Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-534

EVERGREEN 230 KV

200 MW Capacity / 200 MW Energy

January 2021

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1 Introduction

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

2 Preface

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

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

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 Storage generating facility located in Loudoun County, Virginia. The installed facilities will have a total capability of 200 MW with 200 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is June 01, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	**AG1-534**
Project Name	BRAMBLETON-POLAND RD 230 KV
State	Virginia
County	Loudoun
Transmission Owner	Dominion
MFO	200
MWE	200
MWC	200
Fuel	Storage
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

AG1-534 "Evergreen 230 kV" will interconnect with the Dominion transmission system. The primary POI is a direct connect to the Evergreen 230 kV substation.

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

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

4.2 Secondary Point of Interconnection

The IC requested that a secondary POI be reviewed for network impacts.

The secondary POI for AG1-534 is a new tap on the Brambleton-Poland Rd 230 kV line.

This report does not provide costs for the interconnection of the secondary POI. The secondary POI was analyzed for network impacts. Network impact results are shown in the Summer Peak - Load Flow Analysis – Secondary Point of Interconnection section of this report.

5 Cost Summary

The AG1-534 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$4,500,000
***Total System Network Upgrade Costs**	$24,360,000[1]
Total Costs	$28,860,000

***Note**: Due to Primary/Secondary POI issues during analysis the exact reinforcement for this violation is not included in this report. However, based on available line length and planning level costs estimates, if a reconductor is required the project would cost approximately $1,600,000 and if a rebuild is required it would cost approximately $3,000,000. Schedule would be 30-42 months. Additionally, planned RTEP projects b3300 and b3031 may mitigate this violation. This will be further reviewed in the System Impact Study Phase.

[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.

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.

6 Transmission Owner Scope of Work

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of AG1-534 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	$2,100,000
New Breakers	$2,400,000
Total Physical Interconnection Costs	$4,500,000

AG1-534 "Evergreen 230 kV" will interconnect with the Dominion transmission system. The primary POI is a direct connect to the Evergreen 230 kV substation.

To accommodate the proposed Project, Dominion Energy will add two new 230 kV breakers to the existing Evergreen 230 kV substation to allow for the proposed interconnection. Dominion will install one span of overhead 230 kV line to the point of interconnection ("POI") including 230 kV interconnection metering.

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

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

7 Schedule

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

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

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.

8 Transmission Owner Analysis

Dominion assessed the impact of the proposed AG1-534 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 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 - Primary POI

The Queue Project AG1-534 was evaluated as a 200.0 MW (Capacity 200.0 MW) injection at the Evergreen 230 kV substation in the Dominion area. Project AG1-534 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-534 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)

None

11.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
163411164	314171	6BRAMBL	230.0	DVP	313827	6EVERG R MILL	230.0	DVP	1	DVP_P7-1: LN 227-274	tower	1204.0	95.17	108.9	DC	165.37

Note: Due to Primary/Secondary POI issues during analysis the exact reinforcement for the Brambleton-Evergreen Mills 230 kV Line violation is not included in this report. However, based on available line length and planning level costs estimates, if a reconductor is required the project would cost approximately $1,600,000 and if a rebuild is required it would cost approximately $3,000,000. Schedule would be 30-42 months.

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
163411032	314085	6REMNGCT	230.0	DVP	314110	6ELK RUN	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	106.16	106.76	DC	13.63
163411037	314110	6ELK RUN	230.0	DVP	941850	AE2-190 TAP	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.81	106.41	DC	13.63
163928414	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P7-1: LN 569-2101	tower	3144.0	107.09	107.65	DC	37.27
163928415	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P7-1: LN 569-2163	tower	3144.0	100.65	101.19	DC	35.0
163410997	941850	AE2-190 TAP	230.0	DVP	314037	6GAINSVL	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.88	106.44	DC	13.63
173937793	941850	AE2-190 TAP	230.0	DVP	314037	6GAINSVL	230.0	DVP	1	DVP_P4-2: H1T539	breaker	1204.0	102.79	103.29	DC	12.37

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
167766747	223938	DICKH230	230.0	PEPCO	223937	DICK 230	230.0	PEPCO	2	PEPCO_P1_PP1	operation	680.0	146.75	151.14	DC	28.99
167766750	223938	DICKH230	230.0	PEPCO	223937	DICK 230	230.0	PEPCO	1	PEPCO_P1_PP2	operation	680.0	146.75	151.14	DC	28.99
175598026	314171	6BRAMBL	230.0	DVP	313827	6EVERGR MILL	230.0	DVP	1	313864 6POLAND RD 230 314171 6BRAMBL 230 1	operation	984.179992676	95.38	111.61	DC	159.74
163927943	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P1-2: LN 569	operation	2686.52001953	114.67	115.28	DC	34.12
169806432	941850	AE2-190 TAP	230.0	DVP	314037	6GAINSVL	230.0	DVP	1	DVP_P1-2: LN 569	operation	984.179992676	118.11	118.69	DC	11.77

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
163928415,163928414	3	8OX 500.0 kV - 8CLIFTON 500.0 kV Ckt 1	DVP n6161 (1708) : Replace Wave traps at Ox and Clifton 500 kV substations. Project Type : FAC Cost : $300,000 Time Estimate : 16-18 Months	$300,000
163410997	4	AE2-190 TAP 230.0 kV - 6GAINSVL 230.0 kV Ckt 1	DVP n6322 (1675) : Reconductor 20.4 miles of 230 kV Line 2114 from AE2-190 Tap to Gainesville with 795 ACSR. Project Type : FAC Cost : $16,320,000 Time Estimate : 36-42 Months	$16,320,000
163411032	1	6REMNGCT 230.0 kV - 6ELK RUN 230.0 kV Ckt 1	DVP dom-206 (1737) : Rebuild 3.46 miles of 230 kV Line 2114 from Remington CT to Elk Run with 2-795 ACSR. Project Type : FAC Cost : $5,190,000 Time Estimate : 30-36 Months	$5,190,000
163411037	2	6ELK RUN 230.0 kV - AE2-190 TAP 230.0 kV Ckt 1	DVP dom-207 (1738) : Rebuild 1.7 miles of 230 kV Line 2114 from AE2-190 Tap to Elk Run with 2-795 ACSR. Project Type : FAC Cost : $2,550,000 Time Estimate : 30-36 Months	$2,550,000
			TOTAL COST	$24,360,000*

***Note:** Due to Primary/Secondary POI issues during analysis the exact reinforcement for the Brambleton-Evergreen Mills 230 kV Line violation is not included in this report. However, based on available line length and planning level costs estimates, if a reconductor is required the project would cost approximately $1,600,000 and if a rebuild is required it would cost approximately $3,000,000. Schedule would be 30-42 months. Additionally, planned RTEP projects b3300 and b3031 may mitigate this violation. This will be further reviewed in the System Impact Study Phase.

11.6 Flow Gate Details - Primary POI

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
163411164	314171	6BRAMBL	DVP	313827	6EVERGR MILL	DVP	1	DVP_P7-1: LN 227-274	tower	1204.0	95.17	108.9	DC	165.37

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963693	AG1-221 BAT	12.1310	50/50	12.1310
966642	AG1-534 BAT	165.3700	50/50	165.3700
G-007A	G-007A	0.8775	Confirmed LTF	0.8775
VFT	VFT	2.3543	Confirmed LTF	2.3543
CALDERWOOD	CALDERWOOD	0.1272	Confirmed LTF	0.1272
PRAIRIE	PRAIRIE	0.3823	Confirmed LTF	0.3823
CHEOAH	CHEOAH	0.1301	Confirmed LTF	0.1301
CBM-N	CBM-N	0.4344	Confirmed LTF	0.4344
COTTONWOOD	COTTONWOOD	0.4452	Confirmed LTF	0.4452
HAMLET	HAMLET	0.2685	Confirmed LTF	0.2685
GIBSON	GIBSON	0.0633	Confirmed LTF	0.0633
BLUEG	BLUEG	0.1962	Confirmed LTF	0.1962
TRIMBLE	TRIMBLE	0.0623	Confirmed LTF	0.0623
CATAWBA	CATAWBA	0.1365	Confirmed LTF	0.1365

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
163411032	314085	6REMNGCT	DVP	314110	6ELK RUN	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	106.16	106.76	DC	13.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315028	1M RUN A	5.3364	50/50	5.3364
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957462	AF2-040 BAT	50.4240	50/50	50.4240
957691	AF2-063 C	5.1576	Adder	6.07
957692	AF2-063 E	3.4384	Adder	4.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O2	2.1281	Adder	4.72
964422	AG1-305 E O2	1.4187	Adder	3.15
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2260	Merchant Transmission	7.2260
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

