# Generation Interconnection

# Feasibility Study Report

# for

# Queue Project AG1-134

# KINGS DOMINION DP 115 KV

# 60 MW Capacity / 100 MW Energy

January 2021

# Table of Contents


1 Introduction ..... 4
2 Preface ..... 4
3 General ..... 6
4 Point of Interconnection ..... 7
4.1 Primary Point of Interconnection ..... 7
4.2 Secondary Point of Interconnection ..... 7
5 Cost Summary ..... 7
6 Transmission Owner Scope of Work ..... 8
7 Schedule ..... 10
8 Transmission Owner Analysis ..... 10
8.1 Power Flow Analysis ..... 10
9 Interconnection Customer Requirements ..... 11
9.1 System Protection ..... 11
9.2 Compliance Issues and Interconnection Customer Requirements ..... 11
9.3 Power Factor Requirements ..... 11
10 Revenue Metering and SCADA Requirements ..... 12
10.1 PJM Requirements ..... 12
10.2 Meteorological Data Reporting Requirements ..... 12
10.3 Interconnected Transmission Owner Requirements ..... 12
11 Summer Peak - Load Flow Analysis ..... 13
11.1 Generation Deliverability ..... 14
11.2 Multiple Facility Contingency ..... 14
11.3 Contribution to Previously Identified Overloads ..... 14
11.4 Potential Congestion due to Local Energy Deliverability ..... 15
11.5 System Reinforcements - Summer Peak Load Flow - Primary POI ..... 17
11.6 Flow Gate Details ..... 19
11.6.1 Index 1 ..... 20
11.6.2 Index 2 ..... 21
11.6.3 Index 3 ..... 22
11.6.4 Index 4 ..... 24
11.6.5 Index 5 ..... 26

11.6.6 Index 6 ..... 28
11.6.7 Index 7 ..... 30
11.6.8 Index 8 ..... 32
11.6.9 Index 9 ..... 37
11.7 Queue Dependencies ..... 42
11.8 Contingency Descriptions ..... 46
12 Short Circuit Analysis ..... 48
12.1 System Reinforcements - Short Circuit ..... 48
13 Affected Systems ..... 49
13.1 TVA ..... 49
13.2 Duke Energy Progress ..... 49
14 Attachment 1: One Line Diagram ..... 50

# 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.

The AG1-134 customer will be an interconnection to Rappahannock Electric Cooperative (REC) facilities. The Interconnection Customer (IC) will need to coordinate with REC for scope, cost and schedule for this physical interconnection. This PJM report identifies the effects on the transmission system. AG1-134 will interconnect within the Rappahannock Electric Cooperative (REC) system which interconnects with the Dominion transmission system at Kings Dominion DP 115 kV.

# 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 Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

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 Solar generating facility located in King William County, Virginia. The installed facilities will have a total capability of 100 MW with 60 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 01, 2024. This study does not imply a TO commitment to this in-service date.

Final attachment facilities and local upgrades (if required) along with terms and conditions to interconnect AG1-134 will be specified in a separate two party Interconnection Agreement (IA) between REC and the Interconnection Customer as this project is considered FERC non-jurisdictional per the PJM Open Access Transmission Tariff (OATT).

From the transmission perspective, the impacts are were analyzed and detailed in the "Network Impacts" section below.

| Queue Number | AG1-134 |
|---|---|
| Project Name | KINGS DOMINION DP 115 KV |
| State | Virginia |
| County | King William |
| Transmission Owner | Dominion – REC connection |
| MFO | 100 |
| MWE | 100 |
| MWC | 60 |
| Fuel | Solar |
| Basecase Study Year | 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

AG1-134 "Kings Dominion DP 115 kV" will interconnect within the Rappahannock Electric Cooperative (REC) system which interconnects with the Dominion transmission system at Kings Dominion DP 115 kV.

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 AG1-134.

# 5 Cost Summary

The costs assoicated with interconnecting AG1-134 to the Rappahannock Electric Cooperative (REC) system will be documented in the two-party Interconnection Agreement between the IC and Rappahannock Electric Cooperative (REC).

The AG1-134 project will be responsible for the following costs:

| Description | Total Cost |
|---|---|
| **Total Physical Interconnection Costs** | $7,600,000 + Costs from REC To be provided in the Interconnection Agreement |
| **Total System Network Upgrade Costs** | $97,422,500[1] |
| **Total Costs** | **$105,022,500** |

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.

[1] 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 AG1-134 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 is given in the table below:

| Description | Total Cost |
|---|---|
| ***Attachment Facilities*** | $500,000 |
| ***115 kV Three Breaker Ring-Bus Substation*** | $5,500,000 |
| ***Re-arrange line and tie-in new substation*** | $1,600,000 |
| REC Interconnection Work | Interconnection Customer to contact REC |
| **Total Physical Interconnection Costs** | **$7,600,000 + Costs from REC to be determined** |

AG1-134 "Kings Dominion DP 115 kV" will interconnect within the Rappahannock Electric Cooperative (REC) system which interconnects with the Dominion transmission system at Kings Dominion DP 115 kV.

These costs are dependent on the interconnection of AD1-105 which is proposing to interconnect on the same REC transmission line. This AD1-105 interconnection may result in the construction of a new three breaker ring bus at Kings Dominion Delivery Point. Should the AD1-105 project withdraw from the Interconnection Queue, the AG1-134 project will assume the Attachment, Direct Connection, and Non-Direct Connection costs identified in the table above for connection to the Dominion system. If the AD1-105 project does not withdraw from the Interconnection Queue, the associated interconnection costs for this project as identified in the table above would require modification.

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 will be identified by REC and included in the Interconnection Agreement between Dominion and REC.

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

These schedules will be more cleary identified in future study phases.

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[1].

# 8 Transmission Owner Analysis

Dominion assessed the impact of the proposed project 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).
2. 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.
3. 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.
4. 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 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Back Panel temperature (Fahrenheit) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Irradiance (Watts/meter2) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Ambient air temperature (Fahrenheit) - (Accepted, not required)
- Wind speed (meters/second) - (Accepted, not required)
- Wind direction (decimal degrees from true north) - (Accepted, not required)

## 10.3 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 AG1-134 was evaluated as a 100.0 MW (Capacity 60.0 MW) injection at the Kings Dominion DP 115 kV substation in the Dominion area. Project AG1-134 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-134 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 | CKT ID | CONT NAME | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC\|DC | MW IMPACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168662861** | 314220 | 3FOURRIVERS | 115.0 | DVP | 314221 | 3HANOVER | 115.0 | DVP | 1 | 3142226HANOVER 230 939750 AE1-206 TAP 230 1 | single | 187.059997559 | 96.64 | 119.7 | DC | 43.14 |
| **168662862** | 314220 | 3FOURRIVERS | 115.0 | DVP | 314221 | 3HANOVER | 115.0 | DVP | 1 | Base Case | single | 187.059997559 | 84.57 | 107.7 | DC | 43.26 |
| **168662867** | 314221 | 3HANOVER | 115.0 | DVP | 314217 | 3ELMONT | 115.0 | DVP | 1 | 3142126FOUR RIVERS 230 939750 AE1-206 TAP 230 1 | single | 187.059997559 | 96.59 | 119.65 | DC | 43.14 |
| **168662868** | 314221 | 3HANOVER | 115.0 | DVP | 314217 | 3ELMONT | 115.0 | DVP | 1 | Base Case | single | 187.059997559 | 84.51 | 107.64 | DC | 43.26 |

## 11.2 Multiple Facility Contingency

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

None.

## 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 | CKT ID | CONT NAME | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC\|DC | MW IMPACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663162** | 314105 | 6AQUIA | 230.0 | DVP | 314186 | 6FULLER ROAD | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.679992676 | 103.9 | 105.08 | DC | 9.55 |
| **168663020** | 314134 | 6CRANES | 230.0 | DVP | 314142 | 6STAFORD | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.679992676 | 129.28 | 130.45 | DC | 9.55 |
| **168663022** | 314134 | 6CRANES | 230.0 | DVP | 314142 | 6STAFORD | 230.0 | DVP | 1 | DVP_P1-2: LN 568 | single | 678.679992676 | 119.94 | 120.82 | DC | 7.5 |
| **168663093** | 314142 | 6STAFORD | 230.0 | DVP | 314145 | 6AQUI_HARB_B | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.679992676 | 114.1 | 115.28 | DC | 9.55 |
| **168663095** | 314142 | 6STAFORD | 230.0 | DVP | 314145 | 6AQUI_HARB_B | 230.0 | DVP | 1 | DVP_P1-2: LN 568 | single | 678.679992676 | 104.76 | 105.65 | DC | 7.5 |
| **168663145** | 314144 | 6AQUI_HARB_A | 230.0 | DVP | 314105 | 6AQUIA | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.679992676 | 107.98 | 109.16 | DC | 9.55 |
| **168663172** | 314186 | 6FULLER ROAD | 230.0 | DVP | 314074 | 6POSSUM | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.679992676 | 102.86 | 104.03 | DC | 9.55 |

| 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 PROJECT LOADING % | POST PROJECT LOADING % | AC\|DC | MW IMPACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168662998** | 314218 | 6ELMONT | 230.0 | DVP | 314908 | 8ELMONT | 500.0 | DVP | 2 | DVP_P1-2: LN 557 | single | 879.840026855 | 151.22 | 152.19 | DC | 9.87 |
| **168663026** | 314218 | 6ELMONT | 230.0 | DVP | 314908 | 8ELMONT | 500.0 | DVP | 1 | DVP_P1-2: LN 557 | single | 920.918029785 | 145.15 | 146.09 | DC | 9.91 |
| **168662858** | 314220 | 3FOURRIVERS | 115.0 | DVP | 314221 | 3HANOVER | 115.0 | DVP | 1 | DVP_P1-2: LN 47 | single | 187.059997559 | 140.48 | 172.53 | DC | 59.95 |
| **168662864** | 314221 | 3HANOVER | 115.0 | DVP | 314217 | 3ELMONT | 115.0 | DVP | 1 | DVP_P1-2: LN 47 | single | 187.059997559 | 140.38 | 172.42 | DC | 59.95 |

## 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 | CKT ID | CONT NAME | Type | Rating MVA | PRE PROJECT LOADING % | POST PROJECT LOADING % | AC\|DC | MW IMPACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663161** | 314105 | 6AQUIA | 230.0 | DVP | 314186 | 6FULLER ROAD | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 678.679992676 | 116.08 | 117.01 | DC | 15.92 |
| **168663019** | 314134 | 6CRANES | 230.0 | DVP | 314142 | 6STAFORD | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 678.679992676 | 141.39 | 142.32 | DC | 15.92 |
| **168663023** | 314134 | 6CRANES | 230.0 | DVP | 314142 | 6STAFORD | 230.0 | DVP | 1 | Base Case | operation | 678.679992676 | 102.65 | 103.39 | DC | 11.51 |
| **168663263** | 314137 | 6FREDBRG | 230.0 | DVP | 314134 | 6CRANES | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 984.179992676 | 103.58 | 104.22 | DC | 15.92 |
| **168663092** | 314142 | 6STAFORD | 230.0 | DVP | 314145 | 6AQUI_HARB_B | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 678.679992676 | 126.28 | 127.21 | DC | 15.92 |
| **168663144** | 314144 | 6AQUI_HARB_A | 230.0 | DVP | 314105 | 6AQUIA | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 678.679992676 | 120.17 | 121.09 | DC | 15.92 |
| **168663230** | 314151 | 3SLABTWN | 115.0 | DVP | 314136 | 3FREDBRG | 115.0 | DVP | 1 | DVP_P1-2: LN 73 | operation | 331.820007324 | 95.71 | 125.82 | DC | 99.91 |
| **168663196** | 314152 | 3S JOHNS | 115.0 | DVP | 314153 | 3WOODPCK | 115.0 | DVP | 1 | DVP_P1-2: LN 73 | operation | 331.820007324 | 103.0 | 133.11 | DC | 99.91 |

| 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 PROJECT LOADING % | POST PROJECT LOADING % | AC\|DC | MW IMPACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663198** | 314153 | 3WOODPCK | 115.0 | DVP | 314151 | 3SLABTWN | 115.0 | DVP | 1 | DVP_P1-2: LN 73 | operation | 331.820007324 | 102.67 | 132.78 | DC | 99.91 |
| **168663171** | 314186 | 6FULLER ROAD | 230.0 | DVP | 314074 | 6POSSUM | 230.0 | DVP | 1 | DVP_P1-2: LN 2089 | operation | 678.679992676 | 115.04 | 115.96 | DC | 15.92 |
| **168663192** | 314216 | 3PINEWOOD | 115.0 | DVP | 314152 | 3S JOHNS | 115.0 | DVP | 1 | DVP_P1-2: LN 73 | operation | 331.820007324 | 104.81 | 134.92 | DC | 99.91 |
| **168663245** | 314217 | 3ELMONT | 115.0 | DVP | 314237 | 3NRTHWST | 115.0 | DVP | 1 | DVP_P1-2: LN 47 | operation | 220.899993896 | 102.86 | 120.1 | DC | 38.09 |
| **168662997** | 314218 | 6ELMONT | 230.0 | DVP | 314908 | 8ELMONT | 500.0 | DVP | 2 | DVP_P1-2: LN 557 | operation | 879.840026855 | 167.84 | 167.97 | DC | 16.45 |
| **168663025** | 314218 | 6ELMONT | 230.0 | DVP | 314908 | 8ELMONT | 500.0 | DVP | 1 | DVP_P1-2: LN 557 | operation | 920.918029785 | 161.1 | 161.22 | DC | 16.52 |
| **168662857** | 314220 | 3FOURRIVERS | 115.0 | DVP | 314221 | 3HANOVER | 115.0 | DVP | 1 | DVP_P1-2: LN 47 | operation | 187.059997559 | 185.92 | 239.33 | DC | 99.91 |
| **168662860** | 314220 | 3FOURRIVERS | 115.0 | DVP | 314221 | 3HANOVER | 115.0 | DVP | 1 | Base Case | operation | 187.059997559 | 117.09 | 155.64 | DC | 72.11 |
| **168662863** | 314221 | 3HANOVER | 115.0 | DVP | 314217 | 3ELMONT | 115.0 | DVP | 1 | DVP_P1-2: LN 47 | operation | 187.059997559 | 185.81 | 239.22 | DC | 99.91 |
| **168662866** | 314221 | 3HANOVER | 115.0 | DVP | 314217 | 3ELMONT | 115.0 | DVP | 1 | Base Case | operation | 187.059997559 | 117.04 | 155.59 | DC | 72.11 |
| **168663166** | 314223 | 3KNGS DOM DP | 115.0 | DVP | 314216 | 3PINEWOOD | 115.0 | DVP | 1 | DVP_P1-2: LN 73 | operation | 331.820007324 | 107.28 | 137.39 | DC | 99.91 |

