



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-094
CARSON-ROGERS ROAD 500 KV
207.2 MW Capacity / 300 MW Energy**

July, 2019

Table of Contents

1	Introduction.....	5
2	Preface.....	5
3	General	6
3.1	Point of Interconnection	6
3.2	Cost Summary.....	7
4	Transmission Owner Scope of Work	7
5	Attachment Facilities	8
6	Direct Connection Cost Estimate.....	9
7	Non-Direct Connection Cost Estimate.....	9
8	Schedule.....	10
9	Transmission Owner Analysis.....	10
9.1	Power Flow Analysis	10
9.2	Short Circuit Analysis	10
9.3	Stability Analysis	11
10	Interconnection Customer Requirements.....	11
10.1	System Protection.....	11
10.2	Compliance Issues and Interconnection Customer Requirements	11
10.3	Power Factor Requirements.....	12
11	Revenue Metering and SCADA Requirements	12
11.1	PJM Requirements	12
11.1.1	Meteorological Data Reporting Requirement.....	12
11.2	Dominion Requirements.....	12
12	Network Impacts.....	12
12.1	Generation Deliverability	14
12.2	Multiple Facility Contingency	14
12.3	Contribution to Previously Identified Overloads.....	15
12.4	Potential Congestion due to Local Energy Deliverability.....	17
12.5	System Reinforcements.....	19
12.6	Flow Gate Details.....	22
12.6.1	Contingency Descriptions	22
12.6.2	Index 1	27

12.6.3	Index 2	30
12.6.4	Index 3	33
12.6.5	Index 4	36
12.6.6	Index 5	39
12.6.7	Index 6	42
12.6.8	Index 7	43
12.6.9	Index 8	47
12.6.10	Index 9.....	51
12.6.11	Index 10.....	54
12.6.12	Index 11.....	59
12.6.13	Index 12.....	63
12.6.14	Index 13.....	65
12.6.15	Index 14.....	67
12.6.16	Index 15.....	69
12.6.17	Index 16.....	72
12.6.18	Index 17.....	78
12.6.19	Index 18.....	81
12.6.20	Index 19.....	84
12.6.21	Index 20.....	87
12.6.22	Index 21.....	89
12.6.23	Index 22.....	92
12.6.24	Index 23.....	96
12.6.25	Index 24.....	100
12.6.26	Index 25.....	104
12.6.27	Index 26.....	108
12.6.28	Index 27.....	111
12.7	Short Circuit	114
13	Affected Systems	116
13.1	LG&E.....	116
13.2	MISO	116
13.3	TVA.....	116
13.4	Duke Energy Progress.....	116
13.5	NYISO	116

Attachment 1..... 117

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 and Storage generating facility located in Sussex County, Virginia. The installed facilities will have a total capability of 300 MW with 207.2 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 06/01/2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-094
Project Name	CARSON-ROGERS ROAD 500 KV
Interconnection Customer	
State	Virginia
County	Sussex
Transmission Owner	Dominion
MFO	300
MWE	300
MWC	207.2
Fuel	Solar; Storage
Basecase Study Year	2022

3.1 Point of Interconnection

AE2-094 “Carson – Rogers Road 500 kV” will interconnect with the Dominion’s transmission system through a new three breaker 500 kV switching station which will be adjacent to the transmission right-of-way. This is the primary Point of Interconnection (POI) chose by the IC with the ITO’s transmission system. The IC is responsible for securing right-of-way, permits and constructing the proposed attachment line from the solar facility site to the proposed new switching station. Attachment 1 shows a one-line diagram of the proposed interconnection facilities. The IC may not install any facilities on Dominion’s right-of-way without first obtaining the necessary approval from Dominion Energy.

3.2 Cost Summary

The AE2-094 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 2,750,000
Direct Connection Network Upgrade	\$ 19,200,000
Non Direct Connection Network Upgrades	\$ 0
Total Costs	\$ 21,950,000

In addition, the AE2-094 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$558,346,000

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 AE2-094 was evaluated as a 207.2 MW Capacity (300.0 MW energy) injection at the AE2-094 500 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 AE2-094 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 Attachment Facilities

To accommodate the proposed AE2-094 Project, Dominion Energy will install one span of overhead 500 kV line to the point of interconnection (“POI”) including 500 kV interconnection metering. The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Substation (Metering)	\$ 750,000
Transmission (one span)	\$ 2,000,000
Total Attachment Facility Costs	\$ 2,750,000

It is estimated to take 18-24 months to complete this work upon execution of an Interconnection Construction Service Agreement (ICSA). These preliminary cost estimates are based on typical engineering costs. A more detailed engineering cost estimates are normally done when the IC provides an exact site plan location for the generation substation during the Facility Study phase. See Attachment 1.

6 Direct Connection Cost Estimate

To accommodate the proposed AE2-094 Project, Dominion Energy will build a new three breaker 500 kV Switching Station and re-arrange the existing section of line between Carson and Septa Substations to allow for the proposed interconnection. The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Three Breaker Ring and Associated Equipment	\$ 17,000,000
Transmission (one span)	\$ 2,200,000
Total Direct Connection Facility Costs	\$ 19,200,000

It is estimated to take 24-30 months to complete this work upon execution of an Interconnection Construction Service Agreement (ICSA). These preliminary cost estimates are based on typical engineering costs. A more detailed engineering cost estimates are normally done when the IC provides an exact site plan location for the generation substation during the Facility Study phase. See Attachment 1.

7 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 16.71 miles of 230 kV Line 2068 from AD1-087 Tap to Sedge Hill	\$25,065,000
Rebuild 27.72 miles of 500 kV Line 557 from Chickahominy to Elmont	\$85,932,000
Rebuild 7.47 miles of 230 kV Line 249 from Carson to Chaparral	\$18,675,000
Rebuild 41.13 miles of 500 kV Line 576 from Midlothian to North Anna	\$127,503,000
Rebuild 37.41 miles of 500 kV Line 563 from Carson to Midlothian	\$115,971,000
Rebuild 14.02 miles of 500 kV Line 573 from North Anna to Spotsylvania	\$43,462,000
Rebuild 18.75 miles of 500 kV Line 594 from Spotsylvania to Morrisville	\$58,125,000

Description	Total Cost
Rebuild 14.53 miles of 500 kV Line 575 from North Anna to Ladysmith	\$45,043,000
Replace Wavetraps and change relays at Ladysmith and Possum Pt 500 kV substations.	\$420,000
Rebuild 2.86 miles of 230 kV Line 249 from Chaparral to Locks	\$7,150,000
Rebuild 12.4 miles of 230 kV Line 259 from Chesterfield to Basin	\$31,000,000
Total Non-Direct Connection Facility Costs	\$558,346,000

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

8 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.

9 Transmission Owner Analysis

9.1 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 AE2-094 project contributes to overloads on the Dominion transmission system as shown in the "Network Impact" section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads is also provided.

9.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-094 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

9.3 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.

10 Interconnection Customer Requirements

10.1 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.

10.2 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.

10.3 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.

11 Revenue Metering and SCADA Requirements

11.1 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.

11.1.1 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

11.2 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>.

12 Network Impacts

The Queue Project AE2-094 was evaluated as a 300.0 MW (Capacity 207.2 MW) injection tapping the Carson to Rogers Rd 500 kV line in the Dominion area. Project AE2-094 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-094 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

12.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
7868099	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	single	441.8	86.38	89.2	DC	12.55
7868096	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	single	441.8	86.4	89.22	DC	12.55
7867745	314677	6BUCKING	DVP	314747	6BREMO	DVP	1	DVP_P1-2: LN 563	single	571.52	87.25	89.45	DC	12.53
7867762	314692	6FARMVIL	DVP	314677	6BUCKING	DVP	1	DVP_P1-2: LN 563	single	559.3	85.66	87.91	DC	12.56
1790003	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 574	single	3218.56	91.13	93.33	DC	71.17
1790208	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 563	single	903.9	87.8	91.71	DC	35.34
1789621	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	single	2442.12	95.54	97.82	DC	55.7
1790101	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	Base Case	single	3218.56	91.32	92.43	DC	35.6
1790320	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 594	single	3218.56	97.84	99.04	DC	39.68
1790189	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	single	2442.12	85.99	88.04	DC	50.81
1790067	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	Base Case	single	3218.56	94.23	95.32	DC	35.21
7868260	314936	8RAWLINGS	DVP	942930	AE2-313 TAP	DVP	1	DVP_P1-2: LN 585-A-A	single	4070.2	93.97	96.99	DC	122.91
7868210	941030	AE2-094 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511-A	single	4070.2	92.72	96.18	DC	140.59
7868189	942930	AE2-313 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A-A	single	4070.2	93.92	96.94	DC	122.91

12.2 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
7605150	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	87.42	88.81	DC	16.65
7605148	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	87.44	88.82	DC	16.65
1789466	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P4-2: 545T594	breaker	3637.0	90.88	91.5	DC	49.89
1789455	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3938.0	93.22	94.8	DC	60.06

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
1789428	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P4-2: 541T569	breaker	3144.0	97.28	97.88	DC	42.82
1789352	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	90.76	91.78	DC	85.88
1789353	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	83.34	84.27	DC	75.16

12.3 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
1790196	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	single	559.3	115.45	117.76	DC	16.59
1790235	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	single	559.3	111.79	114.1	DC	16.59
1789592	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	147.72	149.05	DC	13.19
1790382	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 570	single	814.98	102.51	105.39	DC	23.49
7868142	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 6002_FSA	single	814.98	102.51	105.39	DC	23.49
7868143	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	102.5	105.38	DC	23.49
1790192	314697	6SEEDGE HILL	DVP	927250	AC1-221 TAP	DVP	1	DVP_P1-2: LN 570	single	674.92	108.44	111.26	DC	19.05
7867704	314697	6SEEDGE HILL	DVP	927250	AC1-221 TAP	DVP	1	DVP_P1-2: LN 6002_FSA	single	674.92	108.44	111.26	DC	19.05
7867706	314697	6SEEDGE HILL	DVP	927250	AC1-221 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	674.92	108.41	111.23	DC	19.05
1789226	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	119.3	120.46	DC	113.45
1789227	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: H2T557	breaker	3938.0	112.59	113.76	DC	111.21
1789999	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	single	3218.56	115.8	118.1	DC	75.58
1789081	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	135.33	136.44	DC	82.42
1789082	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 56372	breaker	3144.0	133.15	134.35	DC	85.3
1789657	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	147.24	148.23	DC	53.94
1789661	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 576	single	2442.12	141.9	142.84	DC	51.51
1789666	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	single	2442.12	116.19	116.83	DC	35.05
1789295	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: H1T594	breaker	3351.0	112.56	113.08	DC	56.67
1789296	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: 573T594	breaker	3351.0	111.68	112.21	DC	56.48

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
1789870	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	129.86	130.6	DC	39.03
1789871	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 573	single	2442.12	126.09	126.82	DC	38.28
1789015	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: WT576	breaker	3351.0	143.91	145.1	DC	87.84
1789016	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: 57602	breaker	3351.0	143.91	145.1	DC	87.84
1789536	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	162.73	163.87	DC	60.66
1789537	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 563	single	2442.12	152.11	153.07	DC	51.47
1789276	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	116.94	117.45	DC	57.04
1789277	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: 57302	breaker	3351.0	115.46	116.01	DC	57.67
1789278	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: XT573	breaker	3351.0	115.45	116.0	DC	57.67
1789990	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	119.28	119.95	DC	39.6
1789991	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 594	single	2738.22	116.98	117.62	DC	37.98
1790164	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	113.39	114.01	DC	32.78
1789169	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	132.7	133.19	DC	103.15
1789612	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	151.33	154.06	DC	67.04
1789614	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 557	single	2442.12	142.37	144.95	DC	65.52
1789324	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: 568T575	breaker	3938.0	105.78	107.39	DC	67.47
1790094	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 568	single	3218.56	114.73	116.06	DC	42.94
1790095	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	single	3218.56	115.62	117.05	DC	45.9
1790319	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	single	3218.56	101.35	102.57	DC	41.41
1789316	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P4-2: 568T575	breaker	3938.0	104.73	106.48	DC	66.62
1789317	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P4-2: 57502	breaker	3938.0	103.99	105.62	DC	64.0
1790060	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	single	3218.56	117.29	118.71	DC	45.39
1790061	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	single	3218.56	115.68	117.0	DC	42.57
1790680	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	111.11	111.85	DC	65.54
1790156	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPL	1	DVP_P1-2: LN 570	single	718.0	111.03	113.68	DC	19.05
7867669	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPL	1	DVP_P1-2: LN 6002_FSA	single	718.0	111.05	113.7	DC	19.05
1790313	934610	AD1-087 TAP	DVP	314697	6SEGE HILL	DVP	1	DVP_P1-2: LN 570	single	814.98	108.14	111.01	DC	23.49
7868073	934610	AD1-087 TAP	DVP	314697	6SEGE HILL	DVP	1	DVP_P1-2: LN 6002_FSA	single	814.98	108.14	111.01	DC	23.49
7868074	934610	AD1-087 TAP	DVP	314697	6SEGE HILL	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	108.11	110.99	DC	23.49