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
163411037	314110	6ELK RUN	DVP	941850	AE2-190 TAP	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.81	106.41	DC	13.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315028	1M RUN A	5.3364	50/50	5.3364
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957462	AF2-040 BAT	50.4240	50/50	50.4240
957691	AF2-063 C	5.1576	Adder	6.07
957692	AF2-063 E	3.4384	Adder	4.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O2	2.1281	Adder	4.72
964422	AG1-305 E O2	1.4187	Adder	3.15
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2260	Merchant Transmission	7.2260
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

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
163928414	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P7-1: LN 569-2101	tower	3144.0	107.09	107.65	DC	37.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
314142	6STAFORD	0.0794	Adder	0.09
314177	3HAYES89	0.0335	Adder	0.04
314189	6PAPERMILL	4.0923	Adder	4.81
314331	6POE	1.2923	Adder	1.52
315007	**1POSSM 5 (Deactivation : 31/05/2021)**	**84.2822**	**Adder**	**99.16**
315033	1BIRCHWDA	28.5992	Adder	33.65
315037	1LDYSMT1	4.0914	50/50	4.0914
315038	1LDYSMT2	4.0914	50/50	4.0914
315039	1LDYSMT3	3.9385	50/50	3.9385
315040	1LDYSMT4	3.9459	50/50	3.9459
315041	1LDYSMT5	3.9583	50/50	3.9583
315058	**1CHESTF3 (Deactivation : 13/12/2018)**	**11.0228**	**Adder**	**12.97**
315059	**1CHESTF4 (Deactivation : 13/12/2018)**	**17.8680**	**Adder**	**21.02**
315060	**1CHESTF5 (Deactivation : 31/05/2023)**	**38.5471**	**Adder**	**45.35**
315065	**1CHESTF6 (Deactivation : 31/05/2023)**	**73.5755**	**Adder**	**86.56**
315073	1STONECA	4.1632	Adder	4.9
315074	**1HOPCGN1 (Deactivation : 25/06/2019)**	**0.0108**	**Adder**	**0.01**
315075	**1HOPCGN2 (Deactivation : 25/06/2019)**	**0.0108**	**Adder**	**0.01**
315083	**1SPRUNCA (Deactivation : 12/01/2021)**	**6.3942**	**Adder**	**7.52**
315084	**1SPRUNCB (Deactivation : 12/01/2021)**	**6.3942**	**Adder**	**7.52**
315225	1N ANNA1	23.7560	50/50	23.7560
315226	1N ANNA2	23.7660	50/50	23.7660
316076	AC2-137 E	0.8229	Adder	0.97
316078	AC2-138 E	0.6352	Adder	0.75
316083	AB2-161 C	1.9926	Adder	2.34
316084	AB2-161 E	3.2511	Adder	3.82
316108	AB2-160 C	3.2564	Adder	3.83
316109	AB2-160 E	5.3130	Adder	6.25
316112	**AB2-068 CT1 (Withdrawn : 01/11/2021)**	**31.7803**	**Adder**	**37.39**
316113	**AB2-068 CT2 (Withdrawn : 01/11/2021)**	**31.7803**	**Adder**	**37.39**

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
316114	AB2-068 ST (Withdrawn : 01/11/2021)	55.0560	Adder	64.77
316132	AB2-190 C	12.0209	Adder	14.14
316134	AC1-107 G1	59.6776	Adder	70.21
316135	AC1-107 G2	59.6776	Adder	70.21
316136	AC1-107 G3	59.6888	Adder	70.22
316157	AD2-030 E	0.7398	Adder	0.87
919952	AA2-079 E	3.0640	Adder	3.6
923842	AB2-024 E	0.6858	Adder	0.81
924814	AB2-134 E	7.5577	Adder	8.89
925022	AB2-158 E	2.9499	Adder	3.47
925332	AB2-190 E	5.1518	Adder	6.06
925863	AC1-065 C	4.6182	Adder	5.43
925865	AC1-065 E	3.4250	Adder	4.03
926001	AC1-076 C	2.8184	Adder	3.32
926002	AC1-076 E	4.5829	Adder	5.39
926412	AC1-112 E	0.6865	Adder	0.81
926472	AC1-118 E	0.7827	Adder	0.92
926481	AC1-120 C O1	4.2115	Adder	4.95
926482	AC1-120 E O1	2.1696	Adder	2.55
926501	AC1-121 C O1	1.4464	Adder	1.7
926502	AC1-121 E O1	0.6807	Adder	0.8
926737	AC1-158 C1	4.3457	50/50	4.3457
926738	AC1-158 C2	4.3457	50/50	4.3457
926739	AC1-158 E1	12.0879	50/50	12.0879
926740	AC1-158 E2	12.0879	50/50	12.0879
926754	AC1-161 C	17.6768	Adder	20.8
926755	AC1-161 E	7.5457	Adder	8.88
926784	AC1-164 C	24.4904	Adder	28.81
926785	AC1-164 E	11.0029	Adder	12.94
927044	AC1-191 C	6.0777	Adder	7.15
927045	AC1-191 E	3.0275	Adder	3.56
927226	AC1-216 E	4.6138	Adder	5.43
930122	AB1-027 E	0.6752	Adder	0.79
932502	AC2-070 E (Withdrawn : 01/22/2021)	0.4277	Adder	0.5
932581	AC2-078 C O1	2.3930	Adder	2.82
932582	AC2-078 E O1	3.9044	Adder	4.59
933294	AC2-141 C	17.6768	Adder	20.8
933295	AC2-141 E	7.5457	Adder	8.88
934014	AD1-025 C	10.0840	Adder	11.86
934015	AD1-025 E	5.9733	Adder	7.03
934141	AD1-041 C	3.3137	Adder	3.9
934142	AD1-041 E	2.2092	Adder	2.6
934392	AD1-063 E	0.6633	Adder	0.78
934575	AD1-082 C	4.5410	Adder	5.34
934576	AD1-082 E	2.5904	Adder	3.05
934781	AD1-105 C	5.2285	Adder	6.15
934782	AD1-105 E	3.6334	Adder	4.27
935164	AD1-151 C	9.6597	Adder	11.36
935165	AD1-151 E	6.4398	Adder	7.58
936041	AD2-007 C	0.4817	Adder	0.57
936042	AD2-007 E	0.3319	Adder	0.39

