Generation Interconnection

Feasibility Study Report

for

Queue Project AF1-173

GRETNA DP-SHOCKOE DP 69 KV

13.95 MW Capacity / 0 MW Energy

January, 2020

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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 Virginia Electric and Power Company (VEPCO).

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.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a $10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model.

The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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 Capacity uprate to a planned solar generating facility located in Pittsylvania, Virginia. This projects requests an increase of 13.95 MW of Capacity. The installed facilities will have a total capability of 50 MW with 32.95 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 12/15/2020. This study does not imply a TO commitment to this in-service date.

Note that this project is an increase to the Interconnection Customer's AC1-145 project, which will share the same property and connection point.

Queue Number	AF1-173
Project Name	GRETNA DP-SHOCKOE DP 69 KV
State	Virginia
County	Mecklenburg
Transmission Owner	Dominion
MFO	50
MWE	0
MWC	13.95
Fuel	Solar
Basecase Study Year	2023

3.1 Point of Interconnection

AF1-173 will interconnect with the Dominion transmission system at a new substation between Gretna DP 69 kV and Shockoe DP 69 kV line. The POI is 0.50 miles away from the Gretna DP substation while 2 miles away from the Shockoe DP substation.

3.2 Cost Summary

The AF1-173 project will utilize the interconnection facilities being developed under the AC1-145 project.

The AF1-173 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	**$ 44,828,600**

Cost allocations for these upgrades will be provided in the System Impact Study Report.

The Feasibility Study is used to make a preliminary determination of the type and scope of Attachment Facilities, Local Upgrades, and Network Upgrades that will be necessary to accommodate the Interconnection Request and to provide the Interconnection Customer a preliminary estimate of the time that will be required to construct any necessary facilities and upgrades and the Interconnection Customer's cost responsibility. The System Impact Study provides refined and comprehensive estimates of cost responsibility and construction lead times for new facilities and system upgrades. Facilities Studies will include, commensurate with the degree of engineering specificity as provided in the Facilities Study Agreement, good faith estimates of the cost, determined in accordance with Section 217 of the Tariff,

(a) to be charged to each affected New Service Customer for the Facilities and System Upgrades that are necessary to accommodate this queue project;

(b) the time required to complete detailed design and construction of the facilities and upgrades; and

(c) a description of any site-specific environmental issues or requirements that could reasonably be anticipated to affect the cost or time required to complete construction of such facilities and upgrades.

4 Transmission Owner Scope of Work

Dominion assessed the impact of the proposed Queue Project AF1-173. The project was evaluated as a 13.95 MW Capacity (0.0 MW energy) injection at a new substation between Gretna DP 69 kV and Shockoe DP 69 kV substations in the Dominion Transmission System, for compliance with NERC Reliability Criteria on Dominion Transmission System. The system was assessed using the summer 2023 AF1 case provided to Dominion by PJM. When performing a generation analysis, Dominion's main analysis will be load flow study results under single contingency (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.

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of the AF1-173 generation project to the Dominion Transmission System is detailed in the following sections. The associated one-line with the generation project attachment facilities and primary direct and non-direct connection are 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 phases. 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.

5 Non-Direct Connection Cost Estimate

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.

6 Schedule

The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the "System Reinforcements" section of the report.

7 Transmission Owner Analysis

7.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2023 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.

7.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AF1-173 project to the system does not result in any newly overdutied circuit breakers on the Dominion transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers

7.3 Stability Analysis

PJM will complete a dynamic stability analysis, if necessary, as part of the System Impact Study. The results of this analysis will be reviewed by Dominion. Should stability concerns be identified in PJM's study, Dominion will develop appropriate system reinforcement(s) and included the estimated cost of any reinforcement(s) in Dominion's System Impact Study report.

8 Interconnection Customer Requirements

8.1 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.

8.2 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 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.

8.3 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.

9 Revenue Metering and SCADA Requirements

9.1 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.

9.1.1 Meteorological Data Reporting Requirement

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

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

9.2 Dominion Requirements

See Section 3.4.6 “Metering and telecommunications” of Dominion’s “Dominion’s Facility Interconnection Requirements” document located at: https://www.dominionenergy.com/company/moving-energy/electric-transmission-access.