12.4 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
1790195	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	operation	559.3	127.64	129.58	DC	24.01
1790234	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	operation	559.3	123.97	125.91	DC	24.01
1789590	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	operation	449.32	177.62	179.55	DC	19.09
1790361	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	operation	441.8	105.32	107.17	DC	18.17
1790359	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	operation	441.8	105.34	107.19	DC	18.17
7868144	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 570	operation	814.98	88.99	93.19	DC	34.01
7868145	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 6002_FSA	operation	814.98	88.99	93.19	DC	34.01
1789996	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	operation	3218.56	135.28	136.71	DC	109.43
1790002	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	Base Case	operation	3218.56	92.43	94.97	DC	93.02
1790207	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 563	operation	903.9	103.59	109.25	DC	51.17
1789655	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	166.77	168.17	DC	78.1
1789662	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	operation	2442.12	134.11	135.06	DC	50.75
1789867	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	operation	2442.12	153.13	153.87	DC	56.51
1789875	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	Base Case	operation	2442.12	90.71	91.35	DC	34.34
1789533	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	197.33	198.97	DC	87.83
1789987	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	operation	2738.22	140.06	140.78	DC	57.33
1789610	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	175.99	177.22	DC	97.07
1789617	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	operation	2442.12	117.47	119.51	DC	80.64
1790090	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	operation	3218.56	131.75	132.9	DC	66.46
1790099	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	Base Case	operation	3218.56	101.24	101.92	DC	51.55
1790317	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	operation	3218.56	107.07	109.01	DC	59.95
1790448	314923	8SEPTA	DVP	314924	8SURREY	DVP	1	DVP_P1-2: LN 563	operation	2442.12	88.96	92.06	DC	75.4
1790184	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	operation	2442.12	105.14	106.31	DC	73.56

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
1790056	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	operation	3218.56	135.03	135.89	DC	65.72
1790065	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	Base Case	operation	3218.56	105.97	106.46	DC	50.98
7868258	314936	8BRAWLINGS	DVP	942930	AE2-313 TAP	DVP	1	DVP_P1-2: LN 585-A-A	operation	4070.2	100.6	104.96	DC	177.96
1790315	934610	AD1-087 TAP	DVP	314697	6SEEDGE HILL	DVP	1	DVP_P1-2: LN 570	operation	814.98	99.24	103.45	DC	34.01
7868075	934610	AD1-087 TAP	DVP	314697	6SEEDGE HILL	DVP	1	DVP_P1-2: LN 6002_FSA	operation	814.98	99.24	103.45	DC	34.01
7868294	940470	AE2-031 TAP	DVP	314923	8SEPTA	DVP	1	DVP_P1-2: LN 544-B	operation	2442.12	89.99	92.82	DC	69.2
7868208	941030	AE2-094 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511-A	operation	4070.2	98.96	103.95	DC	203.55
7868342	942920	AE2-311 TAP	DVP	940470	AE2-031 TAP	DVP	1	DVP_P1-2: LN 544-B	operation	2442.12	84.81	87.65	DC	69.2
7868187	942930	AE2-313 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A-A	operation	4070.2	100.27	104.64	DC	177.96

12.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
7868073,1790313,7868074	27	AD1-087 TAP 230.0 kV - 6SEEDGE HILL 230.0 kV Ckt 1	dom-081 (179) : Rebuild 16.71 miles of 230 kV Line 2068 from AD1-087 Tap to Sedge Hill with 2-795 ACSR. Project Type : FAC Cost : \$25,065,000 Time Estimate : 36-40 Months	\$25,065,000
7868189	14	AE2-313 TAP 500.0 kV - 8CARSON 500.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1789081,1789082,1789657,1789666,1789661	22	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
1790196	17	6CARSON 230.0 kV - 6CHRL249 230.0 kV Ckt 1	dom-078 (174) : Rebuild 7.47 miles of 230 kV Line 249 from Carson to Chaparral with 2-636 ACSR. Project Type : FAC Cost : \$18,675,000 Time Estimate : 30-36 Months	\$18,675,000
1789169,1789612,1789621,1789614	7	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
7868143,7868142,1790382	20	6CLOVER 230.0 kV - AD1- 087 TAP 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1790003,1789999,1789226,1789227	5	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
1790208	6	8CARSON 500.0 kV - 6CARSON 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1789277,1789276,1789991,1789990,1789278	25	8LADYSMITH 500.0 kV - 8CHANCE 500.0 kV Ckt 1	b3021 (276) : PJM baseline upgrade b3021: Rebuild 500kV Line #581 Ladysmith to Chancellor - 15.2 miles long. The baseline project has an projected in-service date of 12/31/2023. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$0
1790156,7867669	26	AC1-221 TAP 230.0 kV - 6PERSON230 T 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
7867745	3	6BUCKING 230.0 kV - 6BREMO 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0

ID	Index	Facility	Upgrade Description	Cost
1789295,1789870,1789871,1789296	23	8CHANCE 500.0 kV - 8BRISTER 500.0 kV Ckt 1	b3019 (275) : PJM baseline upgrade b3019: Rebuild 500kV Line #552 Bristers to Chancellor 21.6 miles long. The baseline project has an projected in-service date of 12/31/2023. Project Type : FAC Cost : \$0 Time Estimate : N/A	\$0
7867762	4	6FARMVIL 230.0 kV - 6BUCKING 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1790095,1789324,1790101,1790094	8	8NO ANNA 500.0 kV - 8SPOTSYL 500.0 kV Ckt 1	dom-045 (119) : Rebuild 14.02 miles of 500 kV Line 573 from North Anna to Spotsylvania with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$43,462,000 Time Estimate : 48-60 Months	\$43,462,000
7868099,7605150	1	6HARROWG 230.0 kV - 6TYLER1 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
7605148,7868096	2	6POE 230.0 kV - 6HARROWG 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1789428	16	8OX 500.0 kV - 8CLIFTON 500.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1790189,1789352,1789353	10	8SURRY 500.0 kV - 8CHCKAHM 500.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1790680,1790067,1790060,1790061,1789316,1789317	11	8SPOTSYL 500.0 kV - 8MORRSVL 500.0 kV Ckt 1	dom-019 (79) : Rebuild 18.75 miles of 500 kV Line 594 from Spotsylvania to Morrisville with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$58,125,000 Time Estimate : 48-60 Months	\$58,125,000
7867704,1790192,7867706	21	6SEGE HILL 230.0 kV - AC1-221 TAP 230.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
1790319,1789455,1790320	9	8NO ANNA 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	dom-044 (117) : Rebuild 14.53 miles of 500 kV Line 575 from North Anna to Ladysmith with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$45,043,000 Time Estimate : 48-60 Months	\$45,043,000
1789466,1790164	15	8LADYSMITH 500.0 kV - 8POSSUM 500.0 kV Ckt 1	dom-032 (97) : Replace Wavetraps at Ladysmith and Possum Pt 500 kV substations. Project Type : FAC Cost : \$300,000 Time Estimate : 16-18 Months dom-033 (98) : Relay Change Outs (CT) at Ladysmith and Possum Pt 500 kV substations. Project Type : FAC Cost : \$120,000 Time Estimate : 6-12 Months	\$420,000
7868260	12	8RAWLINGS 500.0 kV - AE2-313 TAP 500.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0

ID	Index	Facility	Upgrade Description	Cost
1790235	18	6CHRL249 230.0 kV - 6LOCKS 230.0 kV Ckt 1	dom-079 (175) : Rebuild 2.86 miles of 230 kV Line 249 from Chaparral to Locks with 2-636 ACSR. Project Type : FAC Cost : \$7,150,000 Time Estimate : 30-36 Months	\$7,150,000
1789592	19	6CHESTF B 230.0 kV - 6BASIN 230.0 kV Ckt 1	dom-012 (70) : Rebuild 12.4 miles of 230 kV Line 259 from Chesterfield to Basin with 2-636 ACSR. Project Type : FAC Cost : \$31,000,000 Time Estimate : 30-36 Months	\$31,000,000
1789536,1789016,1789015,1789537	24	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 Months	\$0
7868210	13	AE2-094 TAP 500.0 kV - 8CARSON 500.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
			TOTAL COST	\$558,346,000

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.

12.6 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.

12.6.1 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P1-2: LN 585-A-A	CONTINGENCY 'DVP_P1-2: LN 585-A-A' OPEN BRANCH FROM BUS 314902 TO BUS 941030 CKT 1 /* 8CARSON 500.00 - AE2-094 TAP 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_P4-2: XT573	CONTINGENCY 'DVP_P4-2: XT573' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 2 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
DVP_P7-1: LN 198-581	CONTINGENCY 'DVP_P7-1: LN 198-581' OPEN BRANCH FROM BUS 314135 TO BUS 314367 CKT 1 /* 3CHANCE 115.00 - 3CHANC_1 115.00 OPEN BRANCH FROM BUS 314135 TO BUS 314775 CKT 1 /* 3CHANCE 115.00 - 3NI RVER 115.00 OPEN BRANCH FROM BUS 314755 TO BUS 314779 CKT 1 /* 3SPOTSYL 115.00 - 3TDTAVRN 115.00 OPEN BRANCH FROM BUS 314775 TO BUS 314779 CKT 1 /* 3NI RVER 115.00 - 3TDTAVRN 115.00 OPEN BRANCH FROM BUS 314815 TO BUS 314877 CKT 1 /* 3OAK GRE 115.00 - 3OAK G_1 115.00 OPEN BUS 314367 /* ISLAND: 3CHANC_1 115.00 OPEN BUS 314775 /* ISLAND: 3NI RVER 115.00 OPEN BUS 314779 /* ISLAND: 3TDTAVRN 115.00 OPEN BUS 314877 /* ISLAND: 3OAK G_1 115.00 OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 2 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314905 TO BUS 314911 CKT 1 /* 8CHANCE 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: 57302	CONTINGENCY 'DVP_P4-2: 57302' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END

Contingency Name	Contingency Definition
DVP_P4-2: 545T594	CONTINGENCY 'DVP_P4-2: 545T594' /* MORRISVILLE 500 KV OPEN BRANCH FROM BUS 314900 TO BUS 314916 CKT 1 /* 8BRISTER 500.00 - 8MORRSVL 500.00 OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
DVP_P1-2: LN 568	CONTINGENCY 'DVP_P1-2: LN 568' OPEN BRANCH FROM BUS 314911 TO BUS 314922 CKT 1 /* 8LADYSMITH 500.00 - 8POSSUM 500.00 END
DVP_P4-2: 562T563	CONTINGENCY 'DVP_P4-2: 562T563' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 941030 CKT 1 /* 8CARSON 500.00 - AE2-094 TAP 500.00 /* CONTINGENCY LINE ADDED FOR AE2 BUILD OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P4-2: 568T575	CONTINGENCY 'DVP_P4-2: 568T575' /* LADYSMITH 500 KV OPEN BRANCH FROM BUS 314911 TO BUS 314922 CKT 1 /* 8LADYSMITH 500.00 - 8POSSUM 500.00 OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: 57502	CONTINGENCY 'DVP_P4-2: 57502' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 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
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

Contingency Name	Contingency Definition
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_P1-2: LN 511-A	CONTINGENCY 'DVP_P1-2: LN 511-A' OPEN BRANCH FROM BUS 314902 TO BUS 942930 CKT 1 /* 8CARSON 500.00 - AE2-313 TAP 500.00 END
DVP_P4-2: 541T569	CONTINGENCY 'DVP_P4-2: 541T569' /* MORRISVILLE 500 KV OPEN BRANCH FROM BUS 314916 TO BUS 314929 CKT 1 /* 8MORRSVL 500.00 - 8FRONT ROYAL500.00 OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 END
DVP_P1-2: LN 552	CONTINGENCY 'DVP_P1-2: LN 552' OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 1 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314900 TO BUS 314905 CKT 1 /* 8BRISTER 500.00 - 8CHANCE 500.00 END
DVP_P4-2: 573T594	CONTINGENCY 'DVP_P4-2: 573T594' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 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_P1-2: LN 544-B	CONTINGENCY 'DVP_P1-2: LN 544-B' OPEN BRANCH FROM BUS 939410 TO BUS 314928 CKT 1 /* AE1-173 TAP 500.00 - 8SUFFOLK 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