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936051	AD2-008 C	1.7556	Adder	2.07
936052	AD2-008 E	3.8216	Adder	4.5
936581	AD2-073 C	1.5234	Adder	1.79
936582	AD2-073 E	0.7548	Adder	0.89
936591	AD2-074 C	3.6692	Adder	4.32
936592	AD2-074 E	5.9866	Adder	7.04
936761	AD2-097 C	1.2127	Adder	1.43
936762	AD2-097 E	6.0635	Adder	7.13
938552	AE1-074 E	0.7396	Adder	0.87
938634	AE1-085 C	5.2517	Adder	6.18
938635	AE1-085 E	2.6259	Adder	3.09
938962	AE1-124 E	0.7786	Adder	0.92
939195	AE1-149 C	6.3235	Adder	7.44
939196	AE1-149 E	4.2157	Adder	4.96
939231	AE1-154 C	1.0845	Adder	1.28
939232	AE1-154 E	0.7592	Adder	0.89
939245	AE1-155 C	8.5537	Adder	10.06
939246	AE1-155 E	5.7400	Adder	6.75
939261	AE1-157 C O1	11.7820	50/50	11.7820
939262	AE1-157 E O1	6.3908	50/50	6.3908
939271	AE1-158 C O1	12.0243	50/50	12.0243
939272	AE1-158 E O1	6.1485	50/50	6.1485
939312	AE1-162 E	0.8422	Adder	0.99
939431	AE1-175 C	1.4432	Adder	1.7
939432	AE1-175 E	0.7162	Adder	0.84
939611	AE1-191 C	6.6275	Adder	7.8
939612	AE1-191 E	4.4183	Adder	5.2
939755	AE1-206 C	20.1034	Adder	23.65
939756	AE1-206 E	13.4022	Adder	15.77
940061	AE2-000BC O1	6.2842	Adder	7.39
940062	AE2-000BE O1	4.1895	Adder	4.93
940231	AE2-005 C	0.8397	Adder	0.99
940232	AE2-005 E	1.3700	Adder	1.61
940251	AE2-007 O1 (Withdrawn : 12/11/2020)	43.8787	Adder	51.62
940352	AE2-019 BAT	22.5660	50/50	22.5660
940431	AE2-027 C O1	7.8006	Adder	9.18
940432	AE2-027 E O1	5.2004	Adder	6.12
940551	AE2-041	4.4217	Adder	5.2
940651	AE2-052	2.1078	Adder	2.48
940891	AE2-078 C	1.4005	Adder	1.65
940892	AE2-078 E	0.7215	Adder	0.85
940901	AE2-079 C	1.4005	Adder	1.65
940902	AE2-079 E	0.7215	Adder	0.85
941381	AE2-134 (Suspended)	1.9421	Adder	2.28
941582	AE2-155 E	0.1688	Adder	0.2
941591	AE2-156 O1	10.4134	Adder	12.25
942001	AE2-212 C	1.2854	Adder	1.51
942002	AE2-212 E	0.8569	Adder	1.01
942151	AE2-227 C	1.3292	Adder	1.56
942152	AE2-227 E	0.8861	Adder	1.04
942161	AE2-228 C	1.2977	Adder	1.53
942162	AE2-228 E	0.8652	Adder	1.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942191	AE2-231 C O1	3.9246	50/50	3.9246
942192	AE2-231 E O1	2.6164	50/50	2.6164
942371	AE2-250 C O1	5.7843	Adder	6.81
942372	AE2-250 E O1	3.0528	Adder	3.59
942551	AE2-270	16.0765	Adder	18.91
943431	AF1-014 C	0.7955	Adder	0.94
943432	AF1-014 E	1.4031	Adder	1.65
943471	AF1-018	4.4217	Adder	5.2
943601	AF1-031 C	6.9848	Adder	8.22
943602	AF1-031 E	3.7761	Adder	4.44
943621	AF1-033 C	1.4005	Adder	1.65
943622	AF1-033 E	0.7215	Adder	0.85
943741	AF1-042 C	1.9199	Adder	2.26
943742	AF1-042 E	3.1325	Adder	3.69
943982	AF1-066 BAT	24.4465	50/50	24.4465
943991	AF1-067 C	3.4527	Adder	4.06
943992	AF1-067 E	2.3018	Adder	2.71
944111	AF1-079 C	2.0606	Adder	2.42
944112	AF1-079 E	2.7980	Adder	3.29
944491	AF1-114 C	4.9080	Adder	5.77
944492	AF1-114 E	6.7778	Adder	7.97
944631	AF1-128 O1	33.8003	Adder	39.77
944641	AF1-129	61.7379	Adder	72.63
945361	AF1-201 C O1	9.7346	Adder	11.45
945362	AF1-201 E O1	6.4898	Adder	7.64
946001	AF1-265	17.6345	Adder	20.75
946261	AF1-291 C	1.2977	Adder	1.53
946262	AF1-291 E	0.8652	Adder	1.02
946371	AF1-301 C	8.3011	Adder	9.77
946372	AF1-301 E	5.5705	Adder	6.55
957191	AF2-013	11.8643	Adder	13.96
957411	AF2-035 C	7.1357	50/50	7.1357
957412	AF2-035 E	4.7571	50/50	4.7571
957431	AF2-037 C	6.5726	Adder	7.73
957432	AF2-037 E	4.3817	Adder	5.15
957551	AF2-049 C	5.2247	50/50	5.2247
957552	AF2-049 E	3.8617	50/50	3.8617
957601	AF2-054 C	1.3185	Adder	1.55
957602	AF2-054 E	0.8790	Adder	1.03
957691	AF2-063 C	10.4881	Adder	12.34
957692	AF2-063 E	6.9921	Adder	8.23
957711	AF2-065 C	8.1990	Adder	9.65
957712	AF2-065 E	7.8775	Adder	9.27
957831	AF2-077 C	1.3044	Adder	1.53
957832	AF2-077 E	0.8696	Adder	1.02
957911	AF2-085	2.1911	Adder	2.58
957971	AF2-091 C	1.6687	Adder	1.96
957972	AF2-091 E	2.3044	Adder	2.71
958141	AF2-108	1.0595	Adder	1.25
958251	AF2-119 C	8.1024	50/50	8.1024
958252	AF2-119 E	5.4016	50/50	5.4016
958261	AF2-120 C	4.1865	Adder	4.93

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958262	AF2-120 E	2.7910	Adder	3.28
959641	AF2-255 C	0.3323	Adder	0.39
959642	AF2-255 E	0.2215	Adder	0.26
959651	AF2-256 C	0.3244	Adder	0.38
959652	AF2-256 E	0.2163	Adder	0.25
959661	AF2-257 C	0.3244	Adder	0.38
959662	AF2-257 E	0.2163	Adder	0.25
959671	AF2-258 C	0.3214	Adder	0.38
959672	AF2-258 E	0.2142	Adder	0.25
959681	AF2-259 C	1.5893	Adder	1.87
959682	AF2-259 E	1.0595	Adder	1.25
960091	AF2-300 C	1.7839	50/50	1.7839
960092	AF2-300 E	1.1893	50/50	1.1893
961711	AG1-011	9.0778	Adder	20.15
961781	AG1-019	6.2881	Adder	13.96
961811	AG1-023 C	0.9467	Adder	2.1
961812	AG1-023 E	3.7869	Adder	8.41
961951	AG1-038 C	1.1247	Adder	2.5
961952	AG1-038 E	1.5531	Adder	3.45
962001	AG1-043 C	5.8583	50/50	5.8583
962002	AG1-043 E	3.9055	50/50	3.9055
962131	AG1-057	1.1718	Adder	2.6
962191	AG1-064 C	0.4719	Adder	1.05
962192	AG1-064 E	0.6548	Adder	1.45
962201	AG1-065 C	0.4719	Adder	1.05
962202	AG1-065 E	0.6548	Adder	1.45
962321	**AG1-081 C (Withdrawn : 01/15/2021)**	**0.6748**	**Adder**	**1.5**
962322	**AG1-081 E (Withdrawn : 01/15/2021)**	**0.4499**	**Adder**	**1.0**
962531	AG1-102 C	0.3549	Adder	0.79
962532	AG1-102 E	0.7397	Adder	1.64
962533	AG1-102 BAT	0.0058	Adder	0.01
962841	AG1-133 C O2	14.2848	50/50	14.2848
962842	AG1-133 E O2	9.5232	50/50	9.5232
962851	AG1-134 C	3.6599	Adder	8.12
962852	AG1-134 E	2.4399	Adder	5.42
962861	AG1-135 C	2.1452	Adder	4.76
962862	AG1-135 E	1.4301	Adder	3.17
962943	AG1-143 BAT	13.9688	50/50	13.9688
962961	AG1-145 C	0.6901	Adder	1.53
962962	AG1-145 E	0.4601	Adder	1.02
962971	AG1-146 C	1.0661	Adder	2.37
962972	AG1-146 E	0.7107	Adder	1.58
962981	AG1-147 C	2.4875	Adder	5.52
962982	AG1-147 E	1.6584	Adder	3.68
963051	AG1-154 C	3.1244	50/50	3.1244
963052	AG1-154 E	4.6866	50/50	4.6866
963221	AG1-171 C	0.6826	Adder	1.52
963222	AG1-171 E	0.4551	Adder	1.01
963231	AG1-172 C	0.6826	Adder	1.52
963232	AG1-172 E	0.4551	Adder	1.01
963241	AG1-173 C	0.6826	Adder	1.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963242	AG1-173 E	0.4551	Adder	1.01
963251	AG1-174 C	0.6826	Adder	1.52
963252	AG1-174 E	0.4551	Adder	1.01
963261	AG1-175 C	0.6826	Adder	1.52
963262	AG1-175 E	0.4551	Adder	1.01
963341	AG1-183 C	5.2804	50/50	5.2804
963381	AG1-187	2.1526	50/50	2.1526
963611	AG1-210 C	0.2405	Adder	0.53
963612	AG1-210 E	0.3607	Adder	0.8
963621	AG1-213 C	0.5946	50/50	0.5946
963622	AG1-213 E	0.8920	50/50	0.8920
963693	AG1-221 BAT	8.9775	50/50	8.9775
964021	AG1-256 C	0.4830	Adder	1.07
964022	AG1-256 E	0.7245	Adder	1.61
964211	AG1-282 C	0.7195	Adder	1.6
964212	AG1-282 E	0.4797	Adder	1.06
964271	AG1-288 C	14.7029	50/50	14.7029
964281	AG1-289	8.1301	50/50	8.1301
964421	AG1-305 C O2	4.3926	Adder	9.75
964422	AG1-305 E O2	2.9284	Adder	6.5
964591	AG1-322 O2	9.9050	50/50	9.9050
965001	AG1-364 C O2	2.2082	Adder	4.9
965002	AG1-364 E O2	3.3123	Adder	7.35
965231	AG1-388 C	0.7195	Adder	1.6
965232	AG1-388 E	0.4797	Adder	1.06
965441	AG1-412 C	12.2688	50/50	12.2688
965442	AG1-412 E	18.4032	50/50	18.4032
966331	AG1-502 C	2.7222	Adder	6.04
966332	AG1-502 E	1.8148	Adder	4.03
966341	AG1-503 C	0.6806	Adder	1.51
966342	AG1-503 E	0.4537	Adder	1.01
966611	AG1-531 C	2.0316	Adder	4.51
966612	AG1-531 E	1.3544	Adder	3.01
966642	AG1-534 BAT	37.2700	50/50	37.2700
966661	AG1-536 C	1.9088	Adder	4.24
966662	AG1-536 E	2.5650	Adder	5.69
966711	AG1-541 C	4.7571	50/50	4.7571
966712	AG1-541 E	6.3924	50/50	6.3924
966731	AG1-544 C	2.1738	Adder	4.83
966732	AG1-544 E	1.1663	Adder	2.59
966741	AG1-545 C	0.7246	Adder	1.61
966742	AG1-545 E	0.3884	Adder	0.86
966871	AG1-558 C	0.7239	Adder	1.61
966872	AG1-558 E	0.4826	Adder	1.07
966881	AG1-559 C	1.7839	50/50	1.7839
966882	AG1-559 E	1.1893	50/50	1.1893
WEC	WEC	0.2602	Confirmed LTF	0.2602
LGEE	LGEE	0.6157	Confirmed LTF	0.6157
CPLE	CPLE	4.7795	Confirmed LTF	4.7795
CBM-W2	CBM-W2	16.7194	Confirmed LTF	16.7194
NY	NY	2.1357	Confirmed LTF	2.1357
TVA	TVA	3.5070	Confirmed LTF	3.5070

