



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-040
SAPONY 34.5 KV
17.64 MW Capacity / 17.64 MW Energy**

September, 2019

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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 approximate 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.

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 Storage generating facility located in Sussex County, Virginia. The installed facilities will have a total capability of 17.64 MW with 17.64 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 06/01/2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-040
Project Name	SAPONY 34.5 KV
Interconnection Customer	
State	Virginia
County	Sussex
Transmission Owner	Dominion
MFO	17.64
MWE	17.64
MWC	17.64
Fuel	Storage
Basecase Study Year	2022

3.1 Primary Point of Interconnection

AE2-040 project will interconnect with the Dominion distribution system on a new circuit into the Sapony 34.5 kV bus fed by Dominion's 230kV system. This is the primary Point of Interconnection (POI) chose by the IC. Attachment 1 shows a one-line diagram of the proposed interconnection facilities. The IC may not install any facilities on Dominion's right-of-way without first obtaining the necessary approval from Dominion Energy.

3.2 Secondary Point of Interconnection

The IC requested that a secondary POI directly on the Dominion distribution system into the Sapony 34.5 kV bus fed by Dominion's 115kV system be reviewed for network impacts (Option 2). This report does not provide costs for the physical interconnection of Option 2. It was just analyzed for network impacts. Results are shown in the Network Impacts – Secondary Point of Interconnection section of this report.

3.3 Cost Summary

The AE2-040 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ N/A
Direct Connection Network Upgrade	\$ N/A
Non Direct Connection Network Upgrades	\$ N/A
Total Costs	\$

Attachment facilities and local upgrades (if required) along with terms and conditions to interconnect AE2-040 will be specified in a separate two party Interconnection Agreement (IA) between ITO and the IC as this project is considered FERC non-jurisdictional per the PJM Open Access Transmission Tariff (OATT). The single line is shown below in Attachment 1.

In addition, the AE2-040 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$67,585,000

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 AE2-040 was evaluated as a 17.64 MW Capacity (17.64 MW energy) load reducer at the 34.5 kV Sapony substation in the Dominion Transmission System, for compliance with NERC Reliability Criteria on Dominion Transmission System. The system was assessed using the summer 2022 AE2 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 Category C Contingency Conditions (Bus Fault, Tower Line, N-1-1, and Stuck Breaker scenarios) 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.

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

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Rebuild 12.3 miles of 230 kV Line 2003 from Poe to Harrowgate	\$30,750,000
Add additional 230/115 kV transformer at Clubhouse substation.	\$6,000,000
Rebuild 0.76 miles of 230 kV Line 2181 from Hathaway to Nash	\$1,900,000
Rebuild 11.79 miles of 230 kV Line 238 from Sapony to Carson	\$17,685,000
Rebuild 4.5 miles of 230 kV Line 2003 from Harrowgate to Tyler	\$11,250,000
Total Non-Direct Connection Facility Costs	\$67,585,000

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 2022 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system. At the Primary POI, the AE2-040 project contributes to overloads on the Dominion transmission system as shown in the “Network Impact – Primary Point of Interconnection” section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads is also provided. At the Secondary POI, the AE2-040 project contributes to overloads on the Dominion transmission system as shown in the “Network Impacts – Secondary Point of Interconnection” section of the report. Cost estimates are not provided for the secondary POI.

Dominion will perform additional studies on the local Sapony power transformers as part of the System Impact Study.

7.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-040 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.

9.2 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 – Primary Point of Interconnection

The Queue Project AE2-040 was evaluated as a 17.64 MW (Capacity 17.64 MW) injection at the Sapony 34.5 kV substation which is fed by the 230kV in the Dominion area. Project AE2-040 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission

Owners). Project AE2-040 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	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
1690984	313845	6HATHAWAY	DVP	314591	6NASH	DVP	1	DVP_P1-2: LN 218-A	single	449.32	99.83	100.03	DC	0.92

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	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
1690363	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	109.51	110.88	DC	7.45
1690362	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	109.53	110.9	DC	7.45
1690357	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 201262	breaker	830.0	113.33	114.96	DC	13.53
1690358	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 239T2141	breaker	830.0	116.18	117.76	DC	15.57
1691704	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P7-1: LN 56-2060	tower	830.0	114.58	116.22	DC	13.6
1691705	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P7-1: LN 56-2012	tower	830.0	114.52	116.16	DC	13.6
1690399	314563	6CLUBHSE	DVP	314562	3CLUBHSE	DVP	1	DVP_P4-2: 239T2141	breaker	208.6	107.24	108.26	DC	2.14