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

| ID | Idx | Facility | Upgrade Description | Cost |
|---|---|---|---|---|
| 168662862,168662861,168662858 | 1 | 3FOURRIVERS 115.0 kV - 3HANOVER 115.0 kV Ckt 1 | **DVP**<br>**n6163 (1405) : Rebuild 5.67 miles of 115 kV Line 73 from Four Rivers to Hanover with 2-636 ACSR.**<br>**Project Type : FAC**<br>**Cost : $8,505,000**<br>**Time Estimate : 30-36 Months** | $8,505,000 |
| 168662868,168662867,168662864 | 2 | 3HANOVER 115.0 kV - 3ELMONT 115.0 kV Ckt 1 | **DVP**<br>**n6164 (1406) : Rebuild 3.3 miles of 115 kV Line 73 from Hanover to Elmont with 2-636 ACSR.**<br>**Project Type : FAC**<br>**Cost : $4,950,000**<br>**Time Estimate : 30-36 Months** | $4,950,000 |
| 168663095,168663093 | 5 | 6STAFORD 230.0 kV - 6AQUI_HARB_B 230.0 kV Ckt 1 | **DVP**<br>**n6382 (1269) : Rebuild 0.32 miles of 230 kV Line2104 from Stafford to Aquia Harbor with 2-636 ACSR.**<br>**Project Type : FAC**<br>**Cost : $500,000**<br>**Time Estimate : 30-36 Months** | $500,000 |
| 168663172 | 7 | 6FULLER ROAD 230.0 kV - 6POSSUM 230.0 kV Ckt 1 | **DVP**<br>**dom-290 (1516) : Rebuild 3.41 mi miles of 230 kV Line 252 from Fuller Road to Possum Point with 2-636 ACSR (24/7) 150 C. Replace wave trap at Possum Point terminal.**<br>**Project Type : FAC**<br>**Cost : $8,725,000**<br>**Time Estimate : 30-36 Months** | $8,725,000 |
| 168663026 | 9 | 6ELMONT 230.0 kV - 8ELMONT 500.0 kV Ckt 1 | **DVP**<br>**n6127 (1386) : Add additional 500/230 kV transformer at Elmont Substation**<br>**Project Type : CON**<br>**Cost : $22,000,000**<br>**Time Estimate : 16-18 Months** | $22,000,000 |
| 168663020,168663022 | 4 | 6CRANES 230.0 kV - 6STAFORD 230.0 kV Ckt 1 | **DVP**<br>**n6131 (1388) : Rebuild 7.62 miles of 230 kV Line 2104 from Cranes Corner to Stafford with 2-636 ACSR.**<br>**Project Type : FAC**<br>**Cost : $11,430,000**<br>**Time Estimate : 30-36 Months** | $11,430,000 |
| 168663162 | 3 | 6AQUIA 230.0 kV - 6FULLER ROAD 230.0 kV Ckt 1 | **DVP**<br>**dom-280 (1506) : Rebuild 4.7 miles of 230 kV Line 252 from Aquia to Fuller Road with 2-636 ACSR (24/7) 150 C. Replace Line lead at Aquia terminal.**<br>**Project Type : FAC**<br>**Cost : $11,750,000**<br>**Time Estimate : 30-36 Months** | $11,750,000 |

| ID | Idx | Facility | Upgrade Description | Cost |
|---|---|---|---|---|
| 168663145 | 6 | 6AQUI_HARB_A 230.0 kV - 6AQUIA 230.0 kV Ckt 1 | **DVP**<br>**dom-284 (1510) : Rebuild 3.745 miles of 230 kV Line 252 from Aquia to Aquia Harbor with 2-636 ACSR (24/7) 150 C. Replace Line lead at Aquia terminal and wave trap at Aquia Harbor terminal.**<br>**Project Type : FAC**<br>**Cost : $9,562,500**<br>**Time Estimate : 30-36 Months** | $9,562,500 |
| 168662998 | 8 | 6ELMONT 230.0 kV - 8ELMONT 500.0 kV Ckt 2 | **DVP**<br>**dom-155 (1332) : Replace existing 500/230 kV transformer No 2 at Elmont.**<br>**Project Type : FAC**<br>**Cost : $20,000,000**<br>**Time Estimate : 30-36 Months**<br><br>**DVP**<br>**n6127 (1386) : Add additional 500/230 kV transformer at Elmont Substation**<br>**Project Type : CON**<br>**Cost : $22,000,000**<br>**Time Estimate : 16-18 Months** | $42,000,000 |
| | | | **TOTAL COST** | **$97,422,500** |

## 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".

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168662858** | 314220 | 3FOURRIVERS | DVP | 314221 | 3HANOVER | DVP | 1 | DVP_P1-2: LN 47 | single | 187.06 | 140.48 | 172.53 | DC | 59.95 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **315050** | 1FOURRIVERG | 26.7969 | 80/20 | 26.7969 |
| **934781** | AD1-105 C | 45.3896 | 80/20 | 45.3896 |
| **943601** | AF1-031 C | 60.6360 | 80/20 | 60.6360 |
| **943991** | AF1-067 C | 29.9733 | 80/20 | 29.9733 |
| **962851** | AG1-134 C | 59.9466 | 80/20 | 59.9466 |
| **CALDERWOOD** | CALDERWOOD | 0.0442 | Confirmed LTF | 0.0442 |
| **NY** | NY | 0.0492 | Confirmed LTF | 0.0492 |
| **PRAIRIE** | PRAIRIE | 0.2299 | Confirmed LTF | 0.2299 |
| **CHEOAH** | CHEOAH | 0.0445 | Confirmed LTF | 0.0445 |
| **COTTONWOOD** | COTTONWOOD | 0.1869 | Confirmed LTF | 0.1869 |
| **HAMLET** | HAMLET | 0.0514 | Confirmed LTF | 0.0514 |
| **GIBSON** | GIBSON | 0.0486 | Confirmed LTF | 0.0486 |
| **BLUEG** | BLUEG | 0.1545 | Confirmed LTF | 0.1545 |
| **TRIMBLE** | TRIMBLE | 0.0495 | Confirmed LTF | 0.0495 |
| **CATAWBA** | CATAWBA | 0.0312 | Confirmed LTF | 0.0312 |