10 Network Impacts

The Queue Project AF1-173 was evaluated as a 0.0 MW (Capacity 13.9 MW) uprate to AC1-145 which is an injection on the Gretna DP 69 kV to Shockoe DP 69 kV line in the Dominion area. Project AF1-173 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-173 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

10.1 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
43133558	314670	2ALTVSTA	69.0	DVP	314667	4ALTVSTA	138.0	DVP	1	Base Case	single	128.78	91.91	102.74	DC	13.95

10.2 Multiple Facility Contingency

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

None

10.3 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
43849933	242687	05JOHNMT	138.0	AEP	242734	05NEWLDN	138.0	AEP	1	Base Case	single	167.0	131.29	134.14	DC	4.76
45137644	242687	05JOHNMT	138.0	AEP	242734	05NEWLDN	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	single	240.0	112.27	114.3	DC	4.88
43849700	242734	05NEWLDN	138.0	AEP	242569	05BRUSHT	138.0	AEP	1	AEP_P4_#10317_05REUSEN 138_D	breaker	205.0	111.23	113.18	DC	4.0
43849918	242741	05OTTER	138.0	AEP	242687	05JOHNMT	138.0	AEP	1	Base Case	single	167.0	136.32	139.17	DC	4.76
45137629	242741	05OTTER	138.0	AEP	242687	05JOHNMT	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	single	245.0	113.4	115.39	DC	4.88
42902916	314667	4ALTVSTA	138.0	DVP	242741	05OTTER	138.0	AEP	1	Base Case	single	167.0	139.01	141.86	DC	4.76
44749519	314667	4ALTVSTA	138.0	DVP	242741	05OTTER	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	single	245.0	115.24	117.23	DC	4.88
43133343	314688	3CRSTLHILL	115.0	DVP	927260	AC1-222 TAP	115.0	DVP	1	AEP_P4_#10294_05NEWLDN 138_D	breaker	350.0	101.39	102.56	DC	4.1
43133476	314730	2STONEMIL	69.0	DVP	314670	2ALTVSTA	69.0	DVP	1	Base Case	single	101.52	116.59	130.33	DC	13.95
42903044	314861	3SKIMMER	115.0	DVP	242886	05SKIMMR	69.0	AEP	1	DVP_P1-3: 3SKIMMER-ID#2	single	53.0	106.69	108.46	DC	0.94
42903061	314861	3SKIMMER	115.0	DVP	242886	05SKIMMR	69.0	AEP	2	DVP_P1-3: 3SKIMMER-ID#1	single	53.0	105.77	107.52	DC	0.93
43133295	927260	AC1-222 TAP	115.0	DVP	314696	3SEDGEHILL	115.0	DVP	1	AEP_P4_#10294_05NEWLDN 138_D	breaker	350.0	114.33	115.5	DC	4.1

10.4 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
43849928	242687	05JOHNMT	138.0	AEP	242734	05NEWLDN	138.0	AEP	1	Base Case	operation	167.0	174.31	177.16	DC	4.76
45137639	242687	05JOHNMT	138.0	AEP	242734	05NEWLDN	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	operation	240.0	150.04	152.07	DC	4.88
43850160	242734	05NEWLDN	138.0	AEP	242569	05BRUSHT	138.0	AEP	1	AEP_P1-2_#5481	operation	205.0	110.1	112.03	DC	3.95
43849913	242741	05OTTER	138.0	AEP	242687	05JOHNMT	138.0	AEP	1	Base Case	operation	167.0	179.34	182.19	DC	4.76
45137624	242741	05OTTER	138.0	AEP	242687	05JOHNMT	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	operation	245.0	150.4	152.4	DC	4.88
42902911	314667	4ALTVSTA	138.0	DVP	242741	05OTTER	138.0	AEP	1	Base Case	operation	167.0	182.04	184.89	DC	4.76
43133777	314667	4ALTVSTA	138.0	DVP	314666	3ALTVSTA	115.0	DVP	2	DVP_P1-3: 4ALTVSTA-TX#3	operation	130.47	106.73	109.65	DC	3.81
44749514	314667	4ALTVSTA	138.0	DVP	242741	05OTTER	138.0	AEP	1	242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	operation	245.0	152.24	154.23	DC	4.88
43133556	314670	2ALTVSTA	69.0	DVP	314667	4ALTVSTA	138.0	DVP	1	Base Case	operation	128.78	199.57	210.4	DC	13.95
43133694	314688	3CRSTL HILL	115.0	DVP	927260	AC1-222 TAP	115.0	DVP	1	DVP_P1-2: LN 13	operation	285.76	123.92	125.35	DC	4.1
43133783	314714	3PERTH	115.0	DVP	314688	3CRSTL HILL	115.0	DVP	1	DVP_P1-2: LN 13	operation	285.76	108.93	110.36	DC	4.1
43133474	314730	2STONE MIL	69.0	DVP	314670	2ALTVSTA	69.0	DVP	1	Base Case	operation	101.52	253.15	266.89	DC	13.95
43133771	314733	2GRNA DP	69.0	DVP	314731	2GRETNA	69.0	DVP	1	Base Case	operation	111.86	100.75	113.22	DC	13.95
43133613	314735	2ALTAVISTA DP	69.0	DVP	314730	2STONE MIL	69.0	DVP	1	Base Case	operation	85.54	163.9	180.21	DC	13.95
43133679	314739	2MT A TP	69.0	DVP	314735	2ALTAVISTA DP	69.0	DVP	1	Base Case	operation	123.14	119.94	131.27	DC	13.95
42903042	314861	3SKIMMER	115.0	DVP	242886	05SKIMMR	69.0	AEP	1	DVP_P1-3: 3SKIMMER-ID#2	operation	53.0	125.82	126.62	DC	0.94
42903060	314861	3SKIMMER	115.0	DVP	242886	05SKIMMR	69.0	AEP	2	DVP_P1-3: 3SKIMMER-ID#1	operation	53.0	124.75	125.53	DC	0.93
43133663	927260	AC1-222 TAP	115.0	DVP	314696	3SEDGE HILL	115.0	DVP	1	DVP_P1-2: LN 13	operation	285.76	139.77	141.2	DC	4.1
43133667	927260	AC1-222 TAP	115.0	DVP	314696	3SEDGE HILL	115.0	DVP	1	Base Case	operation	285.76	108.67	109.69	DC	2.91

