



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-147
SWAMP 230 KV
90 MW Capacity / 150 MW Energy**

July, 2019

Table of Contents

1	Introduction.....	4
2	Preface.....	4
3	General	5
3.1	Primary Point of Interconnection	6
3.2	Secondary Point of Interconnection.....	6
3.3	Cost Summary.....	6
4	Transmission Owner Scope of Work	7
5	Non-Direct Connection Cost Estimate.....	7
6	Schedule.....	8
7	Transmission Owner Analysis.....	8
7.1	Power Flow Analysis	8
7.2	Short Circuit Analysis.....	9
7.3	Stability Analysis.....	9
8	Interconnection Customer Requirements.....	9
8.1	System Protection.....	9
8.2	Compliance Issues and Interconnection Customer Requirements	9
8.3	Power Factor Requirements.....	10
9	Revenue Metering and SCADA Requirements	10
9.1	PJM Requirements	10
9.1.1	Meteorological Data Reporting Requirement.....	10
9.2	Dominion Requirements.....	10
10	Network Impacts.....	10
10.1	Generation Deliverability	12
10.2	Multiple Facility Contingency	12
10.3	Contribution to Previously Identified Overloads.....	12
10.4	Potential Congestion due to Local Energy Deliverability.....	13
10.5	System Reinforcements.....	16
10.6	Flow Gate Details.....	19
10.6.1	Contingency Descriptions	19
10.6.2	Index 1	24
10.6.3	Index 2	27

10.6.4	Index 3	30
10.6.5	Index 4	33
10.6.6	Index 5	35
10.6.7	Index 6	40
10.6.8	Index 7	42
10.6.9	Index 8	44
10.6.10	Index 9.....	46
10.6.11	Index 10.....	50
10.6.12	Index 11.....	53
10.6.13	Index 12.....	55
10.6.14	Index 13.....	58
10.6.15	Index 14.....	61
10.6.16	Index 15.....	65
10.6.17	Index 16.....	69
10.6.18	Index 17.....	73
10.6.19	Index 18.....	78
11	Affected Systems	83
11.1	LG&E.....	83
11.2	MISO	83
11.3	TVA.....	83
11.4	Duke Energy Progress.....	83
11.5	NYISO	83
12	Short Circuit.....	85
	Attachment 1.....	86

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.

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.

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 Solar generating facility located in Perquimans, North Carolina. The installed facilities will have a total capability of 150 MW with 90 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 12/01/2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-147
Project Name	SWAMP 230 KV
Interconnection Customer	
State	North Carolina
County	Perquimans
Transmission Owner	Dominion
MFO	150
MWE	150
MWC	90
Fuel	Solar
Basecase Study Year	2022

3.1 Primary Point of Interconnection

AE2-147 will interconnect with the Dominion transmission system at the Swamp 230 kV substation at the same point of interconnection as the W1-029 project. This is the primary Point of Interconnection (POI) chose by the IC with the ITO's transmission system. Attachment 1 shows a one-line diagram of the proposed interconnection facilities.

3.2 Secondary Point of Interconnection

The IC requested that a secondary POI, a new bay in the Swamp 230 kV substation be reviewed for network impacts. This report does not provide costs for the physical interconnection of the secondary POI. The network results are identical to those for the Primary POI.

3.3 Cost Summary

The AE2-147 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	\$ 0

In addition, the AE2-147 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$440,881,000

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 AE2-147 was evaluated as a 90.0 MW Capacity (150.0 MW Energy) injection at the Swamp 230 kV 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.

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of the AE2-147 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

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 1.55 miles of 230 kV Line 2154 from Skiffes Creek to Kings Mill	\$3,875,000
Rebuild 37.41 miles of 500 kV Line 563 from Carson to Midlothian	\$115,971,000
For DEV portion, rebuild 3.3 miles of 230 kV Line 2181 from Nash to Parmount	\$8,250,000
Rebuild 27.72 miles of 500 kV Line 557 from Chickahominy to Elmont	\$85,932,000
For DEV portion, rebuild 4.13 miles of 230 kV Line 2058 from Hathaway to Rocky Mountain	\$10,325,000
Rebuild 41.13 miles of 500 kV Line 576 from Midlothian to North Anna	\$127,503,000
Rebuild 9.97 miles of 230 kV Line 2020 from Winfall to Tanglewood DP	\$14,955,000
Rebuild 0.76 miles of 230 kV Line 2181 from Hathaway to Nash	\$1,900,000
Add additional 500/230 kV transformer at Elmont Substation	\$22,000,000
Rebuild 17.5 miles of 230 kV Line 218 from Everetts to AD2-068 Tap	\$26,250,000
Replace Terminal Equipment at Surry and Chickahominy Substations	\$4,000,000
or DEV portion, rebuild 3 miles of 230 kV Line 218 from AD2-068 Tap to Greenville DEP	\$4,500,000
Rebuild 10.28 miles of 230 kV Line 2021 from Elizabeth City to Shawboro	\$15,420,000
Total Non-Direct Connection Facility Costs	\$440,881,000

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 AE2-147 project contributes to overloads on the Dominion transmission system as shown in the “Network Impact – Option 1” section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads is also provided.

7.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-147 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 AE2-147 was evaluated as a 150.0 MW (Capacity 90.0 MW) injection at the Swamp 230 kV substation in the Dominion area. Project AE2-147 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-147 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)

None

10.2 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	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
1880329	314651	6WINFALL	DVP	314639	6TANGLEW	DVP	1	DVP_P4-2: 246T247	breaker	1163.0	94.73	103.39	DC	100.69

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
1880675	313845	6HATHAWAY	DVP	304222	6ROCKYMT230T	CPL	1	DVP_P1-2: LN 2181	single	374.0	141.38	142.62	DC	4.64
1880860	313845	6HATHAWAY	DVP	314591	6NASH	DVP	1	DVP_P1-2: LN 2058	single	449.32	126.72	127.77	DC	4.73
1880588	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	single	441.8	177.08	178.45	DC	6.08
1880590	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 567	single	441.8	129.2	130.77	DC	6.91
1879872	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	170.74	171.77	DC	23.68
1880703	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	single	441.8	165.69	167.06	DC	6.08
1880705	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 567	single	441.8	117.8	119.36	DC	6.91
1880630	314386	6KINGS M	DVP	314296	6PENNIMAN	DVP	1	DVP_P1-2: LN 557	single	441.8	169.31	170.69	DC	6.08
1880632	314386	6KINGS M	DVP	314296	6PENNIMAN	DVP	1	DVP_P1-2: LN 567	single	441.8	121.44	123.01	DC	6.91
1880845	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	single	441.8	150.6	151.97	DC	6.08
1880847	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 567	single	441.8	102.7	104.27	DC	6.91
1880760	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P1-2: LN 570	single	449.32	139.15	140.9	DC	7.92
1880762	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P1-2: LN 2167	single	449.32	122.69	124.62	DC	8.68
1880766	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	Base Case	single	449.32	102.53	104.13	DC	7.18
1881425	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P7-1: LN 2058-2181	tower	485.0	171.47	172.79	DC	14.19
7928387	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P1-2: LN 6002_FSA	single	449.32	139.15	140.9	DC	7.92

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
7928388	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	449.32	139.15	140.9	DC	7.92
1880952	314591	6NASH	DVP	304226	6PA-RMOUNT#4	CPL	1	DVP_P1-2: LN 2058	single	470.0	115.7	116.7	DC	4.73
1880121	314596	3POPLR C	DVP	314573	3EVERETS	DVP	1	DVP_P4-2: 203462	breaker	239.0	127.8	130.44	DC	13.98
1879900	314638	6ELIZ CT	DVP	314647	6SHAWBRO	DVP	1	DVP_P4-2: 246T247	breaker	658.0	148.16	163.46	DC	100.66
1879901	314638	6ELIZ CT	DVP	314647	6SHAWBRO	DVP	1	DVP_P4-2: 24742	breaker	658.0	122.17	137.1	DC	98.22
1880126	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	128.14	128.34	DC	44.51
1880127	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: H2T557	breaker	3938.0	121.36	121.57	DC	42.94
1879981	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	147.13	147.74	DC	45.89
1879982	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 56372	breaker	3144.0	145.36	145.99	DC	44.62
1880557	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	154.43	155.51	DC	26.21
1880561	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 576	single	2442.12	149.03	150.1	DC	26.29
1879915	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: WT576	breaker	3351.0	155.86	156.49	DC	46.66
1879916	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: 57602	breaker	3351.0	155.86	156.49	DC	46.66
1880436	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	166.85	167.37	DC	28.0
1880069	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	136.87	136.97	DC	46.06
1880512	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	159.79	160.81	DC	25.12
1880252	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	111.15	111.64	DC	42.17
1880253	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	104.03	104.55	DC	41.4
1880821	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	DVP_P1-2: LN 570	single	478.0	134.62	136.27	DC	7.92
1880827	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	Base Case	single	478.0	100.3	101.8	DC	7.18
1881420	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	DVP_P7-1: LN 2058-2181	tower	478.0	179.0	180.34	DC	14.19
7928427	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	DVP_P1-2: LN 6002_FSA	single	478.0	134.64	136.29	DC	7.92
7928429	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	DVP_P1-2: LN 570_FSA	single	478.0	134.62	136.27	DC	7.92

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
1880527	313713	6SWAMP	DVP	313721	6ACORN HILL	DVP	1	DVP_P1-2: LN 2020	operation	449.32	166.32	188.5	DC	99.62
1881350	313713	6SWAMP	DVP	314651	6WINFALL	DVP	1	DVP_P1-2: LN 247	operation	449.32	66.72	100.1	DC	149.97
7929188	313713	6SWAMP	DVP	314651	6WINFALL	DVP	1	DVP_P1-2: LN 6001	operation	449.32	66.72	100.1	DC	149.97
1880522	313721	6ACORN HILL	DVP	314648	6SUNBURY	DVP	1	DVP_P1-2: LN 2020	operation	449.32	166.32	188.5	DC	99.62
1880587	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	operation	441.8	182.21	183.25	DC	10.14
1881355	314209	6SKIFF CREEK	DVP	314413	6WALR285	DVP	1	DVP_P1-2: LN 557	operation	678.68	98.86	99.5	DC	9.47
1881161	314214	6CHCKAHM	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 567	operation	828.8	113.05	113.96	DC	16.54
1881090	314218	6ELMONT	DVP	314908	8ELMONT	DVP	2	DVP_P1-2: LN 557	operation	879.84	122.05	122.83	DC	15.14
1881156	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 557	operation	920.92	118.2	118.95	DC	15.21
7929179	314227	6LAKESIDE	DVP	314218	6ELMONT	DVP	1	DVP_P1-2: LN 557	operation	740.72	91.25	91.83	DC	9.49
1880702	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	operation	441.8	170.83	171.87	DC	10.14
1880629	314386	6KINGS M	DVP	314296	6PENNIMAN	DVP	1	DVP_P1-2: LN 557	operation	441.8	174.45	175.49	DC	10.14
1881373	314391	6LIGH209	DVP	314388	6LANEXA	DVP	1	DVP_P1-2: LN 557	operation	663.64	96.73	97.42	DC	10.14
1880844	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	operation	441.8	155.73	156.77	DC	10.14
1880755	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P1-2: LN 246	operation	449.32	163.96	165.15	DC	11.88
1880761	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	Base Case	operation	449.32	138.53	139.73	DC	11.97
1881049	314596	3POPLR C	DVP	314573	3EVERETS	DVP	1	DVP_P1-2: LN 2034-B	operation	224.66	135.94	138.75	DC	13.99
1881275	314614	3TRWBRDG2	DVP	314596	3POPLR C	DVP	1	DVP_P1-2: LN 2034-B	operation	285.76	108.9	111.11	DC	13.99
1880547	314620	6CASHIE	DVP	314569	6EARLEYS	DVP	1	Base Case	operation	571.52	105.17	109.09	DC	22.43

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
1880852	314638	6ELIZ CT	DVP	314647	6SHAWBRO	DVP	1	Base Case	operation	530.16	109.81	120.31	DC	55.61
7928483	314638	6ELIZ CT	DVP	314647	6SHAWBRO	DVP	1	DVP_P1-2: LN 6001	operation	571.52	139.99	157.16	DC	98.12
1880550	314648	6SUNBURY	DVP	314537	6SUFFOLK	DVP	1	DVP_P1-2: LN 2020	operation	449.32	164.01	186.19	DC	99.62
7929084	314651	6WINFALL	DVP	314639	6TANGLEW	DVP	1	DVP_P1-2: LN 6001	operation	898.64	98.34	109.26	DC	98.15
1880896	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	operation	3218.56	145.9	146.15	DC	41.85
1880555	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	181.77	182.55	DC	43.69
1880562	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	operation	2442.12	146.42	147.07	DC	34.69
1880767	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	operation	2442.12	160.16	160.53	DC	28.36
1880433	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	213.73	214.6	DC	46.67
1880441	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	Base Case	operation	2442.12	137.79	138.36	DC	30.41
1880887	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	operation	2738.22	146.92	147.29	DC	28.81
1880510	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	186.02	186.26	DC	41.87
1880517	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	operation	2442.12	132.4	132.75	DC	30.85
1881084	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	operation	2442.12	131.28	131.93	DC	40.58
1880816	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	DVP_P1-2: LN 246	operation	478.0	160.44	161.57	DC	11.88
1880822	936530	AD2-068 TAP	DVP	304451	6GREENVILE T	CPL	1	Base Case	operation	478.0	134.57	135.7	DC	11.97
7929184	940640	AE2-051 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 557	operation	2442.12	85.41	86.03	DC	33.61

10.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
1880703,1880705, 1880630,1880632	6, 7	6PENNIMAN 230.0 kV - 6WALR209 230.0 kV Ckt 1, 6KINGS M 230.0 kV - 6PENNIMAN 230.0 kV Ckt 1	b3057 (278) : PJM Baseline Upgrade b3057. Rebuild 6.1 miles of Waller-Skiffes Creek 230 kV Line (#2154) between Waller and Kings Mill to current standards with a minimum summer emergency rating of 1047 MVA utilizing single circuit steel structures. Remove this 6.1 mile section of Line #58 between Waller and Kings Mill. Rebuild the 1.6 miles of Line #2154 and #19 between Kings Mill and Skiffes Creek to current standards with a minimum summer emergency rating of 1047 MVA at 230 kV for Line #2154 and 261 MVA at 115 kV for Line #19, utilizing double circuit steel structures. The baseline project has a projected in-service date of 12/30/2024. Project Type : CON Cost : \$0 Time Estimate : N/A	\$0
1880590,1880588	4	6SKIFF CREEK 230.0 kV - 6KINGS M 230.0 kV Ckt 1	dom-066 (157) : Rebuild 1.55 miles of 230 kV Line 2154 from Skiffes Creek to Kings Mill with 2-636 ACSR. Project Type : FAC Cost : \$3,875,000 Time Estimate : 30-36 Months	\$3,875,000
1880127,1880126	13	8CARSON 500.0 kV - 8MDLTHAN 500.0 kV Ckt 1	dom-029 (92) : Rebuild 37.41 miles of 500 kV Line 563 from Carson to Midlothian with 3-1351.5 125C ACSR. Project Type : FAC Cost : \$115,971,000 Time Estimate : 48-60 Months	\$115,971,000
1880952	10	6NASH 230.0 kV - 6PA- RMOUNT#4 230.0 kV Ckt 1	<u>DVP</u> dom-005 (58) : For DEV portion, rebuild 3.3 miles of 230 kV Line 2181 from Nash to Paramount with 2-636 ACSR. Project Type : FAC Cost : \$8,250,000 Time Estimate : 30-36 Months <u>CPL</u> NonPJMArea (170) : The external (i.e. Non-PJM) Transmission Owner, CPLE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$8,250,000
1880561,1880557,18 79982,1879981	14	8CHCKAHM 500.0 kV - 8ELMONT 500.0 kV Ckt 1	dom-021 (82) : Rebuild 27.72 miles of 500 kV Line 557 from Chickahominy to Elmont with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$85,932,000 Time Estimate : 48-60 Months	\$85,932,000