### 11.6.2 Index 2

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168662864** | 314221 | 3HANOVER | DVP | 314217 | 3ELMONT | DVP | 1 | DVP_P1-2: LN 47 | single | 187.06 | 140.38 | 172.42 | DC | 59.95 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **315050** | 1FOURRIVERG | 26.7969 | 80/20 | 26.7969 |
| **934781** | AD1-105 C | 45.3896 | 80/20 | 45.3896 |
| **943601** | AF1-031 C | 60.6360 | 80/20 | 60.6360 |
| **943991** | AF1-067 C | 29.9733 | 80/20 | 29.9733 |
| **962851** | AG1-134 C | 59.9466 | 80/20 | 59.9466 |
| **CALDERWOOD** | CALDERWOOD | 0.0442 | Confirmed LTF | 0.0442 |
| **NY** | NY | 0.0492 | Confirmed LTF | 0.0492 |
| **PRAIRIE** | PRAIRIE | 0.2299 | Confirmed LTF | 0.2299 |
| **CHEOAH** | CHEOAH | 0.0445 | Confirmed LTF | 0.0445 |
| **COTTONWOOD** | COTTONWOOD | 0.1869 | Confirmed LTF | 0.1869 |
| **HAMLET** | HAMLET | 0.0514 | Confirmed LTF | 0.0514 |
| **GIBSON** | GIBSON | 0.0486 | Confirmed LTF | 0.0486 |
| **BLUEG** | BLUEG | 0.1545 | Confirmed LTF | 0.1545 |
| **TRIMBLE** | TRIMBLE | 0.0495 | Confirmed LTF | 0.0495 |
| **CATAWBA** | CATAWBA | 0.0312 | Confirmed LTF | 0.0312 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663162** | 314105 | 6AQUIA | DVP | 314186 | 6FULLER ROAD | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.68 | 103.9 | 105.08 | DC | 9.55 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314131** | 6ARNOLDS | 0.5419 | 80/20 | 0.5419 |
| **314134** | 6CRANES | 0.1739 | 80/20 | 0.1739 |
| **314190** | 6WESTMOR | 0.5171 | 80/20 | 0.5171 |
| **315033** | 1BIRCHWDA | 100.9501 | 80/20 | 100.9501 |
| **315034** | 1NORNECKC1 | 0.7558 | 80/20 | 0.7558 |
| **315035** | 1NORNECKC2 | 0.7284 | 80/20 | 0.7284 |
| **315037** | 1LDYSMT1 | 9.1596 | 80/20 | 9.1596 |
| **315038** | 1LDYSMT2 | 9.1596 | 80/20 | 9.1596 |
| **315039** | 1LDYSMT3 | 8.8175 | 80/20 | 8.8175 |
| **315040** | 1LDYSMT4 | 8.8340 | 80/20 | 8.8340 |
| **315041** | 1LDYSMT5 | 8.8616 | 80/20 | 8.8616 |
| **315043** | 1FOUR RIVERA | 2.4950 | 80/20 | 2.4950 |
| **315044** | 1FOUR RIVERB | 2.4950 | 80/20 | 2.4950 |
| **315045** | 1FOUR RIVERC | 3.0495 | 80/20 | 3.0495 |
| **315046** | 1FOUR RIVERD | 2.4950 | 80/20 | 2.4950 |
| **315047** | 1FOUR RIVERE | 2.4950 | 80/20 | 2.4950 |
| **315048** | 1FOUR RIVERF | 3.0495 | 80/20 | 3.0495 |
| **315050** | 1FOURRIVERG | 3.9569 | 80/20 | 3.9569 |
| **315051** | 1AA1-145 CT1 | 3.9274 | 80/20 | 3.9274 |
| **315052** | 1AA1-145 CT2 | 3.9274 | 80/20 | 3.9274 |
| **316077** | AC2-138 C | 0.1912 | 80/20 | 0.1912 |
| **316156** | AD2-030 C | 0.2139 | 80/20 | 0.2139 |
| **925863** | AC1-065 C | 3.4588 | Adder | 4.07 |
| **927044** | AC1-191 C | 4.3397 | Adder | 5.11 |
| **934141** | AD1-041 C | 3.0009 | 80/20 | 3.0009 |
| **934781** | AD1-105 C | 7.2320 | 80/20 | 7.2320 |
| **936581** | AD2-073 C | 2.9660 | 80/20 | 2.9660 |
| **936591** | AD2-074 C | 5.1755 | 80/20 | 5.1755 |
| **938961** | AE1-124 C | 0.6019 | 80/20 | 0.6019 |
| **939245** | AE1-155 C | 12.6418 | 80/20 | 12.6418 |
| **939261** | AE1-157 C O1 | 22.6227 | 80/20 | 22.6227 |
| **939271** | AE1-158 C O1 | 23.0879 | 80/20 | 23.0879 |
| **939611** | AE1-191 C | 6.0018 | 80/20 | 6.0018 |
| **939755** | AE1-206 C | 22.0351 | 80/20 | 22.0351 |
| **940231** | AE2-005 C | 0.6289 | Adder | 0.74 |
| **940551** | AE2-041 | 3.2514 | Adder | 3.83 |
| **942191** | AE2-231 C O1 | 6.7729 | 80/20 | 6.7729 |
| **943431** | AF1-014 C | 0.5958 | Adder | 0.7 |
| **943471** | AF1-018 | 3.2514 | Adder | 3.83 |
| **943601** | AF1-031 C | 9.6612 | 80/20 | 9.6612 |
| **943741** | AF1-042 C | 2.7081 | 80/20 | 2.7081 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **943991** | AF1-067 C | 4.7757 | 80/20 | 4.7757 |
| **944491** | AF1-114 C | 12.9805 | 80/20 | 12.9805 |
| **945831** | AF1-248 | 0.0637 | 80/20 | 0.0637 |
| **946001** | AF1-265 | 19.3290 | 80/20 | 19.3290 |
| **957191** | AF2-013 | 37.1160 | 80/20 | 37.1160 |
| **957411** | AF2-035 C | 12.3144 | 80/20 | 12.3144 |
| **957551** | AF2-049 C | 10.0319 | 80/20 | 10.0319 |
| **957601** | AF2-054 C | 1.2358 | 80/20 | 1.2358 |
| **957971** | AF2-091 C | 4.4134 | 80/20 | 4.4134 |
| **958261** | AF2-120 C | 6.1782 | 80/20 | 6.1782 |
| **960091** | AF2-300 C | 3.0786 | 80/20 | 3.0786 |
| **961781** | AG1-019 | 37.1160 | 80/20 | 37.1160 |
| **961951** | AG1-038 C | 2.9932 | 80/20 | 2.9932 |
| **962131** | AG1-057 | 0.8616 | Adder | 1.91 |
| **962851** | AG1-134 C | 9.5514 | 80/20 | 9.5514 |
| **962861** | AG1-135 C | 5.8626 | 80/20 | 5.8626 |
| **962971** | AG1-146 C | 2.5699 | 80/20 | 2.5699 |
| **962981** | AG1-147 C | 5.9963 | 80/20 | 5.9963 |
| **963051** | AG1-154 C | 6.9948 | 80/20 | 6.9948 |
| **963341** | AG1-183 C | 9.1127 | 80/20 | 9.1127 |
| **963381** | AG1-187 | 3.7148 | 80/20 | 3.7148 |
| **963611** | AG1-210 C | 0.7695 | 80/20 | 0.7695 |
| **963621** | AG1-213 C | 1.0262 | 80/20 | 1.0262 |
| **964021** | AG1-256 C | 1.6539 | 80/20 | 1.6539 |
| **964211** | AG1-282 C | 2.1487 | 80/20 | 2.1487 |
| **964591** | AG1-322 O1 | 29.6912 | 80/20 | 29.6912 |
| **965231** | AG1-388 C | 2.1487 | 80/20 | 2.1487 |
| **965441** | AG1-412 C | 30.2480 | 80/20 | 30.2480 |
| **966661** | AG1-536 C | 5.3229 | 80/20 | 5.3229 |
| **966711** | AG1-541 C | 8.2096 | 80/20 | 8.2096 |
| **966871** | AG1-558 C | 0.5169 | Adder | 1.15 |
| **966881** | AG1-559 C | 3.0786 | 80/20 | 3.0786 |
| **WEC** | WEC | 0.1673 | Confirmed LTF | 0.1673 |
| **LGEE** | LGEE | 0.3619 | Confirmed LTF | 0.3619 |
| **CPLE** | CPLE | 1.7861 | Confirmed LTF | 1.7861 |
| **CBM-W2** | CBM-W2 | 7.7862 | Confirmed LTF | 7.7862 |
| **NY** | NY | 0.7891 | Confirmed LTF | 0.7891 |
| **TVA** | TVA | 1.5036 | Confirmed LTF | 1.5036 |
| **SIGE** | SIGE | 0.2340 | Confirmed LTF | 0.2340 |
| **CBM-S2** | CBM-S2 | 21.7674 | Confirmed LTF | 21.7674 |
| **CBM-S1** | CBM-S1 | 0.3735 | Confirmed LTF | 0.3735 |
| **MEC** | MEC | 1.0313 | Confirmed LTF | 1.0313 |
| **LAGN** | LAGN | 1.8427 | Confirmed LTF | 1.8427 |
| **CBM-W1** | CBM-W1 | 6.7436 | Confirmed LTF | 6.7436 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663020** | 314134 | 6CRANES | DVP | 314142 | 6STAFORD | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.68 | 129.28 | 130.45 | DC | 9.55 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314131** | 6ARNOLDS | 0.5419 | 80/20 | 0.5419 |
| **314134** | 6CRANES | 0.1739 | 80/20 | 0.1739 |
| **314190** | 6WESTMOR | 0.5171 | 80/20 | 0.5171 |
| **315033** | 1BIRCHWDA | 100.9501 | 80/20 | 100.9501 |
| **315034** | 1NORNECKC1 | 0.7558 | 80/20 | 0.7558 |
| **315035** | 1NORNECKC2 | 0.7284 | 80/20 | 0.7284 |
| **315037** | 1LDYSMT1 | 9.1596 | 80/20 | 9.1596 |
| **315038** | 1LDYSMT2 | 9.1596 | 80/20 | 9.1596 |
| **315039** | 1LDYSMT3 | 8.8175 | 80/20 | 8.8175 |
| **315040** | 1LDYSMT4 | 8.8340 | 80/20 | 8.8340 |
| **315041** | 1LDYSMT5 | 8.8616 | 80/20 | 8.8616 |
| **315043** | 1FOUR RIVERA | 2.4950 | 80/20 | 2.4950 |
| **315044** | 1FOUR RIVERB | 2.4950 | 80/20 | 2.4950 |
| **315045** | 1FOUR RIVERC | 3.0495 | 80/20 | 3.0495 |
| **315046** | 1FOUR RIVERD | 2.4950 | 80/20 | 2.4950 |
| **315047** | 1FOUR RIVERE | 2.4950 | 80/20 | 2.4950 |
| **315048** | 1FOUR RIVERF | 3.0495 | 80/20 | 3.0495 |
| **315050** | 1FOURRIVERG | 3.9569 | 80/20 | 3.9569 |
| **315051** | 1AA1-145 CT1 | 3.9274 | 80/20 | 3.9274 |
| **315052** | 1AA1-145 CT2 | 3.9274 | 80/20 | 3.9274 |
| **316077** | AC2-138 C | 0.1912 | 80/20 | 0.1912 |
| **316156** | AD2-030 C | 0.2139 | 80/20 | 0.2139 |
| **925863** | AC1-065 C | 3.4588 | Adder | 4.07 |
| **927044** | AC1-191 C | 4.3397 | Adder | 5.11 |
| **934141** | AD1-041 C | 3.0009 | 80/20 | 3.0009 |
| **934781** | AD1-105 C | 7.2320 | 80/20 | 7.2320 |
| **936581** | AD2-073 C | 2.9660 | 80/20 | 2.9660 |
| **936591** | AD2-074 C | 5.1755 | 80/20 | 5.1755 |
| **938961** | AE1-124 C | 0.6019 | 80/20 | 0.6019 |
| **939245** | AE1-155 C | 12.6418 | 80/20 | 12.6418 |
| **939261** | AE1-157 C O1 | 22.6227 | 80/20 | 22.6227 |
| **939271** | AE1-158 C O1 | 23.0879 | 80/20 | 23.0879 |
| **939611** | AE1-191 C | 6.0018 | 80/20 | 6.0018 |
| **939755** | AE1-206 C | 22.0351 | 80/20 | 22.0351 |
| **940231** | AE2-005 C | 0.6289 | Adder | 0.74 |
| **940551** | AE2-041 | 3.2514 | Adder | 3.83 |
| **942191** | AE2-231 C O1 | 6.7729 | 80/20 | 6.7729 |
| **943431** | AF1-014 C | 0.5958 | Adder | 0.7 |
| **943471** | AF1-018 | 3.2514 | Adder | 3.83 |
| **943601** | AF1-031 C | 9.6612 | 80/20 | 9.6612 |
| **943741** | AF1-042 C | 2.7081 | 80/20 | 2.7081 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **943991** | AF1-067 C | 4.7757 | 80/20 | 4.7757 |
| **944491** | AF1-114 C | 12.9805 | 80/20 | 12.9805 |
| **945831** | AF1-248 | 0.0637 | 80/20 | 0.0637 |
| **946001** | AF1-265 | 19.3290 | 80/20 | 19.3290 |
| **957191** | AF2-013 | 37.1160 | 80/20 | 37.1160 |
| **957411** | AF2-035 C | 12.3144 | 80/20 | 12.3144 |
| **957551** | AF2-049 C | 10.0319 | 80/20 | 10.0319 |
| **957601** | AF2-054 C | 1.2358 | 80/20 | 1.2358 |
| **957971** | AF2-091 C | 4.4134 | 80/20 | 4.4134 |
| **958261** | AF2-120 C | 6.1782 | 80/20 | 6.1782 |
| **960091** | AF2-300 C | 3.0786 | 80/20 | 3.0786 |
| **961781** | AG1-019 | 37.1160 | 80/20 | 37.1160 |
| **961951** | AG1-038 C | 2.9932 | 80/20 | 2.9932 |
| **962131** | AG1-057 | 0.8616 | Adder | 1.91 |
| **962851** | AG1-134 C | 9.5514 | 80/20 | 9.5514 |
| **962861** | AG1-135 C | 5.8626 | 80/20 | 5.8626 |
| **962971** | AG1-146 C | 2.5699 | 80/20 | 2.5699 |
| **962981** | AG1-147 C | 5.9963 | 80/20 | 5.9963 |
| **963051** | AG1-154 C | 6.9948 | 80/20 | 6.9948 |
| **963341** | AG1-183 C | 9.1127 | 80/20 | 9.1127 |
| **963381** | AG1-187 | 3.7148 | 80/20 | 3.7148 |
| **963611** | AG1-210 C | 0.7695 | 80/20 | 0.7695 |
| **963621** | AG1-213 C | 1.0262 | 80/20 | 1.0262 |
| **964021** | AG1-256 C | 1.6539 | 80/20 | 1.6539 |
| **964211** | AG1-282 C | 2.1487 | 80/20 | 2.1487 |
| **964591** | AG1-322 O1 | 29.6912 | 80/20 | 29.6912 |
| **965231** | AG1-388 C | 2.1487 | 80/20 | 2.1487 |
| **965441** | AG1-412 C | 30.2480 | 80/20 | 30.2480 |
| **966661** | AG1-536 C | 5.3229 | 80/20 | 5.3229 |
| **966711** | AG1-541 C | 8.2096 | 80/20 | 8.2096 |
| **966871** | AG1-558 C | 0.5169 | Adder | 1.15 |
| **966881** | AG1-559 C | 3.0786 | 80/20 | 3.0786 |
| **WEC** | WEC | 0.1673 | Confirmed LTF | 0.1673 |
| **LGEE** | LGEE | 0.3619 | Confirmed LTF | 0.3619 |
| **CPLE** | CPLE | 1.7861 | Confirmed LTF | 1.7861 |
| **CBM-W2** | CBM-W2 | 7.7862 | Confirmed LTF | 7.7862 |
| **NY** | NY | 0.7891 | Confirmed LTF | 0.7891 |
| **TVA** | TVA | 1.5036 | Confirmed LTF | 1.5036 |
| **SIGE** | SIGE | 0.2340 | Confirmed LTF | 0.2340 |
| **CBM-S2** | CBM-S2 | 21.7674 | Confirmed LTF | 21.7674 |
| **CBM-S1** | CBM-S1 | 0.3735 | Confirmed LTF | 0.3735 |
| **MEC** | MEC | 1.0313 | Confirmed LTF | 1.0313 |
| **LAGN** | LAGN | 1.8427 | Confirmed LTF | 1.8427 |
| **CBM-W1** | CBM-W1 | 6.7436 | Confirmed LTF | 6.7436 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663093** | 314142 | 6STAFORD | DVP | 314145 | 6AQUI_HARB_B | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.68 | 114.1 | 115.28 | DC | 9.55 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314131** | 6ARNOLDS | 0.5419 | 80/20 | 0.5419 |
| **314134** | 6CRANES | 0.1739 | 80/20 | 0.1739 |
| **314190** | 6WESTMOR | 0.5171 | 80/20 | 0.5171 |
| **315033** | 1BIRCHWDA | 100.9501 | 80/20 | 100.9501 |
| **315034** | 1NORNECKC1 | 0.7558 | 80/20 | 0.7558 |
| **315035** | 1NORNECKC2 | 0.7284 | 80/20 | 0.7284 |
| **315037** | 1LDYSMT1 | 9.1596 | 80/20 | 9.1596 |
| **315038** | 1LDYSMT2 | 9.1596 | 80/20 | 9.1596 |
| **315039** | 1LDYSMT3 | 8.8175 | 80/20 | 8.8175 |
| **315040** | 1LDYSMT4 | 8.8340 | 80/20 | 8.8340 |
| **315041** | 1LDYSMT5 | 8.8616 | 80/20 | 8.8616 |
| **315043** | 1FOUR RIVERA | 2.4950 | 80/20 | 2.4950 |
| **315044** | 1FOUR RIVERB | 2.4950 | 80/20 | 2.4950 |
| **315045** | 1FOUR RIVERC | 3.0495 | 80/20 | 3.0495 |
| **315046** | 1FOUR RIVERD | 2.4950 | 80/20 | 2.4950 |
| **315047** | 1FOUR RIVERE | 2.4950 | 80/20 | 2.4950 |
| **315048** | 1FOUR RIVERF | 3.0495 | 80/20 | 3.0495 |
| **315050** | 1FOURRIVERG | 3.9569 | 80/20 | 3.9569 |
| **315051** | 1AA1-145 CT1 | 3.9274 | 80/20 | 3.9274 |
| **315052** | 1AA1-145 CT2 | 3.9274 | 80/20 | 3.9274 |
| **316077** | AC2-138 C | 0.1912 | 80/20 | 0.1912 |
| **316156** | AD2-030 C | 0.2139 | 80/20 | 0.2139 |
| **925863** | AC1-065 C | 3.4588 | Adder | 4.07 |
| **927044** | AC1-191 C | 4.3397 | Adder | 5.11 |
| **934141** | AD1-041 C | 3.0009 | 80/20 | 3.0009 |
| **934781** | AD1-105 C | 7.2320 | 80/20 | 7.2320 |
| **936581** | AD2-073 C | 2.9660 | 80/20 | 2.9660 |
| **936591** | AD2-074 C | 5.1755 | 80/20 | 5.1755 |
| **938961** | AE1-124 C | 0.6019 | 80/20 | 0.6019 |
| **939245** | AE1-155 C | 12.6418 | 80/20 | 12.6418 |
| **939261** | AE1-157 C O1 | 22.6227 | 80/20 | 22.6227 |
| **939271** | AE1-158 C O1 | 23.0879 | 80/20 | 23.0879 |
| **939611** | AE1-191 C | 6.0018 | 80/20 | 6.0018 |
| **939755** | AE1-206 C | 22.0351 | 80/20 | 22.0351 |
| **940231** | AE2-005 C | 0.6289 | Adder | 0.74 |
| **940551** | AE2-041 | 3.2514 | Adder | 3.83 |
| **942191** | AE2-231 C O1 | 6.7729 | 80/20 | 6.7729 |
| **943431** | AF1-014 C | 0.5958 | Adder | 0.7 |
| **943471** | AF1-018 | 3.2514 | Adder | 3.83 |
| **943601** | AF1-031 C | 9.6612 | 80/20 | 9.6612 |
| **943741** | AF1-042 C | 2.7081 | 80/20 | 2.7081 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **943991** | AF1-067 C | 4.7757 | 80/20 | 4.7757 |
| **944491** | AF1-114 C | 12.9805 | 80/20 | 12.9805 |
| **945831** | AF1-248 | 0.0637 | 80/20 | 0.0637 |
| **946001** | AF1-265 | 19.3290 | 80/20 | 19.3290 |
| **957191** | AF2-013 | 37.1160 | 80/20 | 37.1160 |
| **957411** | AF2-035 C | 12.3144 | 80/20 | 12.3144 |
| **957551** | AF2-049 C | 10.0319 | 80/20 | 10.0319 |
| **957601** | AF2-054 C | 1.2358 | 80/20 | 1.2358 |
| **957971** | AF2-091 C | 4.4134 | 80/20 | 4.4134 |
| **958261** | AF2-120 C | 6.1782 | 80/20 | 6.1782 |
| **960091** | AF2-300 C | 3.0786 | 80/20 | 3.0786 |
| **961781** | AG1-019 | 37.1160 | 80/20 | 37.1160 |
| **961951** | AG1-038 C | 2.9932 | 80/20 | 2.9932 |
| **962131** | AG1-057 | 0.8616 | Adder | 1.91 |
| **962851** | AG1-134 C | 9.5514 | 80/20 | 9.5514 |
| **962861** | AG1-135 C | 5.8626 | 80/20 | 5.8626 |
| **962971** | AG1-146 C | 2.5699 | 80/20 | 2.5699 |
| **962981** | AG1-147 C | 5.9963 | 80/20 | 5.9963 |
| **963051** | AG1-154 C | 6.9948 | 80/20 | 6.9948 |
| **963341** | AG1-183 C | 9.1127 | 80/20 | 9.1127 |
| **963381** | AG1-187 | 3.7148 | 80/20 | 3.7148 |
| **963611** | AG1-210 C | 0.7695 | 80/20 | 0.7695 |
| **963621** | AG1-213 C | 1.0262 | 80/20 | 1.0262 |
| **964021** | AG1-256 C | 1.6539 | 80/20 | 1.6539 |
| **964211** | AG1-282 C | 2.1487 | 80/20 | 2.1487 |
| **964591** | AG1-322 O1 | 29.6912 | 80/20 | 29.6912 |
| **965231** | AG1-388 C | 2.1487 | 80/20 | 2.1487 |
| **965441** | AG1-412 C | 30.2480 | 80/20 | 30.2480 |
| **966661** | AG1-536 C | 5.3229 | 80/20 | 5.3229 |
| **966711** | AG1-541 C | 8.2096 | 80/20 | 8.2096 |
| **966871** | AG1-558 C | 0.5169 | Adder | 1.15 |
| **966881** | AG1-559 C | 3.0786 | 80/20 | 3.0786 |
| **WEC** | WEC | 0.1673 | Confirmed LTF | 0.1673 |
| **LGEE** | LGEE | 0.3619 | Confirmed LTF | 0.3619 |
| **CPLE** | CPLE | 1.7861 | Confirmed LTF | 1.7861 |
| **CBM-W2** | CBM-W2 | 7.7862 | Confirmed LTF | 7.7862 |
| **NY** | NY | 0.7891 | Confirmed LTF | 0.7891 |
| **TVA** | TVA | 1.5036 | Confirmed LTF | 1.5036 |
| **SIGE** | SIGE | 0.2340 | Confirmed LTF | 0.2340 |
| **CBM-S2** | CBM-S2 | 21.7674 | Confirmed LTF | 21.7674 |
| **CBM-S1** | CBM-S1 | 0.3735 | Confirmed LTF | 0.3735 |
| **MEC** | MEC | 1.0313 | Confirmed LTF | 1.0313 |
| **LAGN** | LAGN | 1.8427 | Confirmed LTF | 1.8427 |
| **CBM-W1** | CBM-W1 | 6.7436 | Confirmed LTF | 6.7436 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663145** | 314144 | 6AQUI_HARB_A | DVP | 314105 | 6AQUIA | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.68 | 107.98 | 109.16 | DC | 9.55 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314131** | 6ARNOLDS | 0.5419 | 80/20 | 0.5419 |
| **314134** | 6CRANES | 0.1739 | 80/20 | 0.1739 |
| **314190** | 6WESTMOR | 0.5171 | 80/20 | 0.5171 |
| **315033** | 1BIRCHWDA | 100.9501 | 80/20 | 100.9501 |
| **315034** | 1NORNECKC1 | 0.7558 | 80/20 | 0.7558 |
| **315035** | 1NORNECKC2 | 0.7284 | 80/20 | 0.7284 |
| **315037** | 1LDYSMT1 | 9.1596 | 80/20 | 9.1596 |
| **315038** | 1LDYSMT2 | 9.1596 | 80/20 | 9.1596 |
| **315039** | 1LDYSMT3 | 8.8175 | 80/20 | 8.8175 |
| **315040** | 1LDYSMT4 | 8.8340 | 80/20 | 8.8340 |
| **315041** | 1LDYSMT5 | 8.8616 | 80/20 | 8.8616 |
| **315043** | 1FOUR RIVERA | 2.4950 | 80/20 | 2.4950 |
| **315044** | 1FOUR RIVERB | 2.4950 | 80/20 | 2.4950 |
| **315045** | 1FOUR RIVERC | 3.0495 | 80/20 | 3.0495 |
| **315046** | 1FOUR RIVERD | 2.4950 | 80/20 | 2.4950 |
| **315047** | 1FOUR RIVERE | 2.4950 | 80/20 | 2.4950 |
| **315048** | 1FOUR RIVERF | 3.0495 | 80/20 | 3.0495 |
| **315050** | 1FOURRIVERG | 3.9569 | 80/20 | 3.9569 |
| **315051** | 1AA1-145 CT1 | 3.9274 | 80/20 | 3.9274 |
| **315052** | 1AA1-145 CT2 | 3.9274 | 80/20 | 3.9274 |
| **316077** | AC2-138 C | 0.1912 | 80/20 | 0.1912 |
| **316156** | AD2-030 C | 0.2139 | 80/20 | 0.2139 |
| **925863** | AC1-065 C | 3.4588 | Adder | 4.07 |
| **927044** | AC1-191 C | 4.3397 | Adder | 5.11 |
| **934141** | AD1-041 C | 3.0009 | 80/20 | 3.0009 |
| **934781** | AD1-105 C | 7.2320 | 80/20 | 7.2320 |
| **936581** | AD2-073 C | 2.9660 | 80/20 | 2.9660 |
| **936591** | AD2-074 C | 5.1755 | 80/20 | 5.1755 |
| **938961** | AE1-124 C | 0.6019 | 80/20 | 0.6019 |
| **939245** | AE1-155 C | 12.6418 | 80/20 | 12.6418 |
| **939261** | AE1-157 C O1 | 22.6227 | 80/20 | 22.6227 |
| **939271** | AE1-158 C O1 | 23.0879 | 80/20 | 23.0879 |
| **939611** | AE1-191 C | 6.0018 | 80/20 | 6.0018 |
| **939755** | AE1-206 C | 22.0351 | 80/20 | 22.0351 |
| **940231** | AE2-005 C | 0.6289 | Adder | 0.74 |
| **940551** | AE2-041 | 3.2514 | Adder | 3.83 |
| **942191** | AE2-231 C O1 | 6.7729 | 80/20 | 6.7729 |
| **943431** | AF1-014 C | 0.5958 | Adder | 0.7 |
| **943471** | AF1-018 | 3.2514 | Adder | 3.83 |
| **943601** | AF1-031 C | 9.6612 | 80/20 | 9.6612 |
| **943741** | AF1-042 C | 2.7081 | 80/20 | 2.7081 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **943991** | AF1-067 C | 4.7757 | 80/20 | 4.7757 |
| **944491** | AF1-114 C | 12.9805 | 80/20 | 12.9805 |
| **945831** | AF1-248 | 0.0637 | 80/20 | 0.0637 |
| **946001** | AF1-265 | 19.3290 | 80/20 | 19.3290 |
| **957191** | AF2-013 | 37.1160 | 80/20 | 37.1160 |
| **957411** | AF2-035 C | 12.3144 | 80/20 | 12.3144 |
| **957551** | AF2-049 C | 10.0319 | 80/20 | 10.0319 |
| **957601** | AF2-054 C | 1.2358 | 80/20 | 1.2358 |
| **957971** | AF2-091 C | 4.4134 | 80/20 | 4.4134 |
| **958261** | AF2-120 C | 6.1782 | 80/20 | 6.1782 |
| **960091** | AF2-300 C | 3.0786 | 80/20 | 3.0786 |
| **961781** | AG1-019 | 37.1160 | 80/20 | 37.1160 |
| **961951** | AG1-038 C | 2.9932 | 80/20 | 2.9932 |
| **962131** | AG1-057 | 0.8616 | Adder | 1.91 |
| **962851** | AG1-134 C | 9.5514 | 80/20 | 9.5514 |
| **962861** | AG1-135 C | 5.8626 | 80/20 | 5.8626 |
| **962971** | AG1-146 C | 2.5699 | 80/20 | 2.5699 |
| **962981** | AG1-147 C | 5.9963 | 80/20 | 5.9963 |
| **963051** | AG1-154 C | 6.9948 | 80/20 | 6.9948 |
| **963341** | AG1-183 C | 9.1127 | 80/20 | 9.1127 |
| **963381** | AG1-187 | 3.7148 | 80/20 | 3.7148 |
| **963611** | AG1-210 C | 0.7695 | 80/20 | 0.7695 |
| **963621** | AG1-213 C | 1.0262 | 80/20 | 1.0262 |
| **964021** | AG1-256 C | 1.6539 | 80/20 | 1.6539 |
| **964211** | AG1-282 C | 2.1487 | 80/20 | 2.1487 |
| **964591** | AG1-322 O1 | 29.6912 | 80/20 | 29.6912 |
| **965231** | AG1-388 C | 2.1487 | 80/20 | 2.1487 |
| **965441** | AG1-412 C | 30.2480 | 80/20 | 30.2480 |
| **966661** | AG1-536 C | 5.3229 | 80/20 | 5.3229 |
| **966711** | AG1-541 C | 8.2096 | 80/20 | 8.2096 |
| **966871** | AG1-558 C | 0.5169 | Adder | 1.15 |
| **966881** | AG1-559 C | 3.0786 | 80/20 | 3.0786 |
| **WEC** | WEC | 0.1673 | Confirmed LTF | 0.1673 |
| **LGEE** | LGEE | 0.3619 | Confirmed LTF | 0.3619 |
| **CPLE** | CPLE | 1.7861 | Confirmed LTF | 1.7861 |
| **CBM-W2** | CBM-W2 | 7.7862 | Confirmed LTF | 7.7862 |
| **NY** | NY | 0.7891 | Confirmed LTF | 0.7891 |
| **TVA** | TVA | 1.5036 | Confirmed LTF | 1.5036 |
| **SIGE** | SIGE | 0.2340 | Confirmed LTF | 0.2340 |
| **CBM-S2** | CBM-S2 | 21.7674 | Confirmed LTF | 21.7674 |
| **CBM-S1** | CBM-S1 | 0.3735 | Confirmed LTF | 0.3735 |
| **MEC** | MEC | 1.0313 | Confirmed LTF | 1.0313 |
| **LAGN** | LAGN | 1.8427 | Confirmed LTF | 1.8427 |
| **CBM-W1** | CBM-W1 | 6.7436 | Confirmed LTF | 6.7436 |