10.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
44749519,42902916	5	4ALTVSTA 138.0 kV - 05OTTER 138.0 kV Ckt 1	AEP AEPA0014a (81) : Rebuild / reconductor 0.9 miles of overhead conductor (ACSR ~ 397.5 ~ 30/7 ~ LARK) Cost : $1,350,000 Time Estimate : 24-36 Months DVP dom-001 (279) : Relay Change Outs (Secondary) at Altavista Substation Cost : $120,000 Time Estimate : 6-12 Months	$1,470,000
45137629,43849918	4	05OTTER 138.0 kV - 05JOHNMT 138.0 kV Ckt 1	AEP AEP_AE1_REF_r0038 (54) : 1) Replace Otter Riser, Sub cond 477 ACSR 26/7 STD. $175k 2) Replace JohnMt - Otter Line, ACSR ~ 397.5 ~ 30/7 ~ LARK Conductor Section 1, 7 Miles. $10.5M Cost : $10,670,000 Time Estimate : 18-24 Months	$10,670,000
43133295	10	AC1-222 TAP 115.0 kV - 3SEDGE HILL 115.0 kV Ckt 1	DVP dom-184 (720) : Reconductor 3.7 miles of 115 kV Line 1016 from AC1-222 Tap to Sedge Hill with 768 ACSS Cost : $2,220,000 Time Estimate : 30-36 Months	$2,220,000
43133476	7	2STONE MIL 69.0 kV - 2ALTVSTA 69.0 kV Ckt 1	DVP dom-111 (637) : Rebuild 1.64 miles of 69 kV Line 35 from Stone Mill to Altavista with 768 ACSS. Cost : $2,132,000 Time Estimate : 30-36 Months	$2,132,000
43849933,45137644	2	05JOHNMT 138.0 kV - 05NEWLDN 138.0 kV Ckt 1	AEP AEP_AE1_REF_r0039 (55) : 1) Replace ACSR ~ 397.5 ~ 30/7 ~ LARK ~ Fe Clamps 9 d, Conductor Section 1, 14.43 miles Cost : $21,650,000 Time Estimate : 12-18 Months	$21,650,000

ID	Index	Facility	Upgrade Description	Cost
43849700	3	05NEWLDN 138.0 kV - 05BRUSHT 138.0 kV Ckt 1	**AEP** **AEPA0018a (90) : A Sag Study will be required for the 2.9 miles of overhead conductor (ACSR ~ 556.5 ~ 26/7 ~ DOVE) to mitigate the overload. Depending on the sag study results, the cost for this upgrade is expected to be between $11,600 (no remediation required, just sag study) and $5.8 million (complete line reconductor/rebuild). Time Estimate: a) Sag Study: 6-12 months b) Rebuild: The standard time required for construction differs from state to state. An approximate construction time would be 24 to 36 months after signing an interconnection agreement.** **Cost : $11,600** **Time Estimate : 6-12 Months**	$11,600
43133558	1	2ALTVSTA 69.0 kV - 4ALTVSTA 138.0 kV Ckt 1	**DVP** **dom-121 (648) : Add additional 138/69 kV transformer at Altavista substation** **Project Type : CON** **Cost : $6,000,000** **Time Estimate : 16-18 Months**	$6,000,000
43133343	6	3CRSTL HILL 115.0 kV - AC1-222 TAP 115.0 kV Ckt 1	**DVP** **dom-119 (645) : Rebuild 0.5 miles of 115 kV Line 1016 from Crystal Hill DP to AC1-222 Tap with 768 ACSS.** **Cost : $650,000** **Time Estimate : 30-36 Months**	$650,000
42903044	8	3SKIMMER 115.0 kV - 05SKIMMR 69.0 kV Ckt 1	**AEP** **AEPA0016a (83) : Increase relay thermal limit above 80 MVA** **Cost : $25,000** **Time Estimate : 12-18 Months**	$25,000
42903061	9	3SKIMMER 115.0 kV - 05SKIMMR 69.0 kV Ckt 2	**DVP** **No violation. Limiting equipment owned by AEP.**	
			TOTAL COST	**$44,828,600**