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	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
1690999	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 2060	operation	678.68	136.67	138.67	DC	13.51
1691003	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	Base Case	operation	678.68	125.77	127.7	DC	13.1
1690922	314583	6LAKEVEW	DVP	924510	AB2-100 TAP	DVP	1	Base Case	operation	346.86	124.28	125.28	DC	3.47
1691227	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 563	operation	903.9	99.71	100.4	DC	6.28
1690847	924510	AB2-100 TAP	DVP	314563	6CLUBHSE	DVP	1	Base Case	operation	346.86	139.58	140.58	DC	3.47

10.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
1690362	5	6POE 230.0 kV - 6HARROWG 230.0 kV Ckt 1	dom-037 (106) : Rebuild 12.3 miles of 230 kV Line 2003 from Poe to Harrowgate with 2-636 ACSR. Project Type : FAC Cost : \$30,750,000 Time Estimate : 30-36 Months	\$30,750,000
1690399	6	6CLUBHSE 230.0 kV - 3CLUBHSE 115.0 kV Ckt 1	dom-010 (67) : Add additional 230/115 kV transformer at Clubhouse substation. Project Type : CON Cost : \$6,000,000 Time Estimate : 16-18 Months	\$6,000,000
1690984	1	6HATHAWAY 230.0 kV - 6NASH 230.0 kV Ckt 1	dom-143 (272) : Rebuild 0.76 miles of 230 kV Line 2181 from Hathaway to Nash with 2-636 ACSR. Project Type : FAC Cost : \$1,900,000 Time Estimate : 30-36 Months	\$1,900,000
1690358, 1691705, 1691704, 1690357	2	6SAPONY 230.0 kV - 6CARSON 230.0 kV Ckt 1	dom-051 (134) : Rebuild 11.79 miles of 230 kV Line 238 from Sapony to Carson with 2-795 150C ACSR. Project Type : FAC Cost : \$17,685,000 Time Estimate : 30-36 Months	\$17,685,000
1690363	4	6HARROWG 230.0 kV - 6TYLER1 230.0 kV Ckt 1	dom-036 (104) : Rebuild 4.5 miles of 230 kV Line 2003 from Harrowgate to Tyler with 2-636 ACSR. Project Type : FAC Cost : \$11,250,000 Time Estimate : 30-36 Months	\$11,250,000
			TOTAL COST	\$67,585,000

10.6 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, 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
DVP_P7-1: LN 56-2060	CONTINGENCY 'DVP_P7-1: LN 56-2060' OPEN BRANCH FROM BUS 314259 TO BUS 314604 CKT 1 /* 3CAROL56_1 115.00 - 3SEABORD 115.00 OPEN BRANCH FROM BUS 314558 TO BUS 314587 CKT 1 /* 3BOYKINS 115.00 - 3MARGTSV 115.00 OPEN BRANCH FROM BUS 314587 TO BUS 314604 CKT 1 /* 3MARGTSV 115.00 - 3SEABORD 115.00 OPEN BUS 314587 /* ISLAND: 3MARGTSV 115.00 OPEN BUS 314604 /* ISLAND: 3SEABORD 115.00 OPEN BRANCH FROM BUS 314561 TO BUS 314599 CKT 1 /* 6CAROLNA 230.00 - 6ROA VAL 230.00 END
DVP_P4-2: 201262	CONTINGENCY 'DVP_P4-2: 201262' /* EARLEYS 230 KV OPEN BRANCH FROM BUS 314266 TO BUS 314569 CKT 1 /* 6NORTHAMPTON230.00 - 6EARLEYS 230.00 OPEN BRANCH FROM BUS 314266 TO BUS 314599 CKT 1 /* 6NORTHAMPTON230.00 - 6ROA VAL 230.00 OPEN BUS 314266 /* ISLAND: 6NORTHAMPTON230.00 OPEN BRANCH FROM BUS 314568 TO BUS 314569 CKT 1 /* 3EARLEYS 115.00 - 6EARLEYS 230.00 END
DVP_P7-1: LN 56-2012	CONTINGENCY 'DVP_P7-1: LN 56-2012' OPEN BRANCH FROM BUS 314259 TO BUS 314604 CKT 1 /* 3CAROL56_1 115.00 - 3SEABORD 115.00 OPEN BRANCH FROM BUS 314558 TO BUS 314587 CKT 1 /* 3BOYKINS 115.00 - 3MARGTSV 115.00 OPEN BRANCH FROM BUS 314587 TO BUS 314604 CKT 1 /* 3MARGTSV 115.00 - 3SEABORD 115.00 OPEN BUS 314587 /* ISLAND: 3MARGTSV 115.00 OPEN BUS 314604 /* ISLAND: 3SEABORD 115.00 OPEN BRANCH FROM BUS 314266 TO BUS 314569 CKT 1 /* 6NORTHAMPTON230.00 - 6EARLEYS 230.00 OPEN BRANCH FROM BUS 314266 TO BUS 314599 CKT 1 /* 6NORTHAMPTON230.00 - 6ROA VAL 230.00 OPEN BUS 314266 /* ISLAND: 6NORTHAMPTON230.00 END