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
O-066	O-066	27.5122	Confirmed LTF	27.5122
SIGE	SIGE	0.5431	Confirmed LTF	0.5431
CBM-S2	CBM-S2	57.4096	Confirmed LTF	57.4096
CBM-S1	CBM-S1	0.8466	Confirmed LTF	0.8466
G-007	G-007	4.3019	Confirmed LTF	4.3019
MEC	MEC	1.8909	Confirmed LTF	1.8909
LAGN	LAGN	4.2543	Confirmed LTF	4.2543
AA2-074	AA2-074	3.1558	LTF	3.1558
CBM-W1	CBM-W1	9.3654	Confirmed LTF	9.3654

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
163410997	941850	AE2-190 TAP	DVP	314037	6GAINSVL	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.88	106.44	DC	13.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
941851	AE2-190 C	8.8539	50/50	8.8539
941852	AE2-190 E	14.0837	50/50	14.0837
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957461	AF2-040	24.5760	50/50	24.5760
957691	AF2-063 C	5.1576	Adder	6.07

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957692	AF2-063 E	3.4384	Adder	4.05
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
961811	AG1-023 C	0.4327	Adder	0.96
961812	AG1-023 E	1.7307	Adder	3.84
961901	AG1-031 C	2.7525	50/50	2.7525
961902	AG1-031 E	3.8011	50/50	3.8011
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O2	2.1281	Adder	4.72
964422	AG1-305 E O2	1.4187	Adder	3.15
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2260	Merchant Transmission	7.2260
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

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
AA2-074	CPLE-PJM	Confirmed
AA2-079	Possum Point 230kV	In Service
AB1-027	Old Church 34.5 KV	Partially in Service - Under Construction
AB2-024	Correctional 34.5kV	In Service
AB2-029	Remington 34.5kV	In Service
AB2-068	Chickahominy 500kV	Withdrawn
AB2-134	Hopewell-Surry 230kV	In Service
AB2-158	Louisa-South Anna 230kV	Under Construction
AB2-160	Reams 115kV	Engineering and Procurement
AB2-161	Waverly #2 DP 115kV	Engineering and Procurement
AB2-190	Hopewell-Surry 230kV	Engineering and Procurement
AC1-043	Mountain Run-Mitchell 115 kV	Suspended
AC1-065	Harmony Village-Shackleford 115kV	Engineering and Procurement
AC1-076	Locust Grove-Paytes 115kV	Engineering and Procurement
AC1-107	Chickahominy 500kV	Engineering and Procurement
AC1-112	Old Church 34.5kV	In Service
AC1-118	Westmoreland 34.5kV	In Service
AC1-120	Mitchell-Mountain Run 115kV	Engineering and Procurement
AC1-121	Mitchell-Mountain Run 115kV	Engineering and Procurement
AC1-143	Brandy-Remington 115kV	Engineering and Procurement
AC1-158	Spotsylvania 500kV	Partially in Service - Under Construction
AC1-161	Septa 500kV	Engineering and Procurement
AC1-164	Chickahominy 230kV	Engineering and Procurement
AC1-191	Elmont 115kV	Active
AC1-216	Hopewell-Surry 230kV	Partially in Service - Under Construction
AC2-070	Old Church 34.5kV	Withdrawn
AC2-078	Disputanta-Waverly 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
AD1-025	Hopewell-Surry 230 kV	Active
AD1-041	Harmony Village-Shackleford 115 kV	Engineering and Procurement
AD1-063	Harmony Village 34.5 kV	In Service
AD1-082	Bakers Pond-Ivor 115kV	Engineering and Procurement
AD1-105	Kings Dominion DP 115 kV	Active
AD1-115	Mountain Run-Mitchell 115 kV	Active
AD1-151	Hopewell-Surry 230 kV	Active
AD2-007	Hopewell-Surry 230 kV	Active
AD2-008	Hopewell-Surry 230 kV	Active

Queue Number	Project Name	Status
AD2-030	Wan 34.5 kV	In Service
AD2-073	Sanders DP 230 kV	Active
AD2-074	Garner DP-Lancaster 115 kV	Active
AD2-097	Spruance NUG 230kV	In Service
AE1-044	Morrisville 230 kV	Active
AE1-074	Winterpock 34.5 kV	Engineering and Procurement
AE1-085	Bakers Pond-Bell Ave 115 kV	Active
AE1-124	Oak Grove 34.5 kV	Engineering and Procurement
AE1-149	Disputanta-Poe 115 kV	Active
AE1-153	Remington-Gordonsville 230 kV	Active
AE1-154	Louisa-South Anna 230 kV	Engineering and Procurement
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
AE1-162	Smithfield 34.5 kV	Engineering and Procurement
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
AE2-019	New Road 230 kV	Active
AE2-027	Harrowgate-Locks 115kV	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
AE2-132	Remington CT 230 kV	In Service
AE2-134	Locust Grove-Paytes 115 kV	Suspended
AE2-155	Old Church 34.5 kV	Partially in Service - Under Construction
AE2-156	Yadkin 115 kV	Active
AE2-190	Elk Run D.P.-Gainesville 230 kV	Active
AE2-212	Harrowgate 34 kV	Active
AE2-227	Iron Bridge 34 kV	Engineering and Procurement
AE2-228	Tyler 34 kv	Engineering and Procurement
AE2-231	St. Johns 115 kV	Active
AE2-250	Purdy Sw.-Reams 115 kV	Active
AE2-270	Hopewell-Surry 230 kV	Active
AF1-014	Harmony Village-Shackleford 115 kV	Active
AF1-018	Harmony Village 230 kV	Active
AF1-031	Kings Dominion DP 115 kV	Active
AF1-033	Poolesville 34 kV	Engineering and Procurement
AF1-042	Garner DP-Lancaster 115 kV	Active
AF1-066	New Road 230 kV	Active
AF1-067	Kings Dominion DP 115 kV	Active
AF1-079	Louisa-South Anna 230 kV	Active
AF1-114	Oak Grove-Dahlgren 230 kV	Active
AF1-128	Chesterfield 230 kV	Active
AF1-129	Chesterfield 230 kV	Active
AF1-201	Hayes-White Marsh 115 kV	Active
AF1-265	Four Rivers-Hanover 230 kV	Active
AF1-291	Tyler 34.5 kV	Engineering and Procurement

Queue Number	Project Name	Status
AF1-301	Louisa-South Anna 230 kV	Active
AF2-013	Arnold's Corner-Dahlgren 230 kV	Active
AF2-035	St. Johns 115 kV	Active
AF2-037	Louisa-North Anna 230 kV	Active
AF2-040	Elk Run-Gainesville 230 kV	Active
AF2-049	Ladysmith CT-St. Johns 230 kV	Active
AF2-054	Wan 34.5 kV	Active
AF2-063	Louisa-North Anna 230 kV	Active
AF2-065	Surry-Hopewell 230 kV	Active
AF2-077	White Marsh 34.5 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
AF2-119	Bristers-Sowego 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
AF2-401	Culpeper 34.5 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
AG1-023	North Anna-Louisa 230 kV	Active
AG1-031	Elk Run D.P.-Gainesville 230 kV	Active
AG1-038	Garner DP-Lancaster 115 kV	Active
AG1-043	Sowego 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
AG1-133	North Anna-Ladysmith 500 kV	Active
AG1-134	N/A	N/A
AG1-135	Garner-Lancaster 115 kV	Active
AG1-143	Gainesville-Loudoun 230 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
AG1-152	Remington CT 230 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
AG1-183	St. Johns DP-REC 115 kV	Active
AG1-187	St. Johns DP-REC 115 kV	Active
AG1-210	Northern Neck 34.5 kV	Active