10.6 Flow Gate Details

The following indices contain additional information about each flowgate presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

10.6.1 Contingency Descriptions

Contingency Name	Contingency Definition
242575 05CAMDLM 138 926520 AC1-123 TAP 138 1	CONTINGENCY '242575 05CAMDLM 138 926520 AC1-123 TAP 138 1' OPEN BRANCH FROM BUS 242575 TO BUS 926520 CKT 1 END
AEP_P4_#10294_05NEWLDN 138_D	CONTINGENCY 'AEP_P4_#10294_05NEWLDN 138_D' OPEN BRANCH FROM BUS 242569 TO BUS 242734 CKT 1 / 242569 05BRUSHT 138 242734 05NEWLDN 138 1 OPEN BRANCH FROM BUS 242641 TO BUS 242734 CKT 1 / 242641 05FOREST 138 242734 05NEWLDN 138 1 OPEN BRANCH FROM BUS 242687 TO BUS 242734 CKT 1 / 242687 05JOHNMT 138 242734 05NEWLDN 138 1 OPEN BRANCH FROM BUS 242687 TO BUS 242741 CKT 1 / 242687 05JOHNMT 138 242741 05OTTER 138 1 OPEN BRANCH FROM BUS 242741 TO BUS 314667 CKT 1 / 242741 05OTTER 138 314667 4ALTVSTA 138 1 END
DVP_P1-3: 3SKIMMER-ID#2	CONTINGENCY 'DVP_P1-3: 3SKIMMER-ID#2' OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 2 /* 05SKIMMR 69.000 - 3SKIMMER 115.00 END

Contingency Name	Contingency Definition
AEP_P4_#10317_05REUSEN 138_D	CONTINGENCY 'AEP_P4_#10317_05REUSEN 138_D' OPEN BRANCH FROM BUS 242561 TO BUS 242641 CKT 1 / 242561 05BOONSBORO 138 242641 05FOREST 138 1 OPEN BRANCH FROM BUS 242561 TO BUS 242765 CKT 1 / 242561 05BOONSBORO 138 242765 05REUSEN 138 1 OPEN BRANCH FROM BUS 242591 TO BUS 242765 CKT 1 / 242591 05CENTRR 138 242765 05REUSEN 138 1 OPEN BRANCH FROM BUS 242641 TO BUS 242734 CKT 1 / 242641 05FOREST 138 242734 05NEWLDN 138 1 OPEN BRANCH FROM BUS 242719 TO BUS 242765 CKT 1 / 242719 05MONEL 138 242765 05REUSEN 138 1 OPEN BRANCH FROM BUS 242765 TO BUS 242882 CKT 4 / 242765 05REUSEN 138 242882 05REUSENS 69.0 4 OPEN BRANCH FROM BUS 242765 TO BUS 242889 CKT 1 / 242765 05REUSEN 138 242889 05REUSENS 34.5 1 REMOVE SWSHUNT FROM BUS 242765 / 242765 05REUSEN 138 OPEN BRANCH FROM BUS 242860 TO BUS 242882 CKT 1 / 242860 05ABERT 69.0 242882 05REUSENS 69.0 1 OPEN BRANCH FROM BUS 242876 TO BUS 242882 CKT 1 / 242876 05MONROE A 69.0 242882 05REUSENS 69.0 1 OPEN BRANCH FROM BUS 247360 TO BUS 242882 CKT 1 / 247360 05PEAKLANDSS69.0 242882 05REUSENS 69.0 1 REMOVE SWSHUNT FROM BUS 242882 / 242882 05REUSENS 69.0 OPEN BRANCH FROM BUS 247866 TO BUS 242889 CKT 1 / 247866 05GLAMORGNSS34.5 242889 05REUSENS 34.5 1 REMOVE UNIT 1 FROM BUS 242889 / 242889 05REUSENS 34.5 END
DVP_P1-3: 3SKIMMER-ID#1	CONTINGENCY 'DVP_P1-3: 3SKIMMER-ID#1' OPEN BRANCH FROM BUS 242886 TO BUS 314861 CKT 1 /* 05SKIMMR 69.000 - 3SKIMMER 115.00 END
DVP_P1-2: LN 13	CONTINGENCY 'DVP_P1-2: LN 13' OPEN BUS 242687 /* ISLAND: 05JOHNMT 115.00 OPEN BUS 242741 /* ISLAND: 05OTTER 115.00 OPEN BRANCH FROM BUS 242741 TO BUS 314667 CKT 1 /* 05OTTER 138.00 - 4ALTVSTA 138.00 END
AEP_P1-2_#5481	CONTINGENCY 'AEP_P1-2_#5481' OPEN BRANCH FROM BUS 242561 TO BUS 242641 CKT 1 / 242561 05BOONSBORO 138 242641 05FOREST 138 1 OPEN BRANCH FROM BUS 242561 TO BUS 242765 CKT 1 / 242561 05BOONSBORO 138 242765 05REUSEN 138 1 OPEN BRANCH FROM BUS 242641 TO BUS 242734 CKT 1 / 242641 05FOREST 138 242734 05NEWLDN 138 1 END
Base Case	

