| 941821     | AE2-187 C    | 2.4203             | 80/20         | 2.4203         |
| 942671     | AE2-283 C    | 2.6623             | 80/20         | 2.6623         |
| 942751     | AE2-291 C    | 3.8146             | 80/20         | 3.8146         |
| 942761     | AE2-292 C O1 | 4.7495             | 80/20         | 4.7495         |
| 945081     | AF1-173      | 0.9379             | 80/20         | 0.9379         |
| 961121     | AF2-403      | 0.5378             | 80/20         | 0.5378         |
| 963601     | AG1-209 C    | 0.1882             | 80/20         | 0.1882         |
| 964141     | AG1-275 C    | 0.8068             | 80/20         | 0.8068         |
| 964151     | AG1-276 C    | 0.8068             | 80/20         | 0.8068         |
| 966691     | AG1-539 C    | 1.9946             | 80/20         | 1.9946         |
| 966761     | AG1-547 C    | 2.1877             | 80/20         | 2.1877         |
| CPLE       | CPLE         | 0.2034             | Confirmed LTF | 0.2034         |
| G-007A     | G-007A       | 0.0048             | Confirmed LTF | 0.0048         |
| VFT        | VFT          | 0.0064             | Confirmed LTF | 0.0064         |
| NY         | NY           | 0.0033             | Confirmed LTF | 0.0033         |
| PRAIRIE    | PRAIRIE      | 0.1007             | Confirmed LTF | 0.1007         |
| CBM-S2     | CBM-S2       | 1.7957             | Confirmed LTF | 1.7957         |
| CBM-N      | CBM-N        | 0.0012             | Confirmed LTF | 0.0012         |
| COTTONWOOD | COTTONWOOD   | 0.0063             | Confirmed LTF | 0.0063         |
| GIBSON     | GIBSON       | 0.0322             | Confirmed LTF | 0.0322         |
| BLUEG      | BLUEG        | 0.1111             | Confirmed LTF | 0.1111         |
| TRIMBLE    | TRIMBLE      | 0.0362             | Confirmed LTF | 0.0362         |

## 11.6.2 Index 2

| ID            | FROM BUS#  | FROM BUS     | FROM BUS AREA | TO BUS#    | TO BUS         | TO BUS AREA | CK T ID | CONT NAME                              | Type | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC D C | MW IMPAC T |
|---------------|------------|--------------|---------------|------------|----------------|-------------|---------|----------------------------------------|------|------------|------------------------|-------------------------|--------|------------|
| 16194914<br>1 | 24270<br>1 | 05LEESV<br>I | AEP           | 24280<br>2 | 05SMITHMT<br>N | AEP         | 1       | AEP_P2-<br>2_#10292_05NEWLD<br>N 138_1 | bus  | 255.0      | 98.9                   | 109.45                  | DC     | 26.92      |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 247284 | 05LEESVG     | 5.6315             | 50/50 | 5.6315         |
| 315156 | 1HALLBR1     | 4.2676             | 50/50 | 4.2676         |
| 316123 | AC1-075 C    | 1.7607             | 50/50 | 1.7607         |
| 925661 | AC1-042 C    | 9.0567             | 50/50 | 9.0567         |
| 925662 | AC1-042 E    | 14.7767            | 50/50 | 14.7767        |
| 925997 | AC1-075 E    | 6.3232             | 50/50 | 6.3232         |
| 926023 | AC1-080 C    | 0.5884             | 50/50 | 0.5884         |
| 926024 | AC1-080 E    | 2.0980             | 50/50 | 2.0980         |
| 926645 | AC1-145 C    | 1.7010             | 50/50 | 1.7010         |
| 926646 | AC1-145 E    | 9.6752             | 50/50 | 9.6752         |
| 927261 | AC1-222 C    | 3.1105             | 50/50 | 3.1105         |
| 927262 | AC1-222 E    | 2.9611             | 50/50 | 2.9611         |
| 934311 | AD1-055 C    | 2.1597             | 50/50 | 2.1597         |
| 934312 | AD1-055 E    | 0.5569             | 50/50 | 0.5569         |
| 939941 | AE1-230 C    | 4.0857             | 50/50 | 4.0857         |
| 939942 | AE1-230 E    | 7.2635             | 50/50 | 7.2635         |
| 941801 | AE2-185 C    | 20.4286            | 50/50 | 20.4286        |
| 941802 | AE2-185 E    | 13.6190            | 50/50 | 13.6190        |
| 941821 | AE2-187 C    | 20.4286            | 50/50 | 20.4286        |
| 941822 | AE2-187 E    | 9.0794             | 50/50 | 9.0794         |
| 942671 | AE2-283 C    | 22.4714            | 50/50 | 22.4714        |
| 942672 | AE2-283 E    | 11.8032            | 50/50 | 11.8032        |
| 942751 | AE2-291 C    | 21.9635            | 50/50 | 21.9635        |
| 942752 | AE2-291 E    | 14.6423            | 50/50 | 14.6423        |
| 942761 | AE2-292 C O1 | 27.3467            | 50/50 | 27.3467        |
| 942762 | AE2-292 E O1 | 18.2311            | 50/50 | 18.2311        |
| 943901 | AF1-058 C    | 0.9408             | Adder | 1.11           |
| 943902 | AF1-058 E    | 0.6272             | Adder | 0.74           |
| 945081 | AF1-173      | 7.9161             | 50/50 | 7.9161         |
| 960061 | AF2-297 C    | 3.7634             | Adder | 4.43           |
| 960062 | AF2-297 E    | 2.5089             | Adder | 2.95           |
| 961121 | AF2-403      | 4.5397             | 50/50 | 4.5397         |
| 963601 | AG1-209 C    | 1.5889             | 50/50 | 1.5889         |
| 963602 | AG1-209 E    | 2.3833             | 50/50 | 2.3833         |
| 964141 | AG1-275 C    | 6.8095             | 50/50 | 6.8095         |
| 964142 | AG1-275 E    | 4.5397             | 50/50 | 4.5397         |
| 964151 | AG1-276 C    | 6.8095             | 50/50 | 6.8095         |
| 964152 | AG1-276 E    | 4.5397             | 50/50 | 4.5397         |
| 964251 | AG1-286 C    | 3.4048             | 50/50 | 3.4048         |
| 964252 | AG1-286 E    | 2.2698             | 50/50 | 2.2698         |
| 964261 | AG1-287 C    | 0.3740             | Adder | 0.83           |

| Bus #      | Bus        | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|------------|--------------------|---------------|----------------|
| 964262     | AG1-287 E  | 0.2493             | Adder         | 0.55           |
| 964471     | AG1-310 C  | 2.0581             | 50/50         | 2.0581         |
| 964472     | AG1-310 E  | 1.0137             | 50/50         | 1.0137         |
| 966691     | AG1-539 C  | 11.4842            | 50/50         | 11.4842        |
| 966692     | AG1-539 E  | 15.4318            | 50/50         | 15.4318        |
| 966761     | AG1-547 C  | 18.4651            | 50/50         | 18.4651        |
| 966762     | AG1-547 E  | 9.9079             | 50/50         | 9.9079         |
| CPLE       | CPLE       | 0.3999             | Confirmed LTF | 0.3999         |
| G-007A     | G-007A     | 0.2685             | Confirmed LTF | 0.2685         |
| VFT        | VFT        | 0.7159             | Confirmed LTF | 0.7159         |
| CALDERWOOD | CALDERWOOD | 0.0830             | Confirmed LTF | 0.0830         |
| PRAIRIE    | PRAIRIE    | 0.6793             | Confirmed LTF | 0.6793         |
| CBM-S2     | CBM-S2     | 2.5265             | Confirmed LTF | 2.5265         |
| CHEOAH     | CHEOAH     | 0.0781             | Confirmed LTF | 0.0781         |
| CBM-N      | CBM-N      | 0.1284             | Confirmed LTF | 0.1284         |
| COTTONWOOD | COTTONWOOD | 0.3843             | Confirmed LTF | 0.3843         |
| GIBSON     | GIBSON     | 0.1676             | Confirmed LTF | 0.1676         |
| BLUEG      | BLUEG      | 0.5625             | Confirmed LTF | 0.5625         |
| TRIMBLE    | TRIMBLE    | 0.1814             | Confirmed LTF | 0.1814         |

### 11.6.3 Index 3

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS      | TO BUS AREA | CKT ID | CONT NAME                     | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|-------------|---------------|---------|-------------|-------------|--------|-------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 164140030 | 314688    | 3CRSTL HILL | DVP           | 927260  | AC1-222 TAP | DVP         | 1      | AEP_P2-2_#10292_05NEWLDN138_1 | bus  | 350.0      | 92.56                 | 103.92                 | DC    | 39.75     |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.1989             | 50/50 | 1.1989         |
| 246844 | 05SMG2       | 3.2590             | 50/50 | 3.2590         |
| 246845 | 05SMG3       | 2.0432             | 50/50 | 2.0432         |
| 246846 | 05SMG4       | 3.2083             | 50/50 | 3.2083         |
| 246847 | 05SMG5       | 1.2496             | 50/50 | 1.2496         |
| 247284 | 05LEESVG     | 1.5504             | 50/50 | 1.5504         |
| 315156 | 1HALLBR1     | 2.6935             | 50/50 | 2.6935         |
| 316123 | AC1-075 C    | 3.7321             | 50/50 | 3.7321         |
| 925661 | AC1-042 C    | 4.6705             | 50/50 | 4.6705         |
| 925662 | AC1-042 E    | 7.6203             | 50/50 | 7.6203         |
| 925997 | AC1-075 E    | 13.4028            | 50/50 | 13.4028        |
| 926023 | AC1-080 C    | 1.2473             | 50/50 | 1.2473         |
| 926024 | AC1-080 E    | 4.4470             | 50/50 | 4.4470         |
| 926051 | AC1-083 C O1 | 2.4135             | Adder | 2.84           |
| 926052 | AC1-083 E O1 | 3.9377             | Adder | 4.63           |
| 926522 | AC1-123 E O1 | 1.8452             | Adder | 2.17           |
| 926645 | AC1-145 C    | 0.8772             | 50/50 | 0.8772         |
| 926646 | AC1-145 E    | 4.9895             | 50/50 | 4.9895         |
| 927261 | AC1-222 C    | -3.5121            | Adder | -4.13          |
| 933941 | AD1-017 C    | 0.4827             | Adder | 0.57           |
| 933942 | AD1-017 E    | 0.7875             | Adder | 0.93           |
| 934311 | AD1-055 C    | -2.4385            | Adder | -2.87          |
| 938451 | AE1-064 C    | 5.2257             | Adder | 6.15           |
| 938452 | AE1-064 E    | 2.7021             | Adder | 3.18           |
| 939941 | AE1-230 C    | 2.1070             | 50/50 | 2.1070         |
| 939942 | AE1-230 E    | 3.7458             | 50/50 | 3.7458         |
| 941801 | AE2-185 C    | 10.5350            | 50/50 | 10.5350        |
| 941802 | AE2-185 E    | 7.0234             | 50/50 | 7.0234         |
| 941821 | AE2-187 C    | 10.5350            | 50/50 | 10.5350        |
| 941822 | AE2-187 E    | 4.6822             | 50/50 | 4.6822         |
| 942671 | AE2-283 C    | 11.5885            | 50/50 | 11.5885        |
| 942672 | AE2-283 E    | 6.0869             | 50/50 | 6.0869         |
| 942751 | AE2-291 C    | 32.4378            | 50/50 | 32.4378        |
| 942752 | AE2-291 E    | 21.6252            | 50/50 | 21.6252        |
| 942761 | AE2-292 C O1 | 40.3883            | 50/50 | 40.3883        |
| 942762 | AE2-292 E O1 | 26.9255            | 50/50 | 26.9255        |
| 943901 | AF1-058 C    | -1.2633            | Adder | -1.49          |
| 945081 | AF1-173      | 4.0823             | 50/50 | 4.0823         |
| 961121 | AF2-403      | 2.3411             | 50/50 | 2.3411         |
| 962443 | AG1-093 BAT  | 5.5265             | 50/50 | 5.5265         |
| 963601 | AG1-209 C    | 0.8194             | 50/50 | 0.8194         |

| Bus #   | Bus         | Gendeliv MW Impact | Type                  | Full MW Impact |
|---------|-------------|--------------------|-----------------------|----------------|
| 963602  | AG1-209 E   | 1.2291             | 50/50                 | 1.2291         |
| 964141  | AG1-275 C   | 3.5117             | 50/50                 | 3.5117         |
| 964142  | AG1-275 E   | 2.3411             | 50/50                 | 2.3411         |
| 964151  | AG1-276 C   | 3.5117             | 50/50                 | 3.5117         |
| 964152  | AG1-276 E   | 2.3411             | 50/50                 | 2.3411         |
| 964251  | AG1-286 C   | 1.7558             | 50/50                 | 1.7558         |
| 964252  | AG1-286 E   | 1.1706             | 50/50                 | 1.1706         |
| 964471  | AG1-310 C   | 10.6732            | 50/50                 | 10.6732        |
| 964472  | AG1-310 E   | 5.2570             | 50/50                 | 5.2570         |
| 964793  | AG1-342 BAT | 0.4630             | Merchant Transmission | 0.4630         |
| 966691  | AG1-539 C   | 16.9610            | 50/50                 | 16.9610        |
| 966692  | AG1-539 E   | 22.7913            | 50/50                 | 22.7913        |
| 966761  | AG1-547 C   | 9.5225             | 50/50                 | 9.5225         |
| 966762  | AG1-547 E   | 5.1095             | 50/50                 | 5.1095         |
| WEC     | WEC         | 0.0961             | Confirmed LTF         | 0.0961         |
| LGEE    | LGEE        | 0.2193             | Confirmed LTF         | 0.2193         |
| CBM-W2  | CBM-W2      | 1.6397             | Confirmed LTF         | 1.6397         |
| NY      | NY          | 0.0835             | Confirmed LTF         | 0.0835         |
| TVA     | TVA         | 0.1750             | Confirmed LTF         | 0.1750         |
| O-066   | O-066       | 1.3393             | Confirmed LTF         | 1.3393         |
| SIGE    | SIGE        | 0.0541             | Confirmed LTF         | 0.0541         |
| CBM-S1  | CBM-S1      | 0.0627             | Confirmed LTF         | 0.0627         |
| G-007   | G-007       | 0.2121             | Confirmed LTF         | 0.2121         |
| HAMLET  | HAMLET      | 0.5151             | Confirmed LTF         | 0.5151         |
| MEC     | MEC         | 0.4211             | Confirmed LTF         | 0.4211         |
| LAGN    | LAGN        | 0.1715             | Confirmed LTF         | 0.1715         |
| CATAWBA | CATAWBA     | 0.1711             | Confirmed LTF         | 0.1711         |
| CBM-W1  | CBM-W1      | 4.1499             | Confirmed LTF         | 4.1499         |

#### 11.6.4 Index 4

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS      | TO BUS AREA | CKT ID | CONT NAME                     | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|-------------|-------------|--------|-------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 164140025 | 314714    | 3PERTH   | DVP           | 964470  | AG1-310 TAP | DVP         | 1      | AEP_P2-2_#10292_05NEWLDN138_1 | bus  | 350.0      | 92.92                 | 104.28                 | DC    | 39.75     |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.1989             | 50/50 | 1.1989         |
| 246844 | 05SMG2       | 3.2590             | 50/50 | 3.2590         |
| 246845 | 05SMG3       | 2.0432             | 50/50 | 2.0432         |
| 246846 | 05SMG4       | 3.2083             | 50/50 | 3.2083         |
| 246847 | 05SMG5       | 1.2496             | 50/50 | 1.2496         |
| 247284 | 05LEESVG     | 1.5504             | 50/50 | 1.5504         |
| 315156 | 1HALLBR1     | 2.6935             | 50/50 | 2.6935         |
| 316123 | AC1-075 C    | 3.7321             | 50/50 | 3.7321         |
| 925661 | AC1-042 C    | 4.6705             | 50/50 | 4.6705         |
| 925662 | AC1-042 E    | 7.6203             | 50/50 | 7.6203         |
| 925997 | AC1-075 E    | 13.4028            | 50/50 | 13.4028        |
| 926023 | AC1-080 C    | 1.2473             | 50/50 | 1.2473         |
| 926024 | AC1-080 E    | 4.4470             | 50/50 | 4.4470         |
| 926051 | AC1-083 C O1 | 2.4135             | Adder | 2.84           |
| 926052 | AC1-083 E O1 | 3.9377             | Adder | 4.63           |
| 926522 | AC1-123 E O1 | 1.8452             | Adder | 2.17           |
| 926645 | AC1-145 C    | 0.8772             | 50/50 | 0.8772         |
| 926646 | AC1-145 E    | 4.9895             | 50/50 | 4.9895         |
| 927261 | AC1-222 C    | -3.5121            | Adder | -4.13          |
| 933941 | AD1-017 C    | 0.4827             | Adder | 0.57           |
| 933942 | AD1-017 E    | 0.7875             | Adder | 0.93           |
| 934311 | AD1-055 C    | -2.4385            | Adder | -2.87          |
| 938451 | AE1-064 C    | 5.2257             | Adder | 6.15           |
| 938452 | AE1-064 E    | 2.7021             | Adder | 3.18           |
| 939941 | AE1-230 C    | 2.1070             | 50/50 | 2.1070         |
| 939942 | AE1-230 E    | 3.7458             | 50/50 | 3.7458         |
| 941801 | AE2-185 C    | 10.5350            | 50/50 | 10.5350        |
| 941802 | AE2-185 E    | 7.0234             | 50/50 | 7.0234         |
| 941821 | AE2-187 C    | 10.5350            | 50/50 | 10.5350        |
| 941822 | AE2-187 E    | 4.6822             | 50/50 | 4.6822         |
| 942671 | AE2-283 C    | 11.5885            | 50/50 | 11.5885        |
| 942672 | AE2-283 E    | 6.0869             | 50/50 | 6.0869         |
| 942751 | AE2-291 C    | 32.4378            | 50/50 | 32.4378        |
| 942752 | AE2-291 E    | 21.6252            | 50/50 | 21.6252        |
| 942761 | AE2-292 C O1 | 40.3883            | 50/50 | 40.3883        |
| 942762 | AE2-292 E O1 | 26.9255            | 50/50 | 26.9255        |
| 943901 | AF1-058 C    | -1.2633            | Adder | -1.49          |
| 945081 | AF1-173      | 4.0823             | 50/50 | 4.0823         |
| 961121 | AF2-403      | 2.3411             | 50/50 | 2.3411         |
| 962443 | AG1-093 BAT  | 5.5265             | 50/50 | 5.5265         |
| 963601 | AG1-209 C    | 0.8194             | 50/50 | 0.8194         |

| Bus #   | Bus         | Gendeliv MW Impact | Type                  | Full MW Impact |
|---------|-------------|--------------------|-----------------------|----------------|
| 963602  | AG1-209 E   | 1.2291             | 50/50                 | 1.2291         |
| 964141  | AG1-275 C   | 3.5117             | 50/50                 | 3.5117         |
| 964142  | AG1-275 E   | 2.3411             | 50/50                 | 2.3411         |
| 964151  | AG1-276 C   | 3.5117             | 50/50                 | 3.5117         |
| 964152  | AG1-276 E   | 2.3411             | 50/50                 | 2.3411         |
| 964251  | AG1-286 C   | 1.7558             | 50/50                 | 1.7558         |
| 964252  | AG1-286 E   | 1.1706             | 50/50                 | 1.1706         |
| 964793  | AG1-342 BAT | 0.4630             | Merchant Transmission | 0.4630         |
| 966691  | AG1-539 C   | 16.9610            | 50/50                 | 16.9610        |
| 966692  | AG1-539 E   | 22.7913            | 50/50                 | 22.7913        |
| 966761  | AG1-547 C   | 9.5225             | 50/50                 | 9.5225         |
| 966762  | AG1-547 E   | 5.1095             | 50/50                 | 5.1095         |
| WEC     | WEC         | 0.0961             | Confirmed LTF         | 0.0961         |
| LGEE    | LGEE        | 0.2193             | Confirmed LTF         | 0.2193         |
| CBM-W2  | CBM-W2      | 1.6397             | Confirmed LTF         | 1.6397         |
| NY      | NY          | 0.0835             | Confirmed LTF         | 0.0835         |
| TVA     | TVA         | 0.1750             | Confirmed LTF         | 0.1750         |
| O-066   | O-066       | 1.3393             | Confirmed LTF         | 1.3393         |
| SIGE    | SIGE        | 0.0541             | Confirmed LTF         | 0.0541         |
| CBM-S1  | CBM-S1      | 0.0627             | Confirmed LTF         | 0.0627         |
| G-007   | G-007       | 0.2121             | Confirmed LTF         | 0.2121         |
| HAMLET  | HAMLET      | 0.5151             | Confirmed LTF         | 0.5151         |
| MEC     | MEC         | 0.4211             | Confirmed LTF         | 0.4211         |
| LAGN    | LAGN        | 0.1715             | Confirmed LTF         | 0.1715         |
| CATAWBA | CATAWBA     | 0.1711             | Confirmed LTF         | 0.1711         |
| CBM-W1  | CBM-W1      | 4.1499             | Confirmed LTF         | 4.1499         |