ID	Index	Facility	Upgrade Description	Cost
1880675	2	6HATHAWAY 230.0 kV - 6ROCKYMT230T 230.0 kV Ckt 1	<u>DVP</u> dom-003 (56) : For DEV portion, rebuild 4.13 miles of 230 kV Line 2058 from Hathaway to Rocky Mountain with 2-636 ACSR. Project Type : FAC Cost : \$10,325,000 Time Estimate : 30-36 Months <u>CPL</u> NonPJM Area (170) : The external (i.e. Non-PJM) Transmission Owner, CPL, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$10,325,000
1880069,1880512	16	8MDLTHAN 500.0 kV - 8NO ANNA 500.0 kV Ckt 1	dom-023 (84) : Rebuild 41.13 miles of 500 kV Line 576 from Midlothian to North Anna with 3-1351.5 125C ACSR. Project Type : FAC Cost : \$127,503,000 Time Estimate : 48-60 Months	\$127,503,000
1880329	1	6WINFALL 230.0 kV - 6TANGLEW 230.0 kV Ckt 1	dom-104 (212) : Rebuild 9.97 miles of 230 kV Line 2020 from Winfall to Tanglewood DP with 2-795 150C ACSR. Project Type : FAC Cost : \$14,955,000 Time Estimate : 30-36 Months	\$14,955,000
1880121	11	3POPLR C 115.0 kV - 3EVERETS 115.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1880860	3	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
1879872	5	6ELMONT 230.0 kV - 8ELMONT 500.0 kV Ckt 1	dom-013 (71) : Add additional 500/230 kV transformer at Elmont Substation Project Type : CON Cost : \$22,000,000 Time Estimate : 16-18 Months	\$22,000,000
7928388,1881425,79 28387,1880762,1880 760,1880766	9	6EVERETS 230.0 kV - AD2- 068 TAP 230.0 kV Ckt 1	dom-070 (163) : Rebuild 17.5 miles of 230 kV Line 218 from Everetts to AD2-068 Tap with 2-636 ACSR. Project Type : FAC Cost : \$26,250,000 Time Estimate : 36-40 Months	\$26,250,000
1880253,1880252	17	8SURRY 500.0 kV - 8CHCKAHM 500.0 kV Ckt 1	dom-040 (111) : Replace Terminal Equipment at Surry and Chickahominy Substations Project Type : FAC Cost : \$4,000,000 Time Estimate : 16-18 Months	\$4,000,000

ID	Index	Facility	Upgrade Description	Cost
1879915,1879916,1880436	15	8ELMONT 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	b3020 (274) : PJM baseline upgrade b3020: Rebuild 500kV Line #574 Ladysmith to Elmont - 26.2 miles long. The baseline project has an projected in-service date of 12/31/2022. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$0
1880847,1880845	8	6WALR209 230.0 kV - 6LIGH209 230.0 kV Ckt 1	b3056 (279) : PJM Baseline Upgrade b3056. Partial Rebuild 230 kV Line #2113 Waller to Lightfoot. The baseline project has a projected in-service date of 12/30/2024. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$0
1881420,7928429,1880827,7928427,1880821	18	AD2-068 TAP 230.0 kV - 6GREENVILE T 230.0 kV Ckt 1	<u>DVP</u> dom-004 (57) : For DEV portion, rebuild 3 miles of 230 kV Line 218 from AD2-068 Tap to Greenville DEP with 2-636 ACSR. Project Type : FAC Cost : \$4,500,000 Time Estimate : 30-36 Months <u>CPL</u> NonPJMArea (170) : The external (i.e. Non-PJM) Transmission Owner, CPLE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$4,500,000
1879901,1879900	12	6ELIZ CT 230.0 kV - 6SHAWBRO 230.0 kV Ckt 1	dom-011 (68) : Rebuild 10.28 miles of 230 kV Line 2021 from Elizabeth City to Shawboro with 2-636 ACSR. Project Type : FAC Cost : \$15,420,000 Time Estimate : 30-36 Months	\$15,420,000
			TOTAL COST	\$440,881,000

If “No Reinforcement Needed. Not a valid violation” was provided as the Upgrade Description for a facility in the System Reinforcements table then that facility met one of the following conditions:

- The loading on the facility at your queue position was less than 100%; therefore, the facility is not yet overloaded, but may be overloaded by end of the AE2 queue.
- The TO reviewed their ratings on the facility and determined that the current rating was greater than the rating in PJM’s model. This new rating was greater than the loading at your queue position making the violation invalid.
- The TO reviewed the contingency and determined that contingency was not valid; therefore the violation is invalid. Any contingency corrections will be assessed and corrected in the AE2 impact study phase.

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_P1-2: LN 567	CONTINGENCY 'DVP_P1-2: LN 567' OPEN BRANCH FROM BUS 314903 TO BUS 314924 CKT 1 /* 8CHCKAHM 500.00 - 8SURRY 500.00 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
DVP_P1-2: LN 247	CONTINGENCY 'DVP_P1-2: LN 247' OPEN BRANCH FROM BUS 313713 TO BUS 313721 CKT 1 /* 6SWAMP 230.00 - 6ACORN HILL 230.00 OPEN BRANCH FROM BUS 313721 TO BUS 314648 CKT 1 /* 6ACORN HILL 230.00 - 6SUNBURY 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314648 CKT 1 /* 6SUFFOLK 230.00 - 6SUNBURY 230.00 OPEN BUS 313721 /* ISLAND: 6ACORN HILL 230.00 OPEN BUS 314648 /* ISLAND: 6SUNBURY 230.00 END
DVP_P1-2: LN 246	CONTINGENCY 'DVP_P1-2: LN 246' OPEN BRANCH FROM BUS 314537 TO BUS 919140 CKT 1 /* 6SUFFOLK 230.00 - AA1-138 TAP 230.00 OPEN BRANCH FROM BUS 314569 TO BUS 314575 CKT 1 /* 6EARLEYS 230.00 - 6NUCO TP 230.00 OPEN BRANCH FROM BUS 314575 TO BUS 314590 CKT 1 /* 6NUCO TP 230.00 - 6NUCOR 230.00 OPEN BRANCH FROM BUS 314575 TO BUS 919140 CKT 1 /* 6NUCO TP 230.00 - AA1-138 TAP 230.00 OPEN BUS 314575 /* ISLAND: 6NUCO TP 230.00 OPEN BUS 314590 /* ISLAND: 6NUCOR 230.00 OPEN BUS 919140 /* ISLAND: AA1-138 TAP 230.00 END
DVP_P4-2: 203462	CONTINGENCY 'DVP_P4-2: 203462' /* EARLEYS 230 KV OPEN BRANCH FROM BUS 314569 TO BUS 314620 CKT 1 /* 6EARLEYS 230.00 - 6CASHIE 230.00 OPEN BRANCH FROM BUS 933990 TO BUS 314620 CKT 1 /* AD1-023 TAP 230.00 - 6CASHIE 230.00 /* CONTINGENCY LINE ADDED FOR AE1 BUILD OPEN BUS 314620 /* ISLAND: 6CASHIE 230.00 OPEN BRANCH FROM BUS 314568 TO BUS 314569 CKT 2 /* 3EARLEYS 115.00 - 6EARLEYS 230.00 END

Contingency Name	Contingency Definition
DVP_P4-2: 24742	CONTINGENCY 'DVP_P4-2: 24742' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 313713 TO BUS 313721 CKT 1 /* 6SWAMP 230.00 - 6ACORN HILL 230.00 OPEN BRANCH FROM BUS 313721 TO BUS 314648 CKT 1 /* 6ACORN HILL 230.00 - 6SUNBURY 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314648 CKT 1 /* 6SUFFOLK 230.00 - 6SUNBURY 230.00 OPEN BUS 313721 /* ISLAND: 6ACORN HILL 230.00 OPEN BUS 314648 /* ISLAND: 6SUNBURY 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 1 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 1 /* 6SUFFOLK 230.00 - 8SUFFOLK 500.00 REMOVE SWSHUNT FROM BUS 314537 END
DVP_P7-1: LN 2058-2181	CONTINGENCY 'DVP_P7-1: LN 2058-2181' OPEN BRANCH FROM BUS 304222 TO BUS 313845 CKT 1 /* 6ROCKYMT230T230.00 - 6HATHAWAY 230.00 OPEN BUS 304226 /* ISLAND: 6PA-RMOUNT#4115.00 OPEN BRANCH FROM BUS 304226 TO BUS 314591 CKT 1 /* 6PA-RMOUNT#4230.00 - 6NASH 230.00 OPEN BRANCH FROM BUS 313845 TO BUS 314591 CKT 1 /* 6HATHAWAY 230.00 - 6NASH 230.00 OPEN BUS 314591 /* ISLAND: 6NASH 230.00 END
DVP_P1-2: LN 6001	CONTINGENCY 'DVP_P1-2: LN 6001' OPEN BRANCH FROM BUS 313713 TO BUS 313721 CKT 1 /* 6SWAMP 230.00 - 6ACORN HILL 230.00 END
DVP_P4-2: WT576	CONTINGENCY 'DVP_P4-2: WT576' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 2 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
DVP_P1-2: LN 570_FSA	CONTINGENCY 'DVP_P1-2: LN 570_FSA' OPEN BRANCH FROM BUS 304183 TO BUS 918500 CKT 1 /* 8WAKE 500 TT500.00 - AA1-064 TAP 500.00 END
DVP_P1-2: LN 594	CONTINGENCY 'DVP_P1-2: LN 594' OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
DVP_P1-2: LN 2167	CONTINGENCY 'DVP_P1-2: LN 2167' OPEN BRANCH FROM BUS 313845 TO BUS 314564 CKT 1 /* 6HATHAWAY 230.00 - 6EDGECOM 230.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 2181	CONTINGENCY 'DVP_P1-2: LN 2181' OPEN BUS 304226 /* ISLAND: 6PA-RMOUNT#4115.00 OPEN BRANCH FROM BUS 304226 TO BUS 314591 CKT 1 /* 6PA-RMOUNT#4230.00 - 6NASH 230.00 OPEN BRANCH FROM BUS 313845 TO BUS 314591 CKT 1 /* 6HATHAWAY 230.00 - 6NASH 230.00 OPEN BUS 314591 /* ISLAND: 6NASH 230.00 END
DVP_P4-2: 56372	CONTINGENCY 'DVP_P4-2: 56372' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314282 TO BUS 314902 CKT 1 /* 6CARSON 230.00 - 8CARSON 500.00 END
DVP_P1-2: LN 6002_FSA	CONTINGENCY 'DVP_P1-2: LN 6002_FSA' OPEN BRANCH FROM BUS 314935 TO BUS 918500 CKT 1 /* 8HERITAGE 500.00 - AA1-064 TAP 500.00 END
DVP_P4-2: 246T247	CONTINGENCY 'DVP_P4-2: 246T247' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 314537 TO BUS 919140 CKT 1 /* 6SUFFOLK 230.00 - AA1-138 TAP 230.00 OPEN BRANCH FROM BUS 314569 TO BUS 314575 CKT 1 /* 6EARLEYS 230.00 - 6NUCO TP 230.00 OPEN BRANCH FROM BUS 314575 TO BUS 314590 CKT 1 /* 6NUCO TP 230.00 - 6NUCOR 230.00 OPEN BRANCH FROM BUS 314575 TO BUS 919140 CKT 1 /* 6NUCO TP 230.00 - AA1-138 TAP 230.00 OPEN BUS 314575 /* ISLAND: 6NUCO TP 230.00 OPEN BUS 314590 /* ISLAND: 6NUCOR 230.00 OPEN BUS 919140 /* ISLAND: AA1-138 TAP 230.00 OPEN BRANCH FROM BUS 313713 TO BUS 313721 CKT 1 /* 6SWAMP 230.00 - 6ACORN HILL 230.00 OPEN BRANCH FROM BUS 313721 TO BUS 314648 CKT 1 /* 6ACORN HILL 230.00 - 6SUNBURY 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314648 CKT 1 /* 6SUFFOLK 230.00 - 6SUNBURY 230.00 OPEN BUS 313721 /* ISLAND: 6ACORN HILL 230.00 OPEN BUS 314648 /* ISLAND: 6SUNBURY 230.00 END
DVP_P1-2: LN 557	CONTINGENCY 'DVP_P1-2: LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 570	CONTINGENCY 'DVP_P1-2: LN 570' OPEN BRANCH FROM BUS 304183 TO BUS 918500 CKT 1 /* 8WAKE 500 TT500.00 - AA1-064 TAP 500.00 OPEN BRANCH FROM BUS 314935 TO BUS 918500 CKT 1 /* 8HERITAGE 500.00 - AA1-064 TAP 500.00 OPEN BUS 918500 /* ISLAND: AA1-064 TAP 500.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 573	CONTINGENCY 'DVP_P1-2: LN 573' OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 END
DVP_P1-2: LN 574	CONTINGENCY 'DVP_P1-2: LN 574' OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P1-2: LN 576	CONTINGENCY 'DVP_P1-2: LN 576' OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: 557T574	CONTINGENCY 'DVP_P4-2: 557T574' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: 57602	CONTINGENCY 'DVP_P4-2: 57602' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
Base Case	
DVP_P4-2: 563T576	CONTINGENCY 'DVP_P4-2: 563T576' /* MIDLOTHIAN 500 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 2058	CONTINGENCY 'DVP_P1-2: LN 2058' OPEN BRANCH FROM BUS 304222 TO BUS 313845 CKT 1 /* 6ROCKYMT230T230.00 - 6HATHAWAY 230.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 2020	CONTINGENCY 'DVP_P1-2: LN 2020' OPEN BRANCH FROM BUS 313851 TO BUS 314638 CKT 1 /* 6ECITYDP2 230.00 - 6ELIZ CT 230.00 OPEN BRANCH FROM BUS 313851 TO BUS 314639 CKT 1 /* 6ECITYDP2 230.00 - 6TANGLEW 230.00 OPEN BRANCH FROM BUS 314639 TO BUS 314651 CKT 1 /* 6TANGLEW 230.00 - 6WINFALL 230.00 OPEN BUS 313851 /* ISLAND: 6ECITYDP2 230.00 OPEN BUS 314639 /* ISLAND: 6TANGLEW 230.00 OPEN BUS 917122 /* ISLAND: Z2-027 E 230.00 END
DVP_P1-2: LN 2034-B	CONTINGENCY 'DVP_P1-2: LN 2034-B' OPEN BRANCH FROM BUS 314569 TO BUS 314620 CKT 1 /* 6EARLEYS 230.00 - 6CASHIE 230.00 OPEN BRANCH FROM BUS 933990 TO BUS 314620 CKT 1 /* AD1-023 TAP 230.00 - 6CASHIE 230.00 OPEN BUS 314620 /* ISLAND: 6CASHIE 230.00 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
1880329	314651	6WINFALL	DVP	314639	6TANGLEW	DVP	1	DVP_P4-2: 246T247	breaker	1163.0	94.73	103.39	DC	100.69