Contingency Name	Contingency Definition
DVP_P1-3: 4ALTVSTA-TX#3	CONTINGENCY 'DVP_P1-3: 4ALTVSTA-TX#3' OPEN BRANCH FROM BUS 314666 TO BUS 314667 CKT 1 /* 3ALTVSTA 115.00 - 4ALTVSTA 138.00 END

10.6.2 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
43133558	314670	2ALTVSTA	DVP	314667	4ALTVSTA	DVP	1	Base Case	single	128.78	91.91	102.74	DC	13.95

Bus #	Bus	MW Impact
925661	AC1-042 C	15.9600
926641	AC1-145 C	19.0000
939941	AE1-230 C	7.2000
941801	AE2-185 C	36.0000
941821	AE2-187 C	36.0000
942671	AE2-283 C	39.6000
945081	AF1-173	13.9500

10.6.3 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
43849933	242687	05JOHNMT	AEP	242734	05NEWLDN	AEP	1	Base Case	single	167.0	131.29	134.14	DC	4.76

Bus #	Bus	MW Impact
246843	05SMG1	0.9444
246844	05SMG2	2.4929
246845	05SMG3	1.4149
246846	05SMG4	2.4929
246847	05SMG5	0.9444
247284	05LEESVG	1.5009
315156	1HALLBR1	2.2479
315266	1PLYWOOD A	0.3517
919841	AA2-070	0.4582
925661	AC1-042 C	5.4433
925991	AC1-075 C	6.7734
926021	AC1-080 C	2.2637
926051	AC1-083 C O1	2.7888
926271	AC1-105 C O1	1.8687
926641	AC1-145 C	6.4801
927261	AC1-222 C	1.9820
933941	AD1-017 C	0.5578
934311	AD1-055 C	1.3761
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**2.6973**
938451	AE1-064 C	6.1511
939941	AE1-230 C	2.4556
940081	AE1-250 C	5.0562
941801	AE2-185 C	12.2782
941821	AE2-187 C	12.2782
942671	AE2-283 C	13.5060
942751	AE2-291 C O1	13.2039
942761	AE2-292 C O1	16.4401
943901	AF1-058 C	0.7350
945081	AF1-173	4.7578
DUCKCREEK	DUCKCREEK	0.2349
NEWTON	NEWTON	0.2106
CPLE	CPLE	0.7958

Bus #	Bus	MW Impact
FARMERCITY	FARMERCITY	0.0083
NY	NY	0.0227
PRAIRIE	PRAIRIE	0.3797
COFFEEN	COFFEEN	0.1004
CBM-S2	CBM-S2	4.1732
EDWARDS	EDWARDS	0.0739
TILTON	TILTON	0.1424
MADISON	MADISON	0.2137
GIBSON	GIBSON	0.1207
BLUEG	BLUEG	0.4218
TRIMBLE	TRIMBLE	0.1369

10.6.4 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
43849700	247234	05NEWLDN	AEP	242569	05BRUSHT	AEP	1	AEP_P4_#10317_05REUSEN 138_D	breaker	205.0	111.23	113.18	DC	4.0