## 11.6.5 Index 5

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS      | TO BUS AREA | CKT ID | CONT NAME                     | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|-------------|---------------|---------|-------------|-------------|--------|-------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 164140001 | 964470    | AG1-310 TAP | DVP           | 314688  | 3CRSTL HILL | DVP         | 1      | AEP_P2-2_#10292_05NEWLDN138_1 | bus  | 350.0      | 97.47                 | 108.83                 | DC    | 39.75     |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.1989             | 50/50 | 1.1989         |
| 246844 | 05SMG2       | 3.2590             | 50/50 | 3.2590         |
| 246845 | 05SMG3       | 2.0432             | 50/50 | 2.0432         |
| 246846 | 05SMG4       | 3.2083             | 50/50 | 3.2083         |
| 246847 | 05SMG5       | 1.2496             | 50/50 | 1.2496         |
| 247284 | 05LEESVG     | 1.5504             | 50/50 | 1.5504         |
| 315156 | 1HALLBR1     | 2.6935             | 50/50 | 2.6935         |
| 316123 | AC1-075 C    | 3.7321             | 50/50 | 3.7321         |
| 925661 | AC1-042 C    | 4.6705             | 50/50 | 4.6705         |
| 925662 | AC1-042 E    | 7.6203             | 50/50 | 7.6203         |
| 925997 | AC1-075 E    | 13.4028            | 50/50 | 13.4028        |
| 926023 | AC1-080 C    | 1.2473             | 50/50 | 1.2473         |
| 926024 | AC1-080 E    | 4.4470             | 50/50 | 4.4470         |
| 926051 | AC1-083 C O1 | 2.4135             | Adder | 2.84           |
| 926052 | AC1-083 E O1 | 3.9377             | Adder | 4.63           |
| 926522 | AC1-123 E O1 | 1.8452             | Adder | 2.17           |
| 926645 | AC1-145 C    | 0.8772             | 50/50 | 0.8772         |
| 926646 | AC1-145 E    | 4.9895             | 50/50 | 4.9895         |
| 927261 | AC1-222 C    | -3.5121            | Adder | -4.13          |
| 933941 | AD1-017 C    | 0.4827             | Adder | 0.57           |
| 933942 | AD1-017 E    | 0.7875             | Adder | 0.93           |
| 934311 | AD1-055 C    | -2.4385            | Adder | -2.87          |
| 938451 | AE1-064 C    | 5.2257             | Adder | 6.15           |
| 938452 | AE1-064 E    | 2.7021             | Adder | 3.18           |
| 939941 | AE1-230 C    | 2.1070             | 50/50 | 2.1070         |
| 939942 | AE1-230 E    | 3.7458             | 50/50 | 3.7458         |
| 941801 | AE2-185 C    | 10.5350            | 50/50 | 10.5350        |
| 941802 | AE2-185 E    | 7.0234             | 50/50 | 7.0234         |
| 941821 | AE2-187 C    | 10.5350            | 50/50 | 10.5350        |
| 941822 | AE2-187 E    | 4.6822             | 50/50 | 4.6822         |
| 942671 | AE2-283 C    | 11.5885            | 50/50 | 11.5885        |
| 942672 | AE2-283 E    | 6.0869             | 50/50 | 6.0869         |
| 942751 | AE2-291 C    | 32.4378            | 50/50 | 32.4378        |
| 942752 | AE2-291 E    | 21.6252            | 50/50 | 21.6252        |
| 942761 | AE2-292 C O1 | 40.3883            | 50/50 | 40.3883        |
| 942762 | AE2-292 E O1 | 26.9255            | 50/50 | 26.9255        |
| 943901 | AF1-058 C    | -1.2633            | Adder | -1.49          |
| 945081 | AF1-173      | 4.0823             | 50/50 | 4.0823         |
| 961121 | AF2-403      | 2.3411             | 50/50 | 2.3411         |
| 962443 | AG1-093 BAT  | 5.5265             | 50/50 | 5.5265         |
| 963601 | AG1-209 C    | 0.8194             | 50/50 | 0.8194         |

| Bus #   | Bus         | Gendeliv MW Impact | Type                  | Full MW Impact |
|---------|-------------|--------------------|-----------------------|----------------|
| 963602  | AG1-209 E   | 1.2291             | 50/50                 | 1.2291         |
| 964141  | AG1-275 C   | 3.5117             | 50/50                 | 3.5117         |
| 964142  | AG1-275 E   | 2.3411             | 50/50                 | 2.3411         |
| 964151  | AG1-276 C   | 3.5117             | 50/50                 | 3.5117         |
| 964152  | AG1-276 E   | 2.3411             | 50/50                 | 2.3411         |
| 964251  | AG1-286 C   | 1.7558             | 50/50                 | 1.7558         |
| 964252  | AG1-286 E   | 1.1706             | 50/50                 | 1.1706         |
| 964471  | AG1-310 C   | 10.6732            | 50/50                 | 10.6732        |
| 964472  | AG1-310 E   | 5.2570             | 50/50                 | 5.2570         |
| 964793  | AG1-342 BAT | 0.4630             | Merchant Transmission | 0.4630         |
| 966691  | AG1-539 C   | 16.9610            | 50/50                 | 16.9610        |
| 966692  | AG1-539 E   | 22.7913            | 50/50                 | 22.7913        |
| 966761  | AG1-547 C   | 9.5225             | 50/50                 | 9.5225         |
| 966762  | AG1-547 E   | 5.1095             | 50/50                 | 5.1095         |
| WEC     | WEC         | 0.0961             | Confirmed LTF         | 0.0961         |
| LGEE    | LGEE        | 0.2193             | Confirmed LTF         | 0.2193         |
| CBM-W2  | CBM-W2      | 1.6397             | Confirmed LTF         | 1.6397         |
| NY      | NY          | 0.0835             | Confirmed LTF         | 0.0835         |
| TVA     | TVA         | 0.1750             | Confirmed LTF         | 0.1750         |
| O-066   | O-066       | 1.3393             | Confirmed LTF         | 1.3393         |
| SIGE    | SIGE        | 0.0541             | Confirmed LTF         | 0.0541         |
| CBM-S1  | CBM-S1      | 0.0627             | Confirmed LTF         | 0.0627         |
| G-007   | G-007       | 0.2121             | Confirmed LTF         | 0.2121         |
| HAMLET  | HAMLET      | 0.5151             | Confirmed LTF         | 0.5151         |
| MEC     | MEC         | 0.4211             | Confirmed LTF         | 0.4211         |
| LAGN    | LAGN        | 0.1715             | Confirmed LTF         | 0.1715         |
| CATAWBA | CATAWBA     | 0.1711             | Confirmed LTF         | 0.1711         |
| CBM-W1  | CBM-W1      | 4.1499             | Confirmed LTF         | 4.1499         |

## 11.6.6 Index 6

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                                                          | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|----------|-------------|--------|--------------------------------------------------------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 168045842 | 242549    | 05BANSTR | AEP           | 242632  | 05EDAN 2 | AEP         | 1      | AEP_P2-1_242720<br>05MONETA<br>138 242775<br>05ROCKCAS<br>SS 138 1 | single | 296.0      | 105.65                | 106.73                 | DC    | 3.2       |

| Bus #      | Bus          | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|--------------|--------------------|---------------|----------------|
| 242889     | 05REUSENS    | 0.0515             | 80/20         | 0.0515         |
| 246843     | 05SMG1       | 3.5712             | 80/20         | 3.5712         |
| 246844     | 05SMG2       | 9.7076             | 80/20         | 9.7076         |
| 246845     | 05SMG3       | 6.0861             | 80/20         | 6.0861         |
| 246846     | 05SMG4       | 9.5567             | 80/20         | 9.5567         |
| 246847     | 05SMG5       | 3.7221             | 80/20         | 3.7221         |
| 247284     | 05LEESVG     | 1.9442             | 80/20         | 1.9442         |
| 315156     | 1HALLBR1     | 1.2904             | 80/20         | 1.2904         |
| 316123     | AC1-075 C    | 0.4585             | 80/20         | 0.4585         |
| 925661     | AC1-042 C    | 2.7205             | 80/20         | 2.7205         |
| 926023     | AC1-080 C    | 0.1532             | 80/20         | 0.1532         |
| 926051     | AC1-083 C O1 | 19.0954            | 80/20         | 19.0954        |
| 926521     | AC1-123 C O1 | 2.0209             | 80/20         | 2.0209         |
| 926645     | AC1-145 C    | 0.5110             | 80/20         | 0.5110         |
| 933941     | AD1-017 C    | 3.8191             | 80/20         | 3.8191         |
| 935241     | AD1-161 C    | 2.5993             | 80/20         | 2.5993         |
| 938451     | AE1-064 C    | 21.4559            | 80/20         | 21.4559        |
| 939941     | AE1-230 C    | 1.2273             | 80/20         | 1.2273         |
| 940081     | AE1-250 C    | 57.5154            | 80/20         | 57.5154        |
| 941801     | AE2-185 C    | 6.1366             | 80/20         | 6.1366         |
| 941821     | AE2-187 C    | 6.1366             | 80/20         | 6.1366         |
| 942671     | AE2-283 C    | 6.7502             | 80/20         | 6.7502         |
| 942751     | AE2-291 C    | 6.1176             | 80/20         | 6.1176         |
| 942761     | AE2-292 C O1 | 7.6170             | 80/20         | 7.6170         |
| 945081     | AF1-173      | 2.3779             | 80/20         | 2.3779         |
| 958131     | AF2-107 C    | 1.8934             | 80/20         | 1.8934         |
| 961121     | AF2-403      | 1.3637             | 80/20         | 1.3637         |
| 962741     | AG1-123 C O1 | 3.0900             | 80/20         | 3.0900         |
| 962751     | AG1-124 C O1 | 4.1436             | 80/20         | 4.1436         |
| 963601     | AG1-209 C    | 0.4773             | 80/20         | 0.4773         |
| 964141     | AG1-275 C    | 2.0455             | 80/20         | 2.0455         |
| 964151     | AG1-276 C    | 2.0455             | 80/20         | 2.0455         |
| 964251     | AG1-286 C    | 0.8361             | 80/20         | 0.8361         |
| 964531     | AG1-316 C O1 | 7.6979             | 80/20         | 7.6979         |
| 966251     | AG1-494 C    | 1.3718             | 80/20         | 1.3718         |
| 966691     | AG1-539 C    | 3.1987             | 80/20         | 3.1987         |
| 966761     | AG1-547 C    | 5.5468             | 80/20         | 5.5468         |
| CALDERWOOD | CALDERWOOD   | 0.3628             | Confirmed LTF | 0.3628         |
| NY         | NY           | 0.0553             | Confirmed LTF | 0.0553         |

| <b>Bus #</b>      | <b>Bus</b> | <b>Gendeliv MW Impact</b> | <b>Type</b>   | <b>Full MW Impact</b> |
|-------------------|------------|---------------------------|---------------|-----------------------|
| <b>PRAIRIE</b>    | PRAIRIE    | 0.7801                    | Confirmed LTF | 0.7801                |
| <b>CHEOAH</b>     | CHEOAH     | 0.3804                    | Confirmed LTF | 0.3804                |
| <b>COTTONWOOD</b> | COTTONWOOD | 1.2369                    | Confirmed LTF | 1.2369                |
| <b>HAMLET</b>     | HAMLET     | 1.1966                    | Confirmed LTF | 1.1966                |
| <b>GIBSON</b>     | GIBSON     | 0.0814                    | Confirmed LTF | 0.0814                |
| <b>BLUEG</b>      | BLUEG      | 0.1962                    | Confirmed LTF | 0.1962                |
| <b>TRIMBLE</b>    | TRIMBLE    | 0.0590                    | Confirmed LTF | 0.0590                |
| <b>CATAWBA</b>    | CATAWBA    | 0.5712                    | Confirmed LTF | 0.5712                |

## 11.6.7 Index 7

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS      | TO BUS AREA | CK T ID | CONT NAME                      | Type | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC D C | MW IMPAC T |
|-----------|-----------|----------|---------------|---------|-------------|-------------|---------|--------------------------------|------|------------|------------------------|-------------------------|--------|------------|
| 161949175 | 242575    | 05CAMDLM | AEP           | 242737  | 05OPOSSUMCK | AEP         | 1       | AEP_P2-2_#10292_05NEWLDN 138_1 | bus  | 284.0      | 113.86                 | 114.65                  | DC     | 4.93       |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.9399             | 50/50 | 1.9399         |
| 246844 | 05SMG2       | 5.2732             | 50/50 | 5.2732         |
| 246845 | 05SMG3       | 3.3060             | 50/50 | 3.3060         |
| 246846 | 05SMG4       | 5.1913             | 50/50 | 5.1913         |
| 246847 | 05SMG5       | 2.0219             | 50/50 | 2.0219         |
| 247284 | 05LEESVG     | 1.0979             | 50/50 | 1.0979         |
| 925661 | AC1-042 C    | 1.6528             | 50/50 | 1.6528         |
| 925662 | AC1-042 E    | 2.6967             | 50/50 | 2.6967         |
| 925997 | AC1-075 E    | 1.0121             | Adder | 1.19           |
| 926024 | AC1-080 E    | 0.3358             | Adder | 0.4            |
| 926051 | AC1-083 C O1 | 4.8651             | 50/50 | 4.8651         |
| 926052 | AC1-083 E O1 | 7.9379             | 50/50 | 7.9379         |
| 926521 | AC1-123 C O1 | 3.6473             | 50/50 | 3.6473         |
| 926522 | AC1-123 E O1 | 10.8777            | 50/50 | 10.8777        |
| 926645 | AC1-145 C    | 0.3104             | 50/50 | 0.3104         |
| 926646 | AC1-145 E    | 1.7657             | 50/50 | 1.7657         |
| 933941 | AD1-017 C    | 0.9730             | 50/50 | 0.9730         |
| 933942 | AD1-017 E    | 1.5876             | 50/50 | 1.5876         |
| 938451 | AE1-064 C    | 9.5344             | 50/50 | 9.5344         |
| 938452 | AE1-064 E    | 4.9301             | 50/50 | 4.9301         |
| 939011 | AE1-130 C    | 3.6885             | Adder | 4.34           |
| 939012 | AE1-130 E    | 1.8476             | Adder | 2.17           |
| 939941 | AE1-230 C    | 0.7456             | 50/50 | 0.7456         |
| 939942 | AE1-230 E    | 1.3256             | 50/50 | 1.3256         |
| 940081 | AE1-250 C    | 7.2262             | Adder | 8.5            |
| 940082 | AE1-250 E    | 4.8175             | Adder | 5.67           |
| 941801 | AE2-185 C    | 3.7282             | 50/50 | 3.7282         |
| 941802 | AE2-185 E    | 2.4854             | 50/50 | 2.4854         |
| 941821 | AE2-187 C    | 3.7282             | 50/50 | 3.7282         |
| 941822 | AE2-187 E    | 1.6570             | 50/50 | 1.6570         |
| 942671 | AE2-283 C    | 4.1010             | 50/50 | 4.1010         |
| 942672 | AE2-283 E    | 2.1540             | 50/50 | 2.1540         |
| 942751 | AE2-291 C    | 3.4203             | Adder | 4.02           |
| 942752 | AE2-291 E    | 2.2802             | Adder | 2.68           |
| 942761 | AE2-292 C O1 | 4.2586             | Adder | 5.01           |
| 942762 | AE2-292 E O1 | 2.8391             | Adder | 3.34           |
| 945081 | AF1-173      | 1.4447             | 50/50 | 1.4447         |
| 961121 | AF2-403      | 0.8285             | 50/50 | 0.8285         |
| 963601 | AG1-209 C    | 0.2900             | 50/50 | 0.2900         |
| 963602 | AG1-209 E    | 0.4350             | 50/50 | 0.4350         |
| 964141 | AG1-275 C    | 1.2427             | 50/50 | 1.2427         |

| Bus #   | Bus          | Gendeliv MW Impact | Type                  | Full MW Impact |
|---------|--------------|--------------------|-----------------------|----------------|
| 964142  | AG1-275 E    | 0.8285             | 50/50                 | 0.8285         |
| 964151  | AG1-276 C    | 1.2427             | 50/50                 | 1.2427         |
| 964152  | AG1-276 E    | 0.8285             | 50/50                 | 0.8285         |
| 964251  | AG1-286 C    | 0.6214             | 50/50                 | 0.6214         |
| 964252  | AG1-286 E    | 0.4142             | 50/50                 | 0.4142         |
| 964531  | AG1-316 C O1 | 49.4419            | 50/50                 | 49.4419        |
| 964532  | AG1-316 E O1 | 12.3605            | 50/50                 | 12.3605        |
| 966253  | AG1-494 BAT  | 2.2424             | Merchant Transmission | 2.2424         |
| 966691  | AG1-539 C    | 0.9479             | Adder                 | 2.1            |
| 966692  | AG1-539 E    | 1.2737             | Adder                 | 2.83           |
| 966761  | AG1-547 C    | 3.3698             | 50/50                 | 3.3698         |
| 966762  | AG1-547 E    | 1.8082             | 50/50                 | 1.8082         |
| CPLE    | CPLE         | 0.6825             | Confirmed LTF         | 0.6825         |
| NY      | NY           | 0.0476             | Confirmed LTF         | 0.0476         |
| PRAIRIE | PRAIRIE      | 0.1627             | Confirmed LTF         | 0.1627         |
| TVA     | TVA          | 0.0602             | Confirmed LTF         | 0.0602         |
| O-066   | O-066        | 0.5115             | Confirmed LTF         | 0.5115         |
| CBM-S2  | CBM-S2       | 6.4310             | Confirmed LTF         | 6.4310         |
| CBM-S1  | CBM-S1       | 0.0038             | Confirmed LTF         | 0.0038         |
| G-007   | G-007        | 0.0788             | Confirmed LTF         | 0.0788         |
| GIBSON  | GIBSON       | 0.0682             | Confirmed LTF         | 0.0682         |
| BLUEG   | BLUEG        | 0.2448             | Confirmed LTF         | 0.2448         |
| TRIMBLE | TRIMBLE      | 0.0801             | Confirmed LTF         | 0.0801         |
| LAGN    | LAGN         | 0.0962             | Confirmed LTF         | 0.0962         |