Contingency Name	Contingency Definition
DVP_P1-2: LN 581	CONTINGENCY 'DVP_P1-2: LN 581' OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 2 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314905 TO BUS 314911 CKT 1 /* 8CHANCE 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: H1T594	CONTINGENCY 'DVP_P4-2: H1T594' /* MORRISVILLE 500 KV OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314063 TO BUS 314916 CKT 1 /* 6MORRSVL 230.00 - 8MORRSVL 500.00 OPEN BUS 314897 /* 8MORRS_1 500.00 KV END
DVP_P4-2: SPOTS H1T594	CONTINGENCY 'DVP_P4-2: SPOTS H1T594' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314755 TO BUS 314934 CKT 1 /* 3SPOTSYL 115.00 - 8SPOTSYL 500.00 END

12.6.2 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
7868099	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	single	441.8	86.38	89.2	DC	12.55

Bus #	Bus	MW Impact
314589	3MURPHYS	0.02
314704	3LAWRENC	0.12
315102	1BRUNSWICKG1	1.93
315103	1BRUNSWICKG2	1.93
315104	1BRUNSWICKG3	1.93
315105	1BRUNSWICKS1	4.0
315115	1S HAMPT1	0.4
315126	1ROARAP2	0.43
315128	1ROARAP4	0.42
315131	1EDGECEMA	3.33
315132	1EDGECEMB	3.33
315136	1ROSEMG1	0.75
315137	1ROSEMS1	0.46
315138	1ROSEMG2	0.35
315139	1GASTONA	1.08
315141	1GASTONB	1.08
315159	1KERR 2	0.34
315163	1KERR 6	0.33
315164	1KERR 7	0.33
916301	Z1-086 C	11.72
917331	Z2-043 C	0.1
917341	Z2-044 C	0.06
917511	Z2-088 C OP1	0.37
918491	AA1-063AC OP	0.41
918511	AA1-065 C OP	0.36
918531	AA1-067 C	0.07
918561	AA1-072 C	0.02
919691	AA2-053 C	0.44
919701	AA2-057 C	2.64
920041	AA2-088 C OP	0.29
920591	AA2-165 C	0.04
920671	AA2-174 C	0.02
923801	AB2-015 C O1	3.05
923851	AB2-025 C	0.24
923911	AB2-031 C O1	1.12
923991	AB2-040 C O1	0.45
924151	AB2-059 C O1	0.46
924401	AB2-089 C	0.73
924491	AB2-098 C	0.19
924501	AB2-099 C	0.21
924511	AB2-100 C	7.28

Bus #	Bus	MW Impact
925061	AB2-161 C O1	2.61
925171	AB2-174 C O1	3.64
925591	AC1-034 C	2.44
925781	AC1-054 C O1	2.55
926071	AC1-086 C	9.97
926201	AC1-098 C	2.31
926211	AC1-099 C	0.77
927021	AC1-189 C	2.9
927141	AC1-208 C	3.5
930401	AB1-081 C O1	0.39
930861	AB1-132 C O1	0.83
931231	AB1-173 C	0.14
931241	AB1-173AC	0.14
932581	AC2-078 C O1	4.56
932591	AC2-079 C O1	3.17
932631	AC2-084 C	3.29
933991	AD1-023 C	3.98
934201	AD1-047 C	4.03
934231	AD1-050 C	1.62
934331	AD1-057 C O1	4.14
934571	AD1-082 C	5.94
935211	AD1-156 C	0.57
936361	AD2-046 C O1	2.85
936401	AD2-051 C O1	3.07
936661	AD2-085 C	1.95
936701	AD2-089 C	2.52
936711	AD2-090 C O1	2.61
937571	AD2-169 C	4.86
938171	AE1-026 C1 O	8.64
938172	AE1-026 C2 O	1.25
938221	AE1-035 C	0.74
938491	AE1-068 C O1	19.18
938501	AE1-069 C O1	15.02
938631	AE1-085 C O1	11.77
938661	AE1-088	0.55
938771	AE1-103 C O1	1.27
939071	AE1-135 C O1	13.47
939181	AE1-148 C O1	2.8
939191	AE1-149 C O1	12.77
939411	AE1-173 C	25.09
940061	AE1-248 C O1	12.34
940481	AE2-033 C	12.14
940521	AE2-037 C O1	2.83
940541	AE2-040	2.49
940571	AE2-044 C	1.6
940641	AE2-051 C O1	5.19
940651	AE2-052	4.28
940661	AE2-053	1.04
941031	AE2-094 C	12.55
941101	AE2-104 C O1	1.12
941541	AE2-151 C	0.38
941601	AE2-157 C O1	9.47

Bus #	Bus	MW Impact
941951	AE2-207	1.03
942211	AE2-233 C	4.1
942341	AE2-247 C	0.84
942471	AE2-260 C O1	9.28
942711	AE2-287 C O1	6.0
942921	AE2-311 C O1	12.37
942931	AE2-313 C	11.28
943171	AE2-346 C	0.62
AA2-074	AA2-074	1.68
CARR	CARR	0.2
CBM-S1	CBM-S1	4.17
CBM-S2	CBM-S2	4.79
CBM-W1	CBM-W1	4.12
CBM-W2	CBM-W2	27.12
CIN	CIN	1.87
CPLE	CPLE	2.48
IPL	IPL	1.17
LGEE	LGEE	0.54
MEC	MEC	4.17
MECS	MECS	1.7
RENSSELAER	RENSSELAER	0.16
WEC	WEC	0.5

12.6.3 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
7868096	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	single	441.8	86.4	89.22	DC	12.55

Bus #	Bus	MW Impact
314589	3MURPHYS	0.02
314704	3LAWRENC	0.12
315102	1BRUNSWICKG1	1.93
315103	1BRUNSWICKG2	1.93
315104	1BRUNSWICKG3	1.93
315105	1BRUNSWICKS1	4.0
315115	1S HAMPT1	0.4
315126	1ROARAP2	0.43
315128	1ROARAP4	0.42
315131	1EDGECEMA	3.33
315132	1EDGECEMB	3.33
315136	1ROSEMG1	0.75
315137	1ROSEMS1	0.46
315138	1ROSEMG2	0.35
315139	1GASTONA	1.08
315141	1GASTONB	1.08
315159	1KERR 2	0.34
315163	1KERR 6	0.33
315164	1KERR 7	0.33
916301	Z1-086 C	11.72
917331	Z2-043 C	0.1
917341	Z2-044 C	0.06
917511	Z2-088 C OP1	0.37
918491	AA1-063AC OP	0.41
918511	AA1-065 C OP	0.36
918531	AA1-067 C	0.07
918561	AA1-072 C	0.02
919691	AA2-053 C	0.44
919701	AA2-057 C	2.64
920041	AA2-088 C OP	0.29
920591	AA2-165 C	0.04
920671	AA2-174 C	0.02
923801	AB2-015 C O1	3.05
923851	AB2-025 C	0.24
923911	AB2-031 C O1	1.12
923991	AB2-040 C O1	0.45
924151	AB2-059 C O1	0.46
924401	AB2-089 C	0.73
924491	AB2-098 C	0.19
924501	AB2-099 C	0.21
924511	AB2-100 C	7.28

Bus #	Bus	MW Impact
925061	AB2-161 C O1	2.61
925171	AB2-174 C O1	3.64
925591	AC1-034 C	2.44
925781	AC1-054 C O1	2.55
926071	AC1-086 C	9.97
926201	AC1-098 C	2.31
926211	AC1-099 C	0.77
927021	AC1-189 C	2.9
927141	AC1-208 C	3.5
930401	AB1-081 C O1	0.39
930861	AB1-132 C O1	0.83
931231	AB1-173 C	0.14
931241	AB1-173AC	0.14
932581	AC2-078 C O1	4.56
932591	AC2-079 C O1	3.17
932631	AC2-084 C	3.29
933991	AD1-023 C	3.98
934201	AD1-047 C	4.03
934231	AD1-050 C	1.62
934331	AD1-057 C O1	4.14
934571	AD1-082 C	5.94
935211	AD1-156 C	0.57
936361	AD2-046 C O1	2.85
936401	AD2-051 C O1	3.07
936661	AD2-085 C	1.95
936701	AD2-089 C	2.52
936711	AD2-090 C O1	2.61
937571	AD2-169 C	4.86
938171	AE1-026 C1 O	8.64
938172	AE1-026 C2 O	1.25
938221	AE1-035 C	0.74
938491	AE1-068 C O1	19.18
938501	AE1-069 C O1	15.02
938631	AE1-085 C O1	11.77
938661	AE1-088	0.55
938771	AE1-103 C O1	1.27
939071	AE1-135 C O1	13.47
939181	AE1-148 C O1	2.8
939191	AE1-149 C O1	12.77
939411	AE1-173 C	25.09
940061	AE1-248 C O1	12.34
940481	AE2-033 C	12.14
940521	AE2-037 C O1	2.83
940541	AE2-040	2.49
940571	AE2-044 C	1.6
940641	AE2-051 C O1	5.19
940651	AE2-052	4.28
940661	AE2-053	1.04
941031	AE2-094 C	12.55
941101	AE2-104 C O1	1.12
941541	AE2-151 C	0.38
941601	AE2-157 C O1	9.47

Bus #	Bus	MW Impact
941951	AE2-207	1.03
942211	AE2-233 C	4.1
942341	AE2-247 C	0.84
942471	AE2-260 C O1	9.28
942711	AE2-287 C O1	6.0
942921	AE2-311 C O1	12.37
942931	AE2-313 C	11.28
943171	AE2-346 C	0.62
AA2-074	AA2-074	1.68
CARR	CARR	0.2
CBM-S1	CBM-S1	4.17
CBM-S2	CBM-S2	4.79
CBM-W1	CBM-W1	4.12
CBM-W2	CBM-W2	27.12
CIN	CIN	1.87
CPLE	CPLE	2.48
IPL	IPL	1.17
LGEE	LGEE	0.54
MEC	MEC	4.17
MECS	MECS	1.7
RENSSELAER	RENSSELAER	0.16
WEC	WEC	0.5

12.6.4 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
7867745	314677	6BUCKING	DVP	314747	6BREMO	DVP	1	DVP_P1-2: LN 563	single	571.52	87.25	89.45	DC	12.53

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.61
314704	3LAWRENC	0.16
315102	1BRUNSWICKG1	2.15
315103	1BRUNSWICKG2	2.15
315104	1BRUNSWICKG3	2.15
315105	1BRUNSWICKS1	4.46
315126	1ROARAP2	0.44
315128	1ROARAP4	0.43
315150	1BUGGS 1	10.44
315151	1BUGGS 2	10.44
315153	1CLOVER1	7.86
315154	1CLOVER2	7.76
315158	1KERR 1	0.22
315159	1KERR 2	0.88
315160	1KERR 3	0.86
315161	1KERR 4	0.86
315162	1KERR 5	0.86
315163	1KERR 6	0.86
315164	1KERR 7	0.86
315266	1PLYWOOD A	0.7
916301	Z1-086 C	12.63
917341	Z2-044 C	0.06
918491	AA1-063AC OP	0.41
919691	AA2-053 C	0.44
919701	AA2-057 C	2.68
920591	AA2-165 C	0.04
920671	AA2-174 C	0.02
923911	AB2-031 C O1	1.02
923991	AB2-040 C O1	0.41
924021	AB2-043 C O1	0.44
924031	AB2-045 C	1.07
924161	AB2-060 C O1	1.29
924301	AB2-077 C O1	0.27
924311	AB2-078 C O1	0.27
924321	AB2-079 C O1	0.27
924401	AB2-089 C	1.66
925171	AB2-174 C O1	3.22
925611	AC1-036 C	0.19
925781	AC1-054 C O1	5.34
925831	AC1-062	0.08
925991	AC1-075 C	3.02