Bus #	Bus	MW Impact
314554	3BTLEBRO	0.45
314557	3BETHELC	0.6
314566	3CRESWEL	6.4
314574	6EVERETS	4.25
314578	3HORNRTN	1.79
314582	3KELFORD	3.06
314594	6PLYMOTH	1.92
314603	3SCOT NK	2.52
314617	3TUNIS	0.64
314620	6CASHIE	1.49
314623	3WITAKRS	0.79
314651	6WINFALL	6.71
315131	1EDGECEMA	5.38
315132	1EDGECEMB	5.38
315292	1DOMTR78	1.97
315293	1DOMTR9	1.61
315294	1DOMTR10	2.91
900672	V4-068 E	0.17
901081	W1-029 C	3.19
901082	W1-029 E	175.2
916041	Z1-036 C	2.86
916042	Z1-036 E	157.5
917331	Z2-043 C	0.25
917332	Z2-043 E	0.87
917342	Z2-044 E	0.34
917511	Z2-088 C OP1	0.98
917512	Z2-088 E OP1	3.44
918491	AA1-063AC OP	0.73
918492	AA1-063AE OP	2.83
918511	AA1-065 C OP	1.27
918512	AA1-065 E OP	5.12
918531	AA1-067 C	0.21
918532	AA1-067 E	0.75
918561	AA1-072 C	0.04
918562	AA1-072 E	0.14
919691	AA2-053 C	0.67
919692	AA2-053 E	2.35
919701	AA2-057 C	4.28
919702	AA2-057 E	2.14
920592	AA2-165 E	0.28
920671	AA2-174 C	0.03

Bus #	Bus	MW Impact
920672	AA2-174 E	0.27
920691	AA2-178 C	3.12
920692	AA2-178 E	10.96
924152	AB2-059 E O1	3.08
924491	AB2-098 C	0.58
924492	AB2-098 E	0.25
924501	AB2-099 C	0.51
924502	AB2-099 E	0.22
925121	AB2-169 C	1.3
925122	AB2-169 E	9.56
925591	AC1-034 C	3.88
925592	AC1-034 E	2.92
926071	AC1-086 C	11.93
926072	AC1-086 E	5.43
926201	AC1-098 C	4.29
926202	AC1-098 E	2.56
926211	AC1-099 C	1.44
926212	AC1-099 E	0.84
927021	AC1-189 C	8.06
927022	AC1-189 E	4.02
927141	AC1-208 C	5.58
927142	AC1-208 E	2.48
930402	AB1-081 E O1	2.18
930862	AB1-132 E O1	3.47
932631	AC2-084 C	6.12
932632	AC2-084 E	3.01
933991	AD1-023 C	25.22
933992	AD1-023 E	13.73
934331	AD1-057 C O1	5.78
934332	AD1-057 E O1	3.08
934521	AD1-076 C	118.92
934522	AD1-076 E	60.55
936401	AD2-051 C O1	8.55
936402	AD2-051 E O1	3.67
936531	AD2-068 C	3.85
936532	AD2-068 E	1.99
936701	AD2-089 C	5.4
936702	AD2-089 E	3.6
938171	AE1-026 C1 O	49.43
938172	AE1-026 C2 O	7.15
938173	AE1-026 E O1	14.93
938221	AE1-035 C	2.6
938222	AE1-035 E	1.28
938661	AE1-088	5.46
940491	AE2-034 C	22.39
940492	AE2-034 E	9.59
940521	AE2-037 C O1	7.64
940522	AE2-037 E O1	3.69
940571	AE2-044 C	2.54
940572	AE2-044 E	1.09
941501	AE2-147 C	60.42
941502	AE2-147 E	40.28

Bus #	Bus	MW Impact
941541	AE2-151 C	1.06
941542	AE2-151 E	0.57
941951	AE2-207	1.64
942851	AE2-304 C	2.31
942852	AE2-304 E	0.9
943171	AE2-346 C	1.54
943172	AE2-346 E	0.66
AA2-074	AA2-074	1.57
CARR	CARR	0.12
CBM-S1	CBM-S1	3.35
CBM-S2	CBM-S2	4.03
CBM-W1	CBM-W1	3.39
CBM-W2	CBM-W2	21.91
CIN	CIN	1.52
CPL	CPL	2.31
G-007	G-007	0.43
IPL	IPL	0.96
LGEE	LGEE	0.44
MEC	MEC	3.4
MECS	MECS	1.45
O-066	O-066	2.73
RENSSELAER	RENSSELAER	0.1
WEC	WEC	0.41

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
1880675	313845	6HATHAWAY	DVP	304222	6ROCKYMT230T	CPL	1	DVP_P1-2: LN 2181	single	374.0	141.38	142.62	DC	4.64

Bus #	Bus	MW Impact
314589	3MURPHYS	0.04
314704	3LAWRENC	0.13
315115	1S HAMPT1	0.54
315126	1ROARAP2	0.81
315128	1ROARAP4	0.78
315131	1EDGECEMA	24.75
315132	1EDGECEMB	24.75
315136	1ROSEMG1	2.1
315137	1ROSEMS1	1.3
315138	1ROSEMG2	0.98
315139	1GASTONA	2.52
315141	1GASTONB	2.52
315292	1DOMTR78	0.58
315293	1DOMTR9	0.48
315294	1DOMTR10	0.86
901081	W1-029 C	0.25
916041	Z1-036 C	0.29
917331	Z2-043 C	0.23
917341	Z2-044 C	0.2
917511	Z2-088 C OP1	1.46
918491	AA1-063AC OP	0.79
918511	AA1-065 C OP	0.72
918531	AA1-067 C	0.15
918561	AA1-072 C	0.03
919691	AA2-053 C	0.83
919701	AA2-057 C	8.14
920041	AA2-088 C OP	0.46
920591	AA2-165 C	0.14
920671	AA2-174 C	0.04
920691	AA2-178 C	0.54
923801	AB2-015 C O1	3.95
923851	AB2-025 C	0.12
923911	AB2-031 C O1	1.61
923991	AB2-040 C O1	0.64
924151	AB2-059 C O1	2.06
924401	AB2-089 C	0.73
924491	AB2-098 C	0.41
924501	AB2-099 C	0.4
924511	AB2-100 C	8.39
925121	AB2-169 C	0.49
925171	AB2-174 C O1	4.93

Bus #	Bus	MW Impact
925591	AC1-034 C	10.93
925781	AC1-054 C O1	2.83
926071	AC1-086 C	23.24
926201	AC1-098 C	5.92
926211	AC1-099 C	1.98
927021	AC1-189 C	9.72
927141	AC1-208 C	9.06
930401	AB1-081 C O1	1.74
930861	AB1-132 C O1	1.92
931231	AB1-173 C	0.2
931241	AB1-173AC	0.2
932631	AC2-084 C	8.44
933991	AD1-023 C	7.4
934201	AD1-047 C	5.77
934231	AD1-050 C	1.6
934331	AD1-057 C O1	19.81
934521	AD1-076 C	28.78
936401	AD2-051 C O1	6.14
936701	AD2-089 C	14.05
936711	AD2-090 C O1	3.69
937571	AD2-169 C	7.4
938171	AE1-026 C1 O	16.32
938172	AE1-026 C2 O	2.36
938221	AE1-035 C	1.48
938661	AE1-088	2.05
938771	AE1-103 C O1	1.56
939071	AE1-135 C O1	14.1
940481	AE2-033 C	7.06
940491	AE2-034 C	3.88
940521	AE2-037 C O1	5.83
940541	AE2-040	1.29
940571	AE2-044 C	7.16
941501	AE2-147 C	4.64
941541	AE2-151 C	0.76
941951	AE2-207	4.63
942471	AE2-260 C O1	9.71
942711	AE2-287 C O1	6.3
942851	AE2-304 C	0.2
943171	AE2-346 C	1.2
BLUEG	BLUEG	5.91
CALDERWOOD	CALDERWOOD	1.2
CANNELTON	CANNELTON	0.4
CATAWBA	CATAWBA	1.17
CBM-N	CBM-N	0.12
CHEOAH	CHEOAH	1.12
CHILHOWEE	CHILHOWEE	0.39
COFFEEN	COFFEEN	0.69
COTTONWOOD	COTTONWOOD	4.01
DUCKCREEK	DUCKCREEK	1.41
EDWARDS	EDWARDS	0.63
ELMERSMITH	ELMERSMITH	0.71
FARMERCITY	FARMERCITY	0.49

Bus #	Bus	MW Impact
G-007A	G-007A	0.65
GIBSON	GIBSON	0.25
HAMLET	HAMLET	2.3
NEWTON	NEWTON	1.79
NYISO	NYISO	0.54
PRAIRIE	PRAIRIE	3.73
SANTEETLA	SANTEETLA	0.33
SMITHLAND	SMITHLAND	0.33
TATANKA	TATANKA	0.84
TILTON	TILTON	0.75
TRIMBLE	TRIMBLE	0.65
TVA	TVA	3.37
UNIONPOWER	UNIONPOWER	1.66
VFT	VFT	1.72

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
1880860	313845	6HATHAWAY	DVP	314591	6NASH	DVP	1	DVP_P1-2: LN 2058	single	449.32	126.72	127.77	DC	4.73

Bus #	Bus	MW Impact
314589	3MURPHYS	0.04
314704	3LAWRENC	0.13
315115	1S HAMPT1	0.55
315126	1ROARAP2	0.82
315128	1ROARAP4	0.79
315131	1EDGECEMA	25.25
315132	1EDGECEMB	25.25
315136	1ROSEMG1	2.14
315137	1ROSEMS1	1.33
315138	1ROSEMG2	1.0
315139	1GASTONA	2.57
315141	1GASTONB	2.57
315292	1DOMTR78	0.6
315293	1DOMTR9	0.49
315294	1DOMTR10	0.88
901081	W1-029 C	0.25
916041	Z1-036 C	0.3
917331	Z2-043 C	0.23
917341	Z2-044 C	0.21
917511	Z2-088 C OP1	1.49
918491	AA1-063AC OP	0.8
918511	AA1-065 C OP	0.74
918531	AA1-067 C	0.15
918561	AA1-072 C	0.03
919691	AA2-053 C	0.84
919701	AA2-057 C	8.3
920041	AA2-088 C OP	0.47
920591	AA2-165 C	0.14
920671	AA2-174 C	0.04
920691	AA2-178 C	0.55
923801	AB2-015 C O1	4.03
923851	AB2-025 C	0.12
923911	AB2-031 C O1	1.64
923991	AB2-040 C O1	0.66
924151	AB2-059 C O1	2.1
924401	AB2-089 C	0.74
924491	AB2-098 C	0.41
924501	AB2-099 C	0.41
924511	AB2-100 C	8.56
925121	AB2-169 C	0.5
925171	AB2-174 C O1	5.03

Bus #	Bus	MW Impact
925591	AC1-034 C	11.15
925781	AC1-054 C O1	2.89
926071	AC1-086 C	23.71
926201	AC1-098 C	6.04
926211	AC1-099 C	2.02
927021	AC1-189 C	9.92
927141	AC1-208 C	9.24
930401	AB1-081 C O1	1.78
930861	AB1-132 C O1	1.96
931231	AB1-173 C	0.2
931241	AB1-173AC	0.2
932631	AC2-084 C	8.61
933991	AD1-023 C	7.55
934201	AD1-047 C	5.89
934231	AD1-050 C	1.64
934331	AD1-057 C O1	20.2
934521	AD1-076 C	29.35
936401	AD2-051 C O1	6.26
936701	AD2-089 C	14.33
936711	AD2-090 C O1	3.77
937571	AD2-169 C	7.54
938171	AE1-026 C1 O	16.65
938172	AE1-026 C2 O	2.41
938221	AE1-035 C	1.51
938661	AE1-088	2.09
938771	AE1-103 C O1	1.59
939071	AE1-135 C O1	14.38
940481	AE2-033 C	7.2
940491	AE2-034 C	3.96
940521	AE2-037 C O1	5.95
940541	AE2-040	1.32
940571	AE2-044 C	7.3
941501	AE2-147 C	4.73
941541	AE2-151 C	0.78
941951	AE2-207	4.72
942471	AE2-260 C O1	9.91
942711	AE2-287 C O1	6.42
942851	AE2-304 C	0.21
943171	AE2-346 C	1.23
BLUEG	BLUEG	6.03
CALDERWOOD	CALDERWOOD	1.22
CANNELTON	CANNELTON	0.41
CATAWBA	CATAWBA	1.19
CBM-N	CBM-N	0.13
CHEOAH	CHEOAH	1.14
CHILHOWEE	CHILHOWEE	0.4
COFFEEN	COFFEEN	0.7
COTTONWOOD	COTTONWOOD	4.09
DUCKCREEK	DUCKCREEK	1.44
EDWARDS	EDWARDS	0.64
ELMERSMITH	ELMERSMITH	0.72
FARMERCITY	FARMERCITY	0.5

Bus #	Bus	MW Impact
G-007A	G-007A	0.66
GIBSON	GIBSON	0.26
HAMLET	HAMLET	2.34
NEWTON	NEWTON	1.82
NYISO	NYISO	0.55
PRAIRIE	PRAIRIE	3.81
SANTEETLA	SANTEETLA	0.34
SMITHLAND	SMITHLAND	0.34
TATANKA	TATANKA	0.86
TILTON	TILTON	0.76
TRIMBLE	TRIMBLE	0.66
TVA	TVA	3.43
UNIONPOWER	UNIONPOWER	1.7
VFT	VFT	1.75

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
1880588	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	single	441.8	177.08	178.45	DC	6.08

Bus #	Bus	MW Impact
314421	6WINCHST	0.08
314507	3THOMPSN	0.1
314638	6ELIZ CT	0.06
314639	6TANGLEW	0.12
314643	3O INLET	0.13
315090	1YORKTN1	22.98
315091	1YORKTN2	23.85
315092	1YORKTN3	13.98
315098	1CHESPKA	0.13
315099	1CHESPKB	0.33
315108	1ELIZAR1	0.97
315109	1ELIZAR2	0.96
315110	1ELIZAR3	0.99
315116	1SURRY 1	6.16
315120	1GRAVEL4	0.63
315121	1GRAVEL5	0.63
315122	1GRAVEL6	0.63
315233	1SURRY 2	9.95
315260	1GOSPORTA	0.11
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
901081	W1-029 C	0.32
916041	Z1-036 C	0.31
916191	Z1-068 C	0.01
919151	AA1-139 C	0.73
923801	AB2-015 C O1	2.73
923831	AB2-022 C	0.11
924241	AB2-068 O1	102.57
925521	AC1-027 C	0.1
926291	AC1-107 O1	154.82
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.95
932041	AC2-012 C	4.14
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.95
933731	AC2-196 C	0.09
933991	AD1-023 C	4.14
934061	AD1-033 C	3.07
934521	AD1-076 C	17.59
935111	AD1-144 C	0.09
936391	AD2-049 C	1.14