Contingency Name	Contingency Definition
DVP_P4-2: 24972-4	CONTINGENCY 'DVP_P4-2: 24972-4' /* CARSON 230 KV OPEN BRANCH FROM BUS 314282 TO BUS 314285 CKT 1 /* 6CARSON 230.00 - 6CHRL249 230.00 OPEN BRANCH FROM BUS 314285 TO BUS 314316 CKT 1 /* 6CHRL249 230.00 - 6LOCKS 230.00 OPEN BRANCH FROM BUS 314314 TO BUS 314316 CKT 2 /* 3LOCKS 115.00 - 6LOCKS 230.00 OPEN BUS 314285 /* ISLAND: 6CHRL249 230.00 OPEN BRANCH FROM BUS 314282 TO BUS 314902 CKT 1 /* 6CARSON 230.00 - 8CARSON 500.00 OPEN BUS 314455 /* 6CARSO_1 230.00 KV END
DVP_P1-2: LN 2012	CONTINGENCY 'DVP_P1-2: LN 2012' OPEN BRANCH FROM BUS 314266 TO BUS 314569 CKT 1 /* 6NORTHAMPTON230.00 - 6EARLEYS 230.00 OPEN BRANCH FROM BUS 314266 TO BUS 314599 CKT 1 /* 6NORTHAMPTON230.00 - 6ROA VAL 230.00 OPEN BUS 314266 /* ISLAND: 6NORTHAMPTON230.00 END
Base Case	
DVP_P4-2: 239T2141	CONTINGENCY 'DVP_P4-2: 239T2141' /* LAKEVIEW 230 KV OPEN BRANCH FROM BUS 314579 TO BUS 314583 CKT 1 /* 6HORNRTN 230.00 - 6LAKEVIEW 230.00 OPEN BRANCH FROM BUS 314561 TO BUS 314583 CKT 1 /* 6CAROLNA 230.00 - 6LAKEVIEW 230.00 END
DVP_P1-2: LN 218-A	CONTINGENCY 'DVP_P1-2: LN 218-A' OPEN BRANCH FROM BUS 304451 TO BUS 936530 CKT 1 /* 6GREENVILE T230.00 - AD2-068 TAP 230.00 END
DVP_P1-2: LN 2060	CONTINGENCY 'DVP_P1-2: LN 2060' OPEN BRANCH FROM BUS 314561 TO BUS 314599 CKT 1 /* 6CAROLNA 230.00 - 6ROA VAL 230.00 END
DVP_P1-2: LN 563	CONTINGENCY 'DVP_P1-2: LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 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
1690984	313845	6HATHAWAY	DVP	314591	6NASH	DVP	1	DVP_P1-2: LN 218-A	single	449.32	99.83	100.03	DC	0.92

Bus #	Bus	MW Impact
314589	3MURPHYS	0.03
314704	3LAWRENC	0.09
315115	1S HAMPT1	0.43
315126	1ROARAP2	0.57
315128	1ROARAP4	0.55
315131	1EDGECEMA	15.04
315132	1EDGECEMB	15.04
315136	1ROSEMG1	1.4
315137	1ROSEMS1	0.87
315138	1ROSEMG2	0.65
315139	1GASTONA	1.72
315141	1GASTONB	1.72
315292	1DOMTR78	0.61
315293	1DOMTR9	0.49
315294	1DOMTR10	0.9
916041	Z1-036 C	0.28
917331	Z2-043 C	0.18
917341	Z2-044 C	0.13
917511	Z2-088 C OP1	1.18
918491	AA1-063AC OP	0.61
918511	AA1-065 C OP	0.69
918531	AA1-067 C	0.17
918561	AA1-072 C	0.03
919691	AA2-053 C	0.62
919701	AA2-057 C	5.24
920041	AA2-088 C OP	0.36
920591	AA2-165 C	0.09
920671	AA2-174 C	0.03
920691	AA2-178 C	0.53
923801	AB2-015 C O1	3.15
923851	AB2-025 C	0.09
923911	AB2-031 C O1	1.14
923991	AB2-040 C O1	0.46
924151	AB2-059 C O1	1.25
924491	AB2-098 C	0.47
924501	AB2-099 C	0.35
924511	AB2-100 C	5.82
925121	AB2-169 C	0.53
925171	AB2-174 C O1	3.48
925591	AC1-034 C	6.67
926071	AC1-086 C	15.88