### 11.6.7 Index 7

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663172** | 314186 | 6FULLER ROAD | DVP | 314074 | 6POSSUM | DVP | 1 | DVP_P1-2: LN 2089 | single | 678.68 | 102.86 | 104.03 | DC | 9.55 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314131** | 6ARNOLDS | 0.5419 | 80/20 | 0.5419 |
| **314134** | 6CRANES | 0.1739 | 80/20 | 0.1739 |
| **314190** | 6WESTMOR | 0.5171 | 80/20 | 0.5171 |
| **315033** | 1BIRCHWDA | 100.9501 | 80/20 | 100.9501 |
| **315034** | 1NORNECKC1 | 0.7558 | 80/20 | 0.7558 |
| **315035** | 1NORNECKC2 | 0.7284 | 80/20 | 0.7284 |
| **315037** | 1LDYSMT1 | 9.1596 | 80/20 | 9.1596 |
| **315038** | 1LDYSMT2 | 9.1596 | 80/20 | 9.1596 |
| **315039** | 1LDYSMT3 | 8.8175 | 80/20 | 8.8175 |
| **315040** | 1LDYSMT4 | 8.8340 | 80/20 | 8.8340 |
| **315041** | 1LDYSMT5 | 8.8616 | 80/20 | 8.8616 |
| **315043** | 1FOUR RIVERA | 2.4950 | 80/20 | 2.4950 |
| **315044** | 1FOUR RIVERB | 2.4950 | 80/20 | 2.4950 |
| **315045** | 1FOUR RIVERC | 3.0495 | 80/20 | 3.0495 |
| **315046** | 1FOUR RIVERD | 2.4950 | 80/20 | 2.4950 |
| **315047** | 1FOUR RIVERE | 2.4950 | 80/20 | 2.4950 |
| **315048** | 1FOUR RIVERF | 3.0495 | 80/20 | 3.0495 |
| **315050** | 1FOURRIVERG | 3.9569 | 80/20 | 3.9569 |
| **315051** | 1AA1-145 CT1 | 3.9274 | 80/20 | 3.9274 |
| **315052** | 1AA1-145 CT2 | 3.9274 | 80/20 | 3.9274 |
| **316077** | AC2-138 C | 0.1912 | 80/20 | 0.1912 |
| **316156** | AD2-030 C | 0.2139 | 80/20 | 0.2139 |
| **925863** | AC1-065 C | 3.4588 | Adder | 4.07 |
| **927044** | AC1-191 C | 4.3397 | Adder | 5.11 |
| **934141** | AD1-041 C | 3.0009 | 80/20 | 3.0009 |
| **934781** | AD1-105 C | 7.2320 | 80/20 | 7.2320 |
| **936581** | AD2-073 C | 2.9660 | 80/20 | 2.9660 |
| **936591** | AD2-074 C | 5.1755 | 80/20 | 5.1755 |
| **938961** | AE1-124 C | 0.6019 | 80/20 | 0.6019 |
| **939245** | AE1-155 C | 12.6418 | 80/20 | 12.6418 |
| **939261** | AE1-157 C O1 | 22.6227 | 80/20 | 22.6227 |
| **939271** | AE1-158 C O1 | 23.0879 | 80/20 | 23.0879 |
| **939611** | AE1-191 C | 6.0018 | 80/20 | 6.0018 |
| **939755** | AE1-206 C | 22.0351 | 80/20 | 22.0351 |
| **940231** | AE2-005 C | 0.6289 | Adder | 0.74 |
| **940551** | AE2-041 | 3.2514 | Adder | 3.83 |
| **942191** | AE2-231 C O1 | 6.7729 | 80/20 | 6.7729 |
| **943431** | AF1-014 C | 0.5958 | Adder | 0.7 |
| **943471** | AF1-018 | 3.2514 | Adder | 3.83 |
| **943601** | AF1-031 C | 9.6612 | 80/20 | 9.6612 |
| **943741** | AF1-042 C | 2.7081 | 80/20 | 2.7081 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **943991** | AF1-067 C | 4.7757 | 80/20 | 4.7757 |
| **944491** | AF1-114 C | 12.9805 | 80/20 | 12.9805 |
| **945831** | AF1-248 | 0.0637 | 80/20 | 0.0637 |
| **946001** | AF1-265 | 19.3290 | 80/20 | 19.3290 |
| **957191** | AF2-013 | 37.1160 | 80/20 | 37.1160 |
| **957411** | AF2-035 C | 12.3144 | 80/20 | 12.3144 |
| **957551** | AF2-049 C | 10.0319 | 80/20 | 10.0319 |
| **957601** | AF2-054 C | 1.2358 | 80/20 | 1.2358 |
| **957971** | AF2-091 C | 4.4134 | 80/20 | 4.4134 |
| **958261** | AF2-120 C | 6.1782 | 80/20 | 6.1782 |
| **960091** | AF2-300 C | 3.0786 | 80/20 | 3.0786 |
| **961781** | AG1-019 | 37.1160 | 80/20 | 37.1160 |
| **961951** | AG1-038 C | 2.9932 | 80/20 | 2.9932 |
| **962131** | AG1-057 | 0.8616 | Adder | 1.91 |
| **962851** | AG1-134 C | 9.5514 | 80/20 | 9.5514 |
| **962861** | AG1-135 C | 5.8626 | 80/20 | 5.8626 |
| **962971** | AG1-146 C | 2.5699 | 80/20 | 2.5699 |
| **962981** | AG1-147 C | 5.9963 | 80/20 | 5.9963 |
| **963051** | AG1-154 C | 6.9948 | 80/20 | 6.9948 |
| **963341** | AG1-183 C | 9.1127 | 80/20 | 9.1127 |
| **963381** | AG1-187 | 3.7148 | 80/20 | 3.7148 |
| **963611** | AG1-210 C | 0.7695 | 80/20 | 0.7695 |
| **963621** | AG1-213 C | 1.0262 | 80/20 | 1.0262 |
| **964021** | AG1-256 C | 1.6539 | 80/20 | 1.6539 |
| **964211** | AG1-282 C | 2.1487 | 80/20 | 2.1487 |
| **964591** | AG1-322 O1 | 29.6912 | 80/20 | 29.6912 |
| **965231** | AG1-388 C | 2.1487 | 80/20 | 2.1487 |
| **965441** | AG1-412 C | 30.2480 | 80/20 | 30.2480 |
| **966661** | AG1-536 C | 5.3229 | 80/20 | 5.3229 |
| **966711** | AG1-541 C | 8.2096 | 80/20 | 8.2096 |
| **966871** | AG1-558 C | 0.5169 | Adder | 1.15 |
| **966881** | AG1-559 C | 3.0786 | 80/20 | 3.0786 |
| **WEC** | WEC | 0.1673 | Confirmed LTF | 0.1673 |
| **LGEE** | LGEE | 0.3619 | Confirmed LTF | 0.3619 |
| **CPLE** | CPLE | 1.7861 | Confirmed LTF | 1.7861 |
| **CBM-W2** | CBM-W2 | 7.7862 | Confirmed LTF | 7.7862 |
| **NY** | NY | 0.7891 | Confirmed LTF | 0.7891 |
| **TVA** | TVA | 1.5036 | Confirmed LTF | 1.5036 |
| **SIGE** | SIGE | 0.2340 | Confirmed LTF | 0.2340 |
| **CBM-S2** | CBM-S2 | 21.7674 | Confirmed LTF | 21.7674 |
| **CBM-S1** | CBM-S1 | 0.3735 | Confirmed LTF | 0.3735 |
| **MEC** | MEC | 1.0313 | Confirmed LTF | 1.0313 |
| **LAGN** | LAGN | 1.8427 | Confirmed LTF | 1.8427 |
| **CBM-W1** | CBM-W1 | 6.7436 | Confirmed LTF | 6.7436 |