Bus #	Bus	MW Impact
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.68
938172	AE1-026 C2 O	1.26
938181	AE1-027 C	0.95
938191	AE1-028 C	0.55
938531	AE1-072 C O1	7.03
938771	AE1-103 C O1	1.17
939311	AE1-162 C	0.78
939411	AE1-173 C	27.56
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
940251	AE2-007	70.58
940471	AE2-031 C O1	11.6
940491	AE2-034 C	2.86
940641	AE2-051 C O1	4.65
940891	AE2-078 C	0.95
940901	AE2-079 C	0.95
940911	AE2-080 C	0.95
941101	AE2-104 C O1	1.28
941281	AE2-122 C O1	11.59
941291	AE2-123 C O1	11.92
941301	AE2-124 C O1	10.84
941501	AE2-147 C	6.08
941591	AE2-156	7.29
942131	AE2-225 C	0.86
942171	AE2-229 C	0.86
942341	AE2-247 C	0.43
942401	AE2-253 C	2.49
942851	AE2-304 C	0.24
942921	AE2-311 C O1	14.4
CARR	CARR	0.19
CBM-S1	CBM-S1	2.44
CBM-S2	CBM-S2	3.12
CBM-W1	CBM-W1	2.03
CBM-W2	CBM-W2	15.52
CIN	CIN	0.94
CPL	CPL	1.65
IPL	IPL	0.58
LGEE	LGEE	0.27
MEC	MEC	2.24
MECS	MECS	0.68
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.25

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
1879872	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	170.74	171.77	DC	23.68

Bus #	Bus	MW Impact
314189	6PAPERMILL	8.73
314229	6MT RD221	0.17
314236	6NRTHEST	0.23
314250	6ROCKVILLE	0.39
314309	6IRON208	0.49
314539	3UNCAMP	2.16
314541	3WATKINS	0.6
314648	6SUNBURY	0.8
314651	6WINFALL	1.57
315043	1FOUR RIVERA	4.24
315044	1FOUR RIVERB	3.29
315045	1FOUR RIVERC	4.24
315046	1FOUR RIVERD	3.29
315047	1FOUR RIVERE	3.29
315048	1FOUR RIVERF	4.24
315053	1BELMED1	25.27
315054	1BELMED2	25.27
315055	1BELMED3	20.97
315058	1CHESTF3	26.83
315059	1CHESTF4	43.49
315067	1DARBY 1	3.07
315068	1DARBY 2	3.08
315069	1DARBY 3	3.09
315070	1DARBY 4	3.09
315073	1STONECA	9.28
315074	1HOPCGN1	11.19
315075	1HOPCGN2	11.05
315083	1SPRUNCA	14.77
315084	1SPRUNCB	14.77
315085	1SPRUNCC	10.95
315086	1SPRUNCD	10.95
315090	1YORKTN1	30.6
315091	1YORKTN2	31.75
901082	W1-029 E	41.2
907092	X1-038 E	5.4
913392	Y1-086 E	1.98
916042	Z1-036 E	40.19
916192	Z1-068 E	1.73
917122	Z2-027 E	0.95
919152	AA1-139 E	5.84
919211	AA1-145	12.27

Bus #	Bus	MW Impact
923801	AB2-015 C O1	7.63
923802	AB2-015 E O1	6.25
923832	AB2-022 E	1.12
923842	AB2-024 E	1.47
923852	AB2-025 E	1.07
924061	AB2-050	0.72
924241	AB2-068 O1	175.77
924511	AB2-100 C	10.3
924512	AB2-100 E	5.07
924812	AB2-134 E O1	14.7
925051	AB2-160 C O1	7.07
925052	AB2-160 E O1	11.54
925061	AB2-161 C O1	3.58
925062	AB2-161 E O1	5.84
925331	AB2-190 C	24.53
925332	AB2-190 E	10.51
925522	AC1-027 E	1.06
925861	AC1-065 C	4.33
925862	AC1-065 E	7.06
926291	AC1-107 O1	265.31
926411	AC1-112 C	0.42
926412	AC1-112 E	1.92
926472	AC1-118 E	1.06
926551	AC1-134	1.8
926662	AC1-147 E	1.23
926751	AC1-161 C O1	26.82
926752	AC1-161 E O1	11.45
926781	AC1-164 C	57.92
926782	AC1-164 E	26.02
927041	AC1-191 C O1	17.43
927042	AC1-191 E O1	8.68
927221	AC1-216 C O1	11.81
927222	AC1-216 E O1	9.29
930121	AB1-027 C	0.54
930122	AB1-027 E	1.89
932041	AC2-012 C	9.5
932042	AC2-012 E	15.5
932501	AC2-070 C	0.35
932502	AC2-070 E	1.2
932532	AC2-073 E	1.54
932581	AC2-078 C O1	4.69
932582	AC2-078 E O1	7.65
932591	AC2-079 C O1	5.74
932592	AC2-079 E O1	9.36
932831	AC2-110 C	1.73
932832	AC2-110 E	2.83
933061	AC2-130	3.44
933261	AC2-137 C	0.38
933262	AC2-137 E	2.03
933272	AC2-138 E	1.07
933291	AC2-141 C	26.82
933292	AC2-141 E	11.45

Bus #	Bus	MW Impact
933732	AC2-196 E	1.09
934011	AD1-025 C	20.31
934012	AD1-025 E	12.03
934061	AD1-033 C	6.88
934062	AD1-033 E	4.59
934141	AD1-041 C	6.72
934142	AD1-041 E	4.48
934211	AD1-048 C	0.46
934212	AD1-048 E	1.91
934392	AD1-063 E	1.38
934571	AD1-082 C	8.15
934572	AD1-082 E	4.65
934781	AD1-105 C	11.44
934782	AD1-105 E	7.95
935112	AD1-144 E	0.91
935161	AD1-151 C O1	19.71
935162	AD1-151 E O1	13.14
935212	AD1-156 E	1.68
936041	AD2-007	2.16
936051	AD2-008 C	3.54
936052	AD2-008 E	7.7
936151	AD2-021	0.36
936241	AD2-030 C	2.87
936242	AD2-030 E	1.47
936301	AD2-039 C	1.73
936302	AD2-039 E	2.83
936341	AD2-044 C	0.27
936342	AD2-044 E	0.3
936391	AD2-049 C	1.86
936392	AD2-049 E	1.86
936581	AD2-073 C	2.22
936582	AD2-073 E	1.1
936591	AD2-074 C	6.32
936592	AD2-074 E	10.32
936661	AD2-085 C	3.45
936662	AD2-085 E	5.64
936711	AD2-090 C O1	6.26
936712	AD2-090 E O1	4.17
937221	AD2-160 C O1	5.33
937222	AD2-160 E O1	2.8
937251	AD2-164	5.08
937541	AD2-215 C	1.67
937542	AD2-215 E	0.89
938031	AE1-004 C	1.73
938032	AE1-004 E	2.83
938181	AE1-027 C	2.14
938182	AE1-027 E	1.13
938191	AE1-028 C	1.24
938192	AE1-028 E	0.72
938531	AE1-072 C O1	15.94
938532	AE1-072 E O1	8.31
938551	AE1-074 C	3.1

Bus #	Bus	MW Impact
938552	AE1-074 E	1.56
938631	AE1-085 C O1	12.45
938632	AE1-085 E O1	8.3
938771	AE1-103 C O1	3.24
938772	AE1-103 E O1	4.47
939071	AE1-135 C O1	18.69
939072	AE1-135 E O1	12.46
939191	AE1-149 C O1	12.54
939192	AE1-149 E O1	8.36
939241	AE1-155 C	17.01
939242	AE1-155 E	11.34
939281	AE1-159 C O1	12.01
939282	AE1-159 E O1	7.1
939311	AE1-162 C	2.22
939312	AE1-162 E	1.48
939421	AE1-174 C	0.23
939422	AE1-174 E	0.34
939431	AE1-175 C	2.86
939432	AE1-175 E	1.42
939611	AE1-191 C	13.43
939612	AE1-191 E	8.96
939751	AE1-206 C O1	56.7
939752	AE1-206 E O1	37.8
940061	AE1-248 C O1	16.95
940062	AE1-248 E O1	11.3
940071	AE1-249 C	9.33
940072	AE1-249 E	6.96
940231	AE2-005 C	1.73
940232	AE2-005 E	2.83
940251	AE2-007	160.86
940431	AE2-027 C O1	17.76
940432	AE2-027 E O1	11.84
940471	AE2-031 C O1	25.91
940472	AE2-031 E O1	17.27
940481	AE2-033 C	15.17
940482	AE2-033 E	10.23
940541	AE2-040	3.07
940551	AE2-041	9.23
940651	AE2-052	4.2
940891	AE2-078 C	2.59
940892	AE2-078 E	1.33
940901	AE2-079 C	2.59
940902	AE2-079 E	1.33
940911	AE2-080 C	2.59
940912	AE2-080 E	1.33
941101	AE2-104 C O1	3.27
941102	AE2-104 E O1	5.2
941141	AE2-108 C	2.12
941142	AE2-108 E	2.92
941151	AE2-109 C	0.74
941152	AE2-109 E	1.02
941281	AE2-122 C O1	26.21

Bus #	Bus	MW Impact
941282	AE2-122 E O1	105.77
941291	AE2-123 C O1	26.94
941292	AE2-123 E O1	105.04
941301	AE2-124 C O1	24.47
941302	AE2-124 E O1	107.36
941501	AE2-147 C	14.21
941502	AE2-147 E	9.47
941581	AE2-155 C	1.1
941582	AE2-155 E	0.47
941591	AE2-156	16.67
941601	AE2-157 C O1	11.64
941602	AE2-157 E O1	7.76
942001	AE2-212 C	2.82
942002	AE2-212 E	1.88
942131	AE2-225 C	1.96
942132	AE2-225 E	1.31
942151	AE2-227 C O1	2.82
942152	AE2-227 E O1	1.88
942161	AE2-228 C O1	2.82
942162	AE2-228 E O1	1.88
942171	AE2-229 C	1.96
942172	AE2-229 E	1.31
942191	AE2-231 C O1	5.33
942192	AE2-231 E O1	3.55
942341	AE2-247 C	1.5
942342	AE2-247 E	2.07
942371	AE2-250 C O1	12.57
942372	AE2-250 E O1	6.63
942401	AE2-253 C	5.61
942402	AE2-253 E	2.52
942471	AE2-260 C O1	12.88
942472	AE2-260 E O1	18.27
942531	AE2-268 C	2.21
942532	AE2-268 E	1.24
942551	AE2-270	32.87
942851	AE2-304 C	0.56
942852	AE2-304 E	0.22
AA2-074	AA2-074	3.26
CARR	CARR	0.78
CBM-S1	CBM-S1	4.14
CBM-S2	CBM-S2	8.5
CBM-W2	CBM-W2	22.9
CIN	CIN	0.19
CPL	CPL	4.79
G-007	G-007	2.36
IPL	IPL	0.05
LGEE	LGEE	0.06
MEC	MEC	1.89
O-066	O-066	15.05
RENSSELAER	RENSSELAER	0.61
WEC	WEC	0.04

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
1880703	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	single	441.8	165.69	167.06	DC	6.08

Bus #	Bus	MW Impact
314421	6WINCHST	0.08
314507	3THOMPSON	0.1
314638	6ELIZ CT	0.06
314639	6TANGLEW	0.12
314643	3O INLET	0.13
315090	1YORKTN1	22.98
315091	1YORKTN2	23.85
315092	1YORKTN3	13.98
315098	1CHESPKA	0.13
315099	1CHESPKB	0.33
315108	1ELIZAR1	0.97
315109	1ELIZAR2	0.96
315110	1ELIZAR3	0.99
315116	1SURRY 1	6.16
315120	1GRAVEL4	0.63
315121	1GRAVEL5	0.63
315122	1GRAVEL6	0.63
315233	1SURRY 2	9.95
315260	1GOSPORTA	0.11
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
901081	W1-029 C	0.32
916041	Z1-036 C	0.31
916191	Z1-068 C	0.01
919151	AA1-139 C	0.73
923801	AB2-015 C O1	2.73
923831	AB2-022 C	0.11
924241	AB2-068 O1	102.57
925521	AC1-027 C	0.1
926291	AC1-107 O1	154.82
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.95
932041	AC2-012 C	4.14
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.95
933731	AC2-196 C	0.09
933991	AD1-023 C	4.14
934061	AD1-033 C	3.07
934521	AD1-076 C	17.59
935111	AD1-144 C	0.09
936391	AD2-049 C	1.14

Bus #	Bus	MW Impact
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.68
938172	AE1-026 C2 O	1.26
938181	AE1-027 C	0.95
938191	AE1-028 C	0.55
938531	AE1-072 C O1	7.03
938771	AE1-103 C O1	1.17
939311	AE1-162 C	0.78
939411	AE1-173 C	27.56
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
940251	AE2-007	70.58
940471	AE2-031 C O1	11.6
940491	AE2-034 C	2.86
940641	AE2-051 C O1	4.65
940891	AE2-078 C	0.95
940901	AE2-079 C	0.95
940911	AE2-080 C	0.95
941101	AE2-104 C O1	1.28
941281	AE2-122 C O1	11.59
941291	AE2-123 C O1	11.92
941301	AE2-124 C O1	10.84
941501	AE2-147 C	6.08
941591	AE2-156	7.29
942131	AE2-225 C	0.86
942171	AE2-229 C	0.86
942341	AE2-247 C	0.43
942401	AE2-253 C	2.49
942851	AE2-304 C	0.24
942921	AE2-311 C O1	14.4
CARR	CARR	0.19
CBM-S1	CBM-S1	2.44
CBM-S2	CBM-S2	3.12
CBM-W1	CBM-W1	2.03
CBM-W2	CBM-W2	15.52
CIN	CIN	0.94
CPLE	CPLE	1.65
IPL	IPL	0.58
LGEE	LGEE	0.27
MEC	MEC	2.24
MECS	MECS	0.68
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.25

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
1880630	314386	6KINGS M	DVP	314296	6PENNINGMAN	DVP	1	DVP_P1-2: LN 557	single	441.8	169.31	170.69	DC	6.08

Bus #	Bus	MW Impact
314421	6WINCHST	0.08
314507	3THOMPSN	0.1
314638	6ELIZ CT	0.06
314639	6TANGLEW	0.12
314643	3O INLET	0.13
315090	1YORKTN1	22.98
315091	1YORKTN2	23.85
315092	1YORKTN3	13.98
315098	1CHESPKA	0.13
315099	1CHESPKB	0.33
315108	1ELIZAR1	0.97
315109	1ELIZAR2	0.96
315110	1ELIZAR3	0.99
315116	1SURRY 1	6.16
315120	1GRAVEL4	0.63
315121	1GRAVEL5	0.63
315122	1GRAVEL6	0.63
315233	1SURRY 2	9.95
315260	1GOSPORTA	0.11
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
901081	W1-029 C	0.32
916041	Z1-036 C	0.31
916191	Z1-068 C	0.01
919151	AA1-139 C	0.73
923801	AB2-015 C O1	2.73
923831	AB2-022 C	0.11
924241	AB2-068 O1	102.57
925521	AC1-027 C	0.1
926291	AC1-107 O1	154.82
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.95
932041	AC2-012 C	4.14
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.95
933731	AC2-196 C	0.09
933991	AD1-023 C	4.14
934061	AD1-033 C	3.07
934521	AD1-076 C	17.59
935111	AD1-144 C	0.09
936391	AD2-049 C	1.14