Bus #	Bus	MW Impact
926201	AC1-098 C	4.15
926211	AC1-099 C	1.39
927021	AC1-189 C	8.58
927141	AC1-208 C	6.12
930401	AB1-081 C O1	1.06
930861	AB1-132 C O1	1.31
931231	AB1-173 C	0.14
931241	AB1-173AC	0.14
932631	AC2-084 C	5.92
933991	AD1-023 C	7.25
934201	AD1-047 C	4.07
934331	AD1-057 C O1	12.41
934521	AD1-076 C	28.5
936401	AD2-051 C O1	5.38
936531	AD2-068 C	4.42
936701	AD2-089 C	9.59
936711	AD2-090 C O1	2.91
937571	AD2-169 C	5.23
938171	AE1-026 C1 O	15.9
938172	AE1-026 C2 O	2.3
938221	AE1-035 C	1.42
938661	AE1-088	2.21
938771	AE1-103 C O1	1.26
939071	AE1-135 C O1	9.8
940481	AE2-033 C	5.0
940491	AE2-034 C	3.82
940521	AE2-037 C O1	4.99
940541	AE2-040	0.92
940571	AE2-044 C	4.37
941541	AE2-151 C	0.67
941951	AE2-207	2.82
942471	AE2-260 C O1	6.75
942711	AE2-287 C O1	4.41
942851	AE2-304 C	0.19
943171	AE2-346 C	1.04
BLUEG	BLUEG	4.89
CALDERWOOD	CALDERWOOD	1.01
CANNELTON	CANNELTON	0.33
CATAWBA	CATAWBA	0.99
CBM-N	CBM-N	0.11
CHEOAH	CHEOAH	0.94
CHILHOWEE	CHILHOWEE	0.33
COFFEEN	COFFEEN	0.57
COTTONWOOD	COTTONWOOD	3.39
DUCKCREEK	DUCKCREEK	1.17
EDWARDS	EDWARDS	0.52
ELMERSMITH	ELMERSMITH	0.59
FARMERCITY	FARMERCITY	0.41
G-007A	G-007A	0.57
GIBSON	GIBSON	0.21
HAMLET	HAMLET	2.0
NEWTON	NEWTON	1.49

Bus #	Bus	MW Impact
NYISO	NYISO	0.49
PRAIRIE	PRAIRIE	3.12
SANTEETLA	SANTEETLA	0.28
SMITHLAND	SMITHLAND	0.28
TATANKA	TATANKA	0.7
TILTON	TILTON	0.62
TRIMBLE	TRIMBLE	0.54
TVA	TVA	2.84
UNIONPOWER	UNIONPOWER	1.41
VFT	VFT	1.51

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
1690358	314435	6SAPONY	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 239T2141	breaker	830.0	116.18	117.76	DC	15.57

Bus #	Bus	MW Impact
314572	3EMPORIA	1.24
314578	3HORNRTN	3.01
314704	3LAWRENC	0.62
315126	1ROARAP2	0.97
315139	1GASTONA	10.52
315141	1GASTONB	10.52
918492	AA1-063AE OP	2.96
919692	AA2-053 E	3.15
920672	AA2-174 E	0.36
923851	AB2-025 C	1.48
923852	AB2-025 E	5.44
923911	AB2-031 C O1	5.04
923912	AB2-031 E O1	2.48
923991	AB2-040 C O1	2.02
923992	AB2-040 E O1	13.53
924022	AB2-043 E O1	4.05
924162	AB2-060 E O1	3.3
924302	AB2-077 E O1	1.02
924312	AB2-078 E O1	1.02
924322	AB2-079 E O1	1.02
924511	AB2-100 C	52.6
924512	AB2-100 E	25.91
925171	AB2-174 C O1	17.73
925172	AB2-174 E O1	16.04
925781	AC1-054 C O1	5.59
925782	AC1-054 E O1	2.58
926071	AC1-086 C	97.11
926072	AC1-086 E	44.2
930861	AB1-132 C O1	8.04
930862	AB1-132 E O1	28.26
931231	AB1-173 C	0.62
931232	AB1-173 E	2.37
931241	AB1-173AC	0.62
931242	AB1-173AE	2.37
934201	AD1-047 C	18.04
934202	AD1-047 E	12.03
937571	AD2-169 C	19.53
937572	AD2-169 E	13.02
939071	AE1-135 C O1	94.2
939072	AE1-135 E O1	62.8
940481	AE2-033 C	76.88