Bus #	Bus	MW Impact
926021	AC1-080 C	1.01
926201	AC1-098 C	2.31
926211	AC1-099 C	0.77
926271	AC1-105 C O1	4.53
927141	AC1-208 C	3.54
927251	AC1-221 C	1.12
927261	AC1-222 C	2.51
931231	AB1-173 C	0.13
931241	AB1-173AC	0.13
932511	AC2-071 C	1.05
932631	AC2-084 C	3.29
932761	AC2-100 C	2.59
934201	AD1-047 C	3.65
934231	AD1-050 C	3.66
934311	AD1-055 C	1.74
934341	AD1-058 C	2.82
934611	AD1-087 C O1	6.29
934621	AD1-088 C	20.83
934991	AD1-131 C	0.92
935171	AD1-152 C O1	6.25
935221	AD1-157 C	0.41
935231	AD1-160 C	2.5
936261	AD2-033 C	20.32
936331	AD2-043 C	3.26
936361	AD2-046 C O1	7.89
936481	AD2-063 C O1	20.12
937481	AD2-202 C O1	1.73
937571	AD2-169 C	4.52
938371	AE1-056 C	14.67
938491	AE1-068 C O1	20.14
938501	AE1-069 C O1	16.19
939181	AE1-148 C O1	7.92
939371	AE1-168 C	29.32
940241	AE2-006	0.8
940661	AE2-053	2.95
941031	AE2-094 C	12.53
941791	AE2-182 C	3.77
942211	AE2-233 C	4.1
942451	AE2-258	2.68
942461	AE2-259 C O1	26.93
942711	AE2-287 C O1	9.4
942751	AE2-291 C O1	4.02
942761	AE2-292 C O1	5.0
942931	AE2-313 C	12.46
943051	AE2-328 C	27.76
AA2-074	AA2-074	2.29
CARR	CARR	0.26
CBM-S1	CBM-S1	4.65
CBM-S2	CBM-S2	6.33
CBM-W1	CBM-W1	3.71
CBM-W2	CBM-W2	29.4
CIN	CIN	1.71

Bus #	Bus	MW Impact
CPL	CPL	3.37
IPL	IPL	1.05
LGEE	LGEE	0.49
MEC	MEC	4.16
MECS	MECS	1.21
RENSSELAER	RENSSELAER	0.21
WEC	WEC	0.46

12.6.5 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
7867762	314692	6FARMVIL	DVP	314677	6BUCKING	DVP	1	DVP_P1-2: LN 563	single	559.3	85.66	87.91	DC	12.56

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.61
314704	3LAWRENC	0.16
315102	1BRUNSWICKG1	2.15
315103	1BRUNSWICKG2	2.15
315104	1BRUNSWICKG3	2.15
315105	1BRUNSWICKS1	4.47
315126	1ROARAP2	0.44
315128	1ROARAP4	0.43
315150	1BUGGS 1	10.45
315151	1BUGGS 2	10.45
315153	1CLOVER1	7.87
315154	1CLOVER2	7.77
315158	1KERR 1	0.22
315159	1KERR 2	0.88
315160	1KERR 3	0.86
315161	1KERR 4	0.86
315162	1KERR 5	0.86
315163	1KERR 6	0.86
315164	1KERR 7	0.86
315266	1PLYWOOD A	0.7
916301	Z1-086 C	12.66
917341	Z2-044 C	0.06
918491	AA1-063AC OP	0.41
919691	AA2-053 C	0.44
919701	AA2-057 C	2.69
920591	AA2-165 C	0.04
920671	AA2-174 C	0.02
923911	AB2-031 C O1	1.02
923991	AB2-040 C O1	0.41
924021	AB2-043 C O1	0.44
924161	AB2-060 C O1	1.29
924301	AB2-077 C O1	0.27
924311	AB2-078 C O1	0.27
924321	AB2-079 C O1	0.27
924401	AB2-089 C	1.66
925171	AB2-174 C O1	3.22
925611	AC1-036 C	0.19
925781	AC1-054 C O1	5.35
925831	AC1-062	0.08
925991	AC1-075 C	3.03
926021	AC1-080 C	1.01

Bus #	Bus	MW Impact
926201	AC1-098 C	2.31
926211	AC1-099 C	0.78
926271	AC1-105 C O1	4.54
927141	AC1-208 C	3.55
927251	AC1-221 C	1.13
927261	AC1-222 C	2.51
931231	AB1-173 C	0.13
931241	AB1-173AC	0.13
932631	AC2-084 C	3.3
932761	AC2-100 C	2.59
934201	AD1-047 C	3.65
934231	AD1-050 C	3.67
934311	AD1-055 C	1.75
934341	AD1-058 C	2.82
934611	AD1-087 C O1	6.3
934621	AD1-088 C	20.84
934991	AD1-131 C	0.93
935171	AD1-152 C O1	6.26
935221	AD1-157 C	0.41
935231	AD1-160 C	2.5
936261	AD2-033 C	20.33
936331	AD2-043 C	3.26
936361	AD2-046 C O1	7.9
936481	AD2-063 C O1	20.13
937481	AD2-202 C O1	1.73
937571	AD2-169 C	4.53
938371	AE1-056 C	14.68
938491	AE1-068 C O1	20.18
938501	AE1-069 C O1	16.22
939181	AE1-148 C O1	7.93
939371	AE1-168 C	29.33
940241	AE2-006	0.8
940661	AE2-053	2.95
941031	AE2-094 C	12.56
941791	AE2-182 C	3.77
942211	AE2-233 C	4.1
942451	AE2-258	2.68
942461	AE2-259 C O1	26.94
942711	AE2-287 C O1	9.41
942751	AE2-291 C O1	4.03
942761	AE2-292 C O1	5.01
942931	AE2-313 C	12.49
943051	AE2-328 C	27.77
AA2-074	AA2-074	2.3
CARR	CARR	0.26
CBM-S1	CBM-S1	4.7
CBM-S2	CBM-S2	6.35
CBM-W1	CBM-W1	3.79
CBM-W2	CBM-W2	29.76
CIN	CIN	1.74
CPL	CPL	3.38
IPL	IPL	1.08

Bus #	Bus	MW Impact
LGEE	LGEE	0.5
MEC	MEC	4.23
MECS	MECS	1.26
RENSSELAER	RENSSELAER	0.2
WEC	WEC	0.47

12.6.6 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
1789226	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	119.3	120.46	DC	113.45

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

12.6.7 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
1790208	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 563	single	903.9	87.8	91.71	DC	35.34

Bus #	Bus	MW Impact
315102	1BRUNSWICKG1	5.24
315103	1BRUNSWICKG2	5.24
315104	1BRUNSWICKG3	5.24
315105	1BRUNSWICKS1	10.89
315153	1CLOVER1	5.99
315154	1CLOVER2	5.91
916301	Z1-086 C	32.26
938491	AE1-068 C O1	53.23
938501	AE1-069 C O1	41.34
939411	AE1-173 C	67.3
940471	AE2-031 C O1	22.51
940641	AE2-051 C O1	14.9
941031	AE2-094 C	35.34
942211	AE2-233 C	11.55
942921	AE2-311 C O1	34.88
942931	AE2-313 C	31.57
AA2-074	AA2-074	2.05
CARR	CARR	0.28
CBM-S1	CBM-S1	5.66
CBM-S2	CBM-S2	6.27
CBM-W1	CBM-W1	5.58
CBM-W2	CBM-W2	36.81
CIN	CIN	2.54
CPL	CPL	3.01
IPL	IPL	1.59
LGEE	LGEE	0.73
MEC	MEC	5.66
MECS	MECS	2.31
RENSSELAER	RENSSELAER	0.22
WEC	WEC	0.68

12.6.8 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
1789612	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	151.33	154.06	DC	67.04

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

12.6.9 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
1790095	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	single	3218.56	115.62	117.05	DC	45.9

Bus #	Bus	MW Impact
314236	6NRTHEST	0.17
314250	6ROCKVILLE	0.3
314309	6IRON208	0.4
314314	3LOCKS	0.26
314507	3THOMPSN	0.3
315053	1BELMED1	21.1
315054	1BELMED2	21.1
315055	1BELMED3	17.52
315058	1CHESTF3	21.87
315059	1CHESTF4	35.45
315065	1CHESTF6	18.16
315074	1HOPCGN1	10.14
315075	1HOPCGN2	10.01
315076	1HOPPOLC	1.42
315077	1HOPHCF1	2.21
315078	1HOPHCF2	2.21
315079	1HOPHCF3	2.21
315080	1HOPHCF4	3.36
315083	1SPRUNCA	13.09
315084	1SPRUNCB	13.09
315085	1SPRUNCC	9.7
315086	1SPRUNCD	9.7
315090	1YORKTN1	34.62
315091	1YORKTN2	35.93
315098	1CHESPKA	0.4
315099	1CHESPKB	0.99
315108	1ELIZAR1	2.92
315109	1ELIZAR2	2.87
315110	1ELIZAR3	2.96
315225	1N ANNA1	45.34
315226	1N ANNA2	45.44
315233	1SURREY 2	22.66
315260	1GOSPORTA	0.32
315261	1GOSPORTB	0.41
315262	1GOSPORTC	0.34
923801	AB2-015 C O1	10.16
923911	AB2-031 C O1	2.53
924241	AB2-068 O1	230.57
924501	AB2-099 C	0.67
924511	AB2-100 C	13.34
925051	AB2-160 C O1	6.67

Bus #	Bus	MW Impact
925061	AB2-161 C O1	4.12
925171	AB2-174 C O1	7.98
925331	AB2-190 C	24.5
925821	AC1-061	0.01
925861	AC1-065 C	3.98
926071	AC1-086 C	23.3
926291	AC1-107 O1	348.03
926661	AC1-147 C	0.34
926751	AC1-161 C O1	37.34
926781	AC1-164 C	47.75
927041	AC1-191 C O1	11.08
927221	AC1-216 C O1	11.98
932041	AC2-012 C	12.49
932581	AC2-078 C O1	4.97
932591	AC2-079 C O1	6.97
932831	AC2-110 C	1.59
933011	AC2-125	2.87
933021	AC2-126	2.88
933061	AC2-130	2.88
933291	AC2-141 C	37.34
933501	AC2-165 C	11.0
933991	AD1-023 C	15.17
934011	AD1-025 C	20.6
934061	AD1-033 C	9.18
934141	AD1-041 C	6.26
934201	AD1-047 C	9.08
934521	AD1-076 C	63.11
934571	AD1-082 C	9.38
935161	AD1-151 C O1	19.68
935211	AD1-156 C	0.32
936041	AD2-007	2.19
936051	AD2-008 C	3.59
936151	AD2-021	0.28
936241	AD2-030 C	2.72
936301	AD2-039 C	1.59
936391	AD2-049 C	2.17
936401	AD2-051 C O1	9.93
936591	AD2-074 C	6.19
936661	AD2-085 C	4.18
936711	AD2-090 C O1	8.4
937221	AD2-160 C O1	7.13
937251	AD2-164	5.81
937541	AD2-215 C	2.12
937571	AD2-169 C	11.29
938031	AE1-004 C	1.59
938171	AE1-026 C1 O	32.23
938172	AE1-026 C2 O	4.66
938181	AE1-027 C	2.86
938191	AE1-028 C	1.66
938221	AE1-035 C	2.55
938491	AE1-068 C O1	70.23
938501	AE1-069 C O1	55.02

Bus #	Bus	MW Impact
938531	AE1-072 C O1	21.32
938551	AE1-074 C	3.09
938561	AE1-075 C	2.45
938631	AE1-085 C O1	13.34
938661	AE1-088	2.0
938771	AE1-103 C O1	4.3
939071	AE1-135 C O1	24.05
939191	AE1-149 C O1	13.11
939231	AE1-154 C	2.08
939241	AE1-155 C	16.72
939261	AE1-157 C O1	15.38
939271	AE1-158 C O1	15.69
939311	AE1-162 C	2.63
939411	AE1-173 C	108.28
939421	AE1-174 C	0.23
939431	AE1-175 C	2.89
939611	AE1-191 C	12.51
939751	AE1-206 C O1	38.21
940061	AE1-248 C O1	19.5
940071	AE1-249 C	8.79
940231	AE2-005 C	1.59
940251	AE2-007	212.16
940421	AE2-026 C	3.95
940431	AE2-027 C O1	15.77
940471	AE2-031 C O1	39.17
940481	AE2-033 C	18.69
940491	AE2-034 C	9.84
940521	AE2-037 C O1	9.09
940541	AE2-040	3.76
940551	AE2-041	8.42
940641	AE2-051 C O1	20.51
940651	AE2-052	4.39
940891	AE2-078 C	2.88
940901	AE2-079 C	2.88
940911	AE2-080 C	2.88
941031	AE2-094 C	45.9
941101	AE2-104 C O1	4.23
941281	AE2-122 C O1	34.76
941291	AE2-123 C O1	35.72
941301	AE2-124 C O1	32.48
941501	AE2-147 C	19.04
941541	AE2-151 C	1.23
941581	AE2-155 C	0.76
941591	AE2-156	21.94
941601	AE2-157 C O1	13.03
942001	AE2-212 C	2.64
942131	AE2-225 C	2.59
942151	AE2-227 C O1	2.64
942161	AE2-228 C O1	2.64
942171	AE2-229 C	2.59
942191	AE2-231 C O1	6.02
942211	AE2-233 C	15.0