## 11.6.8 Index 8

| ID        | FROM BUS# | FROM BUS  | FRO M BUS AREA | TO BUS# | TO BUS    | TO BUS ARE A | CK T ID | CONT NAME                        | Type | Ratin g MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC D C | MW IMPAC T |
|-----------|-----------|-----------|----------------|---------|-----------|--------------|---------|----------------------------------|------|-------------|------------------------|-------------------------|--------|------------|
| 161949054 | 242687    | 05JOHNM T | AEP            | 242734  | 05NEWLD N | AEP          | 1       | AEP_P2-2_#13260_05SKIMM R 69.0_1 | bus  | 240.0       | 150.42                 | 158.18                  | DC     | 18.61      |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.1693             | 50/50 | 1.1693         |
| 246844 | 05SMG2       | 3.1786             | 50/50 | 3.1786         |
| 246845 | 05SMG3       | 1.9928             | 50/50 | 1.9928         |
| 246846 | 05SMG4       | 3.1292             | 50/50 | 3.1292         |
| 246847 | 05SMG5       | 1.2187             | 50/50 | 1.2187         |
| 247284 | 05LEESVG     | 1.8564             | 50/50 | 1.8564         |
| 315156 | 1HALLBR1     | 2.9223             | 50/50 | 2.9223         |
| 316118 | AC1-105 C    | 1.8331             | Adder | 2.16           |
| 316123 | AC1-075 C    | 1.2269             | 50/50 | 1.2269         |
| 925661 | AC1-042 C    | 5.9959             | 50/50 | 5.9959         |
| 925662 | AC1-042 E    | 9.7827             | 50/50 | 9.7827         |
| 925997 | AC1-075 E    | 4.4060             | 50/50 | 4.4060         |
| 926023 | AC1-080 C    | 0.4100             | 50/50 | 0.4100         |
| 926024 | AC1-080 E    | 1.4619             | 50/50 | 1.4619         |
| 926051 | AC1-083 C O1 | 2.5478             | Adder | 3.0            |
| 926052 | AC1-083 E O1 | 4.1570             | Adder | 4.89           |
| 926274 | AC1-105 E    | 0.9006             | Adder | 1.06           |
| 926645 | AC1-145 C    | 1.1261             | 50/50 | 1.1261         |
| 926646 | AC1-145 E    | 6.4053             | 50/50 | 6.4053         |
| 927261 | AC1-222 C    | 1.9259             | Adder | 2.27           |
| 927262 | AC1-222 E    | 1.8334             | Adder | 2.16           |
| 933941 | AD1-017 C    | 0.5096             | Adder | 0.6            |
| 933942 | AD1-017 E    | 0.8314             | Adder | 0.98           |
| 934311 | AD1-055 C    | 1.3372             | Adder | 1.57           |
| 934312 | AD1-055 E    | 0.3448             | Adder | 0.41           |
| 938451 | AE1-064 C    | 4.7778             | Adder | 5.62           |
| 938452 | AE1-064 E    | 2.4705             | Adder | 2.91           |
| 939941 | AE1-230 C    | 2.7049             | 50/50 | 2.7049         |
| 939942 | AE1-230 E    | 4.8087             | 50/50 | 4.8087         |
| 941801 | AE2-185 C    | 13.5245            | 50/50 | 13.5245        |
| 941802 | AE2-185 E    | 9.0163             | 50/50 | 9.0163         |
| 941821 | AE2-187 C    | 13.5245            | 50/50 | 13.5245        |
| 941822 | AE2-187 E    | 6.0109             | 50/50 | 6.0109         |
| 942671 | AE2-283 C    | 14.8769            | 50/50 | 14.8769        |
| 942672 | AE2-283 E    | 7.8141             | 50/50 | 7.8141         |
| 942751 | AE2-291 C    | 15.1898            | 50/50 | 15.1898        |
| 942752 | AE2-291 E    | 10.1266            | 50/50 | 10.1266        |
| 942761 | AE2-292 C O1 | 18.9128            | 50/50 | 18.9128        |
| 942762 | AE2-292 E O1 | 12.6086            | 50/50 | 12.6086        |
| 943901 | AF1-058 C    | 0.7117             | Adder | 0.84           |
| 943902 | AF1-058 E    | 0.4744             | Adder | 0.56           |

| Bus #      | Bus          | Gendeliv MW Impact | Type                  | Full MW Impact |
|------------|--------------|--------------------|-----------------------|----------------|
| 945081     | AF1-173      | 5.2407             | 50/50                 | 5.2407         |
| 960061     | AF2-297 C    | 2.8466             | Adder                 | 3.35           |
| 960062     | AF2-297 E    | 1.8977             | Adder                 | 2.23           |
| 961121     | AF2-403      | 3.0054             | 50/50                 | 3.0054         |
| 962441     | AG1-093 C O1 | 2.5908             | Adder                 | 5.75           |
| 962442     | AG1-093 E O1 | 0.7885             | Adder                 | 1.75           |
| 963601     | AG1-209 C    | 1.0519             | 50/50                 | 1.0519         |
| 963602     | AG1-209 E    | 1.5779             | 50/50                 | 1.5779         |
| 964141     | AG1-275 C    | 4.5082             | 50/50                 | 4.5082         |
| 964142     | AG1-275 E    | 3.0054             | 50/50                 | 3.0054         |
| 964151     | AG1-276 C    | 4.5082             | 50/50                 | 4.5082         |
| 964152     | AG1-276 E    | 3.0054             | 50/50                 | 3.0054         |
| 964251     | AG1-286 C    | 3.3401             | 50/50                 | 3.3401         |
| 964252     | AG1-286 E    | 2.2268             | 50/50                 | 2.2268         |
| 964261     | AG1-287 C    | 0.2829             | Adder                 | 0.63           |
| 964262     | AG1-287 E    | 0.1886             | Adder                 | 0.42           |
| 964471     | AG1-310 C    | 1.4850             | 50/50                 | 1.4850         |
| 964472     | AG1-310 E    | 0.7314             | 50/50                 | 0.7314         |
| 964533     | AG1-316 BAT  | 1.6207             | Merchant Transmission | 1.6207         |
| 966253     | AG1-494 BAT  | 2.5943             | Merchant Transmission | 2.5943         |
| 966691     | AG1-539 C    | 7.9424             | 50/50                 | 7.9424         |
| 966692     | AG1-539 E    | 10.6726            | 50/50                 | 10.6726        |
| 966761     | AG1-547 C    | 12.2246            | 50/50                 | 12.2246        |
| 966762     | AG1-547 E    | 6.5594             | 50/50                 | 6.5594         |
| CPLE       | CPLE         | 0.9111             | Confirmed LTF         | 0.9111         |
| NY         | NY           | 0.0210             | Confirmed LTF         | 0.0210         |
| PRAIRIE    | PRAIRIE      | 0.4288             | Confirmed LTF         | 0.4288         |
| O-066      | O-066        | 0.0673             | Confirmed LTF         | 0.0673         |
| CBM-S2     | CBM-S2       | 8.1014             | Confirmed LTF         | 8.1014         |
| COTTONWOOD | COTTONWOOD   | 0.0105             | Confirmed LTF         | 0.0105         |
| G-007      | G-007        | 0.0084             | Confirmed LTF         | 0.0084         |
| GIBSON     | GIBSON       | 0.1381             | Confirmed LTF         | 0.1381         |
| BLUEG      | BLUEG        | 0.4826             | Confirmed LTF         | 0.4826         |
| TRIMBLE    | TRIMBLE      | 0.1564             | Confirmed LTF         | 0.1564         |

## 11.6.9 Index 9

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                      | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|----------|-------------|--------|--------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 161949049 | 242741    | 05OTTER  | AEP           | 242687  | 05JOHNMT | AEP         | 1      | AEP_P2-2_#13260_05SKIMMR69.0_1 | bus  | 245.0      | 150.88                | 158.48                 | DC    | 18.61     |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.1693             | 50/50 | 1.1693         |
| 246844 | 05SMG2       | 3.1786             | 50/50 | 3.1786         |
| 246845 | 05SMG3       | 1.9928             | 50/50 | 1.9928         |
| 246846 | 05SMG4       | 3.1292             | 50/50 | 3.1292         |
| 246847 | 05SMG5       | 1.2187             | 50/50 | 1.2187         |
| 247284 | 05LEESVG     | 1.8564             | 50/50 | 1.8564         |
| 315156 | 1HALLBR1     | 2.9223             | 50/50 | 2.9223         |
| 316118 | AC1-105 C    | 1.8331             | Adder | 2.16           |
| 316123 | AC1-075 C    | 1.2269             | 50/50 | 1.2269         |
| 925661 | AC1-042 C    | 5.9959             | 50/50 | 5.9959         |
| 925662 | AC1-042 E    | 9.7827             | 50/50 | 9.7827         |
| 925997 | AC1-075 E    | 4.4060             | 50/50 | 4.4060         |
| 926023 | AC1-080 C    | 0.4100             | 50/50 | 0.4100         |
| 926024 | AC1-080 E    | 1.4619             | 50/50 | 1.4619         |
| 926051 | AC1-083 C O1 | 2.5478             | Adder | 3.0            |
| 926052 | AC1-083 E O1 | 4.1570             | Adder | 4.89           |
| 926274 | AC1-105 E    | 0.9006             | Adder | 1.06           |
| 926645 | AC1-145 C    | 1.1261             | 50/50 | 1.1261         |
| 926646 | AC1-145 E    | 6.4053             | 50/50 | 6.4053         |
| 927261 | AC1-222 C    | 1.9259             | Adder | 2.27           |
| 927262 | AC1-222 E    | 1.8334             | Adder | 2.16           |
| 933941 | AD1-017 C    | 0.5096             | Adder | 0.6            |
| 933942 | AD1-017 E    | 0.8314             | Adder | 0.98           |
| 934311 | AD1-055 C    | 1.3372             | Adder | 1.57           |
| 934312 | AD1-055 E    | 0.3448             | Adder | 0.41           |
| 938451 | AE1-064 C    | 4.7778             | Adder | 5.62           |
| 938452 | AE1-064 E    | 2.4705             | Adder | 2.91           |
| 939941 | AE1-230 C    | 2.7049             | 50/50 | 2.7049         |
| 939942 | AE1-230 E    | 4.8087             | 50/50 | 4.8087         |
| 940081 | AE1-250 C    | 4.5831             | Adder | 5.39           |
| 940082 | AE1-250 E    | 3.0554             | Adder | 3.59           |
| 941801 | AE2-185 C    | 13.5245            | 50/50 | 13.5245        |
| 941802 | AE2-185 E    | 9.0163             | 50/50 | 9.0163         |
| 941821 | AE2-187 C    | 13.5245            | 50/50 | 13.5245        |
| 941822 | AE2-187 E    | 6.0109             | 50/50 | 6.0109         |
| 942671 | AE2-283 C    | 14.8769            | 50/50 | 14.8769        |
| 942672 | AE2-283 E    | 7.8141             | 50/50 | 7.8141         |
| 942751 | AE2-291 C    | 15.1898            | 50/50 | 15.1898        |
| 942752 | AE2-291 E    | 10.1266            | 50/50 | 10.1266        |
| 942761 | AE2-292 C O1 | 18.9128            | 50/50 | 18.9128        |
| 942762 | AE2-292 E O1 | 12.6086            | 50/50 | 12.6086        |

| Bus #      | Bus          | Gendeliv MW Impact | Type                  | Full MW Impact |
|------------|--------------|--------------------|-----------------------|----------------|
| 943901     | AF1-058 C    | 0.7117             | Adder                 | 0.84           |
| 943902     | AF1-058 E    | 0.4744             | Adder                 | 0.56           |
| 945081     | AF1-173      | 5.2407             | 50/50                 | 5.2407         |
| 960061     | AF2-297 C    | 2.8466             | Adder                 | 3.35           |
| 960062     | AF2-297 E    | 1.8977             | Adder                 | 2.23           |
| 961121     | AF2-403      | 3.0054             | 50/50                 | 3.0054         |
| 962441     | AG1-093 C O1 | 2.5908             | Adder                 | 5.75           |
| 962442     | AG1-093 E O1 | 0.7885             | Adder                 | 1.75           |
| 963601     | AG1-209 C    | 1.0519             | 50/50                 | 1.0519         |
| 963602     | AG1-209 E    | 1.5779             | 50/50                 | 1.5779         |
| 964141     | AG1-275 C    | 4.5082             | 50/50                 | 4.5082         |
| 964142     | AG1-275 E    | 3.0054             | 50/50                 | 3.0054         |
| 964151     | AG1-276 C    | 4.5082             | 50/50                 | 4.5082         |
| 964152     | AG1-276 E    | 3.0054             | 50/50                 | 3.0054         |
| 964261     | AG1-287 C    | 0.2829             | Adder                 | 0.63           |
| 964262     | AG1-287 E    | 0.1886             | Adder                 | 0.42           |
| 964471     | AG1-310 C    | 1.4850             | 50/50                 | 1.4850         |
| 964472     | AG1-310 E    | 0.7314             | 50/50                 | 0.7314         |
| 964533     | AG1-316 BAT  | 1.6207             | Merchant Transmission | 1.6207         |
| 966253     | AG1-494 BAT  | 2.5943             | Merchant Transmission | 2.5943         |
| 966691     | AG1-539 C    | 7.9424             | 50/50                 | 7.9424         |
| 966692     | AG1-539 E    | 10.6726            | 50/50                 | 10.6726        |
| 966761     | AG1-547 C    | 12.2246            | 50/50                 | 12.2246        |
| 966762     | AG1-547 E    | 6.5594             | 50/50                 | 6.5594         |
| CPL        | CPL          | 0.9111             | Confirmed LTF         | 0.9111         |
| NY         | NY           | 0.0210             | Confirmed LTF         | 0.0210         |
| PRAIRIE    | PRAIRIE      | 0.4288             | Confirmed LTF         | 0.4288         |
| O-066      | O-066        | 0.0673             | Confirmed LTF         | 0.0673         |
| CBM-S2     | CBM-S2       | 8.1014             | Confirmed LTF         | 8.1014         |
| COTTONWOOD | COTTONWOOD   | 0.0105             | Confirmed LTF         | 0.0105         |
| G-007      | G-007        | 0.0084             | Confirmed LTF         | 0.0084         |
| GIBSON     | GIBSON       | 0.1381             | Confirmed LTF         | 0.1381         |
| BLUEG      | BLUEG        | 0.4826             | Confirmed LTF         | 0.4826         |
| TRIMBLE    | TRIMBLE      | 0.1564             | Confirmed LTF         | 0.1564         |

## 11.6.10 Index 10

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS  | TO BUS AREA | CKT ID | CONT NAME | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|---------|-------------|--------|-----------|--------|------------|-----------------------|------------------------|-------|-----------|
| 163932802 | 314667    | 4ALTVSTA | DVP           | 242741  | 05OTTER | AEP         | 1      | Base Case | single | 167.0      | 148.21                | 152.33                 | DC    | 6.89      |

| Bus #      | Bus          | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|--------------|--------------------|---------------|----------------|
| 246843     | 05SMG1       | 1.0628             | 80/20         | 1.0628         |
| 246844     | 05SMG2       | 2.8890             | 80/20         | 2.8890         |
| 246845     | 05SMG3       | 1.8113             | 80/20         | 1.8113         |
| 246846     | 05SMG4       | 2.8441             | 80/20         | 2.8441         |
| 246847     | 05SMG5       | 1.1077             | 80/20         | 1.1077         |
| 247284     | 05LEESVG     | 1.6819             | 80/20         | 1.6819         |
| 315156     | 1HALLBR1     | 2.5326             | 80/20         | 2.5326         |
| 315266     | 1PLYWOOD A   | 0.3932             | 80/20         | 0.3932         |
| 316118     | AC1-105 C    | 1.8744             | 80/20         | 1.8744         |
| 316123     | AC1-075 C    | 1.0637             | 80/20         | 1.0637         |
| 925661     | AC1-042 C    | 5.4272             | 80/20         | 5.4272         |
| 926023     | AC1-080 C    | 0.3555             | 80/20         | 0.3555         |
| 926051     | AC1-083 C O1 | 2.7208             | 80/20         | 2.7208         |
| 926645     | AC1-145 C    | 1.0193             | 80/20         | 1.0193         |
| 927261     | AC1-222 C    | 1.9669             | 80/20         | 1.9669         |
| 933941     | AD1-017 C    | 0.5442             | 80/20         | 0.5442         |
| 934311     | AD1-055 C    | 1.3657             | 80/20         | 1.3657         |
| 938451     | AE1-064 C    | 5.1128             | 80/20         | 5.1128         |
| 939941     | AE1-230 C    | 2.4484             | 80/20         | 2.4484         |
| 940081     | AE1-250 C    | 4.8870             | 80/20         | 4.8870         |
| 941801     | AE2-185 C    | 12.2418            | 80/20         | 12.2418        |
| 941821     | AE2-187 C    | 12.2418            | 80/20         | 12.2418        |
| 942671     | AE2-283 C    | 13.4660            | 80/20         | 13.4660        |
| 942751     | AE2-291 C    | 13.1678            | 80/20         | 13.1678        |
| 942761     | AE2-292 C O1 | 16.3952            | 80/20         | 16.3952        |
| 943901     | AF1-058 C    | 0.7274             | 80/20         | 0.7274         |
| 945081     | AF1-173      | 4.7437             | 80/20         | 4.7437         |
| 960061     | AF2-297 C    | 2.9098             | 80/20         | 2.9098         |
| 961121     | AF2-403      | 2.7204             | 80/20         | 2.7204         |
| 962441     | AG1-093 C O1 | 4.9984             | 80/20         | 4.9984         |
| 963601     | AG1-209 C    | 0.9521             | 80/20         | 0.9521         |
| 964141     | AG1-275 C    | 4.0806             | 80/20         | 4.0806         |
| 964151     | AG1-276 C    | 4.0806             | 80/20         | 4.0806         |
| 964261     | AG1-287 C    | 0.5456             | 80/20         | 0.5456         |
| 964471     | AG1-310 C    | 1.2888             | 80/20         | 1.2888         |
| 966691     | AG1-539 C    | 6.8851             | 80/20         | 6.8851         |
| 966761     | AG1-547 C    | 11.0652            | 80/20         | 11.0652        |
| CPL        | CPL          | 0.8026             | Confirmed LTF | 0.8026         |
| NY         | NY           | 0.0194             | Confirmed LTF | 0.0194         |
| PRAIRIE    | PRAIRIE      | 0.3771             | Confirmed LTF | 0.3771         |
| CBM-S2     | CBM-S2       | 7.1514             | Confirmed LTF | 7.1514         |
| COTTONWOOD | COTTONWOOD   | 0.0084             | Confirmed LTF | 0.0084         |

| <b>Bus #</b>   | <b>Bus</b> | <b>Gendeliv MW Impact</b> | <b>Type</b>   | <b>Full MW Impact</b> |
|----------------|------------|---------------------------|---------------|-----------------------|
| <b>GIBSON</b>  | GIBSON     | 0.1212                    | Confirmed LTF | 0.1212                |
| <b>BLUEG</b>   | BLUEG      | 0.4236                    | Confirmed LTF | 0.4236                |
| <b>TRIMBLE</b> | TRIMBLE    | 0.1375                    | Confirmed LTF | 0.1375                |