Bus #	Bus	MW Impact
940482	AE2-033 E	51.83
940541	AE2-040	15.57
942451	AE2-258	1.84
942471	AE2-260 C O1	64.92
942472	AE2-260 E O1	92.08
942711	AE2-287 C O1	30.26
942712	AE2-287 E O1	20.17
CARR	CARR	0.13
CBM-S1	CBM-S1	1.39
CBM-S2	CBM-S2	1.82
CBM-W1	CBM-W1	1.12
CBM-W2	CBM-W2	8.8
CIN	CIN	0.53
CPL	CPL	1.02
G-007	G-007	0.44
IPL	IPL	0.33
LGEE	LGEE	0.16
MEC	MEC	1.26
MECS	MECS	0.35
O-066	O-066	2.77
RENSSELAER	RENSSELAER	0.11
WEC	WEC	0.14

10.6.4 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
1690363	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	109.51	110.88	DC	7.45

Bus #	Bus	MW Impact
314539	3UNCAMP	1.22
314541	3WATKINS	0.38
314554	3BTLEBRO	0.5
314557	3BETHELC	0.48
314572	3EMPORIA	0.58
314574	6EVERETS	2.18
314578	3HORNRTN	2.96
314582	3KELFORD	2.27
314603	3SCOT NK	2.25
314617	3TUNIS	0.53
314620	6CASHIE	0.4
314623	3WITAKRS	0.88
314704	3LAWRENC	0.29
315126	1ROARAP2	0.93
315131	1EDGECEMA	5.88
315132	1EDGECEMB	5.88
315136	1ROSEMG1	1.72
315137	1ROSEMS1	1.07
315138	1ROSEMG2	0.8
315139	1GASTONA	2.54
315141	1GASTONB	2.54
900672	V4-068 E	0.19
907092	X1-038 E	3.04
917332	Z2-043 E	0.64
917342	Z2-044 E	0.38
917512	Z2-088 E OP1	2.17
918492	AA1-063AE OP	3.19
918512	AA1-065 E OP	2.44
918532	AA1-067 E	0.39
918562	AA1-072 E	0.11
919692	AA2-053 E	3.2
919701	AA2-057 C	4.86
919702	AA2-057 E	2.43
920042	AA2-088 E OP	6.77
920592	AA2-165 E	0.32
920672	AA2-174 E	0.37
923801	AB2-015 C O1	4.55
923802	AB2-015 E O1	3.74
923851	AB2-025 C	0.71
923852	AB2-025 E	2.6
923911	AB2-031 C O1	2.72

Bus #	Bus	MW Impact
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91
934232	AD1-050 E	1.59

Bus #	Bus	MW Impact
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O1	5.01
940522	AE2-037 E O1	2.42
940541	AE2-040	7.45
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O1	13.21
941602	AE2-157 E O1	8.81
941951	AE2-207	1.8
942341	AE2-247 C	1.08
942342	AE2-247 E	1.49
942451	AE2-258	1.17

Bus #	Bus	MW Impact
942471	AE2-260 C O1	25.73
942472	AE2-260 E O1	36.5
942711	AE2-287 C O1	14.19
942712	AE2-287 E O1	9.46
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

10.6.5 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
1690362	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	109.53	110.9	DC	7.45