Bus #	Bus	MW Impact
942341	AE2-247 C	1.81
942371	AE2-250 C O1	11.84
942401	AE2-253 C	7.5
942471	AE2-260 C O1	16.57
942531	AE2-268 C	2.02
942551	AE2-270	32.83
942851	AE2-304 C	0.75
942921	AE2-311 C O1	54.33
942931	AE2-313 C	41.45
943171	AE2-346 C	2.0
AA2-074	AA2-074	5.89
CARR	CARR	1.84
CBM-S1	CBM-S1	13.47
CBM-S2	CBM-S2	16.92
CBM-W1	CBM-W1	8.86
CBM-W2	CBM-W2	82.41
CIN	CIN	4.58
CPLE	CPLE	8.65
IPL	IPL	2.81
LGEE	LGEE	1.38
MEC	MEC	11.2
MECS	MECS	1.5
RENSSELAER	RENSSELAER	1.46
WEC	WEC	1.17

12.6.10 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
1790319	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	single	3218.56	101.35	102.57	DC	41.41

Bus #	Bus	MW Impact
314643	3O INLET	0.26
315102	1BRUNSWICKG1	6.34
315103	1BRUNSWICKG2	6.34
315104	1BRUNSWICKG3	6.34
315105	1BRUNSWICKS1	13.17
315108	1ELIZAR1	1.9
315109	1ELIZAR2	1.87
315110	1ELIZAR3	1.92
315150	1BUGGS 1	9.24
315151	1BUGGS 2	9.24
315153	1CLOVER1	9.0
315154	1CLOVER2	8.89
315172	1LOISA A	2.15
315173	1LOISA B	2.16
315174	1LOISA C	2.16
315175	1LOISA D	2.16
315176	1LOISA E	4.4
315177	1S ANNAG1	1.32
315178	1S ANNAS1	0.68
315179	1S ANNAG2	1.32
315180	1S ANNAS2	0.68
315225	1N ANNA1	79.58
315226	1N ANNA2	79.76
916191	Z1-068 C	0.03
916301	Z1-086 C	38.61
919151	AA1-139 C	1.46
923801	AB2-015 C O1	6.94
923851	AB2-025 C	0.26
923861	AB2-026 C	0.3
923911	AB2-031 C O1	1.87
924401	AB2-089 C	1.76
924501	AB2-099 C	0.48
924511	AB2-100 C	9.69
925021	AB2-158 C	3.02
925061	AB2-161 C O1	2.58
925171	AB2-174 C O1	5.89
925521	AC1-027 C	0.19
925781	AC1-054 C O1	5.94
926071	AC1-086 C	17.07
926201	AC1-098 C	5.01
926211	AC1-099 C	1.68

Bus #	Bus	MW Impact
926271	AC1-105 C O1	4.56
926751	AC1-161 C O1	24.32
927141	AC1-208 C	7.37
932041	AC2-012 C	8.1
932581	AC2-078 C O1	3.01
932591	AC2-079 C O1	4.46
932631	AC2-084 C	7.14
933291	AC2-141 C	24.32
933501	AC2-165 C	9.85
933731	AC2-196 C	0.17
933991	AD1-023 C	10.62
934061	AD1-033 C	6.02
934201	AD1-047 C	6.71
934231	AD1-050 C	3.88
934331	AD1-057 C O1	8.13
934521	AD1-076 C	43.95
934571	AD1-082 C	5.88
934611	AD1-087 C O1	7.46
934621	AD1-088 C	11.99
935171	AD1-152 C O1	7.41
935231	AD1-160 C	0.93
936261	AD2-033 C	10.75
936361	AD2-046 C O1	7.29
936401	AD2-051 C O1	7.11
936481	AD2-063 C O1	12.31
936661	AD2-085 C	2.68
936711	AD2-090 C O1	5.81
937221	AD2-160 C O1	4.69
937481	AD2-202 C O1	2.05
937541	AD2-215 C	1.34
937571	AD2-169 C	8.34
938171	AE1-026 C1 O	22.63
938172	AE1-026 C2 O	3.27
938181	AE1-027 C	1.88
938191	AE1-028 C	1.09
938221	AE1-035 C	1.82
938371	AE1-056 C	5.47
938491	AE1-068 C O1	63.23
938501	AE1-069 C O1	49.48
938531	AE1-072 C O1	14.06
938551	AE1-074 C	2.11
938561	AE1-075 C	2.18
938631	AE1-085 C O1	8.11
938661	AE1-088	1.42
938771	AE1-103 C O1	2.92
939071	AE1-135 C O1	17.45
939181	AE1-148 C O1	7.19
939231	AE1-154 C	4.07
939371	AE1-168 C	12.56
939411	AE1-173 C	87.8
940061	AE1-248 C O1	12.23
940241	AE2-006	0.4

Bus #	Bus	MW Impact
940251	AE2-007	137.84
940421	AE2-026 C	7.73
940471	AE2-031 C O1	29.84
940481	AE2-033 C	13.42
940491	AE2-034 C	6.77
940521	AE2-037 C O1	6.53
940541	AE2-040	2.69
940641	AE2-051 C O1	17.66
940661	AE2-053	2.68
941031	AE2-094 C	41.41
941101	AE2-104 C O1	2.77
941281	AE2-122 C O1	22.69
941291	AE2-123 C O1	23.32
941301	AE2-124 C O1	21.22
941501	AE2-147 C	12.7
941541	AE2-151 C	0.88
941591	AE2-156	14.24
941601	AE2-157 C O1	8.08
941791	AE2-182 C	2.17
942131	AE2-225 C	1.7
942171	AE2-229 C	1.7
942211	AE2-233 C	13.53
942341	AE2-247 C	1.16
942401	AE2-253 C	4.93
942451	AE2-258	1.92
942461	AE2-259 C O1	8.58
942471	AE2-260 C O1	12.02
942711	AE2-287 C O1	10.9
942851	AE2-304 C	0.51
942921	AE2-311 C O1	43.78
942931	AE2-313 C	37.37
943051	AE2-328 C	10.35
943171	AE2-346 C	1.43
AA2-074	AA2-074	4.86
CARR	CARR	1.55
CBM-S1	CBM-S1	11.51
CBM-S2	CBM-S2	13.97
CBM-W1	CBM-W1	9.08
CBM-W2	CBM-W2	72.25
CIN	CIN	4.42
CPL	CPL	7.14
IPL	IPL	2.74
LGEE	LGEE	1.31
MEC	MEC	10.36
MECS	MECS	2.62
RENSSELAER	RENSSELAER	1.22
WEC	WEC	1.15

12.6.11 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
1789352	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	90.76	91.78	DC	85.88

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
CPL	CPL	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

12.6.12 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
1790060	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	single	3218.56	117.29	118.71	DC	45.39

Bus #	Bus	MW Impact
314236	6NRTHEST	0.16
314250	6ROCKVILLE	0.3
314309	6IRON208	0.4
314314	3LOCKS	0.26
314507	3THOMPSN	0.3
315053	1BELMED1	20.89
315054	1BELMED2	20.89
315055	1BELMED3	17.34
315058	1CHESTF3	21.64
315059	1CHESTF4	35.08
315065	1CHESTF6	17.97
315074	1HOPCGN1	10.03
315075	1HOPCGN2	9.9
315076	1HOPPOLC	1.4
315077	1HOPHCF1	2.19
315078	1HOPHCF2	2.19
315079	1HOPHCF3	2.19
315080	1HOPHCF4	3.33
315083	1SPRUNCA	12.96
315084	1SPRUNCB	12.96
315085	1SPRUNCC	9.6
315086	1SPRUNCD	9.6
315090	1YORKTN1	34.25
315091	1YORKTN2	35.54
315098	1CHESPKA	0.39
315099	1CHESPKB	0.98
315108	1ELIZAR1	2.89
315109	1ELIZAR2	2.84
315110	1ELIZAR3	2.93
315225	1N ANNA1	44.47
315226	1N ANNA2	44.57
315233	1SURRY 2	22.42
315260	1GOSPORTA	0.31
315261	1GOSPORTB	0.4
315262	1GOSPORTC	0.34
923801	AB2-015 C O1	10.06
923911	AB2-031 C O1	2.51
924241	AB2-068 O1	228.21
924501	AB2-099 C	0.66
924511	AB2-100 C	13.21
925021	AB2-158 C	1.69

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.6
925061	AB2-161 C O1	4.07
925171	AB2-174 C O1	7.91
925331	AB2-190 C	24.24
925821	AC1-061	0.01
925861	AC1-065 C	3.94
926001	AC1-076 C	6.64
926071	AC1-086 C	23.08
926291	AC1-107 O1	344.46
926661	AC1-147 C	0.33
926731	AC1-158 C	193.43
926751	AC1-161 C O1	36.93
926781	AC1-164 C	47.25
927041	AC1-191 C O1	10.96
927221	AC1-216 C O1	11.86
932041	AC2-012 C	12.36
932581	AC2-078 C O1	4.92
932591	AC2-079 C O1	6.9
932831	AC2-110 C	1.57
933011	AC2-125	2.83
933021	AC2-126	2.85
933061	AC2-130	2.85
933291	AC2-141 C	36.93
933501	AC2-165 C	11.07
933991	AD1-023 C	15.02
934011	AD1-025 C	20.38
934061	AD1-033 C	9.08
934141	AD1-041 C	6.19
934201	AD1-047 C	9.0
934521	AD1-076 C	62.49
934541	AD1-078 C	4.06
934571	AD1-082 C	9.28
935161	AD1-151 C O1	19.48
935211	AD1-156 C	0.31
936041	AD2-007	2.16
936051	AD2-008 C	3.55
936151	AD2-021	0.28
936241	AD2-030 C	2.69
936301	AD2-039 C	1.57
936391	AD2-049 C	2.15
936401	AD2-051 C O1	9.83
936591	AD2-074 C	6.12
936661	AD2-085 C	4.14
936711	AD2-090 C O1	8.32
937221	AD2-160 C O1	7.05
937251	AD2-164	5.75
937541	AD2-215 C	2.1
937571	AD2-169 C	11.2
938031	AE1-004 C	1.57
938171	AE1-026 C1 O	31.92
938172	AE1-026 C2 O	4.62
938181	AE1-027 C	2.83

Bus #	Bus	MW Impact
938191	AE1-028 C	1.64
938221	AE1-035 C	2.53
938491	AE1-068 C O1	69.46
938501	AE1-069 C O1	54.42
938531	AE1-072 C O1	21.09
938551	AE1-074 C	3.06
938561	AE1-075 C	2.46
938631	AE1-085 C O1	13.2
938661	AE1-088	1.98
938771	AE1-103 C O1	4.26
939071	AE1-135 C O1	23.82
939191	AE1-149 C O1	12.97
939231	AE1-154 C	2.28
939261	AE1-157 C O1	15.19
939271	AE1-158 C O1	15.5
939311	AE1-162 C	2.6
939411	AE1-173 C	107.05
939421	AE1-174 C	0.23
939431	AE1-175 C	2.86
939611	AE1-191 C	12.38
939751	AE1-206 C O1	37.8
940061	AE1-248 C O1	19.3
940071	AE1-249 C	8.7
940231	AE2-005 C	1.57
940251	AE2-007	209.84
940421	AE2-026 C	4.33
940431	AE2-027 C O1	15.61
940471	AE2-031 C O1	38.73
940481	AE2-033 C	18.5
940491	AE2-034 C	9.74
940521	AE2-037 C O1	9.0
940541	AE2-040	3.72
940551	AE2-041	8.33
940641	AE2-051 C O1	20.28
940651	AE2-052	4.34
940891	AE2-078 C	2.85
940901	AE2-079 C	2.85
940911	AE2-080 C	2.85
941031	AE2-094 C	45.39
941101	AE2-104 C O1	4.19
941281	AE2-122 C O1	34.38
941291	AE2-123 C O1	35.33
941301	AE2-124 C O1	32.12
941381	AE2-134	4.24
941501	AE2-147 C	18.84
941541	AE2-151 C	1.22
941581	AE2-155 C	0.75
941591	AE2-156	21.71
941601	AE2-157 C O1	12.89
942001	AE2-212 C	2.61
942131	AE2-225 C	2.57
942151	AE2-227 C O1	2.61

Bus #	Bus	MW Impact
942161	AE2-228 C O1	2.61
942171	AE2-229 C	2.57
942191	AE2-231 C O1	5.95
942211	AE2-233 C	14.83
942341	AE2-247 C	1.79
942371	AE2-250 C O1	11.72
942401	AE2-253 C	7.41
942471	AE2-260 C O1	16.41
942531	AE2-268 C	2.0
942551	AE2-270	32.48
942851	AE2-304 C	0.75
942921	AE2-311 C O1	53.71
942931	AE2-313 C	41.0
943171	AE2-346 C	1.98
AA2-074	AA2-074	5.85
CARR	CARR	1.85
CBM-S1	CBM-S1	13.48
CBM-S2	CBM-S2	16.83
CBM-W1	CBM-W1	8.93
CBM-W2	CBM-W2	82.48
CIN	CIN	4.62
CPL	CPL	8.59
IPL	IPL	2.83
LGEE	LGEE	1.39
MEC	MEC	11.24
MECS	MECS	1.54
RENSSELAER	RENSSELAER	1.46
WEC	WEC	1.17