Bus #	Bus	MW Impact
247284	05LEESVG	1.2523
315156	1HALLBR1	1.9109
925661	AC1-042 C	4.5776
925662	AC1-042 E	7.4688
925991	AC1-075 C	5.7527
925992	AC1-075 E	3.2593
926021	AC1-080 C	1.9226
926022	AC1-080 E	1.0814
926051	AC1-083 C O1	1.9338
926052	AC1-083 E O1	3.1551
926641	AC1-145 C	5.4496
926642	AC1-145 E	8.8914
927261	AC1-222 C	1.4280
927262	AC1-222 E	1.3594
933941	AD1-017 C	0.3868
933942	AD1-017 E	0.6310
934311	AD1-055 C	0.9915
934312	AD1-055 E	0.2557
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**1.9434**
936332	**AD2-043 E (Withdrawn : 12/20/2019)**	**2.2996**
938451	AE1-064 C	4.2667
938452	AE1-064 E	2.1871
939941	AE1-230 C	2.0651
939942	AE1-230 E	3.6713
941801	AE2-185 C	10.3255
941802	AE2-185 E	6.8837
941821	AE2-187 C	10.3255
941822	AE2-187 E	6.8837
942671	AE2-283 C	11.3581
942672	AE2-283 E	5.9659
942751	AE2-291 C O1	11.2186
942752	AE2-291 E O1	7.4790

Bus #	Bus	MW Impact
942761	AE2-292 C O1	13.9682
942762	AE2-292 E O1	9.3121
943901	AF1-058 C	0.2801
943902	AF1-058 E	0.1868
945081	AF1-173	4.0011
DUCKCREEK	DUCKCREEK	0.1854
NEWTON	NEWTON	0.1655
CPLE	CPLE	0.6694
FARMERCITY	FARMERCITY	0.0064
NY	NY	0.0210
PRAIRIE	PRAIRIE	0.2919
O-066	O-066	0.1210
COFFEEN	COFFEEN	0.0782
CBM-S2	CBM-S2	3.5316
EDWARDS	EDWARDS	0.0581
TILTON	TILTON	0.1121
G-007	G-007	0.0177
MADISON	MADISON	0.1754
GIBSON	GIBSON	0.0950
BLUEG	BLUEG	0.3333
TRIMBLE	TRIMBLE	0.1085

10.6.5 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
43849918	242741	05OTTER	AEP	242687	05JOHNMT	AEP	1	Base Case	single	167.0	136.32	139.17	DC	4.76

Bus #	Bus	MW Impact
246843	05SMG1	0.9444
246844	05SMG2	2.4929
246845	05SMG3	1.4149
246846	05SMG4	2.4929
246847	05SMG5	0.9444
247284	05LEESVG	1.5009
315156	1HALLBR1	2.2479
315266	1PLYWOOD A	0.3517
919841	AA2-070	0.4582
925661	AC1-042 C	5.4433
925991	AC1-075 C	6.7734
926021	AC1-080 C	2.2637
926051	AC1-083 C O1	2.7888
926271	AC1-105 C O1	1.8687
926641	AC1-145 C	6.4801
927261	AC1-222 C	1.9820
933941	AD1-017 C	0.5578
934311	AD1-055 C	1.3761
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**2.6973**
938451	AE1-064 C	6.1511
939941	AE1-230 C	2.4556
940081	AE1-250 C	5.0562
941801	AE2-185 C	12.2782
941821	AE2-187 C	12.2782
942671	AE2-283 C	13.5060
942751	AE2-291 C O1	13.2039
942761	AE2-292 C O1	16.4401
943901	AF1-058 C	0.7350
945081	AF1-173	4.7578
DUCKCREEK	DUCKCREEK	0.2349
NEWTON	NEWTON	0.2106
CPLE	CPLE	0.7958

Bus #	Bus	MW Impact
FARMERCITY	FARMERCITY	0.0083
NY	NY	0.0227
PRAIRIE	PRAIRIE	0.3797
COFFEEN	COFFEEN	0.1004
CBM-S2	CBM-S2	4.1732
EDWARDS	EDWARDS	0.0739
TILTON	TILTON	0.1424
MADISON	MADISON	0.2137
GIBSON	GIBSON	0.1207
BLUEG	BLUEG	0.4218
TRIMBLE	TRIMBLE	0.1369

10.6.6 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
42902916	314667	4ALTVSTA	DVP	242741	05OTTER	AEP	1	Base Case	single	167.0	139.01	141.86	DC	4.76

Bus #	Bus	MW Impact
246843	05SMG1	0.9444
246844	05SMG2	2.4929
246845	05SMG3	1.4149
246846	05SMG4	2.4929
246847	05SMG5	0.9444
247284	05LEESVG	1.5009
315156	1HALLBR1	2.2479
315266	1PLYWOOD A	0.3517
919841	AA2-070	0.4582
925661	AC1-042 C	5.4433
925991	AC1-075 C	6.7734
926021	AC1-080 C	2.2637
926051	AC1-083 C O1	2.7888
926271	AC1-105 C O1	1.8687
926641	AC1-145 C	6.4801
927261	AC1-222 C	1.9820
933941	AD1-017 C	0.5578
934311	AD1-055 C	1.3761
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**2.6973**
938451	AE1-064 C	6.1511
939941	AE1-230 C	2.4556
940081	AE1-250 C	5.0562
941801	AE2-185 C	12.2782
941821	AE2-187 C	12.2782
942671	AE2-283 C	13.5060
942751	AE2-291 C O1	13.2039
942761	AE2-292 C O1	16.4401
943901	AF1-058 C	0.7350
945081	AF1-173	4.7578
DUCKCREEK	DUCKCREEK	0.2349
NEWTON	NEWTON	0.2106
CPLE	CPLE	0.7958