Bus #	Bus	MW Impact
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.68
938172	AE1-026 C2 O	1.26
938181	AE1-027 C	0.95
938191	AE1-028 C	0.55
938531	AE1-072 C O1	7.03
938771	AE1-103 C O1	1.17
939311	AE1-162 C	0.78
939411	AE1-173 C	27.56
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
940251	AE2-007	70.58
940471	AE2-031 C O1	11.6
940491	AE2-034 C	2.86
940641	AE2-051 C O1	4.65
940891	AE2-078 C	0.95
940901	AE2-079 C	0.95
940911	AE2-080 C	0.95
941101	AE2-104 C O1	1.28
941281	AE2-122 C O1	11.59
941291	AE2-123 C O1	11.92
941301	AE2-124 C O1	10.84
941501	AE2-147 C	6.08
941591	AE2-156	7.29
942131	AE2-225 C	0.86
942171	AE2-229 C	0.86
942341	AE2-247 C	0.43
942401	AE2-253 C	2.49
942851	AE2-304 C	0.24
942921	AE2-311 C O1	14.4
CARR	CARR	0.19
CBM-S1	CBM-S1	2.44
CBM-S2	CBM-S2	3.12
CBM-W1	CBM-W1	2.03
CBM-W2	CBM-W2	15.52
CIN	CIN	0.94
CPLE	CPLE	1.65
IPL	IPL	0.58
LGEE	LGEE	0.27
MEC	MEC	2.24
MECS	MECS	0.68
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.25

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
1880845	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	single	441.8	150.6	151.97	DC	6.08

Bus #	Bus	MW Impact
314421	6WINCHST	0.08
314507	3THOMPSN	0.1
314638	6ELIZ CT	0.06
314639	6TANGLEW	0.12
314643	3O INLET	0.13
315090	1YORKTN1	22.98
315091	1YORKTN2	23.85
315092	1YORKTN3	13.98
315098	1CHESPKA	0.13
315099	1CHESPKB	0.33
315108	1ELIZAR1	0.97
315109	1ELIZAR2	0.96
315110	1ELIZAR3	0.99
315116	1SURRY 1	6.16
315120	1GRAVEL4	0.63
315121	1GRAVEL5	0.63
315122	1GRAVEL6	0.63
315233	1SURRY 2	9.95
315260	1GOSPORTA	0.11
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
901081	W1-029 C	0.32
916041	Z1-036 C	0.31
916191	Z1-068 C	0.01
919151	AA1-139 C	0.73
923801	AB2-015 C O1	2.73
923831	AB2-022 C	0.11
924241	AB2-068 O1	102.57
925521	AC1-027 C	0.1
926291	AC1-107 O1	154.82
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.95
932041	AC2-012 C	4.14
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.95
933731	AC2-196 C	0.09
933991	AD1-023 C	4.14
934061	AD1-033 C	3.07
934521	AD1-076 C	17.59
935111	AD1-144 C	0.09
936391	AD2-049 C	1.14

Bus #	Bus	MW Impact
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.68
938172	AE1-026 C2 O	1.26
938181	AE1-027 C	0.95
938191	AE1-028 C	0.55
938531	AE1-072 C O1	7.03
938771	AE1-103 C O1	1.17
939311	AE1-162 C	0.78
939411	AE1-173 C	27.56
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
940251	AE2-007	70.58
940471	AE2-031 C O1	11.6
940491	AE2-034 C	2.86
940641	AE2-051 C O1	4.65
940891	AE2-078 C	0.95
940901	AE2-079 C	0.95
940911	AE2-080 C	0.95
941101	AE2-104 C O1	1.28
941281	AE2-122 C O1	11.59
941291	AE2-123 C O1	11.92
941301	AE2-124 C O1	10.84
941501	AE2-147 C	6.08
941591	AE2-156	7.29
942131	AE2-225 C	0.86
942171	AE2-229 C	0.86
942341	AE2-247 C	0.43
942401	AE2-253 C	2.49
942851	AE2-304 C	0.24
942921	AE2-311 C O1	14.4
CARR	CARR	0.19
CBM-S1	CBM-S1	2.44
CBM-S2	CBM-S2	3.12
CBM-W1	CBM-W1	2.03
CBM-W2	CBM-W2	15.52
CIN	CIN	0.94
CPL	CPL	1.65
IPL	IPL	0.58
LGEE	LGEE	0.27
MEC	MEC	2.24
MECS	MECS	0.68
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.25

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
1881425	314574	6EVERETS	DVP	936530	AD2-068 TAP	DVP	1	DVP_P7-1: LN 2058-2181	tower	485.0	171.47	172.79	DC	14.19

Bus #	Bus	MW Impact
314539	3UNCAMP	1.27
314541	3WATKINS	0.39
314554	3BTLEBRO	0.38
314557	3BETHEL	1.06
314566	3CRESWEL	2.23
314572	3EMPORIA	0.22
314574	6EVERETS	8.22
314578	3HORNRTN	2.14
314582	3KELFORD	3.33
314589	3MURPHYS	0.05
314594	6PLYMOTH	0.9
314603	3SCOT NK	2.69
314617	3TUNIS	0.77
314620	6CASHIE	0.97
314623	3WITAKRS	0.71
314648	6SUNBURY	0.41
314651	6WINFALL	0.99
315131	1EDGECEMA	8.55
315132	1EDGECEMB	8.55
315136	1ROSEMG1	1.26
315137	1ROSEMS1	0.78
315138	1ROSEMG2	0.59
315292	1DOMTR78	1.31
315293	1DOMTR9	1.07
315294	1DOMTR10	1.95
900672	V4-068 E	0.24
901082	W1-029 E	24.69
907092	X1-038 E	3.17
913392	Y1-086 E	1.0
916042	Z1-036 E	30.83
917122	Z2-027 E	0.52
917331	Z2-043 C	0.27
917332	Z2-043 E	0.95
917342	Z2-044 E	0.31
917511	Z2-088 C OP1	1.82
917512	Z2-088 E OP1	6.41
918491	AA1-063AC OP	0.85
918492	AA1-063AE OP	3.28
918511	AA1-065 C OP	1.36
918512	AA1-065 E OP	5.52
918531	AA1-067 C	0.41

Bus #	Bus	MW Impact
918532	AA1-067 E	1.45
918561	AA1-072 C	0.04
918562	AA1-072 E	0.16
919692	AA2-053 E	2.78
919701	AA2-057 C	4.11
919702	AA2-057 E	2.06
920042	AA2-088 E OP	6.79
920592	AA2-165 E	0.27
920672	AA2-174 E	0.32
920691	AA2-178 C	1.09
920692	AA2-178 E	3.82
923801	AB2-015 C O1	4.7
923802	AB2-015 E O1	3.86
923832	AB2-022 E	0.57
923911	AB2-031 C O1	1.26
923912	AB2-031 E O1	0.62
923992	AB2-040 E O1	3.38
924152	AB2-059 E O1	3.09
924491	AB2-098 C	1.13
924492	AB2-098 E	0.48
924501	AB2-099 C	0.59
924502	AB2-099 E	0.25
924511	AB2-100 C	6.09
924512	AB2-100 E	3.0
925121	AB2-169 C	1.19
925122	AB2-169 E	8.74
925171	AB2-174 C O1	3.82
925172	AB2-174 E O1	3.46
925591	AC1-034 C	3.88
925592	AC1-034 E	2.93
926071	AC1-086 C	15.84
926072	AC1-086 E	7.21
926201	AC1-098 C	4.51
926202	AC1-098 E	2.69
926211	AC1-099 C	1.51
926212	AC1-099 E	0.89
927021	AC1-189 C	15.22
927022	AC1-189 E	7.58
927141	AC1-208 C	5.86
927142	AC1-208 E	2.6
930402	AB1-081 E O1	2.18
930862	AB1-132 E O1	4.61
931232	AB1-173 E	0.59
931242	AB1-173AE	0.59
932631	AC2-084 C	6.43
932632	AC2-084 E	3.17
933991	AD1-023 C	14.76
933992	AD1-023 E	8.04
934201	AD1-047 C	4.51
934202	AD1-047 E	3.01
934331	AD1-057 C O1	8.5
934332	AD1-057 E O1	4.53

Bus #	Bus	MW Impact
934521	AD1-076 C	58.79
934522	AD1-076 E	29.94
936401	AD2-051 C O1	9.44
936402	AD2-051 E O1	4.05
936701	AD2-089 C	9.53
936702	AD2-089 E	6.35
936711	AD2-090 C O1	4.25
936712	AD2-090 E O1	2.83
937571	AD2-169 C	5.82
937572	AD2-169 E	3.88
938171	AE1-026 C1 O	32.16
938172	AE1-026 C2 O	4.65
938173	AE1-026 E O1	9.71
938221	AE1-035 C	2.8
938222	AE1-035 E	1.38
938531	AE1-072 C O1	6.69
938532	AE1-072 E O1	3.49
938661	AE1-088	5.0
938771	AE1-103 C O1	1.9
938772	AE1-103 E O1	2.62
939071	AE1-135 C O1	10.35
939072	AE1-135 E O1	6.9
940491	AE2-034 C	7.79
940492	AE2-034 E	3.34
940521	AE2-037 C O1	8.41
940522	AE2-037 E O1	4.06
940571	AE2-044 C	2.54
940572	AE2-044 E	1.09
941501	AE2-147 C	8.51
941502	AE2-147 E	5.67
941541	AE2-151 C	1.17
941542	AE2-151 E	0.63
941951	AE2-207	1.64
942471	AE2-260 C O1	7.13
942472	AE2-260 E O1	10.11
942851	AE2-304 C	0.38
942852	AE2-304 E	0.15
943171	AE2-346 C	1.77
943172	AE2-346 E	0.76
AC1-131	AC1-131	6.18
BLUEG	BLUEG	7.82
CALDERWOOD	CALDERWOOD	1.67
CANNELTON	CANNELTON	0.54
CATAWBA	CATAWBA	1.63
CBM-N	CBM-N	0.21
CHEOAH	CHEOAH	1.56
CHILHOWEE	CHILHOWEE	0.54
COFFEEN	COFFEEN	0.93
COTTONWOOD	COTTONWOOD	5.63
DUCKCREEK	DUCKCREEK	1.89
EDWARDS	EDWARDS	0.84
ELMERSMITH	ELMERSMITH	0.95

Bus #	Bus	MW Impact
FARMERCITY	FARMERCITY	0.67
G-007A	G-007A	1.0
GIBSON	GIBSON	0.34
HAMLET	HAMLET	3.48
NEWTON	NEWTON	2.4
NYISO	NYISO	0.9
PRAIRIE	PRAIRIE	5.09
SANTEETLA	SANTEETLA	0.46
SMITHLAND	SMITHLAND	0.46
TATANKA	TATANKA	1.14
TILTON	TILTON	0.99
TRIMBLE	TRIMBLE	0.86
TVA	TVA	4.7
UNIONPOWER	UNIONPOWER	2.33
VFT	VFT	2.64

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
1880952	314591	6NASH	DVP	304226	6PA-RMOUNT#4	CPL	1	DVP_P1-2: LN 2058	single	470.0	115.7	116.7	DC	4.73

Bus #	Bus	MW Impact
314589	3MURPHYS	0.04
314704	3LAWRENC	0.13
315115	1S HAMPT1	0.55
315126	1ROARAP2	0.82
315128	1ROARAP4	0.79
315131	1EDGECEMA	25.25
315132	1EDGECEMB	25.25
315136	1ROSEMG1	2.14
315137	1ROSEMS1	1.33
315138	1ROSEMG2	1.0
315139	1GASTONA	2.57
315141	1GASTONB	2.57
315292	1DOMTR78	0.6
315293	1DOMTR9	0.49
315294	1DOMTR10	0.88
901081	W1-029 C	0.25
916041	Z1-036 C	0.3
917331	Z2-043 C	0.23
917341	Z2-044 C	0.21
917511	Z2-088 C OP1	1.49
918491	AA1-063AC OP	0.8
918511	AA1-065 C OP	0.74
918531	AA1-067 C	0.15
918561	AA1-072 C	0.03
919691	AA2-053 C	0.84
919701	AA2-057 C	8.3
920041	AA2-088 C OP	0.47
920591	AA2-165 C	0.14
920671	AA2-174 C	0.04
920691	AA2-178 C	0.55
923801	AB2-015 C O1	4.03
923851	AB2-025 C	0.12
923911	AB2-031 C O1	1.64
923991	AB2-040 C O1	0.66
924151	AB2-059 C O1	2.1
924401	AB2-089 C	0.74
924491	AB2-098 C	0.41
924501	AB2-099 C	0.41
924511	AB2-100 C	8.56
925121	AB2-169 C	0.5
925171	AB2-174 C O1	5.03

Bus #	Bus	MW Impact
925591	AC1-034 C	11.15
925781	AC1-054 C O1	2.89
926071	AC1-086 C	23.71
926201	AC1-098 C	6.04
926211	AC1-099 C	2.02
927021	AC1-189 C	9.92
927141	AC1-208 C	9.24
930401	AB1-081 C O1	1.78
930861	AB1-132 C O1	1.96
931231	AB1-173 C	0.2
931241	AB1-173AC	0.2
932631	AC2-084 C	8.61
933991	AD1-023 C	7.55
934201	AD1-047 C	5.89
934231	AD1-050 C	1.64
934331	AD1-057 C O1	20.2
934521	AD1-076 C	29.35
936401	AD2-051 C O1	6.26
936701	AD2-089 C	14.33
936711	AD2-090 C O1	3.77
937571	AD2-169 C	7.54
938171	AE1-026 C1 O	16.65
938172	AE1-026 C2 O	2.41
938221	AE1-035 C	1.51
938661	AE1-088	2.09
938771	AE1-103 C O1	1.59
939071	AE1-135 C O1	14.38
940481	AE2-033 C	7.2
940491	AE2-034 C	3.96
940521	AE2-037 C O1	5.95
940541	AE2-040	1.32
940571	AE2-044 C	7.3
941501	AE2-147 C	4.73
941541	AE2-151 C	0.78
941951	AE2-207	4.72
942471	AE2-260 C O1	9.91
942711	AE2-287 C O1	6.42
942851	AE2-304 C	0.21
943171	AE2-346 C	1.23
BLUEG	BLUEG	6.03
CALDERWOOD	CALDERWOOD	1.22
CANNELTON	CANNELTON	0.41
CATAWBA	CATAWBA	1.19
CBM-N	CBM-N	0.13
CHEOAH	CHEOAH	1.14
CHILHOWEE	CHILHOWEE	0.4
COFFEEN	COFFEEN	0.7
COTTONWOOD	COTTONWOOD	4.09
DUCKCREEK	DUCKCREEK	1.44
EDWARDS	EDWARDS	0.64
ELMERSMITH	ELMERSMITH	0.72
FARMERCITY	FARMERCITY	0.5

Bus #	Bus	MW Impact
G-007A	G-007A	0.66
GIBSON	GIBSON	0.26
HAMLET	HAMLET	2.34
NEWTON	NEWTON	1.82
NYISO	NYISO	0.55
PRAIRIE	PRAIRIE	3.81
SANTEETLA	SANTEETLA	0.34
SMITHLAND	SMITHLAND	0.34
TATANKA	TATANKA	0.86
TILTON	TILTON	0.76
TRIMBLE	TRIMBLE	0.66
TVA	TVA	3.43
UNIONPOWER	UNIONPOWER	1.7
VFT	VFT	1.75

10.6.12 Index 11

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880121	314596	3POPLR C	DVP	314573	3EVERETS	DVP	1	DVP_P4-2: 203462	breaker	239.0	127.8	130.44	DC	13.98