Queue Number	Project Name	Status
AG1-213	St Johns 13.2 kV	Active
AG1-221	Poland Rd-Runway DP 230 kV	Active
AG1-256	Northern Neck 230 kV	Active
AG1-282	Dunnsville 34.5 kV	Active
AG1-288	Lake of the Woods DP-Wilderness DP 115 kV	Active
AG1-289	Lake of the Woods DP-Wilderness DP 115 kV	Active
AG1-305	Louisa-North Anna 230 kV	Active
AG1-322	Birchwood 230 kV	Active
AG1-344	Culpeper 34.5 kV	Active
AG1-364	Deep Creek 115 kV	Active
AG1-388	Dunnsville 34.5 kV	Active
AG1-412	Ladysmith CT-Mine Road 230 kV	Active
AG1-466	Orange 34.5 kV	Active
AG1-467	Somerset 34.5 kV	Active
AG1-469	Gordonsville 34.5 kV	Active
AG1-502	Oak Green 115 kV	Active
AG1-503	Oak Green 115 kV	Active
AG1-519	Cash's Corner 230 kV	Active
AG1-531	Poolesville-Winchester 230 kV	Active
AG1-534	Brambleton-Poland Rd 230 kV	Active
AG1-536	Garner-Northern Neck 115 kV	Active
AG1-538	Remington-Gordonsville 230 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 - Primary POI

Contingency Name	Contingency Definition
DVP_P7-1: LN 569-2163	CONTINGENCY 'DVP_P7-1: LN 569-2163' /* . OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 OPEN BRANCH FROM BUS 314125 TO BUS 314133 CKT 1 /* 6VINTHIL 230.00 - 6LIBERTY 230.00 END
313864 6POLAND RD 230 314171 6BRAMBL 230 1	CONTINGENCY '313864 6POLAND RD 230 314171 6BRAMBL 230 1' / 1222 OPEN BRANCH FROM BUS 313864 TO BUS 314171 CKT 1 / 313864 6POLAND RD 230 314171 6BRAMBL 230 1 END
DVP_P7-1: LN 569-2101	CONTINGENCY 'DVP_P7-1: LN 569-2101' /* . OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 OPEN BRANCH FROM BUS 313716 TO BUS 314119 CKT 1 /* 6VINTHIL_DP 230.00 - 6NOKESVL 230.00 OPEN BRANCH FROM BUS 313716 TO BUS 314125 CKT 1 /* 6VINTHIL_DP 230.00 - 6VINTHIL 230.00 OPEN BRANCH FROM BUS 314119 TO BUS 314130 CKT 1 /* 6NOKESVL 230.00 - 6BRISTER 230.00 OPEN BUS 313716 /* ISLAND: 6VINTHIL_DP 230.00 OPEN BUS 314119 /* ISLAND: 6NOKESVL 230.00 OPEN BUS 932521 /* ISLAND: AC2-072 C 230.00 OPEN BUS 932522 /* ISLAND: AC2-072 E 230.00 END
DVP_P1-2: LN 569	CONTINGENCY 'DVP_P1-2: LN 569' OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 END
PEPCO_P1_PP1	CONTINGENCY 'PEPCO_P1_PP1' / 794 OPEN BRANCH FROM BUS 223937 TO BUS 223938 CKT 1 / 223937 DICK 230 230 223938 DICKH230 230 1 END
DVP_P4-2: H1T539	CONTINGENCY 'DVP_P4-2: H1T539' /* BRISTERS 500 KV OPEN BRANCH FROM BUS 314900 TO BUS 314919 CKT 1 /* 8BRISTER 500.00 - 8OX 500.00 OPEN BRANCH FROM BUS 314130 TO BUS 314900 CKT 1 /* 6BRISTER 230.00 - 8BRISTER 500.00 OPEN BRANCH FROM BUS 314130 TO BUS 314156 CKT 1 /* 6BRISTER 230.00 - 3BRISTER 115.00 END

Contingency Name	Contingency Definition
DVP_P7-1: LN 227-274	CONTINGENCY 'DVP_P7-1: LN 227-274' /* . OPEN BRANCH FROM BUS 313859 TO BUS 314170 CKT 1 /* 6BELMONT 230.00 - 6COHMIL 230.00 OPEN BRANCH FROM BUS 314006 TO BUS 314010 CKT 1 /* 6ASHBURA 230.00 - 6BEAMEAD 230.00 OPEN BRANCH FROM BUS 314006 TO BUS 314170 CKT 1 /* 6ASHBURA 230.00 - 6COHMIL 230.00 OPEN BUS 314006 /* ISLAND: 6ASHBURA 230.00 OPEN BUS 314170 /* ISLAND: 6COHMIL 230.00 OPEN BRANCH FROM BUS 314004 TO BUS 314010 CKT 1 /* 6ASHBURN 230.00 - 6BEAMEAD 230.00 OPEN BRANCH FROM BUS 314004 TO BUS 314072 CKT 1 /* 6ASHBURN 230.00 - 6PL VIEW 230.00 OPEN BUS 314004 /* ISLAND: 6ASHBURN 230.00 OPEN BUS 314354 /* ISLAND: 6ASHBURN_2 230.00 OPEN BUS 314359 /* ISLAND: 6ASHBU_1 230.00 END
PEPCO_P1_PP2	CONTINGENCY 'PEPCO_P1_PP2' / 795 OPEN BRANCH FROM BUS 223937 TO BUS 223938 CKT 2 / 223937 DICK 230 230 223938 DICKH230 230 2 END

12 Short Circuit Analysis - Primary POI

The following Breakers are overdutied:

None.

12.1 System Reinforcements - Short Circuit

None.

13 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-534 was evaluated as a 200.0 MW (Capacity 200.0 MW) injection tapping the Brambleton to Poland Road 230 kV line in the Dominion area. Project AG1-534 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-534 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

13.1 Generation Deliverability

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

None

13.2 Multiple Facility Contingency

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

None.

13.3 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
163411032	314085	6REMNGCT	230.0	DVP	314110	6ELK RUN	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	106.16	106.76	DC	13.76
163411037	314110	6ELK RUN	230.0	DVP	941850	AE2-190 TAP	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.82	106.42	DC	13.76
163928414	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P7-1: LN 569-2101	tower	3144.0	107.14	107.69	DC	37.76
163928415	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P7-1: LN 569-2163	tower	3144.0	100.7	101.22	DC	35.46
163410997	941850	AE2-190 TAP	230.0	DVP	314037	6GAINSVL	230.0	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.89	106.45	DC	13.76

13.4 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
167766747	223938	DICKH230	230.0	PEPCO	223937	DICK 230	230.0	PEPCO	2	PEPCO_P1_PP1	operation	680.0	146.72	151.04	DC	28.52
167766750	223938	DICKH230	230.0	PEPCO	223937	DICK 230	230.0	PEPCO	1	PEPCO_P1_PP2	operation	680.0	146.72	151.04	DC	28.52
168883114	314171	6BRAMBL	230.0	DVP	313827	6EVERGR MILL	230.0	DVP	1	314171 6BRAMBL 230 966640 AG1-534 TAP 230 1	operation	984.179992676	95.44	104.46	DC	88.77
163927943	314919	8OX	500.0	DVP	314904	8CLIFTON	500.0	DVP	1	DVP_P1-2: LN 569	operation	2686.52001953	114.72	115.32	DC	34.58
169806432	941850	AE2-190 TAP	230.0	DVP	314037	6GAINSVL	230.0	DVP	1	DVP_P1-2: LN 569	operation	984.179992676	118.11	118.7	DC	11.88

13.5 Flow Gate Details - Secondary POI

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".

13.5.1 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
163411032	314085	6REMNGCT	DVP	314110	6ELK RUN	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	106.16	106.76	DC	13.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315028	1M RUN A	5.3364	50/50	5.3364
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957462	AF2-040 BAT	50.4240	50/50	50.4240
957691	AF2-063 C	5.1576	Adder	6.07
957692	AF2-063 E	3.4384	Adder	4.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O1	2.1504	Adder	4.77
964422	AG1-305 E O1	1.4336	Adder	3.18
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2928	Merchant Transmission	7.2928
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

13.5.2 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
163411037	314110	6ELK RUN	DVP	941850	AE2-190 TAP	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.82	106.42	DC	13.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315028	1M RUN A	5.3364	50/50	5.3364
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957462	AF2-040 BAT	50.4240	50/50	50.4240
957691	AF2-063 C	5.1576	Adder	6.07
957692	AF2-063 E	3.4384	Adder	4.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O1	2.1504	Adder	4.77
964422	AG1-305 E O1	1.4336	Adder	3.18
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2928	Merchant Transmission	7.2928
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