12.6.13 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
7868260	314936	8RAWLINGS	DVP	942930	AE2-313 TAP	DVP	1	DVP_P1-2: LN 585-A-A	single	4070.2	93.97	96.99	DC	122.91

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.3
315102	1BRUNSWICKG1	19.59
315103	1BRUNSWICKG2	19.59
315104	1BRUNSWICKG3	19.59
315105	1BRUNSWICKS1	40.7
315150	1BUGGS 1	13.33
315151	1BUGGS 2	13.33
315153	1CLOVER1	24.84
315154	1CLOVER2	24.52
315156	1HALLBR1	1.01
315158	1KERR 1	0.24
315159	1KERR 2	1.0
315160	1KERR 3	0.98
315161	1KERR 4	0.98
315162	1KERR 5	0.98
315163	1KERR 6	0.98
315164	1KERR 7	0.98
315165	1HURT 1	5.72
315166	1HURT 2	5.72
315266	1PLYWOOD A	1.5
916301	Z1-086 C	117.83
924021	AB2-043 C O1	0.39
924161	AB2-060 C O1	1.14
924301	AB2-077 C O1	0.25
924311	AB2-078 C O1	0.25
924321	AB2-079 C O1	0.25
924401	AB2-089 C	1.76
925611	AC1-036 C	0.12
925831	AC1-062	0.04
925991	AC1-075 C	8.46
926021	AC1-080 C	2.83
926051	AC1-083 C O1	5.25
926271	AC1-105 C O1	9.16
927251	AC1-221 C	4.03
927261	AC1-222 C	6.38
932761	AC2-100 C	9.27
933941	AD1-017 C	1.05
934231	AD1-050 C	3.88
934311	AD1-055 C	4.43
934341	AD1-058 C	10.1
934611	AD1-087 C O1	19.57

Bus #	Bus	MW Impact
934621	AD1-088 C	27.27
934991	AD1-131 C	3.31
935171	AD1-152 C O1	19.45
935221	AD1-157 C	0.19
935231	AD1-160 C	1.14
936161	AD2-022 C O1	13.37
936171	AD2-023 C O1	7.83
936261	AD2-033 C	13.42
936331	AD2-043 C	8.29
936361	AD2-046 C O1	8.6
936391	AD2-049 C	1.61
936481	AD2-063 C O1	15.44
937481	AD2-202 C O1	5.39
938371	AE1-056 C	6.72
938491	AE1-068 C O1	191.08
938501	AE1-069 C O1	150.98
938941	AE1-122 O1	64.48
939181	AE1-148 C O1	8.52
939371	AE1-168 C	15.54
939421	AE1-174 C	0.31
940081	AE1-250 C	14.15
940241	AE2-006	0.5
940601	AE2-047 C O1	4.26
940661	AE2-053	3.17
941031	AE2-094 C	122.91
941431	AE2-140 C O1	16.85
941791	AE2-182 C	4.93
942211	AE2-233 C	40.16
942451	AE2-258	2.41
942461	AE2-259 C O1	10.44
942552	AE2-270 BAT	23.13
942751	AE2-291 C O1	12.0
942761	AE2-292 C O1	14.94
943051	AE2-328 C	18.07
AA2-074	AA2-074	9.99
CARR	CARR	1.27
CBM-S1	CBM-S1	27.05
CBM-S2	CBM-S2	29.9
CBM-W1	CBM-W1	27.1
CBM-W2	CBM-W2	176.19
CIN	CIN	12.29
CPL	CPL	14.68
IPL	IPL	7.7
LGEE	LGEE	3.56
MEC	MEC	27.28
MECS	MECS	11.37
RENSSELAER	RENSSELAER	1.0
WEC	WEC	3.28
Z1-043	Z1-043	12.91

12.6.14 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
7868210	941030	AE2-094 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511-A	single	4070.2	92.72	96.18	DC	140.59

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.27
315102	1BRUNSWICKG1	19.58
315103	1BRUNSWICKG2	19.58
315104	1BRUNSWICKG3	19.58
315105	1BRUNSWICKS1	40.68
315150	1BUGGS 1	12.24
315151	1BUGGS 2	12.24
315153	1CLOVER1	22.3
315154	1CLOVER2	22.01
315156	1HALLBR1	0.94
315158	1KERR 1	0.23
315159	1KERR 2	0.92
315160	1KERR 3	0.91
315161	1KERR 4	0.91
315162	1KERR 5	0.91
315163	1KERR 6	0.91
315164	1KERR 7	0.91
315165	1HURT 1	5.31
315166	1HURT 2	5.31
315266	1PLYWOOD A	1.38
916301	Z1-086 C	123.02
924021	AB2-043 C O1	0.36
924161	AB2-060 C O1	1.04
924301	AB2-077 C O1	0.23
924311	AB2-078 C O1	0.23
924321	AB2-079 C O1	0.23
925611	AC1-036 C	0.11
925831	AC1-062	0.04
925991	AC1-075 C	7.77
926021	AC1-080 C	2.6
926051	AC1-083 C O1	4.99
926271	AC1-105 C O1	8.38
927251	AC1-221 C	3.79
927261	AC1-222 C	5.84
932761	AC2-100 C	8.73
933941	AD1-017 C	1.0
934311	AD1-055 C	4.05
934341	AD1-058 C	9.51
934611	AD1-087 C O1	17.7
934621	AD1-088 C	24.42
934991	AD1-131 C	3.12

Bus #	Bus	MW Impact
935171	AD1-152 C O1	17.59
935221	AD1-157 C	0.17
935231	AD1-160 C	1.03
936161	AD2-022 C O1	12.81
936171	AD2-023 C O1	7.5
936261	AD2-033 C	12.17
936331	AD2-043 C	7.59
936361	AD2-046 C O1	7.95
936391	AD2-049 C	1.55
936481	AD2-063 C O1	14.06
937481	AD2-202 C O1	4.87
938371	AE1-056 C	6.03
938491	AE1-068 C O1	206.12
938501	AE1-069 C O1	157.63
938941	AE1-122 O1	61.69
939181	AE1-148 C O1	7.87
939371	AE1-168 C	14.02
939421	AE1-174 C	0.3
940081	AE1-250 C	13.49
940241	AE2-006	0.45
940601	AE2-047 C O1	4.07
940661	AE2-053	2.93
941031	AE2-094 C	140.59
941431	AE2-140 C O1	16.12
941791	AE2-182 C	4.42
942211	AE2-233 C	45.93
942451	AE2-258	2.2
942461	AE2-259 C O1	9.31
942552	AE2-270 BAT	22.28
942751	AE2-291 C O1	11.05
942761	AE2-292 C O1	13.76
942931	AE2-313 C	106.54
943051	AE2-328 C	16.12
AA2-074	AA2-074	9.7
CARR	CARR	1.24
CBM-S1	CBM-S1	26.15
CBM-S2	CBM-S2	29.04
CBM-W1	CBM-W1	26.03
CBM-W2	CBM-W2	170.15
CIN	CIN	11.81
CPL	CPL	14.26
IPL	IPL	7.4
LGEE	LGEE	3.42
MEC	MEC	26.27
MECS	MECS	10.86
RENSSELAER	RENSSELAER	0.98
WEC	WEC	3.15
Z1-043	Z1-043	12.41

12.6.15 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
7868189	942930	AE2-313 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A-A	single	4070.2	93.92	96.94	DC	122.91

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.3
315102	1BRUNSWICKG1	19.59
315103	1BRUNSWICKG2	19.59
315104	1BRUNSWICKG3	19.59
315105	1BRUNSWICKS1	40.7
315150	1BUGGS 1	13.33
315151	1BUGGS 2	13.33
315153	1CLOVER1	24.84
315154	1CLOVER2	24.52
315156	1HALLBR1	1.01
315158	1KERR 1	0.24
315159	1KERR 2	1.0
315160	1KERR 3	0.98
315161	1KERR 4	0.98
315162	1KERR 5	0.98
315163	1KERR 6	0.98
315164	1KERR 7	0.98
315165	1HURT 1	5.72
315166	1HURT 2	5.72
315266	1PLYWOOD A	1.5
916301	Z1-086 C	117.83
924021	AB2-043 C O1	0.39
924161	AB2-060 C O1	1.14
924301	AB2-077 C O1	0.25
924311	AB2-078 C O1	0.25
924321	AB2-079 C O1	0.25
924401	AB2-089 C	1.76
925611	AC1-036 C	0.12
925831	AC1-062	0.04
925991	AC1-075 C	8.46
926021	AC1-080 C	2.83
926051	AC1-083 C O1	5.25
926271	AC1-105 C O1	9.16
927251	AC1-221 C	4.03
927261	AC1-222 C	6.38
932761	AC2-100 C	9.27
933941	AD1-017 C	1.05
934231	AD1-050 C	3.88
934311	AD1-055 C	4.43
934341	AD1-058 C	10.1
934611	AD1-087 C O1	19.57

Bus #	Bus	MW Impact
934621	AD1-088 C	27.27
934991	AD1-131 C	3.31
935171	AD1-152 C O1	19.45
935221	AD1-157 C	0.19
935231	AD1-160 C	1.14
936161	AD2-022 C O1	13.37
936171	AD2-023 C O1	7.83
936261	AD2-033 C	13.42
936331	AD2-043 C	8.29
936361	AD2-046 C O1	8.6
936391	AD2-049 C	1.61
936481	AD2-063 C O1	15.44
937481	AD2-202 C O1	5.39
938371	AE1-056 C	6.72
938491	AE1-068 C O1	191.08
938501	AE1-069 C O1	150.98
938941	AE1-122 O1	64.48
939181	AE1-148 C O1	8.52
939371	AE1-168 C	15.54
939421	AE1-174 C	0.31
940081	AE1-250 C	14.15
940241	AE2-006	0.5
940601	AE2-047 C O1	4.26
940661	AE2-053	3.17
941031	AE2-094 C	122.91
941431	AE2-140 C O1	16.85
941791	AE2-182 C	4.93
942211	AE2-233 C	40.16
942451	AE2-258	2.41
942461	AE2-259 C O1	10.44
942552	AE2-270 BAT	23.13
942751	AE2-291 C O1	12.0
942761	AE2-292 C O1	14.94
942931	AE2-313 C	125.76
943051	AE2-328 C	18.07
AA2-074	AA2-074	9.99
CARR	CARR	1.27
CBM-S1	CBM-S1	27.05
CBM-S2	CBM-S2	29.9
CBM-W1	CBM-W1	27.1
CBM-W2	CBM-W2	176.19
CIN	CIN	12.29
CPL	CPL	14.68
IPL	IPL	7.7
LGEE	LGEE	3.56
MEC	MEC	27.28
MECS	MECS	11.37
RENSSELAER	RENSSELAER	1.0
WEC	WEC	3.28
Z1-043	Z1-043	12.91

12.6.16 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
1790164	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	113.39	114.01	DC	32.78

Bus #	Bus	MW Impact
314229	6MT RD221	0.08
314236	6NRTHEST	0.13
314250	6ROCKVILLE	0.23
314309	6IRON208	0.31
315043	1FOUR RIVERA	2.4
315044	1FOUR RIVERB	1.86
315045	1FOUR RIVERC	2.4
315046	1FOUR RIVERD	1.86
315047	1FOUR RIVERE	1.86
315048	1FOUR RIVERF	2.4
315053	1BELMED1	16.01
315054	1BELMED2	16.01
315055	1BELMED3	13.29
315058	1CHESTF3	16.75
315059	1CHESTF4	27.15
315060	1CHESTF5	6.9
315061	1CHESTG7	2.7
315062	1CHESTS7	1.23
315063	1CHESTG8	2.65
315064	1CHESTS8	1.37
315067	1DARBY 1	1.77
315068	1DARBY 2	1.77
315069	1DARBY 3	1.78
315070	1DARBY 4	1.78
315074	1HOPCGN1	7.72
315075	1HOPCGN2	7.62
315083	1SPRUNCA	9.82
315084	1SPRUNCB	9.82
315085	1SPRUNCC	7.28
315086	1SPRUNCD	7.28
315090	1YORKTN1	26.24
315091	1YORKTN2	27.23
315225	1N ANNA1	25.29
315226	1N ANNA2	25.35
919211	AA1-145	6.94
924061	AB2-050	0.41
924241	AB2-068 O1	186.59
925051	AB2-160 C O1	5.02
925061	AB2-161 C O1	3.08
925331	AB2-190 C	18.55
925861	AC1-065 C	3.03