Bus #	Bus	MW Impact
314566	3CRESWEL	3.21
314594	6PLYMOTH	1.36
314648	6SUNBURY	0.31
314651	6WINFALL	1.04
315292	1DOMTR78	2.37
315293	1DOMTR9	1.93
315294	1DOMTR10	3.51
901082	W1-029 E	24.33
913392	Y1-086 E	0.9
916041	Z1-036 C	0.68
916042	Z1-036 E	37.63
917122	Z2-027 E	0.5
920691	AA2-178 C	1.57
920692	AA2-178 E	5.51
923832	AB2-022 E	0.51
925121	AB2-169 C	0.71
925122	AB2-169 E	5.25
933991	AD1-023 C	21.74
933992	AD1-023 E	11.84
934521	AD1-076 C	89.75
934522	AD1-076 E	45.7
938661	AE1-088	3.0
940491	AE2-034 C	11.24
940492	AE2-034 E	4.82
941501	AE2-147 C	8.39
941502	AE2-147 E	5.59
942851	AE2-304 C	0.43
942852	AE2-304 E	0.17
BLUEG	BLUEG	1.74
CALDERWOOD	CALDERWOOD	0.36
CANNELTON	CANNELTON	0.12
CATAWBA	CATAWBA	0.34
CBM-N	CBM-N	0.04
CHEOAH	CHEOAH	0.33
CHILHOWEE	CHILHOWEE	0.12
COFFEEN	COFFEEN	0.2
COTTONWOOD	COTTONWOOD	1.2
DUCKCREEK	DUCKCREEK	0.42
EDWARDS	EDWARDS	0.19
ELMERSMITH	ELMERSMITH	0.21
FARMERCITY	FARMERCITY	0.15

Bus #	Bus	MW Impact
G-007A	G-007A	0.2
GIBSON	GIBSON	0.07
HAMLET	HAMLET	0.71
NEWTON	NEWTON	0.53
NYISO	NYISO	0.16
PRAIRIE	PRAIRIE	1.11
SANTEETLA	SANTEETLA	0.1
SMITHLAND	SMITHLAND	0.1
TATANKA	TATANKA	0.25
TILTON	TILTON	0.22
TRIMBLE	TRIMBLE	0.19
TVA	TVA	1.01
UNIONPOWER	UNIONPOWER	0.5
VFT	VFT	0.52

10.6.13 Index 12

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1879900	314638	6ELIZ CT	DVP	314647	6SHAWBRO	DVP	1	DVP_P4-2: 246T247	breaker	658.0	148.16	163.46	DC	100.66

Bus #	Bus	MW Impact
314557	3BETHEL C	0.6
314566	3CRESWEL	6.39
314574	6EVERETS	4.25
314582	3KELFORD	3.05
314594	6PLYMOTH	1.92
314603	3SCOT NK	2.51
314617	3TUNIS	0.64
314620	6CASHIE	1.49
314638	6ELIZ CT	0.72
314639	6TANGLEW	1.26
314651	6WINFALL	6.71
315292	1DOMTR78	1.97
315293	1DOMTR9	1.61
315294	1DOMTR10	2.91
901081	W1-029 C	3.19
901082	W1-029 E	175.15
913392	Y1-086 E	9.58
916041	Z1-036 C	2.86
916042	Z1-036 E	157.45
917122	Z2-027 E	4.42
917331	Z2-043 C	0.25
917332	Z2-043 E	0.87
917511	Z2-088 C OP1	0.98
917512	Z2-088 E OP1	3.44
918491	AA1-063AC OP	0.73
918492	AA1-063AE OP	2.82
918511	AA1-065 C OP	1.27
918512	AA1-065 E OP	5.12
918531	AA1-067 C	0.21
918532	AA1-067 E	0.75
918561	AA1-072 C	0.04
918562	AA1-072 E	0.14
919691	AA2-053 C	0.66
919692	AA2-053 E	2.34
920671	AA2-174 C	0.03
920672	AA2-174 E	0.27
920691	AA2-178 C	3.12
920692	AA2-178 E	10.96
923831	AB2-022 C	1.22
923832	AB2-022 E	5.41
924491	AB2-098 C	0.58

Bus #	Bus	MW Impact
924492	AB2-098 E	0.25
924501	AB2-099 C	0.51
924502	AB2-099 E	0.22
925121	AB2-169 C	1.3
925122	AB2-169 E	9.55
926201	AC1-098 C	4.28
926202	AC1-098 E	2.55
926211	AC1-099 C	1.44
926212	AC1-099 E	0.84
927021	AC1-189 C	8.05
927022	AC1-189 E	4.01
927141	AC1-208 C	5.57
927142	AC1-208 E	2.47
932631	AC2-084 C	6.11
932632	AC2-084 E	3.01
933991	AD1-023 C	25.21
933992	AD1-023 E	13.72
934521	AD1-076 C	118.85
934522	AD1-076 E	60.52
936401	AD2-051 C O1	8.54
936402	AD2-051 E O1	3.67
936531	AD2-068 C	3.85
936532	AD2-068 E	1.98
936701	AD2-089 C	5.39
936702	AD2-089 E	3.59
938171	AE1-026 C1 O	49.4
938172	AE1-026 C2 O	7.15
938173	AE1-026 E O1	14.92
938221	AE1-035 C	2.6
938222	AE1-035 E	1.28
938661	AE1-088	5.46
940491	AE2-034 C	22.38
940492	AE2-034 E	9.59
940521	AE2-037 C O1	7.63
940522	AE2-037 E O1	3.69
941501	AE2-147 C	60.4
941502	AE2-147 E	40.27
941541	AE2-151 C	1.06
941542	AE2-151 E	0.57
942851	AE2-304 C	2.31
942852	AE2-304 E	0.9
943171	AE2-346 C	1.54
943172	AE2-346 E	0.66
AA2-074	AA2-074	1.56
CARR	CARR	0.13
CBM-S1	CBM-S1	3.29
CBM-S2	CBM-S2	4.0
CBM-W1	CBM-W1	3.28
CBM-W2	CBM-W2	21.46
CIN	CIN	1.48
CPL	CPL	2.29
G-007	G-007	0.45

Bus #	Bus	MW Impact
IPL	IPL	0.93
LGEE	LGEE	0.43
MEC	MEC	3.31
MECS	MECS	1.39
O-066	O-066	2.85
RENSSELAER	RENSSELAER	0.1
WEC	WEC	0.4

10.6.14 Index 13

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880126	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	128.14	128.34	DC	44.51

Bus #	Bus	MW Impact
314539	3UNCAMP	3.89
314541	3WATKINS	1.1
314566	3CRESWEL	3.94
314594	6PLYMOTH	1.38
314648	6SUNBURY	1.49
314651	6WINFALL	2.96
315102	1BRUNSWICKG1	11.92
315103	1BRUNSWICKG2	11.92
315104	1BRUNSWICKG3	11.92
315105	1BRUNSWICKS1	24.76
315108	1ELIZAR1	4.09
315109	1ELIZAR2	4.02
315110	1ELIZAR3	4.15
315233	1SURRY 2	32.32
901082	W1-029 E	77.45
907092	X1-038 E	9.72
913392	Y1-086 E	3.74
916042	Z1-036 E	76.13
916191	Z1-068 C	0.06
916192	Z1-068 E	3.23
916301	Z1-086 C	72.75
916302	Z1-086 E	18.68
917122	Z2-027 E	1.8
919151	AA1-139 C	3.13
919152	AA1-139 E	11.03
920692	AA2-178 E	6.75
923801	AB2-015 C O1	13.78
923802	AB2-015 E O1	11.3
923832	AB2-022 E	2.11
924241	AB2-068 O1	333.15
925521	AC1-027 C	0.42
925522	AC1-027 E	1.97
926291	AC1-107 O1	502.86
926662	AC1-147 E	2.26
926751	AC1-161 C O1	55.48
926752	AC1-161 E O1	23.68
932041	AC2-012 C	17.42
932042	AC2-012 E	28.43
932591	AC2-079 C O1	6.4
932592	AC2-079 E O1	10.43
933291	AC2-141 C	55.48

Bus #	Bus	MW Impact
933292	AC2-141 E	23.68
933731	AC2-196 C	0.38
933732	AC2-196 E	2.06
933991	AD1-023 C	21.18
933992	AD1-023 E	11.53
934061	AD1-033 C	12.98
934062	AD1-033 E	8.65
934521	AD1-076 C	88.28
934522	AD1-076 E	44.95
935112	AD1-144 E	1.53
937221	AD2-160 C O1	10.07
937222	AD2-160 E O1	5.28
937541	AD2-215 C	2.84
937542	AD2-215 E	1.51
938181	AE1-027 C	4.04
938182	AE1-027 E	2.13
938191	AE1-028 C	2.34
938192	AE1-028 E	1.36
938491	AE1-068 C O1	119.31
938492	AE1-068 E O1	65.89
938501	AE1-069 C O1	93.21
938502	AE1-069 E O1	53.29
938531	AE1-072 C O1	30.11
938532	AE1-072 E O1	15.69
938771	AE1-103 C O1	5.83
938772	AE1-103 E O1	8.05
939411	AE1-173 C	175.24
939412	AE1-173 E	116.83
940251	AE2-007	296.94
940471	AE2-031 C O1	62.25
940472	AE2-031 E O1	41.5
940491	AE2-034 C	13.78
940492	AE2-034 E	5.91
940641	AE2-051 C O1	34.51
940642	AE2-051 E O1	23.01
941031	AE2-094 C	78.36
941032	AE2-094 E	35.09
941101	AE2-104 C O1	5.74
941102	AE2-104 E O1	9.12
941281	AE2-122 C O1	48.88
941282	AE2-122 E O1	197.25
941291	AE2-123 C O1	50.23
941292	AE2-123 E O1	195.89
941301	AE2-124 C O1	45.71
941302	AE2-124 E O1	200.57
941501	AE2-147 C	26.71
941502	AE2-147 E	17.8
941591	AE2-156	30.65
942131	AE2-225 C	3.62
942132	AE2-225 E	2.41
942171	AE2-229 C	3.62
942172	AE2-229 E	2.41

Bus #	Bus	MW Impact
942211	AE2-233 C	25.6
942212	AE2-233 E	9.95
942401	AE2-253 C	10.6
942402	AE2-253 E	4.76
942851	AE2-304 C	1.06
942852	AE2-304 E	0.41
942921	AE2-311 C O1	88.58
942922	AE2-311 E O1	59.06
942931	AE2-313 C	70.34
942932	AE2-313 E	46.89
AA2-074	AA2-074	8.87
CARR	CARR	1.73
CBM-S1	CBM-S1	21.71
CBM-S2	CBM-S2	25.47
CBM-W1	CBM-W1	19.62
CBM-W2	CBM-W2	139.1
CIN	CIN	9.13
CPL	CPL	13.04
G-007	G-007	5.72
IPL	IPL	5.69
LGEE	LGEE	2.67
MEC	MEC	20.79
MECS	MECS	7.23
O-066	O-066	36.38
RENSSELAER	RENSSELAER	1.37
WEC	WEC	2.42
Z1-043	Z1-043	9.52

10.6.15 Index 14

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880557	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	154.43	155.51	DC	26.21

Bus #	Bus	MW Impact
314421	6WINCHST	0.19
314507	3THOMPSN	0.43
314638	6ELIZ CT	0.28
314639	6TANGLEW	0.5
314643	3O INLET	0.56
315074	1HOPCGN1	9.52
315075	1HOPCGN2	9.4
315090	1YORKTN1	50.95
315091	1YORKTN2	52.87
315092	1YORKTN3	30.89
315098	1CHESPKA	0.56
315099	1CHESPKB	1.4
315108	1ELIZAR1	4.14
315109	1ELIZAR2	4.07
315110	1ELIZAR3	4.2
315116	1SURRY 1	28.48
315120	1GRAVEL4	2.93
315121	1GRAVEL5	2.89
315122	1GRAVEL6	2.93
315131	1EDGECEMA	11.15
315132	1EDGECEMB	11.15
315233	1SURRY 2	37.58
315260	1GOSPORTA	0.45
315261	1GOSPORTB	0.57
315262	1GOSPORTC	0.49
901081	W1-029 C	1.38
916041	Z1-036 C	1.34
916191	Z1-068 C	0.06
919151	AA1-139 C	3.13
919701	AA2-057 C	8.79
923801	AB2-015 C O1	12.96
923831	AB2-022 C	0.47
923841	AB2-024 C	0.47
923911	AB2-031 C O1	2.78
924241	AB2-068 O1	607.0
924491	AB2-098 C	0.76
924501	AB2-099 C	0.82
924511	AB2-100 C	14.25
925061	AB2-161 C O1	4.78
925171	AB2-174 C O1	8.68
925331	AB2-190 C	27.02

Bus #	Bus	MW Impact
925521	AC1-027 C	0.42
925591	AC1-034 C	8.21
925861	AC1-065 C	5.05
926071	AC1-086 C	26.3
926201	AC1-098 C	7.92
926211	AC1-099 C	2.65
926291	AC1-107 O1	916.22
926661	AC1-147 C	0.48
926751	AC1-161 C O1	56.99
926781	AC1-164 C	64.03
927021	AC1-189 C	11.37
927141	AC1-208 C	11.41
927221	AC1-216 C O1	13.51
932041	AC2-012 C	17.66
932581	AC2-078 C O1	5.08
932591	AC2-079 C O1	8.71
932631	AC2-084 C	11.29
932831	AC2-110 C	2.02
933061	AC2-130	2.81
933291	AC2-141 C	56.99
933731	AC2-196 C	0.38
933991	AD1-023 C	19.45
934011	AD1-025 C	23.23
934061	AD1-033 C	13.04
934141	AD1-041 C	8.0
934201	AD1-047 C	9.95
934331	AD1-057 C O1	12.33
934521	AD1-076 C	81.69
934571	AD1-082 C	10.9
935111	AD1-144 C	0.35
935161	AD1-151 C O1	21.71
936041	AD2-007	2.47
936051	AD2-008 C	4.04
936151	AD2-021	0.3
936241	AD2-030 C	3.51
936301	AD2-039 C	2.02
936391	AD2-049 C	3.09
936401	AD2-051 C O1	12.17
936531	AD2-068 C	6.41
936591	AD2-074 C	7.02
936661	AD2-085 C	5.21
936701	AD2-089 C	9.09
936711	AD2-090 C O1	10.57
937221	AD2-160 C O1	10.08
937251	AD2-164	8.44
937541	AD2-215 C	2.93
937571	AD2-169 C	12.48
938031	AE1-004 C	2.02
938171	AE1-026 C1 O	41.09
938172	AE1-026 C2 O	5.94
938181	AE1-027 C	4.05
938191	AE1-028 C	2.35

Bus #	Bus	MW Impact
938221	AE1-035 C	3.18
938491	AE1-068 C O1	82.21
938501	AE1-069 C O1	64.27
938531	AE1-072 C O1	30.01
938631	AE1-085 C O1	13.85
938661	AE1-088	2.52
938771	AE1-103 C O1	5.53
939071	AE1-135 C O1	25.53
939191	AE1-149 C O1	13.01
939241	AE1-155 C	18.61
939311	AE1-162 C	3.48
939411	AE1-173 C	139.64
939421	AE1-174 C	0.63
939431	AE1-175 C	4.2
939611	AE1-191 C	16.0
940061	AE1-248 C O1	22.66
940231	AE2-005 C	2.02
940251	AE2-007	300.6
940471	AE2-031 C O1	53.95
940481	AE2-033 C	19.16
940491	AE2-034 C	12.98
940521	AE2-037 C O1	11.09
940541	AE2-040	3.83
940551	AE2-041	11.04
940571	AE2-044 C	5.38
940641	AE2-051 C O1	25.53
940651	AE2-052	4.36
940891	AE2-078 C	3.73
940901	AE2-079 C	3.73
940911	AE2-080 C	3.73
941031	AE2-094 C	53.94
941101	AE2-104 C O1	5.69
941281	AE2-122 C O1	49.27
941291	AE2-123 C O1	50.64
941301	AE2-124 C O1	46.05
941501	AE2-147 C	26.21
941541	AE2-151 C	1.51
941591	AE2-156	31.06
941601	AE2-157 C O1	14.53
941951	AE2-207	3.47
942131	AE2-225 C	3.61
942171	AE2-229 C	3.61
942211	AE2-233 C	17.62
942341	AE2-247 C	2.26
942401	AE2-253 C	10.6
942471	AE2-260 C O1	17.59
942531	AE2-268 C	2.64
942551	AE2-270	36.21
942711	AE2-287 C O1	14.65
942851	AE2-304 C	1.03
942921	AE2-311 C O1	71.62
942931	AE2-313 C	48.46