13.5.3 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
163928414	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P7-1: LN 569-2101	tower	3144.0	107.14	107.69	DC	37.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
314142	6STAFORD	0.0794	Adder	0.09
314177	3HAYES89	0.0335	Adder	0.04
314189	6PAPERMILL	4.0923	Adder	4.81
314331	6POE	1.2923	Adder	1.52
315007	**1POSSM 5 (Deactivation : 31/05/2021)**	**84.2822**	**Adder**	**99.16**
315033	1BIRCHWDA	28.5992	Adder	33.65
315037	1LDYSMT1	4.0914	50/50	4.0914
315038	1LDYSMT2	4.0914	50/50	4.0914
315039	1LDYSMT3	3.9385	50/50	3.9385
315040	1LDYSMT4	3.9459	50/50	3.9459
315041	1LDYSMT5	3.9583	50/50	3.9583
315058	**1CHESTF3 (Deactivation : 13/12/2018)**	**11.0228**	**Adder**	**12.97**
315059	**1CHESTF4 (Deactivation : 13/12/2018)**	**17.8680**	**Adder**	**21.02**
315060	**1CHESTF5 (Deactivation : 31/05/2023)**	**38.5471**	**Adder**	**45.35**
315065	**1CHESTF6 (Deactivation : 31/05/2023)**	**73.5755**	**Adder**	**86.56**
315073	1STONECA	4.1632	Adder	4.9
315074	**1HOPCGN1 (Deactivation : 25/06/2019)**	**0.0108**	**Adder**	**0.01**
315075	**1HOPCGN2 (Deactivation : 25/06/2019)**	**0.0108**	**Adder**	**0.01**
315083	**1SPRUNCA (Deactivation : 12/01/2021)**	**6.3942**	**Adder**	**7.52**
315084	**1SPRUNCB (Deactivation : 12/01/2021)**	**6.3942**	**Adder**	**7.52**
315225	1N ANNA1	23.7560	50/50	23.7560
315226	1N ANNA2	23.7660	50/50	23.7660
316076	AC2-137 E	0.8229	Adder	0.97
316078	AC2-138 E	0.6352	Adder	0.75
316083	AB2-161 C	1.9926	Adder	2.34
316084	AB2-161 E	3.2511	Adder	3.82
316108	AB2-160 C	3.2564	Adder	3.83
316109	AB2-160 E	5.3130	Adder	6.25
316112	**AB2-068 CT1 (Withdrawn : 01/11/2021)**	**31.7803**	**Adder**	**37.39**
316113	**AB2-068 CT2 (Withdrawn : 01/11/2021)**	**31.7803**	**Adder**	**37.39**

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
316114	AB2-068 ST (Withdrawn : 01/11/2021)	55.0560	Adder	64.77
316132	AB2-190 C	12.0209	Adder	14.14
316134	AC1-107 G1	59.6776	Adder	70.21
316135	AC1-107 G2	59.6776	Adder	70.21
316136	AC1-107 G3	59.6888	Adder	70.22
316157	AD2-030 E	0.7398	Adder	0.87
919952	AA2-079 E	3.0640	Adder	3.6
923842	AB2-024 E	0.6858	Adder	0.81
924814	AB2-134 E	7.5577	Adder	8.89
925022	AB2-158 E	2.9499	Adder	3.47
925332	AB2-190 E	5.1518	Adder	6.06
925863	AC1-065 C	4.6182	Adder	5.43
925865	AC1-065 E	3.4250	Adder	4.03
926001	AC1-076 C	2.8184	Adder	3.32
926002	AC1-076 E	4.5829	Adder	5.39
926412	AC1-112 E	0.6865	Adder	0.81
926472	AC1-118 E	0.7827	Adder	0.92
926481	AC1-120 C O1	4.2115	Adder	4.95
926482	AC1-120 E O1	2.1696	Adder	2.55
926501	AC1-121 C O1	1.4464	Adder	1.7
926502	AC1-121 E O1	0.6807	Adder	0.8
926737	AC1-158 C1	4.3457	50/50	4.3457
926738	AC1-158 C2	4.3457	50/50	4.3457
926739	AC1-158 E1	12.0879	50/50	12.0879
926740	AC1-158 E2	12.0879	50/50	12.0879
926754	AC1-161 C	17.6768	Adder	20.8
926755	AC1-161 E	7.5457	Adder	8.88
926784	AC1-164 C	24.4904	Adder	28.81
926785	AC1-164 E	11.0029	Adder	12.94
927044	AC1-191 C	6.0777	Adder	7.15
927045	AC1-191 E	3.0275	Adder	3.56
927226	AC1-216 E	4.6138	Adder	5.43
930122	AB1-027 E	0.6752	Adder	0.79
932502	AC2-070 E (Withdrawn : 01/22/2021)	0.4277	Adder	0.5
932581	AC2-078 C O1	2.3930	Adder	2.82
932582	AC2-078 E O1	3.9044	Adder	4.59
933294	AC2-141 C	17.6768	Adder	20.8
933295	AC2-141 E	7.5457	Adder	8.88
934014	AD1-025 C	10.0840	Adder	11.86
934015	AD1-025 E	5.9733	Adder	7.03
934141	AD1-041 C	3.3137	Adder	3.9
934142	AD1-041 E	2.2092	Adder	2.6
934392	AD1-063 E	0.6633	Adder	0.78
934575	AD1-082 C	4.5410	Adder	5.34
934576	AD1-082 E	2.5904	Adder	3.05
934781	AD1-105 C	5.2285	Adder	6.15
934782	AD1-105 E	3.6334	Adder	4.27
935164	AD1-151 C	9.6597	Adder	11.36
935165	AD1-151 E	6.4398	Adder	7.58
936041	AD2-007 C	0.4817	Adder	0.57
936042	AD2-007 E	0.3319	Adder	0.39

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936051	AD2-008 C	1.7556	Adder	2.07
936052	AD2-008 E	3.8216	Adder	4.5
936581	AD2-073 C	1.5234	Adder	1.79
936582	AD2-073 E	0.7548	Adder	0.89
936591	AD2-074 C	3.6692	Adder	4.32
936592	AD2-074 E	5.9866	Adder	7.04
936761	AD2-097 C	1.2127	Adder	1.43
936762	AD2-097 E	6.0635	Adder	7.13
938552	AE1-074 E	0.7396	Adder	0.87
938634	AE1-085 C	5.2517	Adder	6.18
938635	AE1-085 E	2.6259	Adder	3.09
938962	AE1-124 E	0.7786	Adder	0.92
939195	AE1-149 C	6.3235	Adder	7.44
939196	AE1-149 E	4.2157	Adder	4.96
939231	AE1-154 C	1.0845	Adder	1.28
939232	AE1-154 E	0.7592	Adder	0.89
939245	AE1-155 C	8.5537	Adder	10.06
939246	AE1-155 E	5.7400	Adder	6.75
939261	AE1-157 C O1	11.7820	50/50	11.7820
939262	AE1-157 E O1	6.3908	50/50	6.3908
939271	AE1-158 C O1	12.0243	50/50	12.0243
939272	AE1-158 E O1	6.1485	50/50	6.1485
939312	AE1-162 E	0.8422	Adder	0.99
939431	AE1-175 C	1.4432	Adder	1.7
939432	AE1-175 E	0.7162	Adder	0.84
939611	AE1-191 C	6.6275	Adder	7.8
939612	AE1-191 E	4.4183	Adder	5.2
939755	AE1-206 C	20.1034	Adder	23.65
939756	AE1-206 E	13.4022	Adder	15.77
940061	AE2-000BC O1	6.2842	Adder	7.39
940062	AE2-000BE O1	4.1895	Adder	4.93
940231	AE2-005 C	0.8397	Adder	0.99
940232	AE2-005 E	1.3700	Adder	1.61
940251	AE2-007 O1 (Withdrawn : 12/11/2020)	35.4012	Adder	41.65
940352	AE2-019 BAT	22.5660	50/50	22.5660
940431	AE2-027 C O1	7.8006	Adder	9.18
940432	AE2-027 E O1	5.2004	Adder	6.12
940551	AE2-041	4.4217	Adder	5.2
940651	AE2-052	2.1078	Adder	2.48
940891	AE2-078 C	1.4005	Adder	1.65
940892	AE2-078 E	0.7215	Adder	0.85
940901	AE2-079 C	1.4005	Adder	1.65
940902	AE2-079 E	0.7215	Adder	0.85
941381	AE2-134 (Suspended)	1.9421	Adder	2.28
941582	AE2-155 E	0.1688	Adder	0.2
941591	AE2-156 O1	10.4134	Adder	12.25
942001	AE2-212 C	1.2854	Adder	1.51
942002	AE2-212 E	0.8569	Adder	1.01
942151	AE2-227 C	1.3292	Adder	1.56
942152	AE2-227 E	0.8861	Adder	1.04
942161	AE2-228 C	1.2977	Adder	1.53
942162	AE2-228 E	0.8652	Adder	1.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942191	AE2-231 C O1	3.9246	50/50	3.9246
942192	AE2-231 E O1	2.6164	50/50	2.6164
942371	AE2-250 C O1	5.7843	Adder	6.81
942372	AE2-250 E O1	3.0528	Adder	3.59
942551	AE2-270	16.0765	Adder	18.91
943431	AF1-014 C	0.7955	Adder	0.94
943432	AF1-014 E	1.4031	Adder	1.65
943471	AF1-018	4.4217	Adder	5.2
943601	AF1-031 C	6.9848	Adder	8.22
943602	AF1-031 E	3.7761	Adder	4.44
943621	AF1-033 C	1.4005	Adder	1.65
943622	AF1-033 E	0.7215	Adder	0.85
943741	AF1-042 C	1.9199	Adder	2.26
943742	AF1-042 E	3.1325	Adder	3.69
943982	AF1-066 BAT	24.4465	50/50	24.4465
943991	AF1-067 C	3.4527	Adder	4.06
943992	AF1-067 E	2.3018	Adder	2.71
944111	AF1-079 C	2.0606	Adder	2.42
944112	AF1-079 E	2.7980	Adder	3.29
944491	AF1-114 C	4.9080	Adder	5.77
944492	AF1-114 E	6.7778	Adder	7.97
944631	AF1-128 O1	33.8003	Adder	39.77
944641	AF1-129	61.7379	Adder	72.63
945361	AF1-201 C O1	9.7346	Adder	11.45
945362	AF1-201 E O1	6.4898	Adder	7.64
946001	AF1-265	17.6345	Adder	20.75
946261	AF1-291 C	1.2977	Adder	1.53
946262	AF1-291 E	0.8652	Adder	1.02
946371	AF1-301 C	8.3011	Adder	9.77
946372	AF1-301 E	5.5705	Adder	6.55
957191	AF2-013	11.8643	Adder	13.96
957411	AF2-035 C	7.1357	50/50	7.1357
957412	AF2-035 E	4.7571	50/50	4.7571
957431	AF2-037 C	6.5726	Adder	7.73
957432	AF2-037 E	4.3817	Adder	5.15
957551	AF2-049 C	5.2247	50/50	5.2247
957552	AF2-049 E	3.8617	50/50	3.8617
957601	AF2-054 C	1.3185	Adder	1.55
957602	AF2-054 E	0.8790	Adder	1.03
957691	AF2-063 C	10.4881	Adder	12.34
957692	AF2-063 E	6.9921	Adder	8.23
957711	AF2-065 C	8.1990	Adder	9.65
957712	AF2-065 E	7.8775	Adder	9.27
957831	AF2-077 C	1.3044	Adder	1.53
957832	AF2-077 E	0.8696	Adder	1.02
957911	AF2-085	2.1911	Adder	2.58
957971	AF2-091 C	1.6687	Adder	1.96
957972	AF2-091 E	2.3044	Adder	2.71
958141	AF2-108	1.0595	Adder	1.25
958251	AF2-119 C	8.1024	50/50	8.1024
958252	AF2-119 E	5.4016	50/50	5.4016
958261	AF2-120 C	4.1865	Adder	4.93