### 11.6.8 Index 8

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168662998** | 314218 | 6ELMONT | DVP | 314908 | 8ELMONT | DVP | 2 | DVP_P1-2: LN 557 | single | 879.84 | 151.22 | 152.19 | DC | 9.87 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314229** | 6MT RD221 | 0.1393 | 80/20 | 0.1393 |
| **314236** | 6NRTHEST | 0.1832 | 80/20 | 0.1832 |
| **314241** | 6OLDCHRC | 0.8548 | 80/20 | 0.8548 |
| **314250** | 6ROCKVILLE | 0.3145 | 80/20 | 0.3145 |
| **314309** | 6IRON208 | 0.3968 | 80/20 | 0.3968 |
| **315043** | 1FOUR RIVERA | 3.0873 | 80/20 | 3.0873 |
| **315044** | 1FOUR RIVERB | 3.0873 | 80/20 | 3.0873 |
| **315045** | 1FOUR RIVERC | 3.7734 | 80/20 | 3.7734 |
| **315046** | 1FOUR RIVERD | 3.0873 | 80/20 | 3.0873 |
| **315047** | 1FOUR RIVERE | 3.0873 | 80/20 | 3.0873 |
| **315048** | 1FOUR RIVERF | 3.7734 | 80/20 | 3.7734 |
| **315050** | 1FOURRIVERG | 4.6210 | 80/20 | 4.6210 |
| **315051** | 1AA1-145 CT1 | 4.8597 | 80/20 | 4.8597 |
| **315052** | 1AA1-145 CT2 | 4.8597 | 80/20 | 4.8597 |
| **315058** | **1CHESTF3 (Deactivation : 13/12/2018)** | **16.7010** | **80/20** | **16.7010** |
| **315059** | **1CHESTF4 (Deactivation : 13/12/2018)** | **27.0723** | **80/20** | **27.0723** |
| **315060** | **1CHESTF5 (Deactivation : 31/05/2023)** | **56.0665** | **80/20** | **56.0665** |
| **315061** | 1CHESTG7 | 3.3032 | 80/20 | 3.3032 |
| **315062** | 1CHESTS7 | 1.5164 | 80/20 | 1.5164 |
| **315063** | 1CHESTG8 | 3.2501 | 80/20 | 3.2501 |
| **315064** | 1CHESTS8 | 1.6731 | 80/20 | 1.6731 |
| **315065** | **1CHESTF6 (Deactivation : 31/05/2023)** | **91.6222** | **Adder** | **107.79** |
| **315067** | 1DARBY 1 | 2.4661 | 80/20 | 2.4661 |
| **315068** | 1DARBY 2 | 2.4690 | 80/20 | 2.4690 |
| **315069** | 1DARBY 3 | 2.4776 | 80/20 | 2.4776 |
| **315070** | 1DARBY 4 | 2.4805 | 80/20 | 2.4805 |
| **315074** | **1HOPCGN1 (Deactivation : 25/06/2019)** | **0.0129** | **Adder** | **0.02** |
| **315075** | **1HOPCGN2 (Deactivation : 25/06/2019)** | **0.0129** | **Adder** | **0.02** |
| **315083** | **1SPRUNCA (Deactivation : 12/01/2021)** | **7.8772** | **Adder** | **9.27** |
| **315084** | **1SPRUNCB (Deactivation : 12/01/2021)** | **7.8772** | **Adder** | **9.27** |
| **316075** | AC2-137 C | 0.2994 | 80/20 | 0.2994 |
| **316083** | **AB2-161 C (Suspended)** | **2.1134** | **Adder** | **2.49** |
| **316103** | AB2-015 C | 4.3635 | Adder | 5.13 |
| **316108** | **AB2-160 C (Suspended)** | **3.7946** | **Adder** | **4.46** |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| 316112 | AB2-068 CT1 (Withdrawn : 01/11/2021) | 31.7658 | Adder | 37.37 |
| 316113 | AB2-068 CT2 (Withdrawn : 01/11/2021) | 31.7658 | Adder | 37.37 |
| 316114 | AB2-068 ST (Withdrawn : 01/11/2021) | 55.0309 | Adder | 64.74 |
| 316132 | AB2-190 C | 13.4527 | Adder | 15.83 |
| 316134 | AC1-107 G1 | 59.6504 | Adder | 70.18 |
| 316135 | AC1-107 G2 | 59.6504 | Adder | 70.18 |
| 316136 | AC1-107 G3 | 59.6616 | Adder | 70.19 |
| 925863 | AC1-065 C | 4.9550 | Adder | 5.83 |
| 926754 | AC1-161 C | 15.6838 | Adder | 18.45 |
| 926784 | AC1-164 C | 29.3625 | Adder | 34.54 |
| 927044 | AC1-191 C | 11.0570 | 80/20 | 11.0570 |
| 932044 | AC2-012 C | 5.4501 | Adder | 6.41 |
| 932501 | AC2-070 C | 0.2809 | 80/20 | 0.2809 |
| 932581 | AC2-078 C O1 | 2.5477 | Adder | 3.0 |
| 932591 | AC2-079 C O1 | 3.3547 | Adder | 3.95 |
| 933294 | AC2-141 C | 15.6838 | Adder | 18.45 |
| 933991 | AD1-023 C | 6.3205 | Adder | 7.44 |
| 934014 | AD1-025 C | 11.0985 | Adder | 13.06 |
| 934061 | AD1-033 C | 3.9598 | Adder | 4.66 |
| 934141 | AD1-041 C | 3.5032 | Adder | 4.12 |
| 934521 | AD1-076 C | 26.3163 | Adder | 30.96 |
| 934575 | AD1-082 C | 4.8163 | Adder | 5.67 |
| 934781 | AD1-105 C | 7.4723 | 80/20 | 7.4723 |
| 935164 | AD1-151 C | 10.8102 | Adder | 12.72 |
| 936041 | AD2-007 C | 0.5302 | Adder | 0.62 |
| 936051 | AD2-008 C | 1.9322 | Adder | 2.27 |
| 936151 | AD2-021 | 0.0341 | 80/20 | 0.0341 |
| 936581 | AD2-073 C | 1.1747 | Adder | 1.38 |
| 936591 | AD2-074 C | 3.3545 | Adder | 3.95 |
| 936661 | AD2-085 C | 1.9427 | Adder | 2.29 |
| 936761 | AD2-097 C | 1.4939 | Adder | 1.76 |
| 937221 | AD2-160 C O1 | 3.0701 | Adder | 3.61 |
| 938535 | AE1-072 C | 9.2178 | Adder | 10.84 |
| 938634 | AE1-085 C | 5.6087 | Adder | 6.6 |
| 938771 | AE1-103 C | 1.8803 | Adder | 2.21 |
| 939195 | AE1-149 C | 6.8610 | Adder | 8.07 |
| 939245 | AE1-155 C | 7.6706 | Adder | 9.02 |
| 939414 | AE1-173_C1 | 14.0087 | Adder | 16.48 |
| 939415 | AE1-173_C2 | 12.0074 | Adder | 14.13 |
| 939416 | AE1-173_C3 | 14.0087 | Adder | 16.48 |
| 939431 | AE1-175 C | 1.5371 | Adder | 1.81 |
| 939611 | AE1-191 C | 7.0064 | Adder | 8.24 |
| 939755 | AE1-206 C | 33.2373 | 80/20 | 33.2373 |
| 940061 | AE2-000BC O1 | 6.6229 | Adder | 7.79 |
| 940231 | AE2-005 C | 0.9009 | Adder | 1.06 |
| 940251 | AE2-007 O1 (Withdrawn : 12/11/2020) | 92.3294 | Adder | 108.62 |
| 940431 | AE2-027 C O1 | 9.4713 | Adder | 11.14 |
| 940481 | AE2-033 C | 8.3782 | Adder | 9.86 |
| 940491 | AE2-034 C | 3.5500 | Adder | 4.18 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **940541** | AE2-040 | 1.4982 | Adder | 1.76 |
| **940551** | AE2-041 | 4.7631 | Adder | 5.6 |
| **940651** | AE2-052 | 2.2870 | Adder | 2.69 |
| **940891** | AE2-078 C | 1.4322 | Adder | 1.68 |
| **940901** | AE2-079 C | 1.4322 | Adder | 1.68 |
| **941101** | AE2-104 C O1 | 1.8038 | Adder | 2.12 |
| **941281** | AE2-122 C O1 | 15.0624 | Adder | 17.72 |
| **941291** | AE2-123 C O1 | 15.4795 | Adder | 18.21 |
| **941301** | AE2-124 C O1 | 14.0640 | Adder | 16.55 |
| **941501** | AE2-147 C | 8.1916 | Adder | 9.64 |
| **941581** | AE2-155 C | 0.1069 | 80/20 | 0.1069 |
| **941591** | AE2-156 O1 | 9.5557 | Adder | 11.24 |
| **942001** | AE2-212 C | 1.5155 | Adder | 1.78 |
| **942131** | AE2-225 C | 1.1264 | Adder | 1.33 |
| **942151** | AE2-227 C | 2.0256 | 80/20 | 2.0256 |
| **942161** | AE2-228 C | 1.5941 | Adder | 1.88 |
| **942171** | AE2-229 C | 0.8448 | Adder | 0.99 |
| **942191** | AE2-231 C O1 | 2.2128 | Adder | 2.6 |
| **942341** | AE2-247 C | 0.8426 | Adder | 0.99 |
| **942371** | AE2-250 C O1 | 6.7404 | Adder | 7.93 |
| **942401** | AE2-253 C | 3.2293 | Adder | 3.8 |
| **942471** | AE2-260 C O1 | 7.1645 | Adder | 8.43 |
| **942551** | AE2-270 | 17.8270 | Adder | 20.97 |
| **943431** | AF1-014 C | 0.8535 | Adder | 1.0 |
| **943461** | AF1-017 C | 0.7623 | Adder | 0.9 |
| **943471** | AF1-018 | 4.7631 | Adder | 5.6 |
| **943601** | AF1-031 C | 9.9823 | 80/20 | 9.9823 |
| **943611** | AF1-032 C | 0.9199 | Adder | 1.08 |
| **943621** | AF1-033 C | 1.4322 | Adder | 1.68 |
| **943741** | AF1-042 C | 1.7552 | Adder | 2.06 |
| **943991** | AF1-067 C | 4.9344 | 80/20 | 4.9344 |
| **944581** | AF1-123 C O1 | 25.0863 | Adder | 29.51 |
| **944591** | AF1-124 C O1 | 25.0863 | Adder | 29.51 |
| **944601** | AF1-125 C O1 | 25.0863 | Adder | 29.51 |
| **944631** | AF1-128 O1 | 49.1623 | 80/20 | 49.1623 |
| **944641** | AF1-129 | 76.8810 | Adder | 90.45 |
| **944871** | AF1-152 C | 2.7305 | Adder | 3.21 |
| **945361** | AF1-201 C O1 | 9.8494 | Adder | 11.59 |
| **945711** | AF1-236 C O1 | 38.8641 | Adder | 45.72 |
| **946001** | AF1-265 | 29.1555 | 80/20 | 29.1555 |
| **946011** | AF1-266 | 7.0132 | Adder | 8.25 |
| **946261** | AF1-291 C | 1.5947 | Adder | 1.88 |
| **957411** | AF2-035 C | 4.0233 | Adder | 4.73 |
| **957491** | AF2-043 C | 1.1264 | Adder | 1.33 |
| **957531** | AF2-047 C | 8.4355 | Adder | 9.92 |
| **957601** | AF2-054 C | 1.3669 | Adder | 1.61 |
| **957631** | AF2-057 | 1.9123 | Adder | 2.25 |
| **957711** | AF2-065 C | 9.0918 | Adder | 10.7 |
| **957821** | AF2-076 C | 2.7764 | Adder | 3.27 |
| **957831** | AF2-077 C | 1.3275 | Adder | 1.56 |
| **957871** | AF2-081 C | 5.2284 | Adder | 6.15 |
| **957911** | AF2-085 | 2.0584 | Adder | 2.42 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **958141** | AF2-108 | 1.1888 | Adder | 1.4 |
| **958161** | AF2-110 C | 0.7436 | Adder | 0.87 |
| **958261** | AF2-120 C | 3.7568 | Adder | 4.42 |
| **959641** | AF2-255 C | 0.5064 | 80/20 | 0.5064 |
| **959651** | AF2-256 C | 0.3985 | Adder | 0.47 |
| **959661** | AF2-257 C | 0.3987 | Adder | 0.47 |
| **959671** | AF2-258 C | 0.3789 | Adder | 0.45 |
| **959681** | AF2-259 C | 1.7832 | Adder | 2.1 |
| **960091** | AF2-300 C | 1.0058 | Adder | 1.18 |
| **961091** | AF2-400 C | 0.2356 | Adder | 0.28 |
| **961611** | AG1-000B C | 5.2231 | Adder | 11.59 |
| **961711** | AG1-011 | 9.9910 | Adder | 22.18 |
| **961851** | AG1-027 C | 4.7644 | Adder | 10.58 |
| **961951** | AG1-038 C | 1.0282 | Adder | 2.28 |
| **962131** | AG1-057 | 1.2622 | Adder | 2.8 |
| **962191** | AG1-064 C | 1.4123 | 80/20 | 1.4123 |
| **962201** | AG1-065 C | 1.4123 | 80/20 | 1.4123 |
| **962271** | AG1-075 C O1 | 6.1657 | Adder | 13.69 |
| **962321** | **AG1-081 C (Withdrawn : 01/15/2021)** | **0.6901** | **Adder** | **1.53** |
| **962531** | AG1-102 C | 0.3612 | Adder | 0.8 |
| **962851** | AG1-134 C | 9.8688 | 80/20 | 9.8688 |
| **962861** | AG1-135 C | 1.9402 | Adder | 4.31 |
| **962961** | AG1-145 C | 0.7351 | Adder | 1.63 |
| **962971** | AG1-146 C | 1.0114 | Adder | 2.25 |
| **962981** | AG1-147 C | 2.3598 | Adder | 5.24 |
| **963221** | AG1-171 C | 0.7639 | Adder | 1.7 |
| **963231** | AG1-172 C | 0.7639 | Adder | 1.7 |
| **963241** | AG1-173 C | 0.7639 | Adder | 1.7 |
| **963251** | AG1-174 C | 0.7639 | Adder | 1.7 |
| **963261** | AG1-175 C | 0.7639 | Adder | 1.7 |
| **963291** | AG1-178 C O1 | 8.9012 | Adder | 19.76 |
| **963341** | AG1-183 C | 1.5779 | Adder | 3.5 |
| **963351** | AG1-184 O1 | 7.5174 | Adder | 16.69 |
| **963381** | AG1-187 | 0.6433 | Adder | 1.43 |
| **963611** | AG1-210 C | 0.2021 | Adder | 0.45 |
| **963621** | AG1-213 C | 0.1777 | Adder | 0.39 |
| **963821** | AG1-235 C O1 | 6.7197 | Adder | 14.92 |
| **964021** | AG1-256 C | 0.3910 | Adder | 0.87 |
| **964211** | AG1-282 C | 0.6321 | Adder | 1.4 |
| **964801** | AG1-343 C | 1.5171 | Adder | 3.37 |
| **964951** | AG1-359 O1 | 7.4887 | Adder | 16.62 |
| **965001** | AG1-364 C O1 | 2.0260 | Adder | 4.5 |
| **965181** | AG1-383 C | 0.7686 | Adder | 1.71 |
| **965231** | AG1-388 C | 0.6321 | Adder | 1.4 |
| **965291** | AG1-394 C | 0.5215 | Adder | 1.16 |
| **965631** | AG1-431 | 11.9252 | Adder | 26.47 |
| **966491** | AG1-518 O1 | 2.4874 | Adder | 5.52 |
| **966611** | AG1-531 C | 2.0603 | Adder | 4.57 |
| **966661** | AG1-536 C | 1.7118 | Adder | 3.8 |
| **966711** | AG1-541 C | 1.4216 | Adder | 3.16 |
| **966731** | AG1-544 C | 2.3216 | Adder | 5.15 |
| **966741** | AG1-545 C | 0.7727 | Adder | 1.72 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **966871** | AG1-558 C | 2.4847 | 80/20 | 2.4847 |
| **966881** | AG1-559 C | 0.5331 | Adder | 1.18 |
| **966931** | AG1-431A | 8.9595 | Adder | 19.89 |
| **WEC** | WEC | 0.0702 | Confirmed LTF | 0.0702 |
| **LGEE** | LGEE | 0.1502 | Confirmed LTF | 0.1502 |
| **CPLE** | CPLE | 3.2692 | Confirmed LTF | 3.2692 |
| **CBM-W2** | CBM-W2 | 7.4816 | Confirmed LTF | 7.4816 |
| **NY** | NY | 0.7001 | Confirmed LTF | 0.7001 |