## 11.6.11 Index 11

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                     | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|----------|-------------|--------|-------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 164139957 | 314667    | 4ALTVSTA | DVP           | 314666  | 3ALTVSTA | DVP         | 2      | AEP_P2-2_#10292_05NEWLDN138_1 | bus  | 146.6      | 101.88                | 113.22                 | DC    | 16.62     |

| Bus #  | Bus          | Gendeliv MW Impact | Type                  | Full MW Impact |
|--------|--------------|--------------------|-----------------------|----------------|
| 247284 | 05LEESVG     | 1.3809             | 50/50                 | 1.3809         |
| 925661 | AC1-042 C    | 4.2551             | 50/50                 | 4.2551         |
| 925662 | AC1-042 E    | 6.9425             | 50/50                 | 6.9425         |
| 926051 | AC1-083 C O1 | 2.0730             | Adder                 | 2.44           |
| 926052 | AC1-083 E O1 | 3.3823             | Adder                 | 3.98           |
| 926522 | AC1-123 E O1 | 1.2579             | Adder                 | 1.48           |
| 926645 | AC1-145 C    | 0.7992             | 50/50                 | 0.7992         |
| 926646 | AC1-145 E    | 4.5457             | 50/50                 | 4.5457         |
| 927261 | AC1-222 C    | -1.6354            | Adder                 | -1.92          |
| 933941 | AD1-017 C    | 0.4146             | Adder                 | 0.49           |
| 933942 | AD1-017 E    | 0.6765             | Adder                 | 0.8            |
| 934311 | AD1-055 C    | -1.1355            | Adder                 | -1.34          |
| 938451 | AE1-064 C    | 4.3075             | Adder                 | 5.07           |
| 938452 | AE1-064 E    | 2.2274             | Adder                 | 2.62           |
| 939941 | AE1-230 C    | 1.9196             | 50/50                 | 1.9196         |
| 939942 | AE1-230 E    | 3.4126             | 50/50                 | 3.4126         |
| 941801 | AE2-185 C    | 9.5980             | 50/50                 | 9.5980         |
| 941802 | AE2-185 E    | 6.3986             | 50/50                 | 6.3986         |
| 941821 | AE2-187 C    | 9.5980             | 50/50                 | 9.5980         |
| 941822 | AE2-187 E    | 4.2658             | 50/50                 | 4.2658         |
| 942671 | AE2-283 C    | 10.5578            | 50/50                 | 10.5578        |
| 942672 | AE2-283 E    | 5.5455             | 50/50                 | 5.5455         |
| 943901 | AF1-058 C    | -0.5827            | Adder                 | -0.69          |
| 945081 | AF1-173      | 3.7192             | 50/50                 | 3.7192         |
| 961121 | AF2-403      | 2.1329             | 50/50                 | 2.1329         |
| 962443 | AG1-093 BAT  | 1.3486             | Merchant Transmission | 1.3486         |
| 963601 | AG1-209 C    | 0.7465             | 50/50                 | 0.7465         |
| 963602 | AG1-209 E    | 1.1198             | 50/50                 | 1.1198         |
| 964141 | AG1-275 C    | 3.1993             | 50/50                 | 3.1993         |
| 964142 | AG1-275 E    | 2.1329             | 50/50                 | 2.1329         |
| 964151 | AG1-276 C    | 3.1993             | 50/50                 | 3.1993         |
| 964152 | AG1-276 E    | 2.1329             | 50/50                 | 2.1329         |
| 964251 | AG1-286 C    | 1.5997             | 50/50                 | 1.5997         |
| 964252 | AG1-286 E    | 1.0664             | 50/50                 | 1.0664         |
| 966693 | AG1-539 BAT  | 16.6215            | 50/50                 | 16.6215        |
| 966761 | AG1-547 C    | 8.6755             | 50/50                 | 8.6755         |
| 966762 | AG1-547 E    | 4.6550             | 50/50                 | 4.6550         |
| WEC    | WEC          | 0.0501             | Confirmed LTF         | 0.0501         |
| LGEE   | LGEE         | 0.1112             | Confirmed LTF         | 0.1112         |
| CBM-W2 | CBM-W2       | 1.0752             | Confirmed LTF         | 1.0752         |
| NY     | NY           | 0.0371             | Confirmed LTF         | 0.0371         |

| Bus #   | Bus     | Gendeliv MW Impact | Type          | Full MW Impact |
|---------|---------|--------------------|---------------|----------------|
| TVA     | TVA     | 0.1442             | Confirmed LTF | 0.1442         |
| O-066   | O-066   | 0.6057             | Confirmed LTF | 0.6057         |
| SIGE    | SIGE    | 0.0268             | Confirmed LTF | 0.0268         |
| CBM-S1  | CBM-S1  | 0.0441             | Confirmed LTF | 0.0441         |
| G-007   | G-007   | 0.0956             | Confirmed LTF | 0.0956         |
| HAMLET  | HAMLET  | 0.1559             | Confirmed LTF | 0.1559         |
| MEC     | MEC     | 0.2320             | Confirmed LTF | 0.2320         |
| LAGN    | LAGN    | 0.1593             | Confirmed LTF | 0.1593         |
| CATAWBA | CATAWBA | 0.0388             | Confirmed LTF | 0.0388         |
| CBM-W1  | CBM-W1  | 2.1591             | Confirmed LTF | 2.1591         |

## 11.6.12 Index 12

| ID        | FROM BUS# | FROM BUS     | FROM BUS AREA | TO BUS# | TO BUS       | TO BUS AREA | CKT ID | CONT NAME                   | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|--------------|---------------|---------|--------------|-------------|--------|-----------------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 169288342 | 314696    | 3SEEDGE HILL | DVP           | 314697  | 6SEEDGE HILL | DVP         | 1      | DVP_P1-3: 6SEEDGE HILL-TX#2 | single | 226.73     | 175.09                | 179.54                 | DC    | 10.09     |

| Bus #  | Bus                                | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|------------------------------------|--------------------|-------|----------------|
| 246843 | 05SMG1                             | 0.5805             | 80/20 | 0.5805         |
| 246844 | 05SMG2                             | 1.5779             | 80/20 | 1.5779         |
| 246845 | 05SMG3                             | 0.9892             | 80/20 | 0.9892         |
| 246846 | 05SMG4                             | 1.5534             | 80/20 | 1.5534         |
| 246847 | 05SMG5                             | 0.6050             | 80/20 | 0.6050         |
| 247284 | 05LEESVG                           | 0.7296             | 80/20 | 0.7296         |
| 313527 | AB2-043 C                          | 0.6460             | 80/20 | 0.6460         |
| 314429 | 3JTRSVLE                           | 0.2980             | 80/20 | 0.2980         |
| 314704 | 3LAWRENC                           | 0.1696             | 80/20 | 0.1696         |
| 315156 | 1HALLBR1                           | 1.3548             | 80/20 | 1.3548         |
| 315158 | 1KERR 1                            | 0.3699             | 80/20 | 0.3699         |
| 315159 | 1KERR 2                            | 1.0357             | 80/20 | 1.0357         |
| 315160 | 1KERR 3                            | 1.0357             | 80/20 | 1.0357         |
| 315161 | 1KERR 4                            | 1.0357             | 80/20 | 1.0357         |
| 315162 | 1KERR 5                            | 1.0357             | 80/20 | 1.0357         |
| 315163 | 1KERR 6                            | 1.0357             | 80/20 | 1.0357         |
| 315164 | 1KERR 7                            | 1.0357             | 80/20 | 1.0357         |
| 315266 | 1PLYWOOD A                         | 3.6058             | 80/20 | 3.6058         |
| 316118 | AC1-105 C                          | 17.1934            | 80/20 | 17.1934        |
| 316123 | AC1-075 C                          | 2.2966             | 80/20 | 2.2966         |
| 316129 | AC1-054 C                          | 4.6827             | 80/20 | 4.6827         |
| 316131 | AB2-060 C                          | 1.8286             | 80/20 | 1.8286         |
| 924301 | AB2-077 C O1 (Suspended)           | 2.6800             | 80/20 | 2.6800         |
| 924311 | AB2-078 C O1 (Suspended)           | 2.6800             | 80/20 | 2.6800         |
| 924321 | AB2-079 C O1 (Suspended)           | 2.6800             | 80/20 | 2.6800         |
| 925611 | AC1-036 C                          | 0.2218             | 80/20 | 0.2218         |
| 925661 | AC1-042 C                          | 2.1728             | 80/20 | 2.1728         |
| 926023 | AC1-080 C                          | 0.7675             | 80/20 | 0.7675         |
| 926645 | AC1-145 C                          | 0.4081             | 80/20 | 0.4081         |
| 927261 | AC1-222 C                          | 12.1290            | 80/20 | 12.1290        |
| 934311 | AD1-055 C                          | 8.4214             | 80/20 | 8.4214         |
| 935221 | AD1-157 C (Withdrawn : 01/26/2021) | 0.1446             | 80/20 | 0.1446         |
| 936265 | AD2-033 C                          | 13.5587            | 80/20 | 13.5587        |
| 936361 | AD2-046 C O1                       | 9.1138             | 80/20 | 9.1138         |
| 936485 | AD2-063 C                          | 17.6553            | 80/20 | 17.6553        |
| 938371 | AE1-056 C                          | 3.9510             | 80/20 | 3.9510         |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 939181 | AE1-148 C    | 9.0914             | 80/20 | 9.0914         |
| 939941 | AE1-230 C    | 0.9802             | 80/20 | 0.9802         |
| 940661 | AE2-053 O1   | 3.3672             | 80/20 | 3.3672         |
| 941801 | AE2-185 C    | 4.9010             | 80/20 | 4.9010         |
| 941821 | AE2-187 C    | 4.9010             | 80/20 | 4.9010         |
| 942451 | AE2-258      | 3.0548             | 80/20 | 3.0548         |
| 942461 | AE2-259 C O1 | 3.4716             | 80/20 | 3.4716         |
| 942671 | AE2-283 C    | 5.3911             | 80/20 | 5.3911         |
| 942751 | AE2-291 C    | 19.2878            | 80/20 | 19.2878        |
| 942761 | AE2-292 C O1 | 24.0152            | 80/20 | 24.0152        |
| 943901 | AF1-058 C    | 6.8587             | 80/20 | 6.8587         |
| 943911 | AF1-059      | 14.0170            | 80/20 | 14.0170        |
| 945081 | AF1-173      | 1.8992             | 80/20 | 1.8992         |
| 946301 | AF1-294 C    | 3.0108             | 80/20 | 3.0108         |
| 958211 | AF2-115 C    | 1.7711             | 80/20 | 1.7711         |
| 958801 | AF2-171 C    | 10.7010            | 80/20 | 10.7010        |
| 959311 | AF2-222 C    | 15.7000            | 80/20 | 15.7000        |
| 960061 | AF2-297 C    | 27.4349            | 80/20 | 27.4349        |
| 961121 | AF2-403      | 1.0891             | 80/20 | 1.0891         |
| 961791 | AG1-021 C    | 1.4168             | 80/20 | 1.4168         |
| 961891 | AG1-030 C    | 12.0555            | 80/20 | 12.0555        |
| 962041 | AG1-048 C    | 8.8552             | 80/20 | 8.8552         |
| 962441 | AG1-093 C O1 | 45.8491            | 80/20 | 45.8491        |
| 963171 | AG1-166 C    | 1.4168             | 80/20 | 1.4168         |
| 963181 | AG1-167 C    | 1.4168             | 80/20 | 1.4168         |
| 963191 | AG1-168 C    | 1.4168             | 80/20 | 1.4168         |
| 963201 | AG1-169 C    | 1.4168             | 80/20 | 1.4168         |
| 963211 | AG1-170 C    | 1.4168             | 80/20 | 1.4168         |
| 963301 | AG1-179 C    | 3.7689             | 80/20 | 3.7689         |
| 963311 | AG1-180      | 1.8363             | 80/20 | 1.8363         |
| 963321 | AG1-181 C O1 | 17.3096            | 80/20 | 17.3096        |
| 963361 | AG1-185 O1   | 8.3749             | 80/20 | 8.3749         |
| 963601 | AG1-209 C    | 0.3812             | 80/20 | 0.3812         |
| 963641 | AG1-215 C    | 0.6612             | 80/20 | 0.6612         |
| 964111 | AG1-272 C    | 2.5210             | 80/20 | 2.5210         |
| 964121 | AG1-273 C    | 2.5210             | 80/20 | 2.5210         |
| 964131 | AG1-274 C    | 2.5210             | 80/20 | 2.5210         |
| 964141 | AG1-275 C    | 1.6337             | 80/20 | 1.6337         |
| 964151 | AG1-276 C    | 1.6337             | 80/20 | 1.6337         |
| 964241 | AG1-285 C O1 | 15.1590            | 80/20 | 15.1590        |
| 964251 | AG1-286 C    | 0.6223             | 80/20 | 0.6223         |
| 964261 | AG1-287 C    | 5.1440             | 80/20 | 5.1440         |
| 964471 | AG1-310 C    | 6.8684             | 80/20 | 6.8684         |
| 964791 | AG1-342 C    | 10.6934            | 80/20 | 10.6934        |
| 964821 | AG1-345 C    | 0.5693             | 80/20 | 0.5693         |
| 965191 | AG1-384 C    | 2.5210             | 80/20 | 2.5210         |
| 965281 | AG1-393 C    | 1.4168             | 80/20 | 1.4168         |
| 965451 | AG1-413 C O1 | 5.8922             | 80/20 | 5.8922         |
| 965591 | AG1-427 C    | 14.2996            | 80/20 | 14.2996        |
| 965601 | AG1-428 C O1 | 3.1464             | 80/20 | 3.1464         |
| 965641 | AG1-432 C O1 | 6.9432             | 80/20 | 6.9432         |
| 965721 | AG1-440 C    | 6.1934             | 80/20 | 6.1934         |

| Bus #      | Bus                                         | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|---------------------------------------------|--------------------|---------------|----------------|
| 965731     | AG1-441 C                                   | 6.1934             | 80/20         | 6.1934         |
| 965771     | AG1-445                                     | 3.5784             | 80/20         | 3.5784         |
| 965781     | AG1-446                                     | 3.5784             | 80/20         | 3.5784         |
| 965831     | AG1-451                                     | 1.1572             | 80/20         | 1.1572         |
| 966691     | AG1-539 C                                   | 10.0851            | 80/20         | 10.0851        |
| 966751     | AG1-546 C                                   | 9.6117             | 80/20         | 9.6117         |
| 966761     | AG1-547 C                                   | 4.4300             | 80/20         | 4.4300         |
| 966861     | AG1-557 C O1<br>(Withdrawn :<br>12/14/2020) | 0.6943             | 80/20         | 0.6943         |
| WEC        | WEC                                         | 0.0164             | Confirmed LTF | 0.0164         |
| LGEE       | LGEE                                        | 0.0509             | Confirmed LTF | 0.0509         |
| CALDERWOOD | CALDERWOOD                                  | 0.1387             | Confirmed LTF | 0.1387         |
| NY         | NY                                          | 0.0547             | Confirmed LTF | 0.0547         |
| PRAIRIE    | PRAIRIE                                     | 0.0827             | Confirmed LTF | 0.0827         |
| SIGE       | SIGE                                        | 0.0181             | Confirmed LTF | 0.0181         |
| CHEOAH     | CHEOAH                                      | 0.1496             | Confirmed LTF | 0.1496         |
| COTTONWOOD | COTTONWOOD                                  | 0.4284             | Confirmed LTF | 0.4284         |
| HAMLET     | HAMLET                                      | 0.6809             | Confirmed LTF | 0.6809         |
| CATAWBA    | CATAWBA                                     | 0.3041             | Confirmed LTF | 0.3041         |
| CBM-W1     | CBM-W1                                      | 0.7290             | Confirmed LTF | 0.7290         |

### 11.6.13 Index 13

| ID        | FROM BUS# | FROM BUS     | FROM BUS AREA | TO BUS# | TO BUS       | TO BUS AREA | CKT ID | CONT NAME                   | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|--------------|---------------|---------|--------------|-------------|--------|-----------------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 169288358 | 314696    | 3SEEDGE HILL | DVP           | 314697  | 6SEEDGE HILL | DVP         | 2      | DVP_P1-3: 6SEEDGE HILL-TX#1 | single | 256.06     | 154.57                | 158.5                  | DC    | 10.06     |

| Bus #  | Bus                                | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|------------------------------------|--------------------|-------|----------------|
| 246843 | 05SMG1                             | 0.5788             | 80/20 | 0.5788         |
| 246844 | 05SMG2                             | 1.5733             | 80/20 | 1.5733         |
| 246845 | 05SMG3                             | 0.9864             | 80/20 | 0.9864         |
| 246846 | 05SMG4                             | 1.5489             | 80/20 | 1.5489         |
| 246847 | 05SMG5                             | 0.6032             | 80/20 | 0.6032         |
| 247284 | 05LEESVG                           | 0.7274             | 80/20 | 0.7274         |
| 313527 | AB2-043 C                          | 0.6441             | 80/20 | 0.6441         |
| 314429 | 3JTRSVLE                           | 0.2972             | 80/20 | 0.2972         |
| 314704 | 3LAWRENC                           | 0.1691             | 80/20 | 0.1691         |
| 315156 | 1HALLBR1                           | 1.3508             | 80/20 | 1.3508         |
| 315158 | 1KERR 1                            | 0.3688             | 80/20 | 0.3688         |
| 315159 | 1KERR 2                            | 1.0326             | 80/20 | 1.0326         |
| 315160 | 1KERR 3                            | 1.0326             | 80/20 | 1.0326         |
| 315161 | 1KERR 4                            | 1.0326             | 80/20 | 1.0326         |
| 315162 | 1KERR 5                            | 1.0326             | 80/20 | 1.0326         |
| 315163 | 1KERR 6                            | 1.0326             | 80/20 | 1.0326         |
| 315164 | 1KERR 7                            | 1.0326             | 80/20 | 1.0326         |
| 315266 | 1PLYWOOD A                         | 3.5951             | 80/20 | 3.5951         |
| 316118 | AC1-105 C                          | 17.1420            | 80/20 | 17.1420        |
| 316123 | AC1-075 C                          | 2.2897             | 80/20 | 2.2897         |
| 316129 | AC1-054 C                          | 4.6689             | 80/20 | 4.6689         |
| 316131 | AB2-060 C                          | 1.8231             | 80/20 | 1.8231         |
| 924301 | AB2-077 C O1 (Suspended)           | 2.6719             | 80/20 | 2.6719         |
| 924311 | AB2-078 C O1 (Suspended)           | 2.6719             | 80/20 | 2.6719         |
| 924321 | AB2-079 C O1 (Suspended)           | 2.6719             | 80/20 | 2.6719         |
| 925611 | AC1-036 C                          | 0.2212             | 80/20 | 0.2212         |
| 925661 | AC1-042 C                          | 2.1663             | 80/20 | 2.1663         |
| 926023 | AC1-080 C                          | 0.7652             | 80/20 | 0.7652         |
| 926645 | AC1-145 C                          | 0.4069             | 80/20 | 0.4069         |
| 927261 | AC1-222 C                          | 12.0926            | 80/20 | 12.0926        |
| 934311 | AD1-055 C                          | 8.3962             | 80/20 | 8.3962         |
| 935221 | AD1-157 C (Withdrawn : 01/26/2021) | 0.1442             | 80/20 | 0.1442         |
| 936265 | AD2-033 C                          | 13.5182            | 80/20 | 13.5182        |
| 936361 | AD2-046 C O1                       | 9.0864             | 80/20 | 9.0864         |
| 936485 | AD2-063 C                          | 17.6022            | 80/20 | 17.6022        |
| 938371 | AE1-056 C                          | 3.9394             | 80/20 | 3.9394         |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 939181 | AE1-148 C    | 9.0639             | 80/20 | 9.0639         |
| 939941 | AE1-230 C    | 0.9773             | 80/20 | 0.9773         |
| 940661 | AE2-053 O1   | 3.3570             | 80/20 | 3.3570         |
| 941801 | AE2-185 C    | 4.8863             | 80/20 | 4.8863         |
| 941821 | AE2-187 C    | 4.8863             | 80/20 | 4.8863         |
| 942451 | AE2-258      | 3.0456             | 80/20 | 3.0456         |
| 942461 | AE2-259 C O1 | 3.4614             | 80/20 | 3.4614         |
| 942671 | AE2-283 C    | 5.3749             | 80/20 | 5.3749         |
| 942751 | AE2-291 C    | 19.2303            | 80/20 | 19.2303        |
| 942761 | AE2-292 C O1 | 23.9436            | 80/20 | 23.9436        |
| 943901 | AF1-058 C    | 6.8382             | 80/20 | 6.8382         |
| 943911 | AF1-059      | 13.9753            | 80/20 | 13.9753        |
| 945081 | AF1-173      | 1.8934             | 80/20 | 1.8934         |
| 946301 | AF1-294 C    | 3.0019             | 80/20 | 3.0019         |
| 958211 | AF2-115 C    | 1.7658             | 80/20 | 1.7658         |
| 958801 | AF2-171 C    | 10.6686            | 80/20 | 10.6686        |
| 959311 | AF2-222 C    | 15.6530            | 80/20 | 15.6530        |
| 960061 | AF2-297 C    | 27.3528            | 80/20 | 27.3528        |
| 961121 | AF2-403      | 1.0858             | 80/20 | 1.0858         |
| 961791 | AG1-021 C    | 1.4126             | 80/20 | 1.4126         |
| 961891 | AG1-030 C    | 12.0195            | 80/20 | 12.0195        |
| 962041 | AG1-048 C    | 8.8290             | 80/20 | 8.8290         |
| 962441 | AG1-093 C O1 | 45.7120            | 80/20 | 45.7120        |
| 963171 | AG1-166 C    | 1.4126             | 80/20 | 1.4126         |
| 963181 | AG1-167 C    | 1.4126             | 80/20 | 1.4126         |
| 963191 | AG1-168 C    | 1.4126             | 80/20 | 1.4126         |
| 963201 | AG1-169 C    | 1.4126             | 80/20 | 1.4126         |
| 963211 | AG1-170 C    | 1.4126             | 80/20 | 1.4126         |
| 963301 | AG1-179 C    | 3.7578             | 80/20 | 3.7578         |
| 963311 | AG1-180      | 1.8309             | 80/20 | 1.8309         |
| 963321 | AG1-181 C O1 | 17.2581            | 80/20 | 17.2581        |
| 963361 | AG1-185 O1   | 8.3499             | 80/20 | 8.3499         |
| 963601 | AG1-209 C    | 0.3800             | 80/20 | 0.3800         |
| 963641 | AG1-215 C    | 0.6592             | 80/20 | 0.6592         |
| 964111 | AG1-272 C    | 2.5135             | 80/20 | 2.5135         |
| 964121 | AG1-273 C    | 2.5135             | 80/20 | 2.5135         |
| 964131 | AG1-274 C    | 2.5135             | 80/20 | 2.5135         |
| 964141 | AG1-275 C    | 1.6288             | 80/20 | 1.6288         |
| 964151 | AG1-276 C    | 1.6288             | 80/20 | 1.6288         |
| 964241 | AG1-285 C O1 | 15.1132            | 80/20 | 15.1132        |
| 964251 | AG1-286 C    | 0.6204             | 80/20 | 0.6204         |
| 964261 | AG1-287 C    | 5.1287             | 80/20 | 5.1287         |
| 964471 | AG1-310 C    | 6.8479             | 80/20 | 6.8479         |
| 964791 | AG1-342 C    | 10.6614            | 80/20 | 10.6614        |
| 964821 | AG1-345 C    | 0.5676             | 80/20 | 0.5676         |
| 965191 | AG1-384 C    | 2.5135             | 80/20 | 2.5135         |
| 965281 | AG1-393 C    | 1.4126             | 80/20 | 1.4126         |
| 965451 | AG1-413 C O1 | 5.8747             | 80/20 | 5.8747         |
| 965591 | AG1-427 C    | 14.2570            | 80/20 | 14.2570        |
| 965601 | AG1-428 C O1 | 3.1371             | 80/20 | 3.1371         |
| 965641 | AG1-432 C O1 | 6.9228             | 80/20 | 6.9228         |
| 965721 | AG1-440 C    | 6.1749             | 80/20 | 6.1749         |