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958262	AF2-120 E	2.7910	Adder	3.28
959641	AF2-255 C	0.3323	Adder	0.39
959642	AF2-255 E	0.2215	Adder	0.26
959651	AF2-256 C	0.3244	Adder	0.38
959652	AF2-256 E	0.2163	Adder	0.25
959661	AF2-257 C	0.3244	Adder	0.38
959662	AF2-257 E	0.2163	Adder	0.25
959671	AF2-258 C	0.3214	Adder	0.38
959672	AF2-258 E	0.2142	Adder	0.25
959681	AF2-259 C	1.5893	Adder	1.87
959682	AF2-259 E	1.0595	Adder	1.25
960091	AF2-300 C	1.7839	50/50	1.7839
960092	AF2-300 E	1.1893	50/50	1.1893
961611	AG1-000B C	5.0090	Adder	11.12
961711	AG1-011	9.0778	Adder	20.15
961781	AG1-019	6.2881	Adder	13.96
961811	AG1-023 C	0.9467	Adder	2.1
961812	AG1-023 E	3.7869	Adder	8.41
961951	AG1-038 C	1.1247	Adder	2.5
961952	AG1-038 E	1.5531	Adder	3.45
962001	AG1-043 C	5.8583	50/50	5.8583
962002	AG1-043 E	3.9055	50/50	3.9055
962131	AG1-057	1.1718	Adder	2.6
962191	AG1-064 C	0.4719	Adder	1.05
962192	AG1-064 E	0.6548	Adder	1.45
962201	AG1-065 C	0.4719	Adder	1.05
962202	AG1-065 E	0.6548	Adder	1.45
962271	AG1-075 C O1	5.2912	Adder	11.75
962272	AG1-075 E O1	3.2247	Adder	7.16
962321	AG1-081 C (Withdrawn : 01/15/2021)	0.6748	Adder	1.5
962322	AG1-081 E (Withdrawn : 01/15/2021)	0.4499	Adder	1.0
962531	AG1-102 C	0.3549	Adder	0.79
962532	AG1-102 E	0.7397	Adder	1.64
962533	AG1-102 BAT	0.0058	Adder	0.01
962841	AG1-133 C O1	14.7006	50/50	14.7006
962842	AG1-133 E O1	9.8004	50/50	9.8004
962851	AG1-134 C	3.6599	Adder	8.12
962852	AG1-134 E	2.4399	Adder	5.42
962861	AG1-135 C	2.1452	Adder	4.76
962862	AG1-135 E	1.4301	Adder	3.17
962943	AG1-143 BAT	13.9688	50/50	13.9688
962961	AG1-145 C	0.6901	Adder	1.53
962962	AG1-145 E	0.4601	Adder	1.02
962971	AG1-146 C	1.0661	Adder	2.37
962972	AG1-146 E	0.7107	Adder	1.58
962981	AG1-147 C	2.4875	Adder	5.52
962982	AG1-147 E	1.6584	Adder	3.68
963051	AG1-154 C	3.1244	50/50	3.1244
963052	AG1-154 E	4.6866	50/50	4.6866
963221	AG1-171 C	0.6826	Adder	1.52
963222	AG1-171 E	0.4551	Adder	1.01

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963231	AG1-172 C	0.6826	Adder	1.52
963232	AG1-172 E	0.4551	Adder	1.01
963241	AG1-173 C	0.6826	Adder	1.52
963242	AG1-173 E	0.4551	Adder	1.01
963251	AG1-174 C	0.6826	Adder	1.52
963252	AG1-174 E	0.4551	Adder	1.01
963261	AG1-175 C	0.6826	Adder	1.52
963262	AG1-175 E	0.4551	Adder	1.01
963341	AG1-183 C	5.2804	50/50	5.2804
963381	AG1-187	2.1526	50/50	2.1526
963611	AG1-210 C	0.2405	Adder	0.53
963612	AG1-210 E	0.3607	Adder	0.8
963621	AG1-213 C	0.5946	50/50	0.5946
963622	AG1-213 E	0.8920	50/50	0.8920
963693	AG1-221 BAT	8.9775	50/50	8.9775
964021	AG1-256 C	0.4830	Adder	1.07
964022	AG1-256 E	0.7245	Adder	1.61
964211	AG1-282 C	0.7195	Adder	1.6
964212	AG1-282 E	0.4797	Adder	1.06
964271	AG1-288 C	14.7029	50/50	14.7029
964281	AG1-289	8.1301	50/50	8.1301
964421	AG1-305 C O1	4.3729	Adder	9.71
964422	AG1-305 E O1	2.9152	Adder	6.47
964591	AG1-322 O1	4.4581	Adder	9.9
965001	AG1-364 C O1	2.2074	Adder	4.9
965002	AG1-364 E O1	3.3112	Adder	7.35
965231	AG1-388 C	0.7195	Adder	1.6
965232	AG1-388 E	0.4797	Adder	1.06
965441	AG1-412 C	12.2688	50/50	12.2688
965442	AG1-412 E	18.4032	50/50	18.4032
966331	AG1-502 C	2.7222	Adder	6.04
966332	AG1-502 E	1.8148	Adder	4.03
966341	AG1-503 C	0.6806	Adder	1.51
966342	AG1-503 E	0.4537	Adder	1.01
966611	AG1-531 C	2.0316	Adder	4.51
966612	AG1-531 E	1.3544	Adder	3.01
966642	AG1-534 BAT	37.7640	50/50	37.7640
966661	AG1-536 C	1.9088	Adder	4.24
966662	AG1-536 E	2.5650	Adder	5.69
966711	AG1-541 C	4.7571	50/50	4.7571
966712	AG1-541 E	6.3924	50/50	6.3924
966731	AG1-544 C	2.1738	Adder	4.83
966732	AG1-544 E	1.1663	Adder	2.59
966741	AG1-545 C	0.7246	Adder	1.61
966742	AG1-545 E	0.3884	Adder	0.86
966871	AG1-558 C	0.7239	Adder	1.61
966872	AG1-558 E	0.4826	Adder	1.07
966881	AG1-559 C	1.7839	50/50	1.7839
966882	AG1-559 E	1.1893	50/50	1.1893
WEC	WEC	0.2602	Confirmed LTF	0.2602
LGEE	LGEE	0.6157	Confirmed LTF	0.6157
CPLE	CPLE	4.7795	Confirmed LTF	4.7795