| **TVA** | TVA | 1.6660 | Confirmed LTF | 1.6660 |
| **SIGE** | SIGE | 0.1751 | Confirmed LTF | 0.1751 |
| **CBM-S2** | CBM-S2 | 35.9554 | Confirmed LTF | 35.9554 |
| **CBM-S1** | CBM-S1 | 0.3865 | Confirmed LTF | 0.3865 |
| **MEC** | MEC | 0.6896 | Confirmed LTF | 0.6896 |
| **LAGN** | LAGN | 2.0825 | Confirmed LTF | 2.0825 |
| **AA2-074** | AA2-074 | 2.1551 | LTF | 2.1551 |
| **CBM-W1** | CBM-W1 | 2.3133 | Confirmed LTF | 2.3133 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **168663026** | 314218 | 6ELMONT | DVP | 314908 | 8ELMONT | DVP | 1 | DVP_P1-2: LN 557 | single | 920.92 | 145.15 | 146.09 | DC | 9.91 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **314229** | 6MT RD221 | 0.1400 | 80/20 | 0.1400 |
| **314236** | 6NRTHEST | 0.1840 | 80/20 | 0.1840 |
| **314241** | 6OLDCHRC | 0.8588 | 80/20 | 0.8588 |
| **314250** | 6ROCKVILLE | 0.3160 | 80/20 | 0.3160 |
| **314309** | 6IRON208 | 0.3986 | 80/20 | 0.3986 |
| **315043** | 1FOUR RIVERA | 3.1016 | 80/20 | 3.1016 |
| **315044** | 1FOUR RIVERB | 3.1016 | 80/20 | 3.1016 |
| **315045** | 1FOUR RIVERC | 3.7909 | 80/20 | 3.7909 |
| **315046** | 1FOUR RIVERD | 3.1016 | 80/20 | 3.1016 |
| **315047** | 1FOUR RIVERE | 3.1016 | 80/20 | 3.1016 |
| **315048** | 1FOUR RIVERF | 3.7909 | 80/20 | 3.7909 |
| **315050** | 1FOURRIVERG | 4.6424 | 80/20 | 4.6424 |
| **315051** | 1AA1-145 CT1 | 4.8822 | 80/20 | 4.8822 |
| **315052** | 1AA1-145 CT2 | 4.8822 | 80/20 | 4.8822 |
| **315058** | **1CHESTF3 (Deactivation : 13/12/2018)** | **16.7790** | **80/20** | **16.7790** |
| **315059** | **1CHESTF4 (Deactivation : 13/12/2018)** | **27.1988** | **80/20** | **27.1988** |
| **315060** | **1CHESTF5 (Deactivation : 31/05/2023)** | **56.3255** | **80/20** | **56.3255** |
| **315061** | 1CHESTG7 | 3.3185 | 80/20 | 3.3185 |
| **315062** | 1CHESTS7 | 1.5234 | 80/20 | 1.5234 |
| **315063** | 1CHESTG8 | 3.2651 | 80/20 | 3.2651 |
| **315064** | 1CHESTS8 | 1.6808 | 80/20 | 1.6808 |
| **315065** | **1CHESTF6 (Deactivation : 31/05/2023)** | **92.0429** | **Adder** | **108.29** |
| **315067** | 1DARBY 1 | 2.4776 | 80/20 | 2.4776 |
| **315068** | 1DARBY 2 | 2.4805 | 80/20 | 2.4805 |
| **315069** | 1DARBY 3 | 2.4892 | 80/20 | 2.4892 |
| **315070** | 1DARBY 4 | 2.4921 | 80/20 | 2.4921 |
| **315074** | **1HOPCGN1 (Deactivation : 25/06/2019)** | **0.0130** | **Adder** | **0.02** |
| **315075** | **1HOPCGN2 (Deactivation : 25/06/2019)** | **0.0130** | **Adder** | **0.02** |
| **315083** | **1SPRUNCA (Deactivation : 12/01/2021)** | **7.9136** | **Adder** | **9.31** |
| **315084** | **1SPRUNCB (Deactivation : 12/01/2021)** | **7.9136** | **Adder** | **9.31** |
| **316075** | AC2-137 C | 0.3008 | 80/20 | 0.3008 |
| **316083** | **AB2-161 C (Suspended)** | **2.1232** | **Adder** | **2.5** |
| **316103** | AB2-015 C | 4.3839 | Adder | 5.16 |
| **316108** | **AB2-160 C (Suspended)** | **3.8122** | **Adder** | **4.48** |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| 316112 | AB2-068 CT1 (Withdrawn : 01/11/2021) | 31.9131 | Adder | 37.54 |
| 316113 | AB2-068 CT2 (Withdrawn : 01/11/2021) | 31.9131 | Adder | 37.54 |
| 316114 | AB2-068 ST (Withdrawn : 01/11/2021) | 55.2860 | Adder | 65.04 |
| 316132 | AB2-190 C | 13.5146 | Adder | 15.9 |
| 316134 | AC1-107 G1 | 59.9269 | Adder | 70.5 |
| 316135 | AC1-107 G2 | 59.9269 | Adder | 70.5 |
| 316136 | AC1-107 G3 | 59.9382 | Adder | 70.52 |
| 925863 | AC1-065 C | 4.9781 | Adder | 5.86 |
| 926754 | AC1-161 C | 15.7567 | Adder | 18.54 |
| 926784 | AC1-164 C | 29.4977 | Adder | 34.7 |
| 927044 | AC1-191 C | 11.1083 | 80/20 | 11.1083 |
| 932044 | AC2-012 C | 5.4753 | Adder | 6.44 |
| 932501 | AC2-070 C | 0.2822 | 80/20 | 0.2822 |
| 932581 | AC2-078 C O1 | 2.5595 | Adder | 3.01 |
| 932591 | AC2-079 C O1 | 3.3704 | Adder | 3.97 |
| 933294 | AC2-141 C | 15.7567 | Adder | 18.54 |
| 933991 | AD1-023 C | 6.3502 | Adder | 7.47 |
| 934014 | AD1-025 C | 11.1497 | Adder | 13.12 |
| 934061 | AD1-033 C | 3.9781 | Adder | 4.68 |
| 934141 | AD1-041 C | 3.5195 | Adder | 4.14 |
| 934521 | AD1-076 C | 26.4390 | Adder | 31.1 |
| 934575 | AD1-082 C | 4.8388 | Adder | 5.69 |
| 934781 | AD1-105 C | 7.5069 | 80/20 | 7.5069 |
| 935164 | AD1-151 C | 10.8599 | Adder | 12.78 |
| 936041 | AD2-007 C | 0.5326 | Adder | 0.63 |
| 936051 | AD2-008 C | 1.9411 | Adder | 2.28 |
| 936151 | AD2-021 | 0.0343 | 80/20 | 0.0343 |
| 936581 | AD2-073 C | 1.1801 | Adder | 1.39 |
| 936591 | AD2-074 C | 3.3700 | Adder | 3.96 |
| 936661 | AD2-085 C | 1.9517 | Adder | 2.3 |
| 936761 | AD2-097 C | 1.5009 | Adder | 1.77 |
| 937221 | AD2-160 C O1 | 3.0844 | Adder | 3.63 |
| 938535 | AE1-072 C | 9.2607 | Adder | 10.89 |
| 938634 | AE1-085 C | 5.6346 | Adder | 6.63 |
| 938771 | AE1-103 C | 1.8889 | Adder | 2.22 |
| 939195 | AE1-149 C | 6.8932 | Adder | 8.11 |
| 939245 | AE1-155 C | 7.7061 | Adder | 9.07 |
| 939414 | AE1-173_C1 | 14.0744 | Adder | 16.56 |
| 939415 | AE1-173_C2 | 12.0637 | Adder | 14.19 |
| 939416 | AE1-173_C3 | 14.0744 | Adder | 16.56 |
| 939431 | AE1-175 C | 1.5443 | Adder | 1.82 |
| 939611 | AE1-191 C | 7.0390 | Adder | 8.28 |
| 939755 | AE1-206 C | 33.3912 | 80/20 | 33.3912 |
| 940061 | AE2-000BC O1 | 6.6535 | Adder | 7.83 |
| 940231 | AE2-005 C | 0.9051 | Adder | 1.06 |
| 940251 | AE2-007 O1 (Withdrawn : 12/11/2020) | 92.7570 | Adder | 109.13 |
| 940431 | AE2-027 C O1 | 9.5148 | Adder | 11.19 |
| 940481 | AE2-033 C | 8.4168 | Adder | 9.9 |
| 940491 | AE2-034 C | 3.5664 | Adder | 4.2 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **940541** | AE2-040 | 1.5052 | Adder | 1.77 |
| **940551** | AE2-041 | 4.7852 | Adder | 5.63 |
| **940651** | AE2-052 | 2.2977 | Adder | 2.7 |
| **940891** | AE2-078 C | 1.4390 | Adder | 1.69 |
| **940901** | AE2-079 C | 1.4390 | Adder | 1.69 |
| **941101** | AE2-104 C O1 | 1.8121 | Adder | 2.13 |
| **941281** | AE2-122 C O1 | 15.1327 | Adder | 17.8 |
| **941291** | AE2-123 C O1 | 15.5517 | Adder | 18.3 |
| **941301** | AE2-124 C O1 | 14.1296 | Adder | 16.62 |
| **941501** | AE2-147 C | 8.2299 | Adder | 9.68 |
| **941581** | AE2-155 C | 0.1074 | 80/20 | 0.1074 |
| **941591** | AE2-156 O1 | 9.5999 | Adder | 11.29 |
| **942001** | AE2-212 C | 1.5226 | Adder | 1.79 |
| **942131** | AE2-225 C | 1.1317 | Adder | 1.33 |
| **942151** | AE2-227 C | 2.0350 | 80/20 | 2.0350 |
| **942161** | AE2-228 C | 1.6015 | Adder | 1.88 |
| **942171** | AE2-229 C | 0.8488 | Adder | 1.0 |
| **942191** | AE2-231 C O1 | 2.2229 | Adder | 2.62 |
| **942341** | AE2-247 C | 0.8465 | Adder | 1.0 |
| **942371** | AE2-250 C O1 | 6.7716 | Adder | 7.97 |
| **942401** | AE2-253 C | 3.2442 | Adder | 3.82 |
| **942471** | AE2-260 C O1 | 7.1975 | Adder | 8.47 |
| **942551** | AE2-270 | 17.9099 | Adder | 21.07 |
| **943431** | AF1-014 C | 0.8575 | Adder | 1.01 |
| **943461** | AF1-017 C | 0.7659 | Adder | 0.9 |
| **943471** | AF1-018 | 4.7852 | Adder | 5.63 |
| **943601** | AF1-031 C | 10.0284 | 80/20 | 10.0284 |
| **943611** | AF1-032 C | 0.9242 | Adder | 1.09 |
| **943621** | AF1-033 C | 1.4390 | Adder | 1.69 |
| **943741** | AF1-042 C | 1.7634 | Adder | 2.07 |
| **943991** | AF1-067 C | 4.9572 | 80/20 | 4.9572 |
| **944581** | AF1-123 C O1 | 25.2045 | Adder | 29.65 |
| **944591** | AF1-124 C O1 | 25.2045 | Adder | 29.65 |
| **944601** | AF1-125 C O1 | 25.2045 | Adder | 29.65 |
| **944631** | AF1-128 O1 | 49.3894 | 80/20 | 49.3894 |
| **944641** | AF1-129 | 77.2341 | Adder | 90.86 |
| **944871** | AF1-152 C | 2.7433 | Adder | 3.23 |
| **945361** | AF1-201 C O1 | 9.8953 | Adder | 11.64 |
| **945711** | AF1-236 C O1 | 39.0439 | Adder | 45.93 |
| **946001** | AF1-265 | 29.2905 | 80/20 | 29.2905 |
| **946011** | AF1-266 | 7.0455 | Adder | 8.29 |
| **946261** | AF1-291 C | 1.6021 | Adder | 1.88 |
| **957411** | AF2-035 C | 4.0416 | Adder | 4.75 |
| **957491** | AF2-043 C | 1.1317 | Adder | 1.33 |
| **957531** | AF2-047 C | 8.4745 | Adder | 9.97 |
| **957601** | AF2-054 C | 1.3733 | Adder | 1.62 |
| **957631** | AF2-057 | 1.9212 | Adder | 2.26 |
| **957711** | AF2-065 C | 9.1341 | Adder | 10.75 |
| **957821** | AF2-076 C | 2.7894 | Adder | 3.28 |
| **957831** | AF2-077 C | 1.3337 | Adder | 1.57 |
| **957871** | AF2-081 C | 5.2522 | Adder | 6.18 |
| **957911** | AF2-085 | 2.0679 | Adder | 2.43 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **958141** | AF2-108 | 1.1942 | Adder | 1.4 |
| **958161** | AF2-110 C | 0.7471 | Adder | 0.88 |
| **958261** | AF2-120 C | 3.7742 | Adder | 4.44 |
| **959641** | AF2-255 C | 0.5087 | 80/20 | 0.5087 |
| **959651** | AF2-256 C | 0.4004 | Adder | 0.47 |
| **959661** | AF2-257 C | 0.4005 | Adder | 0.47 |
| **959671** | AF2-258 C | 0.3806 | Adder | 0.45 |
| **959681** | AF2-259 C | 1.7914 | Adder | 2.11 |
| **960091** | AF2-300 C | 1.0104 | Adder | 1.19 |
| **961091** | AF2-400 C | 0.2367 | Adder | 0.28 |
| **961611** | AG1-000B C | 5.2476 | Adder | 11.65 |
| **961711** | AG1-011 | 10.0371 | Adder | 22.28 |
| **961851** | AG1-027 C | 4.7866 | Adder | 10.63 |
| **961951** | AG1-038 C | 1.0330 | Adder | 2.29 |
| **962131** | AG1-057 | 1.2681 | Adder | 2.81 |
| **962191** | AG1-064 C | 1.4189 | 80/20 | 1.4189 |
| **962201** | AG1-065 C | 1.4189 | 80/20 | 1.4189 |
| **962271** | AG1-075 C O1 | 6.1943 | Adder | 13.75 |
| **962321** | **AG1-081 C (Withdrawn : 01/15/2021)** | **0.6933** | **Adder** | **1.54** |
| **962531** | AG1-102 C | 0.3628 | Adder | 0.81 |
| **962851** | AG1-134 C | 9.9144 | 80/20 | 9.9144 |
| **962861** | AG1-135 C | 1.9491 | Adder | 4.33 |
| **962961** | AG1-145 C | 0.7385 | Adder | 1.64 |
| **962971** | AG1-146 C | 1.0161 | Adder | 2.26 |
| **962981** | AG1-147 C | 2.3708 | Adder | 5.26 |
| **963221** | AG1-171 C | 0.7674 | Adder | 1.7 |
| **963231** | AG1-172 C | 0.7674 | Adder | 1.7 |
| **963241** | AG1-173 C | 0.7674 | Adder | 1.7 |
| **963251** | AG1-174 C | 0.7674 | Adder | 1.7 |
| **963261** | AG1-175 C | 0.7674 | Adder | 1.7 |
| **963291** | AG1-178 C O1 | 8.9423 | Adder | 19.85 |
| **963341** | AG1-183 C | 1.5851 | Adder | 3.52 |
| **963351** | AG1-184 O1 | 7.5521 | Adder | 16.76 |
| **963381** | AG1-187 | 0.6462 | Adder | 1.43 |
| **963611** | AG1-210 C | 0.2030 | Adder | 0.45 |
| **963621** | AG1-213 C | 0.1785 | Adder | 0.4 |
| **963821** | AG1-235 C O1 | 6.7507 | Adder | 14.98 |
| **964021** | AG1-256 C | 0.3928 | Adder | 0.87 |
| **964211** | AG1-282 C | 0.6351 | Adder | 1.41 |
| **964801** | AG1-343 C | 1.5242 | Adder | 3.38 |
| **964951** | AG1-359 O1 | 7.5231 | Adder | 16.7 |
| **965001** | AG1-364 C O1 | 2.0355 | Adder | 4.52 |
| **965181** | AG1-383 C | 0.7721 | Adder | 1.71 |
| **965231** | AG1-388 C | 0.6351 | Adder | 1.41 |
| **965291** | AG1-394 C | 0.5238 | Adder | 1.16 |
| **965631** | AG1-431 | 11.9803 | Adder | 26.59 |
| **966491** | AG1-518 O1 | 2.4991 | Adder | 5.55 |
| **966611** | AG1-531 C | 2.0699 | Adder | 4.59 |
| **966661** | AG1-536 C | 1.7197 | Adder | 3.82 |
| **966711** | AG1-541 C | 1.4280 | Adder | 3.17 |
| **966731** | AG1-544 C | 2.3324 | Adder | 5.18 |
| **966741** | AG1-545 C | 0.7762 | Adder | 1.72 |