Bus #	Bus	MW Impact
FARMERCITY	FARMERCITY	0.0083
NY	NY	0.0227
PRAIRIE	PRAIRIE	0.3797
COFFEEN	COFFEEN	0.1004
CBM-S2	CBM-S2	4.1732
EDWARDS	EDWARDS	0.0739
TILTON	TILTON	0.1424
MADISON	MADISON	0.2137
GIBSON	GIBSON	0.1207
BLUEG	BLUEG	0.4218
TRIMBLE	TRIMBLE	0.1369

10.6.7 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
43133343	314688	3CRSTL HILL	DVP	927260	AC1-222 TAP	DVP	1	AEP_P4_#10294_05NEWLDN 138_D	breaker	350.0	101.39	102.56	DC	4.1

Bus #	Bus	MW Impact
246843	05SMG1	1.0588
246844	05SMG2	2.7946
246845	05SMG3	1.5861
246846	05SMG4	2.7946
246847	05SMG5	1.0588
247284	05LEESVG	1.3832
315156	1HALLBR1	2.3914
919841	AA2-070	0.5136
925661	AC1-042 C	4.6890
925662	AC1-042 E	7.6506
925991	AC1-075 C	23.6870
925992	AC1-075 E	13.4206
926021	AC1-080 C	7.9163
926022	AC1-080 E	4.4529
926051	AC1-083 C O1	2.4454
926052	AC1-083 E O1	3.9899
926521	AC1-123 C O1	3.9669
926522	AC1-123 E O1	1.8668
926641	AC1-145 C	5.5822
926642	AC1-145 E	9.1078
933941	AD1-017 C	0.4891
933942	AD1-017 E	0.7980
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**24.3801**
936332	**AD2-043 E (Withdrawn : 12/20/2019)**	**28.8498**
938451	AE1-064 C	6.2422
938452	AE1-064 E	3.1997
939941	AE1-230 C	2.1154
939942	AE1-230 E	3.7606
941801	AE2-185 C	10.5768
941802	AE2-185 E	7.0512
941821	AE2-187 C	10.5768
941822	AE2-187 E	7.0512

Bus #	Bus	MW Impact
942671	AE2-283 C	11.6345
942672	AE2-283 E	6.1110
942751	AE2-291 C O1	32.5309
942752	AE2-291 E O1	21.6872
942761	AE2-292 C O1	40.5041
942762	AE2-292 E O1	27.0027
945081	AF1-173	4.0985
LGEE	LGEE	0.2088
WEC	WEC	0.1024
CBM-W2	CBM-W2	1.7117
NY	NY	0.0570
CBM-W1	CBM-W1	3.9407
TVA	TVA	0.2058
O-066	O-066	1.0080
CBM-S1	CBM-S1	1.6018
G-007	G-007	0.1602
MEC	MEC	0.4513
CATAWBA	CATAWBA	0.1645

10.6.8 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
43133476	314730	2STONE MIL	DVP	314670	2ALTVSTA	DVP	1	Base Case	single	101.52	116.59	130.33	DC	13.95

Bus #	Bus	MW Impact
925661	AC1-042 C	15.9600
926641	AC1-145 C	19.0000
939941	AE1-230 C	7.2000
941801	AE2-185 C	36.0000
941821	AE2-187 C	36.0000
942671	AE2-283 C	39.6000
945081	AF1-173	13.9500

10.6.9 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
42903044	314861	3SKIMMER	DVP	242886	05SKIMMR	AEP	1	DVP_P1-3: 3SKIMMER-ID#2	single	53.0	106.69	108.46	DC	0.94