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	16.7194	Confirmed LTF	16.7194
NY	NY	2.1357	Confirmed LTF	2.1357
TVA	TVA	3.5070	Confirmed LTF	3.5070
O-066	O-066	27.5122	Confirmed LTF	27.5122
SIGE	SIGE	0.5431	Confirmed LTF	0.5431
CBM-S2	CBM-S2	57.4096	Confirmed LTF	57.4096
CBM-S1	CBM-S1	0.8466	Confirmed LTF	0.8466
G-007	G-007	4.3019	Confirmed LTF	4.3019
MEC	MEC	1.8909	Confirmed LTF	1.8909
LAGN	LAGN	4.2543	Confirmed LTF	4.2543
AA2-074	AA2-074	3.1558	LTF	3.1558
CBM-W1	CBM-W1	9.3654	Confirmed LTF	9.3654

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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
163410997	941850	AE2-190 TAP	DVP	314037	6GAINSVL	DVP	1	DVP_P7-1: LN 569-2101	tower	1204.0	105.89	106.45	DC	13.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
315021	1REMNGT1	5.3719	50/50	5.3719
315022	1REMNGT2	5.4437	50/50	5.4437
315023	1REMNGT3	5.4652	50/50	5.4652
315024	1REMNGT4	5.4437	50/50	5.4437
315030	1M RUN C	5.3364	50/50	5.3364
923892	AB2-029 E	2.1473	Adder	2.53
925022	AB2-158 E	1.8078	Adder	2.13
925671	**AC1-043 C (Suspended)**	**4.5327**	**Adder**	**5.33**
925672	**AC1-043 E (Suspended)**	**7.3954**	**Adder**	**8.7**
926001	AC1-076 C	1.8276	Adder	2.15
926002	AC1-076 E	2.9717	Adder	3.5
926481	AC1-120 C O1	3.8228	Adder	4.5
926482	AC1-120 E O1	1.9693	Adder	2.32
926501	AC1-121 C O1	1.3129	Adder	1.54
926502	AC1-121 E O1	0.6178	Adder	0.73
926611	AC1-143 C O1	6.7676	Adder	7.96
926612	AC1-143 E O1	3.0881	Adder	3.63
934861	AD1-115 C	2.2663	Adder	2.67
934862	AD1-115 E	3.6977	Adder	4.35
938291	AE1-044 C O1	15.9974	Adder	18.82
938292	AE1-044 E O1	12.6204	Adder	14.85
938295	AE1-044 C	16.0260	Adder	18.85
938296	AE1-044 E	12.5918	Adder	14.81
939225	AE1-153 C	13.2584	Adder	15.6
939226	AE1-153 E	8.9383	Adder	10.52
939231	AE1-154 C	0.6646	Adder	0.78
939232	AE1-154 E	0.4652	Adder	0.55
940352	AE2-019 BAT	10.6212	Merchant Transmission	10.6212
941361	AE2-132	0.6352	50/50	0.6352
941381	**AE2-134 (Suspended)**	**1.2593**	**Adder**	**1.48**
941851	AE2-190 C	8.8539	50/50	8.8539
941852	AE2-190 E	14.0837	50/50	14.0837
943982	AF1-066 BAT	11.5063	Merchant Transmission	11.5063
944111	AF1-079 C	1.2628	Adder	1.49
944112	AF1-079 E	1.7147	Adder	2.02
946371	AF1-301 C	4.9845	Adder	5.86
946372	AF1-301 E	3.3449	Adder	3.94
957431	AF2-037 C	3.2321	Adder	3.8
957432	AF2-037 E	2.1547	Adder	2.53
957461	AF2-040	24.5760	50/50	24.5760
957691	AF2-063 C	5.1576	Adder	6.07

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957692	AF2-063 E	3.4384	Adder	4.05
961101	AF2-401 C	0.4689	Adder	0.55
961102	AF2-401 E	0.7771	Adder	0.91
961811	AG1-023 C	0.4327	Adder	0.96
961812	AG1-023 E	1.7307	Adder	3.84
961901	AG1-031 C	2.7525	50/50	2.7525
961902	AG1-031 E	3.8011	50/50	3.8011
962943	AG1-143 BAT	5.0329	Merchant Transmission	5.0329
963031	AG1-152 C	9.0980	50/50	9.0980
963032	AG1-152 E	13.6470	50/50	13.6470
963693	AG1-221 BAT	1.7607	Merchant Transmission	1.7607
964271	AG1-288 C	3.0564	Adder	6.78
964281	AG1-289	1.6901	Adder	3.75
964421	AG1-305 C O1	2.1504	Adder	4.77
964422	AG1-305 E O1	1.4336	Adder	3.18
964811	AG1-344 C	0.8521	Adder	1.89
964812	AG1-344 E	0.5681	Adder	1.26
965971	AG1-466 C	0.3951	Adder	0.88
965972	AG1-466 E	0.2634	Adder	0.58
965981	AG1-467 C	0.4402	Adder	0.98
965982	AG1-467 E	0.2935	Adder	0.65
966001	AG1-469 C	0.4357	Adder	0.97
966002	AG1-469 E	0.2904	Adder	0.64
966331	AG1-502 C	2.4059	Adder	5.34
966332	AG1-502 E	1.6039	Adder	3.56
966341	AG1-503 C	0.6015	Adder	1.34
966342	AG1-503 E	0.4010	Adder	0.89
966501	AG1-519 C	0.5215	Adder	1.16
966502	AG1-519 E	0.3476	Adder	0.77
966642	AG1-534 BAT	7.2928	Merchant Transmission	7.2928
966681	AG1-538 C	2.5265	Adder	5.61
966682	AG1-538 E	3.3950	Adder	7.54
WEC	WEC	0.2221	Confirmed LTF	0.2221
LGEE	LGEE	0.4731	Confirmed LTF	0.4731
CPLE	CPLE	1.4066	Confirmed LTF	1.4066
CBM-W2	CBM-W2	8.5299	Confirmed LTF	8.5299
NY	NY	0.8571	Confirmed LTF	0.8571
TVA	TVA	1.5470	Confirmed LTF	1.5470
O-066	O-066	12.1409	Confirmed LTF	12.1409
SIGE	SIGE	0.2706	Confirmed LTF	0.2706
CBM-S2	CBM-S2	18.3326	Confirmed LTF	18.3326
CBM-S1	CBM-S1	0.3956	Confirmed LTF	0.3956
G-007	G-007	1.9100	Confirmed LTF	1.9100
MEC	MEC	1.2585	Confirmed LTF	1.2585
LAGN	LAGN	1.8935	Confirmed LTF	1.8935
CBM-W1	CBM-W1	9.2392	Confirmed LTF	9.2392

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
DVP_P7-1: LN 569-2163	CONTINGENCY 'DVP_P7-1: LN 569-2163' /* . OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 OPEN BRANCH FROM BUS 314125 TO BUS 314133 CKT 1 /* 6VINTHIL 230.00 - 6LIBERTY 230.00 END
DVP_P7-1: LN 569-2101	CONTINGENCY 'DVP_P7-1: LN 569-2101' /* . OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 OPEN BRANCH FROM BUS 313716 TO BUS 314119 CKT 1 /* 6VINTHIL_DP 230.00 - 6NOKESVL 230.00 OPEN BRANCH FROM BUS 313716 TO BUS 314125 CKT 1 /* 6VINTHIL_DP 230.00 - 6VINTHIL 230.00 OPEN BRANCH FROM BUS 314119 TO BUS 314130 CKT 1 /* 6NOKESVL 230.00 - 6BRISTER 230.00 OPEN BUS 313716 /* ISLAND: 6VINTHIL_DP 230.00 OPEN BUS 314119 /* ISLAND: 6NOKESVL 230.00 OPEN BUS 932521 /* ISLAND: AC2-072 C 230.00 OPEN BUS 932522 /* ISLAND: AC2-072 E 230.00 END
DVP_P1-2: LN 569	CONTINGENCY 'DVP_P1-2: LN 569' OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 END
PEPCO_P1_PP1	CONTINGENCY 'PEPCO_P1_PP1' OPEN BRANCH FROM BUS 223937 TO BUS 223938 CKT 1 / 223937 DICK 230 230 223938 DICKH230 230 1 END
314171 6BRAMBL 230 966640 AG1-534 TAP 230 1	CONTINGENCY '314171 6BRAMBL 230 966640 AG1-534 TAP 230 1' OPEN BRANCH FROM BUS 314171 TO BUS 966640 CKT 1 END
PEPCO_P1_PP2	CONTINGENCY 'PEPCO_P1_PP2' OPEN BRANCH FROM BUS 223937 TO BUS 223938 CKT 2 / 223937 DICK 230 230 223938 DICKH230 230 2 END

14 Affected Systems

14.1 TVA

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

14.2 Duke Energy Progress

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

15 Attachment 1: One Line Diagram