Bus #	Bus	MW Impact
926291	AC1-107 O1	281.65
926411	AC1-112 C	0.23
926551	AC1-134	1.02
926751	AC1-161 C O1	27.78
926781	AC1-164 C	37.22
927041	AC1-191 C O1	8.6
927221	AC1-216 C O1	9.07
930121	AB1-027 C	0.29
932041	AC2-012 C	9.31
932501	AC2-070 C	0.19
932581	AC2-078 C O1	3.73
932591	AC2-079 C O1	5.21
932831	AC2-110 C	1.21
933061	AC2-130	2.22
933261	AC2-137 C	0.23
933291	AC2-141 C	27.78
934011	AD1-025 C	15.58
934061	AD1-033 C	6.84
934141	AD1-041 C	4.75
934211	AD1-048 C	0.27
934571	AD1-082 C	7.02
935161	AD1-151 C O1	14.9
936041	AD2-007	1.65
936051	AD2-008 C	2.71
936151	AD2-021	0.22
936241	AD2-030 C	2.06
936301	AD2-039 C	1.21
936391	AD2-049 C	1.64
936661	AD2-085 C	3.13
937221	AD2-160 C O1	5.31
937251	AD2-164	4.4
937541	AD2-215 C	1.59
938031	AE1-004 C	1.21
938181	AE1-027 C	2.13
938191	AE1-028 C	1.23
938531	AE1-072 C O1	15.89
938551	AE1-074 C	2.26
938631	AE1-085 C O1	9.99
939191	AE1-149 C O1	9.82
939311	AE1-162 C	1.97
939411	AE1-173 C	78.25
939421	AE1-174 C	0.18
939431	AE1-175 C	2.21
939611	AE1-191 C	9.51
939751	AE1-206 C O1	30.41
940061	AE1-248 C O1	14.59
940071	AE1-249 C	6.63
940231	AE2-005 C	1.21
940251	AE2-007	158.04
940431	AE2-027 C O1	11.96
940471	AE2-031 C O1	28.55
940551	AE2-041	6.44

Bus #	Bus	MW Impact
940641	AE2-051 C O1	14.68
940651	AE2-052	3.29
940891	AE2-078 C	2.17
940901	AE2-079 C	2.17
940911	AE2-080 C	2.17
941031	AE2-094 C	32.78
941101	AE2-104 C O1	3.16
941281	AE2-122 C O1	25.89
941291	AE2-123 C O1	26.61
941301	AE2-124 C O1	24.19
941501	AE2-147 C	14.23
941581	AE2-155 C	0.6
941591	AE2-156	16.35
941601	AE2-157 C O1	9.75
942001	AE2-212 C	1.99
942131	AE2-225 C	1.93
942151	AE2-227 C O1	1.99
942161	AE2-228 C O1	1.99
942171	AE2-229 C	1.93
942191	AE2-231 C O1	4.78
942211	AE2-233 C	10.71
942341	AE2-247 C	1.36
942371	AE2-250 C O1	8.92
942401	AE2-253 C	5.58
942531	AE2-268 C	1.54
942551	AE2-270	24.86
942921	AE2-311 C O1	39.28
942931	AE2-313 C	29.65
AA2-074	AA2-074	4.74
CARR	CARR	1.85
CBM-S1	CBM-S1	15.75
CBM-S2	CBM-S2	14.45
CBM-W1	CBM-W1	17.83
CBM-W2	CBM-W2	104.25
CIN	CIN	8.21
CPL	CPL	6.96
IPL	IPL	5.19
LGEE	LGEE	2.41
MEC	MEC	17.12
MECS	MECS	7.96
RENSSELAER	RENSSELAER	1.46
WEC	WEC	2.17
Z1-043	Z1-043	8.52

12.6.17 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
1789428	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P4-2: 541T569	breaker	3144.0	97.28	97.88	DC	42.82

Bus #	Bus	MW Impact
314093	6WARRNTN	0.31
314189	6PAPER MILL	5.82
314648	6SUNBURY	0.72
314651	6WINFALL	1.43
315037	1LDYSMT1	3.34
315038	1LDYSMT2	3.34
315039	1LDYSMT3	3.53
315040	1LDYSMT4	3.54
315041	1LDYSMT5	3.55
315053	1BELMED1	14.98
315054	1BELMED2	14.98
315055	1BELMED3	12.43
315058	1CHESTF3	15.76
315059	1CHESTF4	25.54
315073	1STONECA	5.96
315074	1HOPCGN1	7.18
315075	1HOPCGN2	7.09
315083	1SPRUNCA	9.18
315084	1SPRUNCB	9.18
315085	1SPRUNCC	6.81
315086	1SPRUNCD	6.81
315090	1YORKTN1	24.33
315091	1YORKTN2	25.25
315225	1N ANNA1	23.83
315226	1N ANNA2	23.88
901082	W1-029 E	37.37
913392	Y1-086 E	1.8
916042	Z1-036 E	36.63
916192	Z1-068 E	1.56
916302	Z1-086 E	7.1
917122	Z2-027 E	0.87
919152	AA1-139 E	5.3
923832	AB2-022 E	1.01
923842	AB2-024 E	0.98
923852	AB2-025 E	0.88
923892	AB2-029 E	1.94
924241	AB2-068 O1	169.58
924812	AB2-134 E O1	10.44
925021	AB2-158 C	1.28
925022	AB2-158 E	4.68
925051	AB2-160 C O1	4.66

Bus #	Bus	MW Impact
925052	AB2-160 E O1	7.61
925061	AB2-161 C O1	2.82
925062	AB2-161 E O1	4.6
925331	AB2-190 C	17.18
925332	AB2-190 E	7.36
925522	AC1-027 E	0.95
925671	AC1-043 C	6.63
925672	AC1-043 E	10.82
925861	AC1-065 C	2.98
925862	AC1-065 E	4.86
926001	AC1-076 C	4.6
926002	AC1-076 E	7.47
926291	AC1-107 O1	255.97
926412	AC1-112 E	0.98
926472	AC1-118 E	1.08
926481	AC1-120 C O1	7.03
926482	AC1-120 E O1	3.62
926501	AC1-121 C O1	2.41
926502	AC1-121 E O1	1.14
926611	AC1-143 C O1	6.76
926612	AC1-143 E O1	3.08
926662	AC1-147 E	1.1
926731	AC1-158 C	75.01
926732	AC1-158 E	32.92
926751	AC1-161 C O1	25.37
926752	AC1-161 E O1	10.83
926781	AC1-164 C	34.95
926782	AC1-164 E	15.7
927041	AC1-191 C O1	8.61
927042	AC1-191 E O1	4.29
927221	AC1-216 C O1	8.39
927222	AC1-216 E O1	6.6
930122	AB1-027 E	0.96
932041	AC2-012 C	8.5
932042	AC2-012 E	13.87
932502	AC2-070 E	0.61
932532	AC2-073 E	1.05
932581	AC2-078 C O1	3.43
932582	AC2-078 E O1	5.6
932591	AC2-079 C O1	4.76
932592	AC2-079 E O1	7.76
932781	AC2-102 C	5.37
932782	AC2-102 E	8.77
932831	AC2-110 C	1.19
932832	AC2-110 E	1.95
933011	AC2-125	2.7
933021	AC2-126	2.72
933061	AC2-130	2.08
933262	AC2-137 E	1.17
933272	AC2-138 E	0.95
933291	AC2-141 C	25.37
933292	AC2-141 E	10.83

Bus #	Bus	MW Impact
933732	AC2-196 E	0.99
934011	AD1-025 C	14.42
934012	AD1-025 E	8.54
934061	AD1-033 C	6.24
934062	AD1-033 E	4.16
934141	AD1-041 C	4.7
934142	AD1-041 E	3.13
934191	AD1-046 C	4.88
934192	AD1-046 E	3.26
934212	AD1-048 E	1.07
934392	AD1-063 E	0.94
934541	AD1-078 C	2.52
934542	AD1-078 E	1.48
934571	AD1-082 C	6.43
934572	AD1-082 E	3.67
934781	AD1-105 C	7.25
934782	AD1-105 E	5.03
934861	AD1-115 C	3.31
934862	AD1-115 E	5.41
935112	AD1-144 E	0.78
935161	AD1-151 C O1	13.8
935162	AD1-151 E O1	9.2
935212	AD1-156 E	1.2
936041	AD2-007	1.53
936051	AD2-008 C	2.51
936052	AD2-008 E	5.47
936151	AD2-021	0.21
936241	AD2-030 C	2.05
936242	AD2-030 E	1.05
936301	AD2-039 C	1.19
936302	AD2-039 E	1.95
936341	AD2-044 C	0.24
936342	AD2-044 E	0.27
936391	AD2-049 C	1.51
936392	AD2-049 E	1.51
936581	AD2-073 C	2.11
936582	AD2-073 E	1.05
936591	AD2-074 C	5.15
936592	AD2-074 E	8.4
936661	AD2-085 C	2.86
936662	AD2-085 E	4.66
937221	AD2-160 C O1	4.84
937222	AD2-160 E O1	2.54
937251	AD2-164	4.07
937541	AD2-215 C	1.45
937542	AD2-215 E	0.77
938031	AE1-004 C	1.19
938032	AE1-004 E	1.95
938181	AE1-027 C	1.94
938182	AE1-027 E	1.02
938191	AE1-028 C	1.13
938192	AE1-028 E	0.65

Bus #	Bus	MW Impact
938291	AE1-044 C O1	20.43
938292	AE1-044 E O1	16.12
938491	AE1-068 C O1	45.24
938492	AE1-068 E O1	24.99
938501	AE1-069 C O1	35.43
938502	AE1-069 E O1	20.26
938531	AE1-072 C O1	14.46
938532	AE1-072 E O1	7.54
938551	AE1-074 C	2.12
938552	AE1-074 E	1.07
938631	AE1-085 C O1	9.19
938632	AE1-085 E O1	6.13
938961	AE1-124 C	2.11
938962	AE1-124 E	1.06
939191	AE1-149 C O1	9.05
939192	AE1-149 E O1	6.03
939221	AE1-153 C O1	13.69
939222	AE1-153 E O1	9.13
939231	AE1-154 C	1.72
939232	AE1-154 E	1.2
939241	AE1-155 C	14.09
939242	AE1-155 E	9.39
939261	AE1-157 C O1	13.79
939262	AE1-157 E O1	7.48
939271	AE1-158 C O1	14.07
939272	AE1-158 E O1	7.2
939281	AE1-159 C O1	11.86
939282	AE1-159 E O1	7.02
939311	AE1-162 C	1.81
939312	AE1-162 E	1.21
939411	AE1-173 C	71.22
939412	AE1-173 E	47.48
939421	AE1-174 C	0.16
939422	AE1-174 E	0.25
939431	AE1-175 C	2.06
939432	AE1-175 E	1.02
939611	AE1-191 C	9.4
939612	AE1-191 E	6.27
939751	AE1-206 C O1	29.89
939752	AE1-206 E O1	19.93
940061	AE1-248 C O1	13.36
940062	AE1-248 E O1	8.91
940071	AE1-249 C	6.15
940072	AE1-249 E	4.59
940231	AE2-005 C	1.19
940232	AE2-005 E	1.95
940251	AE2-007	144.36
940352	AE2-019 BAT	15.76
940421	AE2-026 C	3.27
940422	AE2-026 E	4.44
940431	AE2-027 C O1	11.16
940432	AE2-027 E O1	7.44

Bus #	Bus	MW Impact
940471	AE2-031 C O1	26.02
940472	AE2-031 E O1	17.35
940481	AE2-033 C	12.55
940482	AE2-033 E	8.46
940541	AE2-040	2.52
940551	AE2-041	6.3
940641	AE2-051 C O1	13.35
940642	AE2-051 E O1	8.9
940651	AE2-052	3.03
940891	AE2-078 C	2.0
940892	AE2-078 E	1.03
940901	AE2-079 C	2.0
940902	AE2-079 E	1.03
940911	AE2-080 C	2.0
940912	AE2-080 E	1.03
941031	AE2-094 C	29.58
941032	AE2-094 E	13.25
941101	AE2-104 C O1	2.88
941102	AE2-104 E O1	4.57
941141	AE2-108 C	1.34
941142	AE2-108 E	1.85
941151	AE2-109 C	0.47
941152	AE2-109 E	0.65
941281	AE2-122 C O1	23.63
941282	AE2-122 E O1	95.35
941291	AE2-123 C O1	24.28
941292	AE2-123 E O1	94.7
941301	AE2-124 C O1	22.08
941302	AE2-124 E O1	96.87
941361	AE2-132	2.77
941381	AE2-134	2.94
941501	AE2-147 C	12.89
941502	AE2-147 E	8.59
941581	AE2-155 C	0.56
941582	AE2-155 E	0.24
941591	AE2-156	14.94
941601	AE2-157 C O1	8.95
941602	AE2-157 E O1	5.97
941831	AE2-188	7.09
942001	AE2-212 C	1.84
942002	AE2-212 E	1.23
942131	AE2-225 C	1.76
942132	AE2-225 E	1.18
942151	AE2-227 C O1	1.84
942152	AE2-227 E O1	1.23
942161	AE2-228 C O1	1.84
942162	AE2-228 E O1	1.23
942171	AE2-229 C	1.76
942172	AE2-229 E	1.18
942191	AE2-231 C O1	5.25
942192	AE2-231 E O1	3.5
942211	AE2-233 C	9.66