| Bus #      | Bus                                         | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|---------------------------------------------|--------------------|---------------|----------------|
| 965731     | AG1-441 C                                   | 6.1749             | 80/20         | 6.1749         |
| 965771     | AG1-445                                     | 3.5677             | 80/20         | 3.5677         |
| 965781     | AG1-446                                     | 3.5677             | 80/20         | 3.5677         |
| 965831     | AG1-451                                     | 1.1538             | 80/20         | 1.1538         |
| 966691     | AG1-539 C                                   | 10.0550            | 80/20         | 10.0550        |
| 966751     | AG1-546 C                                   | 9.5834             | 80/20         | 9.5834         |
| 966761     | AG1-547 C                                   | 4.4167             | 80/20         | 4.4167         |
| 966861     | AG1-557 C O1<br>(Withdrawn :<br>12/14/2020) | 0.6923             | 80/20         | 0.6923         |
| WEC        | WEC                                         | 0.0161             | Confirmed LTF | 0.0161         |
| LGEE       | LGEE                                        | 0.0503             | Confirmed LTF | 0.0503         |
| CALDERWOOD | CALDERWOOD                                  | 0.1387             | Confirmed LTF | 0.1387         |
| NY         | NY                                          | 0.0553             | Confirmed LTF | 0.0553         |
| PRAIRIE    | PRAIRIE                                     | 0.0827             | Confirmed LTF | 0.0827         |
| SIGE       | SIGE                                        | 0.0180             | Confirmed LTF | 0.0180         |
| CHEOAH     | CHEOAH                                      | 0.1496             | Confirmed LTF | 0.1496         |
| COTTONWOOD | COTTONWOOD                                  | 0.4284             | Confirmed LTF | 0.4284         |
| HAMLET     | HAMLET                                      | 0.6791             | Confirmed LTF | 0.6791         |
| CATAWBA    | CATAWBA                                     | 0.3035             | Confirmed LTF | 0.3035         |
| CBM-W1     | CBM-W1                                      | 0.7150             | Confirmed LTF | 0.7150         |

## 11.6.14 Index 14

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS      | TO BUS AREA | CKT ID | CONT NAME          | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|-------------|---------------|---------|-------------|-------------|--------|--------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 169288320 | 314697    | 6SEDGE HILL | DVP           | 927250  | AC1-221 TAP | DVP         | 1      | DVP_P1-2: LN 556-D | single | 674.92     | 219.69                | 220.9                  | DC    | 8.18      |

| Bus #  | Bus                                | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|------------------------------------|--------------------|-------|----------------|
| 247284 | 05LEESVG                           | 0.4591             | 80/20 | 0.4591         |
| 313527 | AB2-043 C                          | 0.6777             | 80/20 | 0.6777         |
| 314333 | 6POWHATN                           | 0.1206             | 80/20 | 0.1206         |
| 314429 | 3JTRSVLE                           | 0.6020             | 80/20 | 0.6020         |
| 314677 | 6BUCKING                           | 0.3988             | 80/20 | 0.3988         |
| 314704 | 3LAWRENC                           | 0.1701             | 80/20 | 0.1701         |
| 315153 | 1CLOVER1                           | 35.6962            | 80/20 | 35.6962        |
| 315154 | 1CLOVER2                           | 35.3404            | 80/20 | 35.3404        |
| 315156 | 1HALLBR1                           | 1.0288             | 80/20 | 1.0288         |
| 315158 | 1KERR 1                            | 0.3313             | 80/20 | 0.3313         |
| 315159 | 1KERR 2                            | 0.9277             | 80/20 | 0.9277         |
| 315160 | 1KERR 3                            | 0.9277             | 80/20 | 0.9277         |
| 315161 | 1KERR 4                            | 0.9277             | 80/20 | 0.9277         |
| 315162 | 1KERR 5                            | 0.9277             | 80/20 | 0.9277         |
| 315163 | 1KERR 6                            | 0.9277             | 80/20 | 0.9277         |
| 315164 | 1KERR 7                            | 0.9277             | 80/20 | 0.9277         |
| 315191 | 1BEARGRDN G1                       | 3.3141             | 80/20 | 3.3141         |
| 315192 | 1BEARGRDN G2                       | 3.3141             | 80/20 | 3.3141         |
| 315193 | 1BEARGRDN S1                       | 4.2858             | 80/20 | 4.2858         |
| 315266 | 1PLYWOOD A                         | 3.0479             | 80/20 | 3.0479         |
| 316118 | AC1-105 C                          | 14.6956            | 80/20 | 14.6956        |
| 316123 | AC1-075 C                          | 1.8835             | 80/20 | 1.8835         |
| 316129 | AC1-054 C                          | 4.0299             | 80/20 | 4.0299         |
| 316131 | AB2-060 C                          | 1.9554             | 80/20 | 1.9554         |
| 924301 | AB2-077 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 924311 | AB2-078 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 924321 | AB2-079 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 925611 | AC1-036 C                          | 0.3165             | 80/20 | 0.3165         |
| 925661 | AC1-042 C                          | 1.5979             | 80/20 | 1.5979         |
| 926023 | AC1-080 C                          | 0.6295             | 80/20 | 0.6295         |
| 926451 | AC1-116 C                          | 0.0446             | 80/20 | 0.0446         |
| 926645 | AC1-145 C                          | 0.3001             | 80/20 | 0.3001         |
| 927251 | AC1-221 C                          | -2.4502            | Adder | -2.88          |
| 927261 | AC1-222 C                          | 10.1051            | 80/20 | 10.1051        |
| 932511 | AC2-071 C (Withdrawn : 01/22/2021) | 0.3929             | 80/20 | 0.3929         |
| 933501 | AC2-165 C                          | 3.6987             | 80/20 | 3.6987         |
| 934311 | AD1-055 C                          | 7.0162             | 80/20 | 7.0162         |
| 934341 | AD1-058 C                          | -6.1424            | Adder | -7.23          |

| Bus #  | Bus                                   | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|---------------------------------------|--------------------|-------|----------------|
| 934615 | AD1-087 C                             | 22.4303            | 80/20 | 22.4303        |
| 934625 | AD1-088 C                             | 29.6903            | 80/20 | 29.6903        |
| 935171 | AD1-152 C O1                          | 24.6374            | 80/20 | 24.6374        |
| 935221 | AD1-157 C (Withdrawn :<br>01/26/2021) | 0.3412             | 80/20 | 0.3412         |
| 936265 | AD2-033 C                             | 18.1139            | 80/20 | 18.1139        |
| 936361 | AD2-046 C O1                          | 8.4650             | 80/20 | 8.4650         |
| 936485 | AD2-063 C                             | 20.6649            | 80/20 | 20.6649        |
| 937481 | AD2-202 C O1                          | 6.5700             | 80/20 | 6.5700         |
| 938371 | AE1-056 C                             | 9.3221             | 80/20 | 9.3221         |
| 938561 | AE1-075 C                             | 0.1048             | 80/20 | 0.1048         |
| 938821 | AE1-108 C O1                          | 7.2807             | 80/20 | 7.2807         |
| 939181 | AE1-148 C                             | 8.5007             | 80/20 | 8.5007         |
| 939941 | AE1-230 C                             | 0.7209             | 80/20 | 0.7209         |
| 940661 | AE2-053 O1                            | 3.1484             | 80/20 | 3.1484         |
| 941011 | AE2-092 C                             | 6.3234             | 80/20 | 6.3234         |
| 941791 | AE2-182 C                             | 4.8236             | 80/20 | 4.8236         |
| 941801 | AE2-185 C                             | 3.6043             | 80/20 | 3.6043         |
| 941821 | AE2-187 C                             | 3.6043             | 80/20 | 3.6043         |
| 942451 | AE2-258                               | 3.2048             | 80/20 | 3.2048         |
| 942461 | AE2-259 C O1                          | 14.7132            | 80/20 | 14.7132        |
| 942671 | AE2-283 C                             | 3.9648             | 80/20 | 3.9648         |
| 942751 | AE2-291 C                             | 15.6354            | 80/20 | 15.6354        |
| 942761 | AE2-292 C O1                          | 19.4676            | 80/20 | 19.4676        |
| 943901 | AF1-058 C                             | 5.7308             | 80/20 | 5.7308         |
| 943911 | AF1-059                               | 14.4227            | 80/20 | 14.4227        |
| 945081 | AF1-173                               | 1.3967             | 80/20 | 1.3967         |
| 945811 | AF1-246 C O1                          | 21.5242            | 80/20 | 21.5242        |
| 946291 | AF1-293 C O1                          | 9.4568             | 80/20 | 9.4568         |
| 946301 | AF1-294 C                             | 6.0812             | 80/20 | 6.0812         |
| 946591 | AF1-323 C                             | 2.4073             | 80/20 | 2.4073         |
| 957481 | AF2-042 C                             | 153.7440           | 80/20 | 153.7440       |
| 958211 | AF2-115 C                             | 3.5772             | 80/20 | 3.5772         |
| 958501 | AF2-144 C                             | 0.5649             | 80/20 | 0.5649         |
| 958801 | AF2-171 C                             | 21.4497            | 80/20 | 21.4497        |
| 959311 | AF2-222 C                             | 23.4030            | 80/20 | 23.4030        |
| 959531 | AF2-244 C (Withdrawn :<br>01/06/2021) | 0.5206             | 80/20 | 0.5206         |
| 959751 | AF2-266                               | 25.6235            | 80/20 | 25.6235        |
| 960061 | AF2-297 C                             | 22.9234            | 80/20 | 22.9234        |
| 960111 | AF2-302 C                             | 0.8754             | 80/20 | 0.8754         |
| 961061 | AF2-397 C                             | 7.1206             | 80/20 | 7.1206         |
| 961121 | AF2-403                               | 0.8010             | 80/20 | 0.8010         |
| 961791 | AG1-021 C                             | 2.8618             | 80/20 | 2.8618         |
| 961801 | AG1-022 C                             | 0.8754             | 80/20 | 0.8754         |
| 961891 | AG1-030 C                             | 21.3030            | 80/20 | 21.3030        |
| 962041 | AG1-048 C                             | 17.8860            | 80/20 | 17.8860        |
| 962441 | AG1-093 C O1                          | 39.1883            | 80/20 | 39.1883        |
| 962491 | AG1-098 C O1                          | 34.5765            | 80/20 | 34.5765        |
| 962561 | AG1-105 C O1                          | 31.8432            | 80/20 | 31.8432        |
| 963171 | AG1-166 C                             | 2.8618             | 80/20 | 2.8618         |
| 963181 | AG1-167 C                             | 2.8618             | 80/20 | 2.8618         |
| 963191 | AG1-168 C                             | 2.8618             | 80/20 | 2.8618         |

| Bus #      | Bus                                         | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|---------------------------------------------|--------------------|---------------|----------------|
| 963201     | AG1-169 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963211     | AG1-170 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963271     | AG1-176 C O1                                | 36.0621            | 80/20         | 36.0621        |
| 963301     | AG1-179 C                                   | 3.8207             | 80/20         | 3.8207         |
| 963311     | AG1-180                                     | 1.8616             | 80/20         | 1.8616         |
| 963321     | AG1-181 C O1                                | 23.4953            | 80/20         | 23.4953        |
| 963361     | AG1-185 O1                                  | 11.3677            | 80/20         | 11.3677        |
| 963601     | AG1-209 C                                   | 0.2803             | 80/20         | 0.2803         |
| 963641     | AG1-215 C                                   | 1.3355             | 80/20         | 1.3355         |
| 964111     | AG1-272 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964121     | AG1-273 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964131     | AG1-274 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964141     | AG1-275 C                                   | 1.2014             | 80/20         | 1.2014         |
| 964151     | AG1-276 C                                   | 1.2014             | 80/20         | 1.2014         |
| 964231     | AG1-284 C O1                                | 3.9711             | 80/20         | 3.9711         |
| 964241     | AG1-285 C O1                                | 17.1705            | 80/20         | 17.1705        |
| 964251     | AG1-286 C                                   | 0.4497             | 80/20         | 0.4497         |
| 964261     | AG1-287 C                                   | 4.2981             | 80/20         | 4.2981         |
| 964471     | AG1-310 C                                   | 5.7147             | 80/20         | 5.7147         |
| 964791     | AG1-342 C                                   | 9.4188             | 80/20         | 9.4188         |
| 964821     | AG1-345 C                                   | 1.1444             | 80/20         | 1.1444         |
| 964841     | AG1-347 C                                   | 22.4655            | 80/20         | 22.4655        |
| 964931     | AG1-357 C                                   | 61.4988            | 80/20         | 61.4988        |
| 965191     | AG1-384 C                                   | 3.5975             | 80/20         | 3.5975         |
| 965281     | AG1-393 C                                   | 2.8618             | 80/20         | 2.8618         |
| 965451     | AG1-413 C O1                                | 6.0628             | 80/20         | 6.0628         |
| 965581     | AG1-426                                     | 1.5862             | 80/20         | 1.5862         |
| 965591     | AG1-427 C                                   | 16.2855            | 80/20         | 16.2855        |
| 965601     | AG1-428 C O1                                | 3.1896             | 80/20         | 3.1896         |
| 965641     | AG1-432 C O1                                | 29.4264            | 80/20         | 29.4264        |
| 965721     | AG1-440 C                                   | 5.4864             | 80/20         | 5.4864         |
| 965731     | AG1-441 C                                   | 5.4864             | 80/20         | 5.4864         |
| 965771     | AG1-445                                     | 3.1699             | 80/20         | 3.1699         |
| 965781     | AG1-446                                     | 3.1699             | 80/20         | 3.1699         |
| 965831     | AG1-451                                     | 4.9044             | 80/20         | 4.9044         |
| 966361     | AG1-505 C                                   | 46.1250            | 80/20         | 46.1250        |
| 966371     | AG1-506 C                                   | 46.1250            | 80/20         | 46.1250        |
| 966691     | AG1-539 C                                   | 8.1754             | 80/20         | 8.1754         |
| 966751     | AG1-546 C                                   | 8.2011             | 80/20         | 8.2011         |
| 966761     | AG1-547 C                                   | 3.2579             | 80/20         | 3.2579         |
| 966791     | AG1-550 O1                                  | 2.6947             | 80/20         | 2.6947         |
| 966861     | AG1-557 C O1<br>(Withdrawn :<br>12/14/2020) | 2.9426             | 80/20         | 2.9426         |
| G-007A     | G-007A                                      | 0.4891             | Confirmed LTF | 0.4891         |
| VFT        | VFT                                         | 1.2964             | Confirmed LTF | 1.2964         |
| CALDERWOOD | CALDERWOOD                                  | 1.4443             | Confirmed LTF | 1.4443         |
| PRAIRIE    | PRAIRIE                                     | 4.6726             | Confirmed LTF | 4.6726         |
| AC1-131    | AC1-131                                     | 5.2830             | LTF           | 5.2830         |
| CHEOAH     | CHEOAH                                      | 1.4865             | Confirmed LTF | 1.4865         |
| CBM-N      | CBM-N                                       | 0.2328             | Confirmed LTF | 0.2328         |
| COTTONWOOD | COTTONWOOD                                  | 5.2395             | Confirmed LTF | 5.2395         |
| HAMLET     | HAMLET                                      | 3.2011             | Confirmed LTF | 3.2011         |

| Bus #          | Bus     | Gendeliv MW Impact | Type          | Full MW Impact |
|----------------|---------|--------------------|---------------|----------------|
| <b>GIBSON</b>  | GIBSON  | 0.7912             | Confirmed LTF | 0.7912         |
| <b>BLUEG</b>   | BLUEG   | 2.4078             | Confirmed LTF | 2.4078         |
| <b>TRIMBLE</b> | TRIMBLE | 0.7618             | Confirmed LTF | 0.7618         |
| <b>CATAWBA</b> | CATAWBA | 1.6965             | Confirmed LTF | 1.6965         |

## 11.6.15 Index 15

| ID        | FROM BUS# | FROM BUS | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                   | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|----------|---------------|---------|----------|-------------|--------|-----------------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 163933010 | 314861    | 3SKIMMER | DVP           | 242886  | 05SKIMMR | AEP         | 2      | DVP_P1-3: 3SKIMMER-3SKIMMER | single | 53.0       | 108.78                | 112.52                 | DC    | 1.98      |

| Bus #      | Bus          | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|--------------|--------------------|---------------|----------------|
| 315156     | 1HALLBR1     | 0.7292             | 80/20         | 0.7292         |
| 316123     | AC1-075 C    | 0.3051             | 80/20         | 0.3051         |
| 925661     | AC1-042 C    | 1.0642             | 80/20         | 1.0642         |
| 926023     | AC1-080 C    | 0.1020             | 80/20         | 0.1020         |
| 926645     | AC1-145 C    | 0.1999             | 80/20         | 0.1999         |
| 939941     | AE1-230 C    | 0.4801             | 80/20         | 0.4801         |
| 941801     | AE2-185 C    | 2.4005             | 80/20         | 2.4005         |
| 941821     | AE2-187 C    | 2.4005             | 80/20         | 2.4005         |
| 942671     | AE2-283 C    | 2.6405             | 80/20         | 2.6405         |
| 942751     | AE2-291 C    | 3.7834             | 80/20         | 3.7834         |
| 942761     | AE2-292 C O1 | 4.7107             | 80/20         | 4.7107         |
| 945081     | AF1-173      | 0.9302             | 80/20         | 0.9302         |
| 961121     | AF2-403      | 0.5334             | 80/20         | 0.5334         |
| 963601     | AG1-209 C    | 0.1867             | 80/20         | 0.1867         |
| 964141     | AG1-275 C    | 0.8002             | 80/20         | 0.8002         |
| 964151     | AG1-276 C    | 0.8002             | 80/20         | 0.8002         |
| 966691     | AG1-539 C    | 1.9782             | 80/20         | 1.9782         |
| 966761     | AG1-547 C    | 2.1698             | 80/20         | 2.1698         |
| CPLE       | CPLE         | 0.2020             | Confirmed LTF | 0.2020         |
| G-007A     | G-007A       | 0.0048             | Confirmed LTF | 0.0048         |
| VFT        | VFT          | 0.0064             | Confirmed LTF | 0.0064         |
| NY         | NY           | 0.0028             | Confirmed LTF | 0.0028         |
| PRAIRIE    | PRAIRIE      | 0.1007             | Confirmed LTF | 0.1007         |
| CBM-S2     | CBM-S2       | 1.7852             | Confirmed LTF | 1.7852         |
| CBM-N      | CBM-N        | 0.0012             | Confirmed LTF | 0.0012         |
| COTTONWOOD | COTTONWOOD   | 0.0063             | Confirmed LTF | 0.0063         |
| GIBSON     | GIBSON       | 0.0317             | Confirmed LTF | 0.0317         |
| BLUEG      | BLUEG        | 0.1111             | Confirmed LTF | 0.1111         |
| TRIMBLE    | TRIMBLE      | 0.0362             | Confirmed LTF | 0.0362         |