Bus #	Bus	MW Impact
315156	1HALLBR1	0.6486
925661	AC1-042 C	1.0704
925991	AC1-075 C	1.9460
926021	AC1-080 C	0.6504
926641	AC1-145 C	1.2743
939941	AE1-230 C	0.4829
941801	AE2-185 C	2.4145
941821	AE2-187 C	2.4145
942671	AE2-283 C	2.6560
942751	AE2-291 C O1	3.8005
942761	AE2-292 C O1	4.7320
945081	AF1-173	0.9356
DUCKCREEK	DUCKCREEK	0.0587
NEWTON	NEWTON	0.0527
CPLE	CPLE	0.1998
FARMERCITY	FARMERCITY	0.0021
NY	NY	0.0050
PRAIRIE	PRAIRIE	0.0956
COFFEEN	COFFEEN	0.0254
CBM-S2	CBM-S2	1.0404
EDWARDS	EDWARDS	0.0186
TILTON	TILTON	0.0359
MADISON	MADISON	0.0544
GIBSON	GIBSON	0.0306
BLUEG	BLUEG	0.1059
TRIMBLE	TRIMBLE	0.0345

10.6.10 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
42903061	314861	3SKIMMER	DVP	242886	05SKIMMR	AEP	2	DVP_P1-3: 3SKIMMER-ID#1	single	53.0	105.77	107.52	DC	0.93

Bus #	Bus	MW Impact
315156	1HALLBR1	0.6434
925661	AC1-042 C	1.0618
925991	AC1-075 C	1.9303
926021	AC1-080 C	0.6451
926641	AC1-145 C	1.2641
939941	AE1-230 C	0.4790
941801	AE2-185 C	2.3951
941821	AE2-187 C	2.3951
942671	AE2-283 C	2.6346
942751	AE2-291 C O1	3.7699
942761	AE2-292 C O1	4.6939
945081	AF1-173	0.9281
DUCKCREEK	DUCKCREEK	0.0587
NEWTON	NEWTON	0.0527
CPLE	CPLE	0.1978
FARMERCITY	FARMERCITY	0.0021
NY	NY	0.0044
PRAIRIE	PRAIRIE	0.0956
COFFEEN	COFFEEN	0.0248
CBM-S2	CBM-S2	1.0346
EDWARDS	EDWARDS	0.0186
TILTON	TILTON	0.0353
MADISON	MADISON	0.0524
GIBSON	GIBSON	0.0300
BLUEG	BLUEG	0.1059
TRIMBLE	TRIMBLE	0.0345

10.6.11 Index 10

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
4313329 5	92726 0	AC1-222 TAP	DVP	314696	3SEDGE HILL	DVP	1	AEP_P4_#10294_05NEWLD N 138_D	breaker	350.0	114.33	115.5	DC	4.1

Bus #	Bus	MW Impact
246843	05SMG1	1.0588
246844	05SMG2	2.7946
246845	05SMG3	1.5861
246846	05SMG4	2.7946
246847	05SMG5	1.0588
247284	05LEESVG	1.3832
315156	1HALLBR1	2.3914
919841	AA2-070	0.5136
925661	AC1-042 C	4.6890
925662	AC1-042 E	7.6506
925991	AC1-075 C	23.6870
925992	AC1-075 E	13.4206
926021	AC1-080 C	7.9163
926022	AC1-080 E	4.4529
926521	AC1-123 C O1	3.9669
926522	AC1-123 E O1	1.8668
926641	AC1-145 C	5.5822
926642	AC1-145 E	9.1078
927261	AC1-222 C	18.7817
927262	AC1-222 E	17.8795
934311	AD1-055 C	13.0405
934312	AD1-055 E	3.3627
936331	**AD2-043 C (Withdrawn : 12/20/2019)**	**24.3801**
936332	**AD2-043 E (Withdrawn : 12/20/2019)**	**28.8498**
938451	AE1-064 C	6.2422
938452	AE1-064 E	3.1997
939941	AE1-230 C	2.1154
939942	AE1-230 E	3.7606
941801	AE2-185 C	10.5768
941802	AE2-185 E	7.0512
941821	AE2-187 C	10.5768
941822	AE2-187 E	7.0512

Bus #	Bus	MW Impact
942671	AE2-283 C	11.6345
942672	AE2-283 E	6.1110
942751	AE2-291 C O1	32.5309
942752	AE2-291 E O1	21.6872
942761	AE2-292 C O1	40.5041
942762	AE2-292 E O1	27.0027
945081	AF1-173	4.0985
LGEE	LGEE	0.2088
WEC	WEC	0.1024
CBM-W2	CBM-W2	1.7117
NY	NY	0.0570
CBM-W1	CBM-W1	3.9407
TVA	TVA	0.2058
O-066	O-066	1.0080
CBM-S1	CBM-S1	1.6018
G-007	G-007	0.1602
MEC	MEC	0.4513
CATAWBA	CATAWBA	0.1645

Short Circuit

10.7 Short Circuit

The following Breakers are overdutied:

None

Affected Systems

11 Affected Systems

11.1 Duke Energy Progress

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

Attachment 1

System Configuration