| Bus # | Bus | Gendeliv MW Impact | Type | Full MW Impact |
|---|---|---|---|---|
| **966871** | AG1-558 C | 2.4962 | 80/20 | 2.4962 |
| **966881** | AG1-559 C | 0.5355 | Adder | 1.19 |
| **966931** | AG1-431A | 9.0010 | Adder | 19.98 |
| **WEC** | WEC | 0.0706 | Confirmed LTF | 0.0706 |
| **LGEE** | LGEE | 0.1508 | Confirmed LTF | 0.1508 |
| **CPLE** | CPLE | 3.2849 | Confirmed LTF | 3.2849 |
| **CBM-W2** | CBM-W2 | 7.5085 | Confirmed LTF | 7.5085 |
| **NY** | NY | 0.7034 | Confirmed LTF | 0.7034 |
| **TVA** | TVA | 1.6744 | Confirmed LTF | 1.6744 |
| **SIGE** | SIGE | 0.1759 | Confirmed LTF | 0.1759 |
| **CBM-S2** | CBM-S2 | 36.1224 | Confirmed LTF | 36.1224 |
| **CBM-S1** | CBM-S1 | 0.3884 | Confirmed LTF | 0.3884 |
| **MEC** | MEC | 0.6912 | Confirmed LTF | 0.6912 |
| **LAGN** | LAGN | 2.0913 | Confirmed LTF | 2.0913 |
| **AA2-074** | AA2-074 | 2.1654 | LTF | 2.1654 |
| **CBM-W1** | CBM-W1 | 2.3273 | Confirmed LTF | 2.3273 |