## 11.6.16 Index 16

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CKT ID | CONT NAME                     | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|-------------|---------------|---------|----------|-------------|--------|-------------------------------|------|------------|-----------------------|------------------------|-------|-----------|
| 161949165 | 926520    | AC1-123 TAP | AEP           | 242575  | 05CAMDLM | AEP         | 1      | AEP_P2-2_#10292_05NEWLDN138_1 | bus  | 255.0      | 115.05                | 115.92                 | DC    | 4.93      |

| Bus #  | Bus          | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|--------------|--------------------|-------|----------------|
| 246843 | 05SMG1       | 1.9399             | 50/50 | 1.9399         |
| 246844 | 05SMG2       | 5.2732             | 50/50 | 5.2732         |
| 246845 | 05SMG3       | 3.3060             | 50/50 | 3.3060         |
| 246846 | 05SMG4       | 5.1913             | 50/50 | 5.1913         |
| 246847 | 05SMG5       | 2.0219             | 50/50 | 2.0219         |
| 247284 | 05LEESVG     | 1.0979             | 50/50 | 1.0979         |
| 925661 | AC1-042 C    | 1.6528             | 50/50 | 1.6528         |
| 925662 | AC1-042 E    | 2.6967             | 50/50 | 2.6967         |
| 925997 | AC1-075 E    | 1.0121             | Adder | 1.19           |
| 926024 | AC1-080 E    | 0.3358             | Adder | 0.4            |
| 926051 | AC1-083 C O1 | 4.8651             | 50/50 | 4.8651         |
| 926052 | AC1-083 E O1 | 7.9379             | 50/50 | 7.9379         |
| 926521 | AC1-123 C O1 | 3.6473             | 50/50 | 3.6473         |
| 926522 | AC1-123 E O1 | 10.8777            | 50/50 | 10.8777        |
| 926645 | AC1-145 C    | 0.3104             | 50/50 | 0.3104         |
| 926646 | AC1-145 E    | 1.7657             | 50/50 | 1.7657         |
| 933941 | AD1-017 C    | 0.9730             | 50/50 | 0.9730         |
| 933942 | AD1-017 E    | 1.5876             | 50/50 | 1.5876         |
| 938451 | AE1-064 C    | 9.5344             | 50/50 | 9.5344         |
| 938452 | AE1-064 E    | 4.9301             | 50/50 | 4.9301         |
| 939011 | AE1-130 C    | 3.6885             | Adder | 4.34           |
| 939012 | AE1-130 E    | 1.8476             | Adder | 2.17           |
| 939941 | AE1-230 C    | 0.7456             | 50/50 | 0.7456         |
| 939942 | AE1-230 E    | 1.3256             | 50/50 | 1.3256         |
| 940081 | AE1-250 C    | 7.2262             | Adder | 8.5            |
| 940082 | AE1-250 E    | 4.8175             | Adder | 5.67           |
| 941801 | AE2-185 C    | 3.7282             | 50/50 | 3.7282         |
| 941802 | AE2-185 E    | 2.4854             | 50/50 | 2.4854         |
| 941821 | AE2-187 C    | 3.7282             | 50/50 | 3.7282         |
| 941822 | AE2-187 E    | 1.6570             | 50/50 | 1.6570         |
| 942671 | AE2-283 C    | 4.1010             | 50/50 | 4.1010         |
| 942672 | AE2-283 E    | 2.1540             | 50/50 | 2.1540         |
| 942751 | AE2-291 C    | 3.4203             | Adder | 4.02           |
| 942752 | AE2-291 E    | 2.2802             | Adder | 2.68           |
| 942761 | AE2-292 C O1 | 4.2586             | Adder | 5.01           |
| 942762 | AE2-292 E O1 | 2.8391             | Adder | 3.34           |
| 945081 | AF1-173      | 1.4447             | 50/50 | 1.4447         |
| 961121 | AF2-403      | 0.8285             | 50/50 | 0.8285         |
| 963601 | AG1-209 C    | 0.2900             | 50/50 | 0.2900         |
| 963602 | AG1-209 E    | 0.4350             | 50/50 | 0.4350         |
| 964141 | AG1-275 C    | 1.2427             | 50/50 | 1.2427         |

| Bus #   | Bus         | Gendeliv MW Impact | Type                  | Full MW Impact |
|---------|-------------|--------------------|-----------------------|----------------|
| 964142  | AG1-275 E   | 0.8285             | 50/50                 | 0.8285         |
| 964151  | AG1-276 C   | 1.2427             | 50/50                 | 1.2427         |
| 964152  | AG1-276 E   | 0.8285             | 50/50                 | 0.8285         |
| 964251  | AG1-286 C   | 0.6214             | 50/50                 | 0.6214         |
| 964252  | AG1-286 E   | 0.4142             | 50/50                 | 0.4142         |
| 964533  | AG1-316 BAT | 9.0988             | 50/50                 | 9.0988         |
| 966253  | AG1-494 BAT | 2.2424             | Merchant Transmission | 2.2424         |
| 966691  | AG1-539 C   | 0.9479             | Adder                 | 2.1            |
| 966692  | AG1-539 E   | 1.2737             | Adder                 | 2.83           |
| 966761  | AG1-547 C   | 3.3698             | 50/50                 | 3.3698         |
| 966762  | AG1-547 E   | 1.8082             | 50/50                 | 1.8082         |
| CPLE    | CPLE        | 0.6825             | Confirmed LTF         | 0.6825         |
| NY      | NY          | 0.0476             | Confirmed LTF         | 0.0476         |
| PRAIRIE | PRAIRIE     | 0.1627             | Confirmed LTF         | 0.1627         |
| TVA     | TVA         | 0.0602             | Confirmed LTF         | 0.0602         |
| O-066   | O-066       | 0.5115             | Confirmed LTF         | 0.5115         |
| CBM-S2  | CBM-S2      | 6.4310             | Confirmed LTF         | 6.4310         |
| CBM-S1  | CBM-S1      | 0.0038             | Confirmed LTF         | 0.0038         |
| G-007   | G-007       | 0.0788             | Confirmed LTF         | 0.0788         |
| GIBSON  | GIBSON      | 0.0682             | Confirmed LTF         | 0.0682         |
| BLUEG   | BLUEG       | 0.2448             | Confirmed LTF         | 0.2448         |
| TRIMBLE | TRIMBLE     | 0.0801             | Confirmed LTF         | 0.0801         |
| LAGN    | LAGN        | 0.0962             | Confirmed LTF         | 0.0962         |

## 11.6.17 Index 17

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS       | TO BUS AREA | CKT ID | CONT NAME          | Type   | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC DC | MW IMPACT |
|-----------|-----------|-------------|---------------|---------|--------------|-------------|--------|--------------------|--------|------------|-----------------------|------------------------|-------|-----------|
| 163932766 | 927250    | AC1-221 TAP | DVP           | 304070  | 6PERSON230 T | CPL         | 1      | DVP_P1-2: LN 556-D | single | 718.0      | 218.48                | 219.62                 | DC    | 8.18      |

| Bus #  | Bus                                | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|------------------------------------|--------------------|-------|----------------|
| 247284 | 05LEESVG                           | 0.4591             | 80/20 | 0.4591         |
| 313527 | AB2-043 C                          | 0.6777             | 80/20 | 0.6777         |
| 314333 | 6POWHATN                           | 0.1206             | 80/20 | 0.1206         |
| 314429 | 3JTRSVLE                           | 0.6020             | 80/20 | 0.6020         |
| 314677 | 6BUCKING                           | 0.3988             | 80/20 | 0.3988         |
| 314704 | 3LAWRENC                           | 0.1701             | 80/20 | 0.1701         |
| 315153 | 1CLOVER1                           | 35.6962            | 80/20 | 35.6962        |
| 315154 | 1CLOVER2                           | 35.3404            | 80/20 | 35.3404        |
| 315156 | 1HALLBR1                           | 1.0288             | 80/20 | 1.0288         |
| 315158 | 1KERR 1                            | 0.3313             | 80/20 | 0.3313         |
| 315159 | 1KERR 2                            | 0.9277             | 80/20 | 0.9277         |
| 315160 | 1KERR 3                            | 0.9277             | 80/20 | 0.9277         |
| 315161 | 1KERR 4                            | 0.9277             | 80/20 | 0.9277         |
| 315162 | 1KERR 5                            | 0.9277             | 80/20 | 0.9277         |
| 315163 | 1KERR 6                            | 0.9277             | 80/20 | 0.9277         |
| 315164 | 1KERR 7                            | 0.9277             | 80/20 | 0.9277         |
| 315191 | 1BEARGRDN G1                       | 3.3141             | 80/20 | 3.3141         |
| 315192 | 1BEARGRDN G2                       | 3.3141             | 80/20 | 3.3141         |
| 315193 | 1BEARGRDN S1                       | 4.2858             | 80/20 | 4.2858         |
| 315266 | 1PLYWOOD A                         | 3.0479             | 80/20 | 3.0479         |
| 316118 | AC1-105 C                          | 14.6956            | 80/20 | 14.6956        |
| 316123 | AC1-075 C                          | 1.8835             | 80/20 | 1.8835         |
| 316129 | AC1-054 C                          | 4.0299             | 80/20 | 4.0299         |
| 316131 | AB2-060 C                          | 1.9554             | 80/20 | 1.9554         |
| 924301 | AB2-077 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 924311 | AB2-078 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 924321 | AB2-079 C O1 (Suspended)           | 2.7590             | 80/20 | 2.7590         |
| 925611 | AC1-036 C                          | 0.3165             | 80/20 | 0.3165         |
| 925661 | AC1-042 C                          | 1.5979             | 80/20 | 1.5979         |
| 926023 | AC1-080 C                          | 0.6295             | 80/20 | 0.6295         |
| 926451 | AC1-116 C                          | 0.0446             | 80/20 | 0.0446         |
| 926645 | AC1-145 C                          | 0.3001             | 80/20 | 0.3001         |
| 927251 | AC1-221 C                          | 11.7174            | 80/20 | 11.7174        |
| 927261 | AC1-222 C                          | 10.1051            | 80/20 | 10.1051        |
| 932511 | AC2-071 C (Withdrawn : 01/22/2021) | 0.3929             | 80/20 | 0.3929         |
| 932761 | AC2-100 C                          | 26.9660            | 80/20 | 26.9660        |
| 933501 | AC2-165 C                          | 3.6987             | 80/20 | 3.6987         |
| 934311 | AD1-055 C                          | 7.0162             | 80/20 | 7.0162         |

| Bus #  | Bus                                | Gendeliv MW Impact | Type  | Full MW Impact |
|--------|------------------------------------|--------------------|-------|----------------|
| 934341 | AD1-058 C                          | 29.3737            | 80/20 | 29.3737        |
| 934615 | AD1-087 C                          | 22.4303            | 80/20 | 22.4303        |
| 934625 | AD1-088 C                          | 29.6903            | 80/20 | 29.6903        |
| 934991 | AD1-131 C                          | 9.6307             | 80/20 | 9.6307         |
| 935171 | AD1-152 C O1                       | 24.6374            | 80/20 | 24.6374        |
| 935221 | AD1-157 C (Withdrawn : 01/26/2021) | 0.3412             | 80/20 | 0.3412         |
| 936265 | AD2-033 C                          | 18.1139            | 80/20 | 18.1139        |
| 936361 | AD2-046 C O1                       | 8.4650             | 80/20 | 8.4650         |
| 936485 | AD2-063 C                          | 20.6649            | 80/20 | 20.6649        |
| 937481 | AD2-202 C O1                       | 6.5700             | 80/20 | 6.5700         |
| 938371 | AE1-056 C                          | 9.3221             | 80/20 | 9.3221         |
| 938561 | AE1-075 C                          | 0.1048             | 80/20 | 0.1048         |
| 938821 | AE1-108 C O1                       | 7.2807             | 80/20 | 7.2807         |
| 939181 | AE1-148 C                          | 8.5007             | 80/20 | 8.5007         |
| 939941 | AE1-230 C                          | 0.7209             | 80/20 | 0.7209         |
| 940661 | AE2-053 O1                         | 3.1484             | 80/20 | 3.1484         |
| 941011 | AE2-092 C                          | 6.3234             | 80/20 | 6.3234         |
| 941791 | AE2-182 C                          | 4.8236             | 80/20 | 4.8236         |
| 941801 | AE2-185 C                          | 3.6043             | 80/20 | 3.6043         |
| 941821 | AE2-187 C                          | 3.6043             | 80/20 | 3.6043         |
| 942451 | AE2-258                            | 3.2048             | 80/20 | 3.2048         |
| 942461 | AE2-259 C O1                       | 14.7132            | 80/20 | 14.7132        |
| 942671 | AE2-283 C                          | 3.9648             | 80/20 | 3.9648         |
| 942751 | AE2-291 C                          | 15.6354            | 80/20 | 15.6354        |
| 942761 | AE2-292 C O1                       | 19.4676            | 80/20 | 19.4676        |
| 943901 | AF1-058 C                          | 5.7308             | 80/20 | 5.7308         |
| 943911 | AF1-059                            | 14.4227            | 80/20 | 14.4227        |
| 945081 | AF1-173                            | 1.3967             | 80/20 | 1.3967         |
| 945811 | AF1-246 C O1                       | 21.5242            | 80/20 | 21.5242        |
| 946291 | AF1-293 C O1                       | 9.4568             | 80/20 | 9.4568         |
| 946301 | AF1-294 C                          | 6.0812             | 80/20 | 6.0812         |
| 946591 | AF1-323 C                          | 2.4073             | 80/20 | 2.4073         |
| 957481 | AF2-042 C                          | 153.7440           | 80/20 | 153.7440       |
| 958211 | AF2-115 C                          | 3.5772             | 80/20 | 3.5772         |
| 958501 | AF2-144 C                          | 0.5649             | 80/20 | 0.5649         |
| 958801 | AF2-171 C                          | 21.4497            | 80/20 | 21.4497        |
| 959311 | AF2-222 C                          | 23.4030            | 80/20 | 23.4030        |
| 959531 | AF2-244 C (Withdrawn : 01/06/2021) | 0.5206             | 80/20 | 0.5206         |
| 959751 | AF2-266                            | 25.6235            | 80/20 | 25.6235        |
| 960061 | AF2-297 C                          | 22.9234            | 80/20 | 22.9234        |
| 960111 | AF2-302 C                          | 0.8754             | 80/20 | 0.8754         |
| 961061 | AF2-397 C                          | 7.1206             | 80/20 | 7.1206         |
| 961121 | AF2-403                            | 0.8010             | 80/20 | 0.8010         |
| 961791 | AG1-021 C                          | 2.8618             | 80/20 | 2.8618         |
| 961801 | AG1-022 C                          | 0.8754             | 80/20 | 0.8754         |
| 961891 | AG1-030 C                          | 21.3030            | 80/20 | 21.3030        |
| 962041 | AG1-048 C                          | 17.8860            | 80/20 | 17.8860        |
| 962441 | AG1-093 C O1                       | 39.1883            | 80/20 | 39.1883        |
| 962491 | AG1-098 C O1                       | 34.5765            | 80/20 | 34.5765        |
| 962561 | AG1-105 C O1                       | 31.8432            | 80/20 | 31.8432        |
| 963171 | AG1-166 C                          | 2.8618             | 80/20 | 2.8618         |

| Bus #      | Bus                                         | Gendeliv MW Impact | Type          | Full MW Impact |
|------------|---------------------------------------------|--------------------|---------------|----------------|
| 963181     | AG1-167 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963191     | AG1-168 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963201     | AG1-169 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963211     | AG1-170 C                                   | 2.8618             | 80/20         | 2.8618         |
| 963271     | AG1-176 C O1                                | 36.0621            | 80/20         | 36.0621        |
| 963301     | AG1-179 C                                   | 3.8207             | 80/20         | 3.8207         |
| 963311     | AG1-180                                     | 1.8616             | 80/20         | 1.8616         |
| 963321     | AG1-181 C O1                                | 23.4953            | 80/20         | 23.4953        |
| 963361     | AG1-185 O1                                  | 11.3677            | 80/20         | 11.3677        |
| 963601     | AG1-209 C                                   | 0.2803             | 80/20         | 0.2803         |
| 963641     | AG1-215 C                                   | 1.3355             | 80/20         | 1.3355         |
| 964111     | AG1-272 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964121     | AG1-273 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964131     | AG1-274 C                                   | 3.5975             | 80/20         | 3.5975         |
| 964141     | AG1-275 C                                   | 1.2014             | 80/20         | 1.2014         |
| 964151     | AG1-276 C                                   | 1.2014             | 80/20         | 1.2014         |
| 964231     | AG1-284 C O1                                | 3.9711             | 80/20         | 3.9711         |
| 964241     | AG1-285 C O1                                | 17.1705            | 80/20         | 17.1705        |
| 964251     | AG1-286 C                                   | 0.4497             | 80/20         | 0.4497         |
| 964261     | AG1-287 C                                   | 4.2981             | 80/20         | 4.2981         |
| 964471     | AG1-310 C                                   | 5.7147             | 80/20         | 5.7147         |
| 964791     | AG1-342 C                                   | 9.4188             | 80/20         | 9.4188         |
| 964821     | AG1-345 C                                   | 1.1444             | 80/20         | 1.1444         |
| 964841     | AG1-347 C                                   | 22.4655            | 80/20         | 22.4655        |
| 964931     | AG1-357 C                                   | 61.4988            | 80/20         | 61.4988        |
| 965191     | AG1-384 C                                   | 3.5975             | 80/20         | 3.5975         |
| 965281     | AG1-393 C                                   | 2.8618             | 80/20         | 2.8618         |
| 965451     | AG1-413 C O1                                | 6.0628             | 80/20         | 6.0628         |
| 965581     | AG1-426                                     | 1.5862             | 80/20         | 1.5862         |
| 965591     | AG1-427 C                                   | 16.2855            | 80/20         | 16.2855        |
| 965601     | AG1-428 C O1                                | 3.1896             | 80/20         | 3.1896         |
| 965641     | AG1-432 C O1                                | 29.4264            | 80/20         | 29.4264        |
| 965721     | AG1-440 C                                   | 5.4864             | 80/20         | 5.4864         |
| 965731     | AG1-441 C                                   | 5.4864             | 80/20         | 5.4864         |
| 965771     | AG1-445                                     | 3.1699             | 80/20         | 3.1699         |
| 965781     | AG1-446                                     | 3.1699             | 80/20         | 3.1699         |
| 965831     | AG1-451                                     | 4.9044             | 80/20         | 4.9044         |
| 966361     | AG1-505 C                                   | 46.1250            | 80/20         | 46.1250        |
| 966371     | AG1-506 C                                   | 46.1250            | 80/20         | 46.1250        |
| 966691     | AG1-539 C                                   | 8.1754             | 80/20         | 8.1754         |
| 966751     | AG1-546 C                                   | 8.2011             | 80/20         | 8.2011         |
| 966761     | AG1-547 C                                   | 3.2579             | 80/20         | 3.2579         |
| 966791     | AG1-550 O1                                  | 2.6947             | 80/20         | 2.6947         |
| 966861     | AG1-557 C O1<br>(Withdrawn :<br>12/14/2020) | 2.9426             | 80/20         | 2.9426         |
| G-007A     | G-007A                                      | 0.4891             | Confirmed LTF | 0.4891         |
| VFT        | VFT                                         | 1.2964             | Confirmed LTF | 1.2964         |
| CALDERWOOD | CALDERWOOD                                  | 1.4443             | Confirmed LTF | 1.4443         |
| PRAIRIE    | PRAIRIE                                     | 4.6726             | Confirmed LTF | 4.6726         |
| AC1-131    | AC1-131                                     | 5.2830             | LTF           | 5.2830         |
| CHEOAH     | CHEOAH                                      | 1.4865             | Confirmed LTF | 1.4865         |
| CBM-N      | CBM-N                                       | 0.2328             | Confirmed LTF | 0.2328         |

| Bus #             | Bus        | Gendeliv MW Impact | Type          | Full MW Impact |
|-------------------|------------|--------------------|---------------|----------------|
| <b>COTTONWOOD</b> | COTTONWOOD | 5.2395             | Confirmed LTF | 5.2395         |
| <b>HAMLET</b>     | HAMLET     | 3.2011             | Confirmed LTF | 3.2011         |
| <b>GIBSON</b>     | GIBSON     | 0.7912             | Confirmed LTF | 0.7912         |
| <b>BLUEG</b>      | BLUEG      | 2.4078             | Confirmed LTF | 2.4078         |
| <b>TRIMBLE</b>    | TRIMBLE    | 0.7618             | Confirmed LTF | 0.7618         |
| <b>CATAWBA</b>    | CATAWBA    | 1.6965             | Confirmed LTF | 1.6965         |