Bus #	Bus	MW Impact
314539	3UNCAMP	1.22
314541	3WATKINS	0.38
314554	3BTLEBRO	0.5
314557	3BETHELC	0.48
314572	3EMPORIA	0.58
314574	6EVERETS	2.18
314578	3HORNRTN	2.96
314582	3KELFORD	2.27
314603	3SCOT NK	2.25
314617	3TUNIS	0.53
314620	6CASHIE	0.4
314623	3WITAKRS	0.88
314704	3LAWRENC	0.29
315126	1ROARAP2	0.93
315131	1EDGECEMA	5.88
315132	1EDGECEMB	5.88
315136	1ROSEMG1	1.72
315137	1ROSEMS1	1.07
315138	1ROSEMG2	0.8
315139	1GASTONA	2.54
315141	1GASTONB	2.54
900672	V4-068 E	0.19
907092	X1-038 E	3.04
917332	Z2-043 E	0.64
917342	Z2-044 E	0.38
917512	Z2-088 E OP1	2.17
918492	AA1-063AE OP	3.19
918512	AA1-065 E OP	2.44
918532	AA1-067 E	0.39
918562	AA1-072 E	0.11
919692	AA2-053 E	3.2
919701	AA2-057 C	4.86
919702	AA2-057 E	2.43
920042	AA2-088 E OP	6.77
920592	AA2-165 E	0.32
920672	AA2-174 E	0.37
923801	AB2-015 C O1	4.55
923802	AB2-015 E O1	3.74
923851	AB2-025 C	0.71
923852	AB2-025 E	2.6
923911	AB2-031 C O1	2.72

Bus #	Bus	MW Impact
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91
934232	AD1-050 E	1.59

Bus #	Bus	MW Impact
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O1	5.01
940522	AE2-037 E O1	2.42
940541	AE2-040	7.45
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O1	13.21
941602	AE2-157 E O1	8.81
941951	AE2-207	1.8
942341	AE2-247 C	1.08
942342	AE2-247 E	1.49
942451	AE2-258	1.17

Bus #	Bus	MW Impact
942471	AE2-260 C O1	25.73
942472	AE2-260 E O1	36.5
942711	AE2-287 C O1	14.19
942712	AE2-287 E O1	9.46
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

10.6.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1690399	314563	6CLUBHSE	DVP	314562	3CLUBHSE	DVP	1	DVP_P4-2: 239T2141	breaker	208.6	107.24	108.26	DC	2.14

Bus #	Bus	MW Impact
315139	1GASTONA	2.86
315141	1GASTONB	2.86
923851	AB2-025 C	0.2
923852	AB2-025 E	0.75
924511	AB2-100 C	14.29
924512	AB2-100 E	7.04
926071	AC1-086 C	26.38
926072	AC1-086 E	12.01
930861	AB1-132 C O1	2.18
930862	AB1-132 E O1	7.68
934233	AD1-050 BAT	5.54
939071	AE1-135 C O1	25.59
939072	AE1-135 E O1	17.06
940481	AE2-033 C	11.96
940482	AE2-033 E	8.07
940541	AE2-040	2.14
940662	AE2-053 BAT	2.38
942471	AE2-260 C O1	17.64
942472	AE2-260 E O1	25.01
BLUEG	BLUEG	1.94
CALDERWOOD	CALDERWOOD	0.41
CANNELTON	CANNELTON	0.13
CATAWBA	CATAWBA	0.4
CBM-N	CBM-N	0.15
CHEOAH	CHEOAH	0.39
CHILHOWEE	CHILHOWEE	0.13
COFFEEN	COFFEEN	0.23
COTTONWOOD	COTTONWOOD	1.37
DUCKCREEK	DUCKCREEK	0.46
EDWARDS	EDWARDS	0.21
ELMERSMITH	ELMERSMITH	0.24
FARMERCITY	FARMERCITY	0.16
G-007A	G-007A	0.58
GIBSON	GIBSON	0.08
HAMLET	HAMLET	0.78
NEWTON	NEWTON	0.59
NYISO	NYISO	0.63
PRAIRIE	PRAIRIE	1.25
SANTEETLA	SANTEETLA	0.11
SMITHLAND	SMITHLAND	0.11
TATANKA	TATANKA	0.28

Bus #	Bus	MW Impact
TILTON	TILTON	0.24
TRIMBLE	TRIMBLE	0.21
TVA	TVA	1.15
UNIONPOWER	UNIONPOWER	0.57
VFT	VFT	1.54

Short Circuit

10.7 Short Circuit

The following Breakers are overduty: None

11 Network Impacts – Secondary Point of Interconnection

The Queue Project AE2-040 was evaluated as a 17.64 MW (Capacity 17.64 MW) injection at the Saphony 34.5kV substation that is fed by the 115 kV open switch point in the Dominion area. Project AE2-040 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-040 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

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)

None

11.3 Contribution to Previously Identified Overloads

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

None

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.

None

Short Circuit

11.5 Short Circuit

The following Breakers are overduty: None

Affected Systems

12 Affected Systems

12.1 Duke Energy Progress

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

Attachment 1 – Single Line Diagram