## 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 |
|---|---|---|
| **AA1-145** | Four Rivers 230kV | In Service |
| **AA2-074** | CPLE-PJM | Confirmed |
| **AB2-015** | Franklin 115kV | Engineering and Procurement |
| **AB2-068** | Chickahominy 500kV | Withdrawn |
| **AB2-160** | Reams 115kV | Suspended |
| **AB2-161** | Waverly #2 DP 115kV | Suspended |
| **AB2-190** | Hopewell-Surry 230kV | Engineering and Procurement |
| **AC1-065** | Harmony Village-Shackleford 115kV | Engineering and Procurement |
| **AC1-107** | Chickahominy 500kV | Engineering and Procurement |
| **AC1-161** | Septa 500kV | Engineering and Procurement |
| **AC1-164** | Chickahominy 230kV | Engineering and Procurement |
| **AC1-191** | Elmont 115kV | Active |
| **AC2-012** | Grassfield-Great Bridge 115kV | Active |
| **AC2-070** | Old Church 34.5kV | Engineering and Procurement |
| **AC2-078** | Disputanta-Waverly 115kV | Engineering and Procurement |
| **AC2-079** | Ivor-Oak Ridge 115kV | Engineering and Procurement |
| **AC2-137** | Elko 34.5kV | Partially in Service - Under Construction |
| **AC2-138** | Northern Neck 34.5kV | Partially in Service - Under Construction |
| **AC2-141** | Septa 500kV | Active |
| **AD1-023** | Cashie-Trowbridge 230 kV | Active |
| **AD1-025** | Hopewell-Surry 230 kV | Active |
| **AD1-033** | Fentress-Landstown 230 kV | Engineering and Procurement |
| **AD1-041** | Harmony Village-Shackleford 115 kV | Engineering and Procurement |
| **AD1-076** | Trowbridge 230 kV | Active |
| **AD1-082** | Bakers Pond-Ivor 115kV | Engineering and Procurement |
| **AD1-105** | Kings Dominion DP 115 kV | Active |
| **AD1-151** | Hopewell-Surry 230 kV | Active |
| **AD2-007** | Hopewell-Surry 230 kV | Active |
| **AD2-008** | Hopewell-Surry 230 kV | Active |
| **AD2-021** | Elko 34.5 kV | Partially in Service - Under Construction |
| **AD2-030** | Wan 34.5 kV | In Service |
| **AD2-073** | Sanders DP 230 kV | Active |
| **AD2-074** | Garner DP-Lancaster 115 kV | Active |
| **AD2-085** | Myrtle-Windsor DP 115kV | Active |
| **AD2-097** | Spruance NUG 230kV | In Service |
| **AD2-160** | Hickory-Moyock 230kV | Active |
| **AE1-072** | Shawboro-Sligo 230 kV | Active |
| **AE1-085** | Bakers Pond-Bell Ave 115 kV | Active |
| **AE1-103** | Holland-Union Camp 115 kV | Active |

| Queue Number | Project Name | Status |
|---|---|---|
| **AE1-124** | Oak Grove 34.5 kV | Engineering and Procurement |
| **AE1-149** | Disputanta-Poe 115 kV | Active |
| **AE1-155** | Garner-Northern Neck 115 kV | Active |
| **AE1-157** | Ladysmith CT-St. Johns 230 kV | Active |
| **AE1-158** | Ladysmith CT-St. Johns 230 kV | Active |
| **AE1-173** | Carson-Suffolk 500 kV | Active |
| **AE1-175** | Light Foot 34.5 kV | Engineering and Procurement |
| **AE1-191** | Harmony Village-Shackleford 115 kV | Active |
| **AE1-206** | Four Rivers-Hanover 230 kV | Active |
| **AE2-000B** | N/A | N/A |
| **AE2-005** | Harmony Village-Shackleford 115 kV | Engineering and Procurement |
| **AE2-007** | Chesapeake 230 kV | Withdrawn |
| **AE2-027** | Harrowgate-Locks 115kV | Active |
| **AE2-033** | Clubhouse-Sappony 230 kV | Active |
| **AE2-034** | Mackeys 230 kV | Active |
| **AE2-040** | Sapony 34.5 kV | Active |
| **AE2-041** | Harmony Village 230 kV | Active |
| **AE2-052** | Disputanta-Poe 115 kV | Active |
| **AE2-078** | Poolesville 34.5 kV | Engineering and Procurement |
| **AE2-079** | Poolesville 34.5 kV | Engineering and Procurement |
| **AE2-104** | Suffolk 115 kV | Active |
| **AE2-122** | Birdneck-Landstown 230 kV | Active |
| **AE2-123** | Birdneck-Landstown 230 kV | Active |
| **AE2-124** | Landstown 230 kV | Active |
| **AE2-147** | Swamp 230 kV | Active |
| **AE2-155** | Old Church 34.5 kV | Partially in Service - Under Construction |
| **AE2-156** | Yadkin 115 kV | Active |
| **AE2-212** | Harrowgate 34 kV | Active |
| **AE2-225** | Suffolk 34 kV | Engineering and Procurement |
| **AE2-227** | Iron Bridge 34 kV | Engineering and Procurement |
| **AE2-228** | Tyler 34 kv | Engineering and Procurement |
| **AE2-229** | Suffolk 34 kV | Engineering and Procurement |
| **AE2-231** | St. Johns 115 kV | Active |
| **AE2-247** | Myrtle-Windsor 115 kV | Active |
| **AE2-250** | Purdy Sw.-Reams 115 kV | Active |
| **AE2-253** | Hickory-Moyock 230 kV | Active |
| **AE2-260** | Clubhouse 230 kV | Active |
| **AE2-270** | Hopewell-Surry 230 kV | Active |
| **AF1-014** | Harmony Village-Shackleford 115 kV | Active |
| **AF1-017** | Myrtle-Windsor 115 kV | Active |
| **AF1-018** | Harmony Village 230 kV | Active |
| **AF1-031** | Kings Dominion DP 115 kV | Active |
| **AF1-032** | Suffolk 34.5 kV | Engineering and Procurement |
| **AF1-033** | Poolesville 34 kV | Engineering and Procurement |
| **AF1-042** | Garner DP-Lancaster 115 kV | Active |
| **AF1-067** | Kings Dominion DP 115 kV | Active |
| **AF1-114** | Oak Grove-Dahlgren 230 kV | Active |
| **AF1-123** | Fentress 500 kV | Active |
| **AF1-124** | Fentress 500 kV | Active |
| **AF1-125** | Fentress 500 kV | Active |
| **AF1-128** | Chesterfield 230 kV | Active |
| **AF1-129** | Chesterfield 230 kV | Active |

| Queue Number | Project Name | Status |
|---|---|---|
| **AF1-152** | Swamp 230 kV | Active |
| **AF1-201** | Hayes-White Marsh 115 kV | Active |
| **AF1-236** | Mackeys 230 kV | Active |
| **AF1-248** | Northern Neck 34.5 kV | Partially in Service - Under Construction |
| **AF1-265** | Four Rivers-Hanover 230 kV | Active |
| **AF1-266** | Clubhouse-Sapony 230 kV | Active |
| **AF1-291** | Tyler 34.5 kV | Engineering and Procurement |
| **AF2-013** | Arnold's Corner-Dahlgren 230 kV | Active |
| **AF2-035** | St. Johns 115 kV | Active |
| **AF2-043** | Suffolk 34.5 kV | Engineering and Procurement |
| **AF2-047** | Creswell-Riders Creek 115 kV | Active |
| **AF2-049** | Ladysmith CT-St. Johns 230 kV | Active |
| **AF2-054** | Wan 34.5 kV | Active |
| **AF2-057** | Grassfield 34.5 kV | Active |
| **AF2-065** | Surry-Hopewell 230 kV | Active |
| **AF2-076** | Suffolk-Nucor Steel 230 kV | Active |
| **AF2-077** | White Marsh 34.5 kV | Active |
| **AF2-081** | Moyock 230 kV | Active |
| **AF2-085** | Midlothian 34.5 kV | Engineering and Procurement |
| **AF2-091** | Oak Grove-Dahlgren 230 kV | Active |
| **AF2-108** | Locks 34.5 kV | Active |
| **AF2-110** | Suffolk 115 kV | Active |
| **AF2-120** | Garner-Northern Neck 115 kV | Active |
| **AF2-255** | Iron Bridge 34.5 kV | Engineering and Procurement |
| **AF2-256** | Tyler 34.5 kV | Engineering and Procurement |
| **AF2-257** | Tyler 34.5 kV | Active |
| **AF2-258** | Harrowgate 34.5 kV | Active |
| **AF2-259** | Locks 34.5 kV | Active |
| **AF2-300** | St. Johns 115 kV | Active |
| **AF2-400** | Franklin 13.2 kV | Engineering and Procurement |
| **AG1-000B** | N/A | N/A |
| **AG1-011** | Colonial Trial 230 kV | Active |
| **AG1-019** | Arnold's Corner-Dahlgren 230 kV | Active |
| **AG1-027** | Suffolk-Holland 115 kV | Active |
| **AG1-038** | Garner DP-Lancaster 115 kV | Active |
| **AG1-057** | Harmony Village 230 kV | Active |
| **AG1-064** | Plaza 34.5 kV | Active |
| **AG1-065** | Plaza 34.5 kV | Active |
| **AG1-075** | Purdy-Sapony 115 kV | Active |
| **AG1-081** | Poolesville 34.5 kV | Withdrawn |
| **AG1-102** | White Marsh 34.5 kV | Active |
| **AG1-134** | Kings Dominion DP 115 kV | Active |
| **AG1-135** | Garner-Lancaster 115 kV | Active |
| **AG1-145** | Lightfoot 34.5 kV | Active |
| **AG1-146** | Garner DP-Lancaster 115 kV | Active |
| **AG1-147** | Garner DP-Lancaster 115 kV | Active |
| **AG1-154** | Ladysmith CT 230 kV | Active |
| **AG1-171** | Hopewell-Surry 230kV | Active |
| **AG1-172** | Hopewell-Surry 230 kV | Active |
| **AG1-173** | Hopewell-Surry 230 kV | Active |
| **AG1-174** | Hopewell-Surry 230 kV | Active |
| **AG1-175** | Hopewell-Surry 230 kV | Active |

| Queue Number | Project Name | Status |
|---|---|---|
| **AG1-178** | Carson-Septa 500 kV | Active |
| **AG1-183** | St. Johns DP-REC 115 kV | Active |
| **AG1-184** | Carson-Septa 500 kV | Active |
| **AG1-187** | St. Johns DP-REC 115 kV | Active |
| **AG1-210** | Northern Neck 34.5 kV | Active |
| **AG1-213** | St Johns 13.2 kV | Active |
| **AG1-235** | Fentress-Sligo 230 kV | Active |
| **AG1-256** | Northern Neck 230 kV | Active |
| **AG1-282** | Dunnsville 34.5 kV | Active |
| **AG1-322** | Birchwood 230 kV | Active |
| **AG1-343** | Boykins-Murphy 115 kV | Active |
| **AG1-359** | Fentress 230 kV | Active |
| **AG1-364** | Deep Creek 115 kV | Active |
| **AG1-383** | Hickory 34.5 kV | Active |
| **AG1-388** | Dunnsville 34.5 kV | Active |
| **AG1-394** | Boykins 34.5 kV | Active |
| **AG1-412** | Ladysmith CT-Mine Road 230 kV | Active |
| **AG1-431** | Mackeys 230 kV | Active |
| **AG1-431A** | Mackeys 230 kV | Active |
| **AG1-518** | Suffolk 230 kV | Active |
| **AG1-531** | Poolesville-Winchester 230 kV | Active |
| **AG1-536** | Garner-Northern Neck 115 kV | Active |
| **AG1-541** | St. Johns 115 kV | Active |
| **AG1-544** | Bakers Pond DP 115 kV | Active |
| **AG1-545** | W. Quaker Rd-Disputanta 34.5 kV | Active |
| **AG1-558** | Buckner 34.5 kV | Active |
| **AG1-559** | Caroline Pines 22 kV | Active |

## 11.8 Contingency Descriptions

| Contingency Name | Contingency Definition |
|---|---|
| **DVP_P1-2: LN 557** | CONTINGENCY 'DVP_P1-2: LN 557'<br>OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00<br>END |
| **DVP_P1-2: LN 73** | CONTINGENCY 'DVP_P1-2: LN 73'<br>OPEN BRANCH FROM BUS 314217 TO BUS 314221 CKT 1 /* 3ELMONT 115.00 - 3HANOVER 115.00<br>OPEN BRANCH FROM BUS 314220 TO BUS 314221 CKT 1 /* 3FOURRIVERS 115.00 - 3HANOVER 115.00<br>OPEN BRANCH FROM BUS 314221 TO BUS 314405 CKT 1 /* 3HANOVER 115.00 - 3HANOV_1 115.00<br>OPEN BUS 314221 /* ISLAND: 3HANOVER 115.00<br>OPEN BUS 314405 /* ISLAND: 3HANOV_1 115.00<br>END |
| **DVP_P1-2: LN 568** | CONTINGENCY 'DVP_P1-2: LN 568'<br>OPEN BRANCH FROM BUS 314911 TO BUS 314922 CKT 1 /* 8LADYSMITH 500.00 - 8POSSUM 500.00<br>END |
| **DVP_P1-2: LN 47** | CONTINGENCY 'DVP_P1-2: LN 47'<br>OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00<br>OPEN BRANCH FROM BUS 314151 TO BUS 314153 CKT 1 /* 3SLABTWN 115.00 - 3WOODPCK 115.00<br>OPEN BRANCH FROM BUS 314152 TO BUS 314153 CKT 1 /* 3S JOHNS 115.00 - 3WOODPCK 115.00<br>OPEN BRANCH FROM BUS 314152 TO BUS 314216 CKT 1 /* 3S JOHNS 115.00 - 3PINEWOOD 115.00<br>OPEN BUS 314151 /* ISLAND: 3SLABTWN 115.00<br>OPEN BUS 314152 /* ISLAND: 3S JOHNS 115.00<br>OPEN BUS 314153 /* ISLAND: 3WOODPCK 115.00<br>END |
| **DVP_P1-2: LN 2089** | CONTINGENCY 'DVP_P1-2: LN 2089'<br>OPEN BRANCH FROM BUS 314196 TO BUS 314197 CKT 1 /* 6LADYSMITH 230.00 - 6LDYSMITH CT230.00<br>END |
| **Base Case** | |
| **314212 6FOUR RIVERS 230 939750 AE1-206 TAP 230 1** | CONTINGENCY '314212 6FOUR RIVERS 230 939750 AE1-206 TAP 230 1'<br>OPEN BRANCH FROM BUS 314212 TO BUS 939750 CKT 1<br>END |

| Contingency Name | Contingency Definition |
| --- | --- |
| **314222 6HANOVER 230 939750 AE1-206 TAP 230 1** | CONTINGENCY '314222 6HANOVER 230 939750 AE1-206 TAP 230 1'<br>OPEN BRANCH FROM BUS 314222 TO BUS 939750 CKT 1<br>END |

# 12 Short Circuit Analysis

The following Breakers are overdutied:

None.

## 12.1 System Reinforcements - Short Circuit

No short circuit impacts were identified for this project.

# 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