## 11.6.18 Index 18

| ID        | FROM BUS# | FROM BUS    | FROM BUS AREA | TO BUS# | TO BUS   | TO BUS AREA | CK T ID | CONT NAME             | Type    | Rating MVA | PRE PROJECT LOADIN G % | POST PROJECT LOADIN G % | AC D C | MW IMPAC T |
|-----------|-----------|-------------|---------------|---------|----------|-------------|---------|-----------------------|---------|------------|------------------------|-------------------------|--------|------------|
| 167232486 | 946590    | AF1-323 TAP | AEP           | 242792  | 05SCOTSV | AEP         | 1       | AEP_P4_#3174_05CLOVRD | breaker | 167.0      | 109.84                 | 110.93                  | DC     | 4.04       |

| Bus #  | Bus          | Gendeliv MW Impact | Type                  | Full MW Impact |
|--------|--------------|--------------------|-----------------------|----------------|
| 242889 | 05REUSENS    | 0.0886             | 50/50                 | 0.0886         |
| 925661 | AC1-042 C    | 1.1325             | Adder                 | 1.33           |
| 925662 | AC1-042 E    | 1.8477             | Adder                 | 2.17           |
| 926522 | AC1-123 E O1 | 1.9010             | Adder                 | 2.24           |
| 926646 | AC1-145 E    | 1.2098             | Adder                 | 1.42           |
| 935241 | AD1-161 C    | 4.2712             | 50/50                 | 4.2712         |
| 935242 | AD1-161 E    | 3.5075             | 50/50                 | 3.5075         |
| 938451 | AE1-064 C    | 2.8963             | Adder                 | 3.41           |
| 938452 | AE1-064 E    | 1.4976             | Adder                 | 1.76           |
| 939941 | AE1-230 C    | 0.5109             | Adder                 | 0.6            |
| 939942 | AE1-230 E    | 0.9083             | Adder                 | 1.07           |
| 941801 | AE2-185 C    | 2.5545             | Adder                 | 3.01           |
| 941802 | AE2-185 E    | 1.7030             | Adder                 | 2.0            |
| 941821 | AE2-187 C    | 2.5545             | Adder                 | 3.01           |
| 941822 | AE2-187 E    | 1.1353             | Adder                 | 1.34           |
| 942671 | AE2-283 C    | 2.8099             | Adder                 | 3.31           |
| 942672 | AE2-283 E    | 1.4759             | Adder                 | 1.74           |
| 942751 | AE2-291 C    | 2.8039             | Adder                 | 3.3            |
| 942752 | AE2-291 E    | 1.8693             | Adder                 | 2.2            |
| 942761 | AE2-292 C O1 | 3.4911             | Adder                 | 4.11           |
| 942762 | AE2-292 E O1 | 2.3274             | Adder                 | 2.74           |
| 945081 | AF1-173      | 0.9899             | Adder                 | 1.16           |
| 946293 | AF1-293 BAT  | 7.1870             | Merchant Transmission | 7.1870         |
| 946591 | AF1-323 C    | 21.2411            | 50/50                 | 21.2411        |
| 946592 | AF1-323 E    | 14.1607            | 50/50                 | 14.1607        |
| 958131 | AF2-107 C    | 10.8586            | 50/50                 | 10.8586        |
| 958132 | AF2-107 E    | 5.9504             | 50/50                 | 5.9504         |
| 960111 | AF2-302 C    | 7.7240             | 50/50                 | 7.7240         |
| 960112 | AF2-302 E    | 5.1494             | 50/50                 | 5.1494         |
| 961121 | AF2-403      | 0.5677             | Adder                 | 0.67           |
| 961801 | AG1-022 C    | 7.7240             | 50/50                 | 7.7240         |
| 961802 | AG1-022 E    | 5.1494             | 50/50                 | 5.1494         |
| 962741 | AG1-123 C O1 | 9.2117             | 50/50                 | 9.2117         |
| 962742 | AG1-123 E O1 | 6.4190             | 50/50                 | 6.4190         |
| 962751 | AG1-124 C O1 | 11.0708            | 50/50                 | 11.0708        |
| 962752 | AG1-124 E O1 | 7.7252             | 50/50                 | 7.7252         |
| 963601 | AG1-209 C    | 0.1053             | Adder                 | 0.23           |
| 963602 | AG1-209 E    | 0.1580             | Adder                 | 0.35           |
| 964141 | AG1-275 C    | 0.4513             | Adder                 | 1.0            |
| 964142 | AG1-275 E    | 0.3009             | Adder                 | 0.67           |
| 964151 | AG1-276 C    | 0.4513             | Adder                 | 1.0            |

| Bus #  | Bus          | Gendeliv MW Impact | Type          | Full MW Impact |
|--------|--------------|--------------------|---------------|----------------|
| 964152 | AG1-276 E    | 0.3009             | Adder         | 0.67           |
| 964251 | AG1-286 C    | 0.6222             | 50/50         | 0.6222         |
| 964252 | AG1-286 E    | 0.4148             | 50/50         | 0.4148         |
| 964531 | AG1-316 C O1 | 8.2368             | 50/50         | 8.2368         |
| 964532 | AG1-316 E O1 | 2.0592             | 50/50         | 2.0592         |
| 965582 | AG1-426 BAT  | 5.7196             | 50/50         | 5.7196         |
| 966251 | AG1-494 C    | 4.5632             | 50/50         | 4.5632         |
| 966252 | AG1-494 E    | 6.8448             | 50/50         | 6.8448         |
| 966691 | AG1-539 C    | 0.7770             | Adder         | 1.72           |
| 966692 | AG1-539 E    | 1.0441             | Adder         | 2.32           |
| 966761 | AG1-547 C    | 1.2238             | Adder         | 2.72           |
| 966762 | AG1-547 E    | 0.6566             | Adder         | 1.46           |
| WEC    | WEC          | 0.1310             | Confirmed LTF | 0.1310         |
| LGEE   | LGEE         | 0.2821             | Confirmed LTF | 0.2821         |
| CPL    | CPL          | 0.2382             | Confirmed LTF | 0.2382         |
| CBM-W2 | CBM-W2       | 4.0947             | Confirmed LTF | 4.0947         |
| NY     | NY           | 0.1134             | Confirmed LTF | 0.1134         |
| TVA    | TVA          | 0.6832             | Confirmed LTF | 0.6832         |
| O-066  | O-066        | 1.7094             | Confirmed LTF | 1.7094         |
| SIGE   | SIGE         | 0.0733             | Confirmed LTF | 0.0733         |
| CBM-S2 | CBM-S2       | 4.6145             | Confirmed LTF | 4.6145         |
| CBM-S1 | CBM-S1       | 0.1828             | Confirmed LTF | 0.1828         |
| G-007  | G-007        | 0.2699             | Confirmed LTF | 0.2699         |
| MEC    | MEC          | 0.6849             | Confirmed LTF | 0.6849         |
| LAGN   | LAGN         | 0.8225             | Confirmed LTF | 0.8225         |
| CBM-W1 | CBM-W1       | 5.5800             | Confirmed LTF | 5.5800         |

## 11.7 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

| Queue Number | Project Name                            | Status                                    |
|--------------|-----------------------------------------|-------------------------------------------|
| AB2-043      | Chase City 115kV                        | Under Construction                        |
| AB2-060      | Chase City-Lunenburg 115kV              | In Service                                |
| AB2-077      | Buggs Island-Chase City 115kV           | Suspended                                 |
| AB2-078      | Buggs Island-Chase City 115kV           | Suspended                                 |
| AB2-079      | Buggs Island-Chase City 115kV           | Suspended                                 |
| AC1-036      | Twittys Creek 34.5kV                    | Partially in Service - Under Construction |
| AC1-042      | Altavista-Mt. Airy 69kV                 | Engineering and Procurement               |
| AC1-054      | Kerr Dam-Eatons Ferry 115 kV            | Engineering and Procurement               |
| AC1-075      | Perth-Hickory Grove 115kV               | Engineering and Procurement               |
| AC1-080      | Perth-Hickory Grove 115kV               | Engineering and Procurement               |
| AC1-083      | Smith Mountain-Bearskin 138kV           | Active                                    |
| AC1-105      | Halifax-Mt. Laurel 115kV                | Engineering and Procurement               |
| AC1-116      | Mount Eagle 34.5kV                      | Engineering and Procurement               |
| AC1-123      | Smith Mountain-Candler's Mountain 138kV | Under Construction                        |
| AC1-131      | PJM-CPLE                                | Confirmed                                 |
| AC1-145      | Gretna DP 69 kV                         | Engineering and Procurement               |
| AC1-221      | Halifax-Person 230kV                    | Engineering and Procurement               |
| AC1-222      | Crystal Hill-Halifax 115kV              | Engineering and Procurement               |
| AC2-071      | Buckingham 35kV                         | Withdrawn                                 |
| AC2-100      | Halifax-Person 230kV                    | Engineering and Procurement               |
| AC2-165      | Bremo-Powhatan 230kV                    | Engineering and Procurement               |
| AD1-017      | Smith Mountain-Bearskin 138 kV          | Active                                    |
| AD1-055      | Crystal Hill-Halifax 115 kV             | Engineering and Procurement               |
| AD1-058      | Halifax-Person 230 kV                   | Engineering and Procurement               |
| AD1-087      | Clover-Sedge Hill 230 kV                | Active                                    |
| AD1-088      | Briery-Clover 230 kV                    | Active                                    |
| AD1-131      | Sedge Hill-Person 230 kV                | Engineering and Procurement               |
| AD1-152      | Clover-Sedge Hill 230 kV                | Active                                    |
| AD1-157      | South Creek 34.5 kV                     | Withdrawn                                 |
| AD1-161      | Stonewall-Long Mountain 69 kV           | Active                                    |
| AD2-033      | Chase City-Lunenburg 115 kV             | Active                                    |
| AD2-046      | Boynton DP-Kerr Dam 115 kV              | Active                                    |
| AD2-063      | Central-Chase City 115kV                | Active                                    |
| AD2-202      | Clover-Sedge Hill 230kV                 | Active                                    |
| AE1-056      | Red House-South Creek 115 kV            | Active                                    |
| AE1-064      | Rockcastle 138 kV                       | Active                                    |
| AE1-075      | Powhatan 34.5 kV                        | Engineering and Procurement               |
| AE1-108      | Bremo-Scottsville 138 kV                | Active                                    |
| AE1-130      | Meads Store 138 kV                      | Active                                    |

| Queue Number | Project Name                                | Status                      |
|--------------|---------------------------------------------|-----------------------------|
| AE1-148      | Kerr Dam-Ridge Rd 115 kV                    | Active                      |
| AE1-230      | Shockoe 69 kV                               | Active                      |
| AE1-250      | Smith Mountain-E. Danville 138 kV           | Active                      |
| AE2-053      | Kerr Dam-Ridge Road 115 kV                  | Active                      |
| AE2-092      | Kidds Store-Sherwood 115 kV                 | Active                      |
| AE2-182      | Briery-Clover 230 kV                        | Active                      |
| AE2-185      | Gladys DP-Stonemill Switching Station 69 kV | Active                      |
| AE2-187      | Shockoe DP-Chatham 69 kV                    | Active                      |
| AE2-258      | Chase City 115 kV                           | Active                      |
| AE2-259      | Curdsville-Willis Mtn 115 kV                | Active                      |
| AE2-283      | Gladys-Stone Mill 69 kV                     | Active                      |
| AE2-291      | Grit DP-Perth 115 kV                        | Active                      |
| AE2-292      | Grit DP-Perth 115 kV                        | Active                      |
| AF1-058      | Welco 34.5 kV                               | Engineering and Procurement |
| AF1-059      | Brodnax-South Hill 115 kV                   | Active                      |
| AF1-173      | Gretna DP-Shockoe DP 69 kV                  | Active                      |
| AF1-246      | Clover-Rawlins 500 kV                       | Active                      |
| AF1-293      | Kidds Store-Fort Union 115 kV               | Active                      |
| AF1-294      | Jetersville-Ponton 115 kV                   | Active                      |
| AF1-323      | Scottsville-Colleen 138 kV                  | Active                      |
| AF2-042      | Clover-Rawlins 500 kV                       | Active                      |
| AF2-107      | Clifford 138 kV                             | Active                      |
| AF2-115      | Jetersville-Ponton 115 kV                   | Active                      |
| AF2-144      | Powhatan 34.5 kV                            | Active                      |
| AF2-171      | Madisonville 115 kV                         | Active                      |
| AF2-222      | Madisonville DP-Twitty's Creek 115 kV       | Active                      |
| AF2-244      | Powhatan 34.5 kV                            | Withdrawn                   |
| AF2-266      | Clover 230 kV                               | Active                      |
| AF2-297      | Sedge Hill 115 kV                           | Active                      |
| AF2-302      | Scottsville-Colleen 138 kV                  | Active                      |
| AF2-397      | Fork Union-Mt. Eagle 230 kV                 | Active                      |
| AF2-403      | Shockoe DP-Chatham 69 kV                    | Active                      |
| AG1-021      | Jetersville-Ponton 115 kV                   | Active                      |
| AG1-022      | Scottsville-Colleen 138 kV                  | Active                      |
| AG1-030      | Victoria DP-Martin DP 115 kV                | Active                      |
| AG1-048      | Jetersville-Ponton 115 kV                   | Active                      |
| AG1-093      | Halifax-Chase City 115 kV                   | Active                      |
| AG1-098      | Briery-Clover 230 kV                        | Active                      |
| AG1-105      | Clover-Sedge Hill 230 kV                    | Active                      |
| AG1-123      | Amherst-Riverville138 kV                    | Active                      |
| AG1-124      | Gladstone 138 kV                            | Active                      |
| AG1-166      | Lone Pine 115 kV                            | Active                      |
| AG1-167      | Lone Pine 115 kV                            | Active                      |
| AG1-168      | Lone Pine 115 kV                            | Active                      |
| AG1-169      | Lone Pine 115 kV                            | Active                      |
| AG1-170      | Lone Pine 115 kV                            | Active                      |
| AG1-176      | Briery-Clover 230 kV                        | Active                      |
| AG1-179      | Brunswick 69 kV                             | Active                      |
| AG1-180      | Brunswick 69 kV                             | Active                      |
| AG1-181      | Pamplin-Chase City 115 kV                   | Active                      |
| AG1-185      | Pamplin-Chase City 115 kV                   | Active                      |
| AG1-209      | Gretna 12.5 kV                              | Active                      |

| Queue Number | Project Name                    | Status    |
|--------------|---------------------------------|-----------|
| AG1-215      | Fort Pickett 13.2 kV            | Active    |
| AG1-272      | Twitty's Creek 115 kV           | Active    |
| AG1-273      | Twitty's Creek 115 kV           | Active    |
| AG1-274      | Twitty's Creek 115 kV           | Active    |
| AG1-275      | Gladys DP-Stone Mill 69 kV      | Active    |
| AG1-276      | Gladys DP-Stone Mill 69 kV      | Active    |
| AG1-284      | Bremo-Cunningham DP 115 kV      | Active    |
| AG1-285      | Chase City-Central 115 kV       | Active    |
| AG1-286      | Johnson Mountain 138 kV         | Active    |
| AG1-287      | South Boston 12.5 kV            | Active    |
| AG1-310      | Crystal Hill-Perth 115 kV       | Active    |
| AG1-316      | Rustburg 138 kV                 | Active    |
| AG1-342      | Dryburg 115 kV                  | Active    |
| AG1-345      | Crewe 12.5 kV                   | Active    |
| AG1-347      | Briery DP-Clover 230 kV         | Active    |
| AG1-357      | Clover-Rawlings 500 kV          | Active    |
| AG1-384      | Twitty's Creek 115 kV           | Active    |
| AG1-393      | Fort Pickett DP 34.5 kV         | Active    |
| AG1-413      | South Hill-Bordnax 115 kV       | Active    |
| AG1-426      | Bremo-Scottsville 138 kV        | Active    |
| AG1-427      | Chase City-Drakes Branch 115 kV | Active    |
| AG1-428      | Danieltown 69 kV                | Active    |
| AG1-432      | Curdsville DP-Willis Mt. 115 kV | Active    |
| AG1-440      | Palmer Springs 115 kV           | Active    |
| AG1-441      | Palmer Springs 115 kV           | Active    |
| AG1-445      | Palmer Spring 115 kV            | Active    |
| AG1-446      | Palmer Springs 115 kV           | Active    |
| AG1-451      | Curdsville DP-Willis Mt. 115 kV | Active    |
| AG1-494      | Boxwood-Riverville 138 kV       | Active    |
| AG1-505      | Rawlings-Clover 500 kV          | Active    |
| AG1-506      | Rawlings-Clover 500 kV          | Active    |
| AG1-539      | Grit DP-Perth 115 kV            | Active    |
| AG1-546      | Ebony-Elams Road 115 kV         | Active    |
| AG1-547      | Mount Airy-Chatham 69 kV        | Active    |
| AG1-550      | Mount Eagle-Fork Union 230 kV   | Active    |
| AG1-557      | Curdsville DP 115 kV            | Withdrawn |