Bus #	Bus	MW Impact
943171	AE2-346 C	2.45
AA2-074	AA2-074	6.33
CARR	CARR	1.23
CBM-S1	CBM-S1	12.44
CBM-S2	CBM-S2	17.46
CBM-W1	CBM-W1	8.49
CBM-W2	CBM-W2	77.11
CIN	CIN	4.07
CPL	CPL	9.31
IPL	IPL	2.49
LGEE	LGEE	1.19
MEC	MEC	10.39
MECS	MECS	1.96
RENSSELAER	RENSSELAER	0.97
WEC	WEC	1.08

10.6.16 Index 15

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880436	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	166.85	167.37	DC	28.0

Bus #	Bus	MW Impact
314229	6MT RD221	0.17
314236	6NRTHEST	0.26
314309	6IRON208	0.62
314421	6WINCHST	0.2
315053	1BELMED1	31.5
315054	1BELMED2	31.5
315055	1BELMED3	26.14
315058	1CHESTF3	33.46
315059	1CHESTF4	54.23
315060	1CHESTF5	13.99
315061	1CHESTG7	5.48
315062	1CHESTS7	2.49
315063	1CHESTG8	5.38
315064	1CHESTS8	2.77
315067	1DARBY 1	3.58
315068	1DARBY 2	3.58
315069	1DARBY 3	3.6
315070	1DARBY 4	3.6
315074	1HOPCGN1	15.43
315075	1HOPCGN2	15.23
315076	1HOPPOLC	2.16
315077	1HOPHCF1	3.37
315078	1HOPHCF2	3.37
315079	1HOPHCF3	3.37
315080	1HOPHCF4	5.12
315083	1SPRUNCA	19.06
315084	1SPRUNCB	19.06
315085	1SPRUNCC	14.13
315086	1SPRUNCD	14.13
315090	1YORKTN1	53.19
315091	1YORKTN2	55.2
315092	1YORKTN3	32.17
315233	1SURRY 2	34.94
923801	AB2-015 C O1	14.83
924241	AB2-068 O1	427.69
924501	AB2-099 C	0.97
924511	AB2-100 C	19.0
925051	AB2-160 C O1	9.87
925061	AB2-161 C O1	6.05
925331	AB2-190 C	37.05
925861	AC1-065 C	6.02

Bus #	Bus	MW Impact
926291	AC1-107 O1	645.57
926411	AC1-112 C	0.47
926751	AC1-161 C O1	55.47
926781	AC1-164 C	77.58
927041	AC1-191 C O1	17.01
927221	AC1-216 C O1	18.11
930121	AB1-027 C	0.6
932041	AC2-012 C	18.46
932501	AC2-070 C	0.39
932581	AC2-078 C O1	7.31
932591	AC2-079 C O1	10.25
932831	AC2-110 C	2.41
933061	AC2-130	4.5
933261	AC2-137 C	0.48
933291	AC2-141 C	55.47
933991	AD1-023 C	22.13
934011	AD1-025 C	31.13
934061	AD1-033 C	13.54
934141	AD1-041 C	9.39
934211	AD1-048 C	0.56
934521	AD1-076 C	92.19
934571	AD1-082 C	13.8
935161	AD1-151 C O1	29.78
936041	AD2-007	3.3
936051	AD2-008 C	5.42
936151	AD2-021	0.45
936241	AD2-030 C	4.04
936301	AD2-039 C	2.41
936391	AD2-049 C	3.3
936401	AD2-051 C O1	14.41
936661	AD2-085 C	6.15
936711	AD2-090 C O1	12.24
937221	AD2-160 C O1	10.5
937251	AD2-164	8.88
937541	AD2-215 C	3.15
938031	AE1-004 C	2.41
938171	AE1-026 C1 O	47.0
938172	AE1-026 C2 O	6.8
938181	AE1-027 C	4.21
938191	AE1-028 C	2.44
938221	AE1-035 C	3.72
938491	AE1-068 C O1	93.03
938501	AE1-069 C O1	72.97
938531	AE1-072 C O1	31.41
938551	AE1-074 C	4.27
938631	AE1-085 C O1	19.6
938661	AE1-088	2.91
938771	AE1-103 C O1	6.28
939071	AE1-135 C O1	34.22
939191	AE1-149 C O1	19.26
939311	AE1-162 C	3.92
939411	AE1-173 C	149.1

Bus #	Bus	MW Impact
939421	AE1-174 C	0.68
939431	AE1-175 C	4.54
939611	AE1-191 C	18.79
939751	AE1-206 C O1	50.23
940061	AE1-248 C O1	28.67
940071	AE1-249 C	13.03
940231	AE2-005 C	2.41
940251	AE2-007	313.38
940431	AE2-027 C O1	23.66
940471	AE2-031 C O1	55.28
940481	AE2-033 C	26.48
940491	AE2-034 C	14.4
940521	AE2-037 C O1	13.19
940541	AE2-040	5.32
940551	AE2-041	12.87
940641	AE2-051 C O1	27.59
940651	AE2-052	6.45
940891	AE2-078 C	4.35
940901	AE2-079 C	4.35
940911	AE2-080 C	4.35
941031	AE2-094 C	60.66
941101	AE2-104 C O1	6.23
941281	AE2-122 C O1	51.3
941291	AE2-123 C O1	52.72
941301	AE2-124 C O1	47.93
941501	AE2-147 C	28.0
941541	AE2-151 C	1.79
941581	AE2-155 C	1.23
941591	AE2-156	32.42
941601	AE2-157 C O1	19.15
942001	AE2-212 C	3.9
942131	AE2-225 C	3.82
942151	AE2-227 C O1	3.9
942161	AE2-228 C O1	3.9
942171	AE2-229 C	3.82
942211	AE2-233 C	19.82
942341	AE2-247 C	2.67
942371	AE2-250 C O1	17.54
942401	AE2-253 C	11.05
942471	AE2-260 C O1	23.59
942531	AE2-268 C	3.08
942551	AE2-270	49.66
942851	AE2-304 C	1.11
942921	AE2-311 C O1	75.07
942931	AE2-313 C	54.81
943171	AE2-346 C	2.9
AA2-074	AA2-074	8.65
CARR	CARR	2.59
CBM-S1	CBM-S1	26.67
CBM-S2	CBM-S2	26.03
CBM-W1	CBM-W1	27.93
CBM-W2	CBM-W2	174.04

Bus #	Bus	MW Impact
CIN	CIN	13.03
CPLE	CPLE	12.72
IPL	IPL	8.21
LGEE	LGEE	3.84
MEC	MEC	27.75
MECS	MECS	11.64
RENSSELAER	RENSSELAER	2.05
WEC	WEC	3.42
Z1-043	Z1-043	13.47

10.6.17 Index 16

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880512	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	159.79	160.81	DC	25.12

Bus #	Bus	MW Impact
314507	3THOMPSN	0.39
314638	6ELIZ CT	0.26
314639	6TANGLEW	0.48
314643	3O INLET	0.52
315053	1BELMED1	25.0
315054	1BELMED2	25.0
315055	1BELMED3	20.75
315058	1CHESTF3	25.07
315059	1CHESTF4	40.64
315074	1HOPCGN1	12.09
315075	1HOPCGN2	11.93
315083	1SPRUNCA	16.01
315084	1SPRUNCB	16.01
315085	1SPRUNCC	11.87
315086	1SPRUNCD	11.87
315090	1YORKTN1	42.39
315091	1YORKTN2	43.99
315098	1CHESPKA	0.52
315099	1CHESPKB	1.3
315102	1BRUNSWICKG1	10.29
315103	1BRUNSWICKG2	10.29
315104	1BRUNSWICKG3	10.29
315105	1BRUNSWICKS1	21.38
315108	1ELIZAR1	3.83
315109	1ELIZAR2	3.76
315110	1ELIZAR3	3.88
315116	1SURRY 1	28.17
315120	1GRAVEL4	2.9
315122	1GRAVEL6	2.9
315131	1EDGECEMA	13.5
315132	1EDGECEMB	13.5
315233	1SURRY 2	28.7
315260	1GOSPORTA	0.42
315261	1GOSPORTB	0.53
315262	1GOSPORTC	0.45
901081	W1-029 C	1.33
916041	Z1-036 C	1.31
916191	Z1-068 C	0.05
916301	Z1-086 C	62.63
919151	AA1-139 C	2.92
919701	AA2-057 C	10.5

Bus #	Bus	MW Impact
923801	AB2-015 C O1	13.47
923831	AB2-022 C	0.45
923851	AB2-025 C	0.48
923911	AB2-031 C O1	3.43
924241	AB2-068 O1	244.96
924401	AB2-089 C	3.06
924491	AB2-098 C	0.86
924501	AB2-099 C	0.9
924511	AB2-100 C	17.96
925051	AB2-160 C O1	8.18
925061	AB2-161 C O1	5.3
925171	AB2-174 C O1	10.78
925331	AB2-190 C	29.95
925521	AC1-027 C	0.39
925591	AC1-034 C	9.94
925781	AC1-054 C O1	10.4
925861	AC1-065 C	4.34
926071	AC1-086 C	31.57
926201	AC1-098 C	9.23
926211	AC1-099 C	3.09
926291	AC1-107 O1	369.74
926661	AC1-147 C	0.44
926751	AC1-161 C O1	49.05
926781	AC1-164 C	52.57
927021	AC1-189 C	12.94
927141	AC1-208 C	13.51
927221	AC1-216 C O1	14.71
932041	AC2-012 C	16.34
932581	AC2-078 C O1	6.31
932591	AC2-079 C O1	9.05
932631	AC2-084 C	13.15
932831	AC2-110 C	1.74
933061	AC2-130	3.3
933291	AC2-141 C	49.05
933501	AC2-165 C	14.51
933731	AC2-196 C	0.35
933991	AD1-023 C	20.32
934011	AD1-025 C	25.28
934061	AD1-033 C	12.05
934201	AD1-047 C	12.28
934231	AD1-050 C	6.74
934331	AD1-057 C O1	14.87
934521	AD1-076 C	84.44
934571	AD1-082 C	12.07
934611	AD1-087 C O1	12.14
934621	AD1-088 C	18.61
935111	AD1-144 C	0.33
935161	AD1-151 C O1	24.07
935171	AD1-152 C O1	12.06
935211	AD1-156 C	0.41
936041	AD2-007	2.68
936051	AD2-008 C	4.4

Bus #	Bus	MW Impact
936151	AD2-021	0.31
936301	AD2-039 C	1.74
936391	AD2-049 C	2.72
936401	AD2-051 C O1	13.38
936531	AD2-068 C	7.57
936661	AD2-085 C	5.43
936701	AD2-089 C	10.68
936711	AD2-090 C O1	11.19
937221	AD2-160 C O1	9.37
937251	AD2-164	7.16
937481	AD2-202 C O1	3.34
937541	AD2-215 C	2.75
937571	AD2-169 C	15.28
938031	AE1-004 C	1.74
938171	AE1-026 C1 O	43.23
938172	AE1-026 C2 O	6.25
938181	AE1-027 C	3.75
938191	AE1-028 C	2.18
938221	AE1-035 C	3.44
938491	AE1-068 C O1	102.49
938501	AE1-069 C O1	80.25
938531	AE1-072 C O1	28.04
938551	AE1-074 C	4.0
938561	AE1-075 C	3.29
938631	AE1-085 C O1	16.95
938661	AE1-088	2.7
938771	AE1-103 C O1	5.69
939071	AE1-135 C O1	32.36
939191	AE1-149 C O1	16.57
939311	AE1-162 C	3.34
939411	AE1-173 C	152.3
939421	AE1-174 C	0.27
939431	AE1-175 C	3.41
940061	AE1-248 C O1	25.09
940071	AE1-249 C	10.79
940231	AE2-005 C	1.74
940251	AE2-007	277.69
940431	AE2-027 C O1	18.86
940471	AE2-031 C O1	53.99
940481	AE2-033 C	25.04
940491	AE2-034 C	13.11
940521	AE2-037 C O1	12.26
940541	AE2-040	5.03
940551	AE2-041	9.18
940571	AE2-044 C	6.51
940641	AE2-051 C O1	29.47
940651	AE2-052	5.55
940891	AE2-078 C	3.6
940901	AE2-079 C	3.6
940911	AE2-080 C	3.6
941031	AE2-094 C	67.04
941101	AE2-104 C O1	5.55

Bus #	Bus	MW Impact
941281	AE2-122 C O1	45.57
941291	AE2-123 C O1	46.83
941301	AE2-124 C O1	42.59
941501	AE2-147 C	25.12
941541	AE2-151 C	1.66
941591	AE2-156	28.71
941601	AE2-157 C O1	16.68
941791	AE2-182 C	3.37
941951	AE2-207	4.21
942001	AE2-212 C	3.24
942131	AE2-225 C	3.41
942151	AE2-227 C O1	3.24
942161	AE2-228 C O1	3.24
942171	AE2-229 C	3.41
942211	AE2-233 C	21.91
942341	AE2-247 C	2.35
942371	AE2-250 C O1	14.54
942401	AE2-253 C	9.85
942471	AE2-260 C O1	22.3
942531	AE2-268 C	2.2
942551	AE2-270	40.14
942711	AE2-287 C O1	19.27
942851	AE2-304 C	1.0
942921	AE2-311 C O1	76.29
942931	AE2-313 C	60.47
943171	AE2-346 C	2.69
AA2-074	AA2-074	8.49
CARR	CARR	2.07
CBM-S1	CBM-S1	23.16
CBM-S2	CBM-S2	24.91
CBM-W1	CBM-W1	22.47
CBM-W2	CBM-W2	149.64
CIN	CIN	10.49
CPLE	CPLE	12.48
IPL	IPL	6.58
LGEE	LGEE	3.08
MEC	MEC	23.08
MECS	MECS	8.8
RENSSELAER	RENSSELAER	1.64
WEC	WEC	2.76
Z1-043	Z1-043	10.88

10.6.18 Index 17

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1880252	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	111.15	111.64	DC	42.17

Bus #	Bus	MW Impact
314539	3UNCAMP	3.29
314541	3WATKINS	0.91
314554	3BTLEBRO	0.84
314557	3BETHEL	0.9
314566	3CRESWEL	3.48
314574	6EVERETS	5.03
314578	3HORNRTN	3.34
314582	3KELFORD	4.11
314594	6PLYMOTH	1.19
314603	3SCOT NK	3.71
314617	3TUNIS	1.02
314620	6CASHIE	1.13
314623	3WITAKRS	1.43
314648	6SUNBURY	1.42
314651	6WINFALL	2.8
315090	1YORKTN1	39.38
315091	1YORKTN2	40.87
315108	1ELIZAR1	4.08
315109	1ELIZAR2	4.01
315110	1ELIZAR3	4.13
315131	1EDGECEMA	9.77
315132	1EDGECEMB	9.77
315233	1SURREY 2	40.44
900672	V4-068 E	0.36
901082	W1-029 E	73.37
907092	X1-038 E	8.22
913392	Y1-086 E	3.61
916042	Z1-036 E	70.49
916191	Z1-068 C	0.06
916192	Z1-068 E	3.21
916302	Z1-086 E	14.12
917122	Z2-027 E	1.72
917332	Z2-043 E	1.17
917342	Z2-044 E	0.61
917512	Z2-088 E OP1	4.52
918492	AA1-063AE OP	4.35
918512	AA1-065 E OP	5.6
918532	AA1-067 E	0.89
918562	AA1-072 E	0.19
919152	AA1-139 E	10.87
919692	AA2-053 E	3.92
919701	AA2-057 C	7.56