## 11.8 Contingency Descriptions

| Contingency Name                                                  | Contingency Definition                                                                                                                                                                  |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P2-1_242549 05BANSTR 138 940080 AE1-250 TAP 138 1-A</b>    | CONTINGENCY 'AEP_P2-1_242549 05BANSTR 138 940080 AE1-250 TAP 138 1-A'<br>OPEN BRANCH FROM BUS 242549 TO BUS 940080 CKT 1<br>END                                                         |
| <b>DVP_P1-2: LN 40-A</b>                                          | CONTINGENCY 'DVP_P1-2: LN 40-A'<br>OPEN BRANCH FROM BUS 314675 TO BUS 943910 CKT 1 /* 3BRODNAX 115.00 - AF1-059 TAP 115.00<br>END                                                       |
| <b>AEP_P4_#3174_05CLOVRD</b>                                      | CONTINGENCY "'AEP_P4_#3174_05CLOVRD' 765_AA2" / 1543<br>OPEN BRANCH FROM BUS 242512 TO BUS 242515 CKT 1 / 242512 05CLOVRD 765<br>242515 05JOSHUA 765 1<br>END                           |
| <b>AEP_P2-1_242575 05CAMDLM 138 242737 05OPOSSUMCK 138 1</b>      | CONTINGENCY 'AEP_P2-1_242575 05CAMDLM 138 242737 05OPOSSUMCK 138 1'<br>OPEN BRANCH FROM BUS 242575 TO BUS 242737 CKT 1<br>END                                                           |
| <b>DVP_P1-2: LN 1016-D</b>                                        | CONTINGENCY 'DVP_P1-2: LN 1016-D'<br>OPEN BRANCH FROM BUS 927260 TO BUS 314696 CKT 1 /* AC1-222 TAP 115.00 - 3SEGE HILL 115.00<br>END                                                   |
| <b>AEP_P2-1_242741 05OTTER 138 314667 4ALTVSTA 138 1</b>          | CONTINGENCY 'AEP_P2-1_242741 05OTTER 138 314667 4ALTVSTA 138 1'<br>OPEN BRANCH FROM BUS 242741 TO BUS 314667 CKT 1<br>END                                                               |
| <b>DVP_P1-2: LN 1016-A</b>                                        | CONTINGENCY 'DVP_P1-2: LN 1016-A'<br>OPEN BRANCH FROM BUS 314688 TO BUS 927260 CKT 1 /* 3CRSTL HILL 115.00 - AC1-222 TAP 115.00<br>OPEN BUS 314688 /* ISLAND: 3CRSTL HILL 115.00<br>END |
| <b>AEP_P2-1_242687 05JOHNMT 138 242734 05NEWLDN 138 1</b>         | CONTINGENCY 'AEP_P2-1_242687 05JOHNMT 138 242734 05NEWLDN 138 1'<br>OPEN BRANCH FROM BUS 242687 TO BUS 242734 CKT 1<br>END                                                              |
| <b>AEP_P2-1_247670 05JOSHUA_XFL 138 247669 05JOSHUA 1EQ 999 1</b> | CONTINGENCY 'AEP_P2-1_247670 05JOSHUA_XFL 138 247669 05JOSHUA 1EQ 999 1'<br>OPEN BRANCH FROM BUS 247670 TO BUS 247669 CKT 1<br>END                                                      |

| Contingency Name                                              | Contingency Definition                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P2-2_#1372_05JOSHUA 765_1</b>                          | CONTINGENCY 'AEP_P2-2_#1372_05JOSHUA 765_1'<br>OPEN BRANCH FROM BUS 242515 TO BUS 247669 CKT 1 / 242515 05JOSHUA 765<br>247669 05JOSHUA 1EQ 999 1<br>OPEN BRANCH FROM BUS 247669 TO BUS 247670 CKT 1 / 247669 05JOSHUA 1EQ<br>999 247670 05JOSHUA_XFL 138 1<br>OPEN BRANCH FROM BUS 242688 TO BUS 247670 CKT 1 / 242688 05JOSHUA 138<br>247670 05JOSHUA_XFL 138 1<br>END |
| <b>AEP_P4_#311_05CLOVRD</b>                                   | CONTINGENCY "'AEP_P4_#311_05CLOVRD' 765_CC2" / 1395<br>OPEN BRANCH FROM BUS 242512 TO BUS 242514 CKT 1 / 242512 05CLOVRD 765<br>242514 05J.FERR 765 1<br>END                                                                                                                                                                                                             |
| <b>AEP_P2-1_242515 05JOSHUA 765 247669 05JOSHUA 1EQ 999 1</b> | CONTINGENCY 'AEP_P2-1_242515 05JOSHUA 765 247669 05JOSHUA 1EQ 999 1'<br>OPEN BRANCH FROM BUS 242515 TO BUS 247669 CKT 1<br>END                                                                                                                                                                                                                                           |
| <b>AEP_P1-2_#375_5201</b>                                     | CONTINGENCY 'AEP_P1-2_#375_5201'<br>OPEN BRANCH FROM BUS 242687 TO BUS 242734 CKT 1 / 242687 05JOHNMT 138<br>242734 05NEWLDN 138 1<br>OPEN BRANCH FROM BUS 242687 TO BUS 242741 CKT 1 / 242687 05JOHNMT 138<br>242741 05OTTER 138 1<br>OPEN BRANCH FROM BUS 242741 TO BUS 314667 CKT 1 / 242741 05OTTER 138<br>314667 4ALTVSTA 138 1<br>END                              |
| <b>DVP_P1-3: 6SEEDGE HILL-TX#1</b>                            | CONTINGENCY 'DVP_P1-3: 6SEEDGE HILL-TX#1'<br>OPEN BRANCH FROM BUS 314696 TO BUS 314697 CKT 1 /* 3SEEDGE HILL 115.00 -<br>6SEEDGE HILL 230.00<br>END                                                                                                                                                                                                                      |
| <b>DVP_P1-3: 6SEEDGE HILL-TX#2</b>                            | CONTINGENCY 'DVP_P1-3: 6SEEDGE HILL-TX#2'<br>OPEN BRANCH FROM BUS 314696 TO BUS 314697 CKT 2 /* 3SEEDGE HILL 115.00 -<br>6SEEDGE HILL 230.00<br>END                                                                                                                                                                                                                      |
| <b>AEP_P2-1_242688 05JOSHUA 138 247670 05JOSHUA_XFL 138 1</b> | CONTINGENCY 'AEP_P2-1_242688 05JOSHUA 138 247670 05JOSHUA_XFL 138 1'<br>OPEN BRANCH FROM BUS 242688 TO BUS 247670 CKT 1<br>END                                                                                                                                                                                                                                           |

| Contingency Name                                              | Contingency Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P2-2_#13260_05SKIMMR 69.0_1</b>                        | CONTINGENCY 'AEP_P2-2_#13260_05SKIMMR 69.0_1'<br>OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 1 / 242886 05SKIMMR 69.0<br>314861 3SKIMMER 115 1<br>OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 2 / 242886 05SKIMMR 69.0<br>314861 3SKIMMER 115 2<br>OPEN BRANCH FROM BUS 242860 TO BUS 242886 CKT 1 / 242860 05ABERT 69.0<br>242886 05SKIMMR 69.0 1<br>OPEN BRANCH FROM BUS 242884 TO BUS 242886 CKT 1 / 242884 05S.LYNCHB 69.0<br>242886 05SKIMMR 69.0 1<br>REMOVE SWSHUNT FROM BUS 242886 / 242886 05SKIMMR 69.0<br>END |
| <b>DVP_P1-3: 3SKIMMER-3SKIMMER</b>                            | CONTINGENCY 'DVP_P1-3: 3SKIMMER-3SKIMMER'<br>OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 1 /* 05SKIMMR 69.000 -<br>3SKIMMER 115.00<br>END                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DVP_P1-2: LN 556-D</b>                                     | CONTINGENCY 'DVP_P1-2: LN 556-D'<br>OPEN BRANCH FROM BUS 966360 TO BUS 314936 CKT 1 /* AG1-055 TAP 500.00 -<br>8RAWLINGS 500.00<br>END                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>DVP_P1-2: LN 296-A</b>                                     | CONTINGENCY 'DVP_P1-2: LN 296-A'<br>OPEN BRANCH FROM BUS 304070 TO BUS 927250 CKT 1 /* 6PERSON230 T230.00 -<br>AC1-221 TAP 230.00<br>END                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>AEP_P2-2_#10292_05NEWLDN 138_1</b>                         | CONTINGENCY 'AEP_P2-2_#10292_05NEWLDN 138_1'<br>OPEN BRANCH FROM BUS 242569 TO BUS 242734 CKT 1 / 242569 05BRUSHT 138<br>242734 05NEWLDN 138 1<br>OPEN BRANCH FROM BUS 242641 TO BUS 242734 CKT 1 / 242641 05FOREST 138<br>242734 05NEWLDN 138 1<br>OPEN BRANCH FROM BUS 242687 TO BUS 242734 CKT 1 / 242687 05JOHNMT 138<br>242734 05NEWLDN 138 1<br>END                                                                                                                                                                    |
| <b>AEP_P2-1_242720 05MONETA 138 242775 05ROCKCAS SS 138 1</b> | CONTINGENCY 'AEP_P2-1_242720 05MONETA 138 242775 05ROCKCAS SS 138 1'<br>OPEN BRANCH FROM BUS 242720 TO BUS 242775 CKT 1<br>END                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>AEP_P1-2_#5366_42-A</b>                                    | CONTINGENCY 'AEP_P1-2_#5366_42-A'<br>OPEN BRANCH FROM BUS 242549 TO BUS 940080 CKT 1 / 242549 05BANSTR 138<br>940080 AE1-250 TAP 138 1<br>OPEN BRANCH FROM BUS 242549 TO BUS 242632 CKT 1 / 242549 05BANSTR 138<br>242632 05EDAN 2 138 1<br>OPEN BRANCH FROM BUS 242549 TO BUS 314668 CKT Z1 / 242549 05BANSTR 138<br>314668 4BANISTR 138 Z1<br>END                                                                                                                                                                          |

| Contingency Name                                          | Contingency Definition                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P2-1_242569 05BRUSHT 138 242734 05NEWLDN 138 1</b> | CONTINGENCY 'AEP_P2-1_242569 05BRUSHT 138 242734 05NEWLDN 138 1'<br>OPEN BRANCH FROM BUS 242569 TO BUS 242734 CKT 1<br>END                                                                                                                                                                                                                                                                                    |
| <b>Base Case</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>AEP_P4_#2914_05J.FERR</b>                              | CONTINGENCY "'AEP_P4_#2914_05J.FERR' 765_B2" / 1487<br>OPEN BRANCH FROM BUS 242512 TO BUS 242514 CKT 1 / 242512 05CLOVRD 765<br>242514 05J.FERR 765 1<br>OPEN BRANCH FROM BUS 242514 TO BUS 245993 CKT 4 / 242514 05J.FERR 765<br>245993 05J.FERR SVS 20.6 4<br>REMOVE SWSHUNT FROM BUS 242514 /* 242514 05J.FERR 765<br>END                                                                                  |
| <b>DVP_P1-2: LN 31-A</b>                                  | CONTINGENCY 'DVP_P1-2: LN 31-A'<br>OPEN BRANCH FROM BUS 314666 TO BUS 314712 CKT 1 /* 3ALTVSTA 115.00 -<br>3OTTER R 115.00<br>OPEN BRANCH FROM BUS 314694 TO BUS 314712 CKT 1 /* 3GRIT 115.00 - 3OTTER R<br>115.00<br>OPEN BRANCH FROM BUS 314694 TO BUS 942750 CKT 1 /* 3GRIT 115.00 - AE2-291<br>TAP 115.00<br>OPEN BUS 314694 /* ISLAND: 3GRIT 115.00<br>OPEN BUS 314712 /* ISLAND: 3OTTER R 115.00<br>END |
| <b>AEP_P2-1_242641 05FOREST 138 242734 05NEWLDN 138 1</b> | CONTINGENCY 'AEP_P2-1_242641 05FOREST 138 242734 05NEWLDN 138 1'<br>OPEN BRANCH FROM BUS 242641 TO BUS 242734 CKT 1<br>END                                                                                                                                                                                                                                                                                    |
| <b>AEP_P1-2_#3174_6</b>                                   | CONTINGENCY 'AEP_P1-2_#3174_6'<br>OPEN BRANCH FROM BUS 242512 TO BUS 242515 CKT 1 / 242512 05CLOVRD 765<br>242515 05JOSHUA 765 1<br>END                                                                                                                                                                                                                                                                       |
| <b>DVP_P1-2: LN 556-C</b>                                 | CONTINGENCY 'DVP_P1-2: LN 556-C'<br>OPEN BRANCH FROM BUS 964930 TO BUS 966360 CKT 1 /* AG1-357 TAP 500.00 -<br>AG1-055 TAP 500.00<br>END                                                                                                                                                                                                                                                                      |
| <b>AEP_P1-3_#1372_05JOSHUA 765_1</b>                      | CONTINGENCY 'AEP_P1-3_#1372_05JOSHUA 765_1'<br>OPEN BRANCH FROM BUS 242515 TO BUS 247669 CKT 1 / 242515 05JOSHUA 765<br>247669 05JOSHUA 1EQ 999 1<br>OPEN BRANCH FROM BUS 247669 TO BUS 247670 CKT 1 / 247669 05JOSHUA 1EQ<br>999 247670 05JOSHUA_XFL 138 1<br>OPEN BRANCH FROM BUS 242688 TO BUS 247670 CKT 1 / 242688 05JOSHUA 138<br>247670 05JOSHUA_XFL 138 1<br>END                                      |

| Contingency Name       | Contingency Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P7-1_#10778</b> | <p>CONTINGENCY 'AEP_P7-1_#10778'</p> <p>OPEN BRANCH FROM BUS 242531 TO BUS 304094 CKT 1 / 242531 05EDANV2 230<br/>304094 6YANCY TAP 230 1</p> <p>OPEN BRANCH FROM BUS 242531 TO BUS 242632 CKT 4 / 242531 05EDANV2 230<br/>242632 05EDAN 2 138 4</p> <p>OPEN BRANCH FROM BUS 242549 TO BUS 242632 CKT 1 / 242549 05BANSTR 138<br/>242632 05EDAN 2 138 1</p> <p>OPEN BRANCH FROM BUS 242629 TO BUS 242632 CKT 1 / 242629 05E.MONU 138<br/>242632 05EDAN 2 138 1</p> <p>OPEN BRANCH FROM BUS 242629 TO BUS 242770 CKT 1 / 242629 05E.MONU 138<br/>242770 05RIGIS 138 1</p> <p>OPEN BRANCH FROM BUS 242631 TO BUS 242632 CKT Z1 / 242631 05EDAN 1 138<br/>242632 05EDAN 2 138 Z1</p> <p>OPEN BRANCH FROM BUS 242629 TO BUS 243948 CKT 1 / 242629 05E.MONU 138<br/>243948 05BRANTLY 69.0 1</p> <p>OPEN BRANCH FROM BUS 242770 TO BUS 243988 CKT 1 / 242770 05RIGIS 138<br/>243988 05RIGIS 69.0 1</p> <p>OPEN BRANCH FROM BUS 243974 TO BUS 243988 CKT 1 / 243974 05GOODYEAR<br/>69.0 243988 05RIGIS 69.0 1</p> <p>END</p> |
| <b>DVP_P1-2: LN 33</b> | <p>CONTINGENCY 'DVP_P1-2: LN 33'</p> <p>OPEN BRANCH FROM BUS 314267 TO BUS 314669 CKT 1 /* 3CHASCTY2 115.00 -<br/>3BARNES J 115.00</p> <p>OPEN BRANCH FROM BUS 314669 TO BUS 314684 CKT 1 /* 3BARNES J 115.00 - 3MT<br/>LREL 115.00</p> <p>OPEN BRANCH FROM BUS 314684 TO BUS 316115 CKT 1 /* 3MT LREL 115.00 - AC1-<br/>105 TAP 115.00</p> <p>OPEN BRANCH FROM BUS 314696 TO BUS 316115 CKT 1 /* 3SEEDGE HILL 115.00 -<br/>AC1-105 TAP 115.00</p> <p>OPEN BUS 314669 /* ISLAND: 3BARNES J 115.00</p> <p>OPEN BUS 314684 /* ISLAND: 3MT LREL 115.00</p> <p>OPEN BUS 316115 /* ISLAND: AC1-105 TAP 115.00</p> <p>OPEN BUS 316116 /* ISLAND: AC1-105 MAIN115.00</p> <p>OPEN BUS 316117 /* ISLAND: AC1-105 COL 34.500</p> <p>OPEN BUS 316118 /* ISLAND: AC1-105 C 0.5750</p> <p>OPEN BUS 926274 /* ISLAND: AC1-105 E 0.5750</p> <p>END</p>                                                                                                                                                                               |

| Contingency Name                       | Contingency Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P1-2_#5419_105</b>              | CONTINGENCY 'AEP_P1-2_#5419_105'<br>OPEN BRANCH FROM BUS 242607 TO BUS 243892 CKT 1 / 242607 05CLOVRD 138<br>243892 05MEADS8 138 1<br>OPEN BRANCH FROM BUS 242720 TO BUS 243892 CKT 1 / 242720 05MONETA 138<br>243892 05MEADS8 138 1<br>OPEN BRANCH FROM BUS 242720 TO BUS 242775 CKT 1 / 242720 05MONETA 138<br>242775 05ROCKCAS SS 138 1<br>OPEN BRANCH FROM BUS 242775 TO BUS 242802 CKT 1 / 242775 05ROCKCAS SS<br>138 242802 05SMITHMTN 138 1<br>OPEN BRANCH FROM BUS 242775 TO BUS 245675 CKT Z1 / 242775 05ROCKCAS SS<br>138 245675 05WHITEHOUS8 138 Z1<br>OPEN BRANCH FROM BUS 243892 TO BUS 243893 CKT Z1 / 243892 05MEADS8 138<br>243893 05MEADS 8 24.9 Z1<br>REMOVE LOAD C1 FROM BUS 242775 / 242775 05ROCKCAS SS 138 C1<br>END |
| <b>DVP_P1-3: 3SKIMMER-3SKIMMER_CK2</b> | CONTINGENCY 'DVP_P1-3: 3SKIMMER-3SKIMMER_CK2'<br>OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 2 /* 05SKIMMR 69.000 -<br>3SKIMMER 115.00<br>END                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>AEP_P2-2_#10163_05EDAN 2 138_2</b>  | CONTINGENCY 'AEP_P2-2_#10163_05EDAN 2 138_2'<br>OPEN BRANCH FROM BUS 242531 TO BUS 304094 CKT 1 / 242531 05EDANV2 230<br>304094 6YANCY TAP 230 1<br>OPEN BRANCH FROM BUS 242531 TO BUS 242632 CKT 4 / 242531 05EDANV2 230<br>242632 05EDAN 2 138 4<br>OPEN BRANCH FROM BUS 242549 TO BUS 242632 CKT 1 / 242549 05BANSTR 138<br>242632 05EDAN 2 138 1<br>OPEN BRANCH FROM BUS 242629 TO BUS 242632 CKT 1 / 242629 05E.MONU 138<br>242632 05EDAN 2 138 1<br>OPEN BRANCH FROM BUS 242631 TO BUS 242632 CKT Z1 / 242631 05EDAN 1 138<br>242632 05EDAN 2 138 Z1<br>END                                                                                                                                                                          |
| <b>DVP_P1-3: 4ALTVSTA-TX#4</b>         | CONTINGENCY 'DVP_P1-3: 4ALTVSTA-TX#4'<br>OPEN BRANCH FROM BUS 314666 TO BUS 314667 CKT 2 /* 3ALTVSTA 115.00 -<br>4ALTVSTA 138.00<br>END                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>AEP_P7-1_#10830</b>                 | CONTINGENCY 'AEP_P7-1_#10830'<br>OPEN BRANCH FROM BUS 242555 TO BUS 242843 CKT 1 / 242555 05BLAINE 138<br>242843 05WLAKE 138 1<br>OPEN BRANCH FROM BUS 242748 TO BUS 243951 CKT 1 / 242748 05PENHOK 138<br>243951 05REDWOOD 138 1<br>OPEN BRANCH FROM BUS 242748 TO BUS 242802 CKT 1 / 242748 05PENHOK 138<br>242802 05SMITHMTN 138 1<br>OPEN BRANCH FROM BUS 242843 TO BUS 243951 CKT 1 / 242843 05WLAKE 138<br>243951 05REDWOOD 138 1<br>END                                                                                                                                                                                                                                                                                             |

| Contingency Name                                          | Contingency Definition                                                                                                     |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1</b> | CONTINGENCY 'AEP_P2-1_242607 05CLOVRD 138 243892 05MEADS8 138 1'<br>OPEN BRANCH FROM BUS 242607 TO BUS 243892 CKT 1<br>END |

## 12 Short Circuit Analysis

The following Breakers are overdutied

None.

### 12.1 System Reinforcements - Short Circuit

None.

## 13 Affected Systems

### 13.1 TVA

TVA Impacts to be determined during later study phases (as applicable).

### 13.2 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

## 14 Attachment 1: One Line Diagram