Bus #	Bus	MW Impact
919702	AA2-057 E	3.78
920042	AA2-088 E OP	12.98
920592	AA2-165 E	0.5
920672	AA2-174 E	0.45
920692	AA2-178 E	5.96
923801	AB2-015 C O1	11.5
923802	AB2-015 E O1	9.43
923832	AB2-022 E	2.04
924152	AB2-059 E O1	5.74
924401	AB2-089 C	2.0
924402	AB2-089 E	1.03
924491	AB2-098 C	0.69
924492	AB2-098 E	0.3
924501	AB2-099 C	0.71
924502	AB2-099 E	0.31
925061	AB2-161 C O1	3.39
925062	AB2-161 E O1	5.54
925122	AB2-169 E	7.61
925521	AC1-027 C	0.42
925522	AC1-027 E	1.95
925591	AC1-034 C	7.21
925592	AC1-034 E	5.44
925781	AC1-054 C O1	6.82
925782	AC1-054 E O1	3.14
926071	AC1-086 C	19.38
926072	AC1-086 E	8.82
926201	AC1-098 C	6.76
926202	AC1-098 E	4.03
926211	AC1-099 C	2.27
926212	AC1-099 E	1.33
926271	AC1-105 C O1	5.3
926272	AC1-105 E O1	2.64
926662	AC1-147 E	2.25
926751	AC1-161 C O1	60.92
926752	AC1-161 E O1	26.01
927021	AC1-189 C	10.21
927022	AC1-189 E	5.09
927141	AC1-208 C	9.6
927142	AC1-208 E	4.26
927251	AC1-221 C	2.26
927252	AC1-221 E	2.26
927261	AC1-222 C	3.46
927262	AC1-222 E	3.29
930402	AB1-081 E O1	4.05
930862	AB1-132 E O1	5.64
932041	AC2-012 C	17.3
932042	AC2-012 E	28.23
932591	AC2-079 C O1	7.14
932592	AC2-079 E O1	11.66
932631	AC2-084 C	9.64
932632	AC2-084 E	4.75
932761	AC2-100 C	5.21

Bus #	Bus	MW Impact
932762	AC2-100 E	2.54
933291	AC2-141 C	60.92
933292	AC2-141 E	26.01
933731	AC2-196 C	0.38
933732	AC2-196 E	2.06
933991	AD1-023 C	17.83
933992	AD1-023 E	9.71
934061	AD1-033 C	12.94
934062	AD1-033 E	8.63
934231	AD1-050 C	4.41
934232	AD1-050 E	2.41
934311	AD1-055 C	2.4
934312	AD1-055 E	0.62
934331	AD1-057 C O1	10.01
934332	AD1-057 E O1	5.34
934341	AD1-058 C	5.67
934342	AD1-058 E	1.44
934521	AD1-076 C	75.57
934522	AD1-076 E	38.48
934571	AD1-082 C	7.73
934572	AD1-082 E	4.41
934611	AD1-087 C O1	9.42
934612	AD1-087 E O1	4.43
934621	AD1-088 C	12.79
934622	AD1-088 E	6.0
934991	AD1-131 C	1.86
934992	AD1-131 E	1.24
935112	AD1-144 E	1.46
935171	AD1-152 C O1	9.36
935172	AD1-152 E O1	6.24
936331	AD2-043 C	4.49
936332	AD2-043 E	5.31
936391	AD2-049 C	2.51
936392	AD2-049 E	2.51
936401	AD2-051 C O1	10.66
936402	AD2-051 E O1	4.58
936531	AD2-068 C	5.94
936532	AD2-068 E	3.06
936661	AD2-085 C	4.24
936662	AD2-085 E	6.91
936701	AD2-089 C	8.06
936702	AD2-089 E	5.37
936711	AD2-090 C O1	9.26
936712	AD2-090 E O1	6.17
937221	AD2-160 C O1	9.97
937222	AD2-160 E O1	5.23
937251	AD2-164	6.63
937481	AD2-202 C O1	2.59
937482	AD2-202 E O1	1.31
937541	AD2-215 C	2.69
937542	AD2-215 E	1.43
937571	AD2-169 C	9.08

Bus #	Bus	MW Impact
937572	AD2-169 E	6.05
938171	AE1-026 C1 O	37.48
938172	AE1-026 C2 O	5.42
938173	AE1-026 E O1	11.32
938181	AE1-027 C	4.02
938182	AE1-027 E	2.12
938191	AE1-028 C	2.33
938192	AE1-028 E	1.35
938221	AE1-035 C	2.84
938222	AE1-035 E	1.4
938491	AE1-068 C O1	90.21
938492	AE1-068 E O1	49.83
938501	AE1-069 C O1	70.44
938502	AE1-069 E O1	40.27
938531	AE1-072 C O1	29.57
938532	AE1-072 E O1	15.42
938661	AE1-088	2.3
938771	AE1-103 C O1	4.93
938772	AE1-103 E O1	6.81
939311	AE1-162 C	2.94
939312	AE1-162 E	1.96
939411	AE1-173 C	149.42
939412	AE1-173 E	99.61
939421	AE1-174 C	0.17
939422	AE1-174 E	0.26
939431	AE1-175 C	2.18
939432	AE1-175 E	1.08
940061	AE1-248 C O1	16.07
940062	AE1-248 E O1	10.72
940251	AE2-007	295.65
940471	AE2-031 C O1	58.39
940472	AE2-031 E O1	38.93
940491	AE2-034 C	12.17
940492	AE2-034 E	5.21
940521	AE2-037 C O1	9.7
940522	AE2-037 E O1	4.69
940571	AE2-044 C	4.72
940572	AE2-044 E	2.02
940641	AE2-051 C O1	28.0
940642	AE2-051 E O1	18.67
940891	AE2-078 C	2.82
940892	AE2-078 E	1.46
940901	AE2-079 C	2.82
940902	AE2-079 E	1.46
940911	AE2-080 C	2.82
940912	AE2-080 E	1.46
941031	AE2-094 C	59.31
941032	AE2-094 E	26.56
941101	AE2-104 C O1	5.25
941102	AE2-104 E O1	8.34
941281	AE2-122 C O1	48.63
941282	AE2-122 E O1	196.22

Bus #	Bus	MW Impact
941291	AE2-123 C O1	49.97
941292	AE2-123 E O1	194.87
941301	AE2-124 C O1	45.48
941302	AE2-124 E O1	199.57
941501	AE2-147 C	25.3
941502	AE2-147 E	16.87
941541	AE2-151 C	1.32
941542	AE2-151 E	0.71
941591	AE2-156	30.48
941601	AE2-157 C O1	9.36
941602	AE2-157 E O1	6.24
941791	AE2-182 C	2.31
941792	AE2-182 E	1.09
941951	AE2-207	3.05
942131	AE2-225 C	3.48
942132	AE2-225 E	2.32
942171	AE2-229 C	3.48
942172	AE2-229 E	2.32
942211	AE2-233 C	19.38
942212	AE2-233 E	7.53
942341	AE2-247 C	1.84
942342	AE2-247 E	2.54
942401	AE2-253 C	10.48
942402	AE2-253 E	4.71
942851	AE2-304 C	0.99
942852	AE2-304 E	0.39
942921	AE2-311 C O1	77.95
942922	AE2-311 E O1	51.96
942931	AE2-313 C	53.22
942932	AE2-313 E	35.48
943171	AE2-346 C	2.14
943172	AE2-346 E	0.92
AA2-074	AA2-074	6.4
CARR	CARR	1.11
CBM-S1	CBM-S1	13.93
CBM-S2	CBM-S2	17.99
CBM-W1	CBM-W1	11.23
CBM-W2	CBM-W2	88.09
CIN	CIN	5.25
CPLE	CPLE	9.41
G-007	G-007	3.6
IPL	IPL	3.25
LGEE	LGEE	1.53
MEC	MEC	12.58
MECS	MECS	3.61
O-066	O-066	22.92
RENSSELAER	RENSSELAER	0.88
WEC	WEC	1.39

10.6.19 Index 18

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
1881420	936530	AD2-068 TAP	DVP	304451	6GREENVILLE T	CPL	1	DVP_P7-1: LN 2058-2181	tower	478.0	179.0	180.34	DC	14.19

Bus #	Bus	MW Impact
314539	3UNCAMP	1.27
314541	3WATKINS	0.39
314554	3BTLEBRO	0.38
314557	3BETHEL	1.06
314566	3CRESWEL	2.23
314572	3EMPORIA	0.22
314574	6EVERETS	8.22
314578	3HORNRTN	2.14
314582	3KELFORD	3.33
314589	3MURPHYS	0.05
314594	6PLYMOTH	0.9
314603	3SCOT NK	2.69
314617	3TUNIS	0.77
314620	6CASHIE	0.97
314623	3WITAKRS	0.71
314648	6SUNBURY	0.41
314651	6WINFALL	0.99
315131	1EDGECEMA	8.55
315132	1EDGECEMB	8.55
315136	1ROSEMG1	1.26
315137	1ROSEMS1	0.78
315138	1ROSEMG2	0.59
315292	1DOMTR78	1.31
315293	1DOMTR9	1.07
315294	1DOMTR10	1.95
900672	V4-068 E	0.24
901082	W1-029 E	24.69
907092	X1-038 E	3.17
913392	Y1-086 E	1.0
916042	Z1-036 E	30.83
917122	Z2-027 E	0.52
917331	Z2-043 C	0.27
917332	Z2-043 E	0.95
917342	Z2-044 E	0.31
917511	Z2-088 C OP1	1.82
917512	Z2-088 E OP1	6.41
918491	AA1-063AC OP	0.85
918492	AA1-063AE OP	3.28
918511	AA1-065 C OP	1.36
918512	AA1-065 E OP	5.52
918531	AA1-067 C	0.41

Bus #	Bus	MW Impact
918532	AA1-067 E	1.45
918561	AA1-072 C	0.04
918562	AA1-072 E	0.16
919692	AA2-053 E	2.78
919701	AA2-057 C	4.11
919702	AA2-057 E	2.06
920042	AA2-088 E OP	6.79
920592	AA2-165 E	0.27
920672	AA2-174 E	0.32
920691	AA2-178 C	1.09
920692	AA2-178 E	3.82
923801	AB2-015 C O1	4.7
923802	AB2-015 E O1	3.86
923832	AB2-022 E	0.57
923911	AB2-031 C O1	1.26
923912	AB2-031 E O1	0.62
923992	AB2-040 E O1	3.38
924152	AB2-059 E O1	3.09
924491	AB2-098 C	1.13
924492	AB2-098 E	0.48
924501	AB2-099 C	0.59
924502	AB2-099 E	0.25
924511	AB2-100 C	6.09
924512	AB2-100 E	3.0
925121	AB2-169 C	1.19
925122	AB2-169 E	8.74
925171	AB2-174 C O1	3.82
925172	AB2-174 E O1	3.46
925591	AC1-034 C	3.88
925592	AC1-034 E	2.93
926071	AC1-086 C	15.84
926072	AC1-086 E	7.21
926201	AC1-098 C	4.51
926202	AC1-098 E	2.69
926211	AC1-099 C	1.51
926212	AC1-099 E	0.89
927021	AC1-189 C	15.22
927022	AC1-189 E	7.58
927141	AC1-208 C	5.86
927142	AC1-208 E	2.6
930402	AB1-081 E O1	2.18
930862	AB1-132 E O1	4.61
931232	AB1-173 E	0.59
931242	AB1-173AE	0.59
932631	AC2-084 C	6.43
932632	AC2-084 E	3.17
933991	AD1-023 C	14.76
933992	AD1-023 E	8.04
934201	AD1-047 C	4.51
934202	AD1-047 E	3.01
934331	AD1-057 C O1	8.5
934332	AD1-057 E O1	4.53

Bus #	Bus	MW Impact
934521	AD1-076 C	58.79
934522	AD1-076 E	29.94
936401	AD2-051 C O1	9.44
936402	AD2-051 E O1	4.05
936531	AD2-068 C	19.17
936532	AD2-068 E	9.88
936701	AD2-089 C	9.53
936702	AD2-089 E	6.35
936711	AD2-090 C O1	4.25
936712	AD2-090 E O1	2.83
937571	AD2-169 C	5.82
937572	AD2-169 E	3.88
938171	AE1-026 C1 O	32.16
938172	AE1-026 C2 O	4.65
938173	AE1-026 E O1	9.71
938221	AE1-035 C	2.8
938222	AE1-035 E	1.38
938661	AE1-088	5.0
938771	AE1-103 C O1	1.9
938772	AE1-103 E O1	2.62
939071	AE1-135 C O1	10.35
939072	AE1-135 E O1	6.9
940491	AE2-034 C	7.79
940492	AE2-034 E	3.34
940521	AE2-037 C O1	8.41
940522	AE2-037 E O1	4.06
940571	AE2-044 C	2.54
940572	AE2-044 E	1.09
941501	AE2-147 C	8.51
941502	AE2-147 E	5.67
941541	AE2-151 C	1.17
941542	AE2-151 E	0.63
941951	AE2-207	1.64
942471	AE2-260 C O1	7.13
942472	AE2-260 E O1	10.11
942851	AE2-304 C	0.38
942852	AE2-304 E	0.15
943171	AE2-346 C	1.77
943172	AE2-346 E	0.76
AC1-131	AC1-131	6.18
BLUEG	BLUEG	7.82
CALDERWOOD	CALDERWOOD	1.67
CANNELTON	CANNELTON	0.54
CATAWBA	CATAWBA	1.63
CBM-N	CBM-N	0.21
CHEOAH	CHEOAH	1.56
CHILHOWEE	CHILHOWEE	0.54
COFFEEN	COFFEEN	0.93
COTTONWOOD	COTTONWOOD	5.63
DUCKCREEK	DUCKCREEK	1.89
EDWARDS	EDWARDS	0.84
ELMERSMITH	ELMERSMITH	0.95

Bus #	Bus	MW Impact
FARMERCITY	FARMERCITY	0.67
G-007A	G-007A	1.0
GIBSON	GIBSON	0.34
HAMLET	HAMLET	3.48
NEWTON	NEWTON	2.4
NYISO	NYISO	0.9
PRAIRIE	PRAIRIE	5.09
SANTEETLA	SANTEETLA	0.46
SMITHLAND	SMITHLAND	0.46
TATANKA	TATANKA	1.14
TILTON	TILTON	0.99
TRIMBLE	TRIMBLE	0.86
TVA	TVA	4.7
UNIONPOWER	UNIONPOWER	2.33
VFT	VFT	2.64

Affected Systems

11 Affected Systems

11.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

11.2 MISO

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

11.3 TVA

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

11.4 Duke Energy Progress

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

11.5 NYISO

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

Short Circuit

12 Short Circuit

The following Breakers are overduty: None

Attachment 1

System Configuration