Bus #	Bus	MW Impact
942212	AE2-233 E	3.75
942341	AE2-247 C	1.24
942342	AE2-247 E	1.71
942371	AE2-250 C O1	8.29
942372	AE2-250 E O1	4.37
942401	AE2-253 C	5.09
942402	AE2-253 E	2.29
942531	AE2-268 C	1.51
942532	AE2-268 E	0.85
942551	AE2-270	23.02
942851	AE2-304 C	0.51
942852	AE2-304 E	0.2
942921	AE2-311 C O1	35.76
942922	AE2-311 E O1	23.84
942931	AE2-313 C	26.73
942932	AE2-313 E	17.82
AA2-074	AA2-074	3.67
BLUEG	BLUEG	0.06
CARR	CARR	1.38
CBM-S1	CBM-S1	5.51
CBM-S2	CBM-S2	10.13
CBM-W2	CBM-W2	28.06
CPL	CPL	5.4
EDWARDS	EDWARDS	0.03
G-007	G-007	3.92
LGEE	LGEE	0.05
MEC	MEC	1.82
O-066	O-066	25.16
RENSSELAER	RENSSELAER	1.09
TILTON	TILTON	0.05
TRIMBLE	TRIMBLE	0.03

12.6.18 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
1790196	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	single	559.3	115.45	117.76	DC	16.59

Bus #	Bus	MW Impact
314589	3MURPHYS	0.03
314704	3LAWRENC	0.16
315102	1BRUNSWICKG1	2.54
315103	1BRUNSWICKG2	2.54
315104	1BRUNSWICKG3	2.54
315105	1BRUNSWICKS1	5.29
315126	1ROARAP2	0.56
315128	1ROARAP4	0.54
315131	1EDGECEMA	4.32
315132	1EDGECEMB	4.32
315136	1ROSEMG1	0.99
315137	1ROSEMS1	0.62
315138	1ROSEMG2	0.47
315139	1GASTONA	1.44
315141	1GASTONB	1.44
315150	1BUGGS 1	4.46
315151	1BUGGS 2	4.46
315159	1KERR 2	0.45
315161	1KERR 4	0.44
315162	1KERR 5	0.44
315163	1KERR 6	0.44
315164	1KERR 7	0.44
916301	Z1-086 C	15.49
917331	Z2-043 C	0.13
917341	Z2-044 C	0.08
918491	AA1-063AC OP	0.52
918561	AA1-072 C	0.02
919691	AA2-053 C	0.56
919701	AA2-057 C	3.39
920591	AA2-165 C	0.06
920671	AA2-174 C	0.03
923851	AB2-025 C	0.33
923911	AB2-031 C O1	1.5
923991	AB2-040 C O1	0.6
924151	AB2-059 C O1	0.59
924401	AB2-089 C	0.96
924491	AB2-098 C	0.23
924501	AB2-099 C	0.25
924511	AB2-100 C	10.06
925171	AB2-174 C O1	4.9
925591	AC1-034 C	3.16

Bus #	Bus	MW Impact
925781	AC1-054 C O1	3.33
926071	AC1-086 C	13.29
926201	AC1-098 C	2.93
926211	AC1-099 C	0.98
927021	AC1-189 C	3.64
927141	AC1-208 C	4.48
930401	AB1-081 C O1	0.5
930861	AB1-132 C O1	1.1
931231	AB1-173 C	0.18
931241	AB1-173AC	0.18
932631	AC2-084 C	4.18
933991	AD1-023 C	4.74
934201	AD1-047 C	5.39
934231	AD1-050 C	2.12
934331	AD1-057 C O1	5.45
934521	AD1-076 C	18.8
934611	AD1-087 C O1	2.89
935171	AD1-152 C O1	2.87
935211	AD1-156 C	0.11
936361	AD2-046 C O1	3.75
936401	AD2-051 C O1	3.75
936481	AD2-063 C O1	5.54
936531	AD2-068 C	2.08
936701	AD2-089 C	3.22
936711	AD2-090 C O1	2.62
937481	AD2-202 C O1	0.79
937571	AD2-169 C	6.45
938171	AE1-026 C1 O	10.34
938172	AE1-026 C2 O	1.5
938221	AE1-035 C	0.91
938491	AE1-068 C O1	25.35
938501	AE1-069 C O1	19.84
938661	AE1-088	0.66
939071	AE1-135 C O1	18.66
939181	AE1-148 C O1	3.69
939411	AE1-173 C	31.68
940471	AE2-031 C O1	10.27
940481	AE2-033 C	17.11
940521	AE2-037 C O1	3.48
940541	AE2-040	3.52
940571	AE2-044 C	2.07
940641	AE2-051 C O1	6.79
940661	AE2-053	1.37
941031	AE2-094 C	16.59
941541	AE2-151 C	0.46
941951	AE2-207	1.34
942211	AE2-233 C	5.42
942451	AE2-258	0.92
942471	AE2-260 C O1	12.86
942711	AE2-287 C O1	8.14
942921	AE2-311 C O1	15.91
942931	AE2-313 C	14.91

Bus #	Bus	MW Impact
943171	AE2-346 C	0.75
AA2-074	AA2-074	2.19
CARR	CARR	0.26
CBM-S1	CBM-S1	5.47
CBM-S2	CBM-S2	6.25
CBM-W1	CBM-W1	5.42
CBM-W2	CBM-W2	35.58
CIN	CIN	2.46
CPL	CPL	3.23
IPL	IPL	1.54
LGEE	LGEE	0.71
MEC	MEC	5.48
MECS	MECS	2.25
RENSSELAER	RENSSELAER	0.21
WEC	WEC	0.66

12.6.19 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
1790235	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	single	559.3	111.79	114.1	DC	16.59

Bus #	Bus	MW Impact
314589	3MURPHYS	0.03
314704	3LAWRENC	0.16
315102	1BRUNSWICKG1	2.54
315103	1BRUNSWICKG2	2.54
315104	1BRUNSWICKG3	2.54
315105	1BRUNSWICKS1	5.29
315126	1ROARAP2	0.56
315128	1ROARAP4	0.54
315131	1EDGECEMA	4.32
315132	1EDGECEMB	4.32
315136	1ROSEMG1	0.99
315137	1ROSEMS1	0.62
315138	1ROSEMG2	0.47
315139	1GASTONA	1.44
315141	1GASTONB	1.44
315150	1BUGGS 1	4.46
315151	1BUGGS 2	4.46
315159	1KERR 2	0.45
315161	1KERR 4	0.44
315162	1KERR 5	0.44
315163	1KERR 6	0.44
315164	1KERR 7	0.44
916301	Z1-086 C	15.49
917331	Z2-043 C	0.13
917341	Z2-044 C	0.08
918491	AA1-063AC OP	0.52
918561	AA1-072 C	0.02
919691	AA2-053 C	0.56
919701	AA2-057 C	3.39
920591	AA2-165 C	0.06
920671	AA2-174 C	0.03
923851	AB2-025 C	0.33
923911	AB2-031 C O1	1.5
923991	AB2-040 C O1	0.6
924151	AB2-059 C O1	0.59
924401	AB2-089 C	0.96
924491	AB2-098 C	0.23
924501	AB2-099 C	0.25
924511	AB2-100 C	10.06
925171	AB2-174 C O1	4.9
925591	AC1-034 C	3.16

Bus #	Bus	MW Impact
925781	AC1-054 C O1	3.33
926071	AC1-086 C	13.29
926201	AC1-098 C	2.93
926211	AC1-099 C	0.98
927021	AC1-189 C	3.64
927141	AC1-208 C	4.48
930401	AB1-081 C O1	0.5
930861	AB1-132 C O1	1.1
931231	AB1-173 C	0.18
931241	AB1-173AC	0.18
932631	AC2-084 C	4.18
933991	AD1-023 C	4.74
934201	AD1-047 C	5.39
934231	AD1-050 C	2.12
934331	AD1-057 C O1	5.45
934521	AD1-076 C	18.8
934611	AD1-087 C O1	2.89
935171	AD1-152 C O1	2.87
935211	AD1-156 C	0.11
936361	AD2-046 C O1	3.75
936401	AD2-051 C O1	3.75
936481	AD2-063 C O1	5.54
936531	AD2-068 C	2.08
936701	AD2-089 C	3.22
936711	AD2-090 C O1	2.62
937481	AD2-202 C O1	0.79
937571	AD2-169 C	6.45
938171	AE1-026 C1 O	10.34
938172	AE1-026 C2 O	1.5
938221	AE1-035 C	0.91
938491	AE1-068 C O1	25.35
938501	AE1-069 C O1	19.84
938661	AE1-088	0.66
939071	AE1-135 C O1	18.66
939181	AE1-148 C O1	3.69
939411	AE1-173 C	31.68
940471	AE2-031 C O1	10.27
940481	AE2-033 C	17.11
940521	AE2-037 C O1	3.48
940541	AE2-040	3.52
940571	AE2-044 C	2.07
940641	AE2-051 C O1	6.79
940661	AE2-053	1.37
941031	AE2-094 C	16.59
941541	AE2-151 C	0.46
941951	AE2-207	1.34
942211	AE2-233 C	5.42
942451	AE2-258	0.92
942471	AE2-260 C O1	12.86
942711	AE2-287 C O1	8.14
942921	AE2-311 C O1	15.91
942931	AE2-313 C	14.91

Bus #	Bus	MW Impact
943171	AE2-346 C	0.75
AA2-074	AA2-074	2.19
CARR	CARR	0.26
CBM-S1	CBM-S1	5.47
CBM-S2	CBM-S2	6.25
CBM-W1	CBM-W1	5.42
CBM-W2	CBM-W2	35.58
CIN	CIN	2.46
CPL	CPL	3.23
IPL	IPL	1.54
LGEE	LGEE	0.71
MEC	MEC	5.48
MECS	MECS	2.25
RENSSELAER	RENSSELAER	0.21
WEC	WEC	0.66

12.6.20 Index 19

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
1789592	314287	6CHESTFB	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	147.72	149.05	DC	13.19

Bus #	Bus	MW Impact
314314	3LOCKS	0.14
314704	3LAWRENC	0.11
315065	1CHESTF6	20.96
315074	1HOPCGN1	6.04
315075	1HOPCGN2	5.96
315076	1HOPPOLC	0.84
315077	1HOPHCF1	1.32
315078	1HOPHCF2	1.32
315079	1HOPHCF3	1.32
315080	1HOPHCF4	2.0
315116	1SURRY 1	8.12
315117	1GRAVELC	0.28
315119	1GRAVEL3	0.82
315120	1GRAVEL4	0.84
315121	1GRAVEL5	0.82
315122	1GRAVEL6	0.83
315136	1ROSEMG1	0.71
315137	1ROSEMS1	0.44
315138	1ROSEMG2	0.33
315139	1GASTONA	1.02
315141	1GASTONB	1.02
923801	AB2-015 C O1	3.37
923851	AB2-025 C	0.2
923911	AB2-031 C O1	1.04
923991	AB2-040 C O1	0.42
924501	AB2-099 C	0.22
924511	AB2-100 C	6.44
924811	AB2-134 C O1	0.88
925051	AB2-160 C O1	3.5
925061	AB2-161 C O1	1.96
925171	AB2-174 C O1	3.33
925331	AB2-190 C	11.72
925821	AC1-061	0.0
926071	AC1-086 C	9.45
926201	AC1-098 C	2.35
926211	AC1-099 C	0.79
927141	AC1-208 C	3.49
927221	AC1-216 C O1	5.52
930861	AB1-132 C O1	0.78
931231	AB1-173 C	0.13
931241	AB1-173AC	0.13

Bus #	Bus	MW Impact
932581	AC2-078 C O1	2.99
932591	AC2-079 C O1	2.78
932631	AC2-084 C	3.36
934011	AD1-025 C	9.49
934201	AD1-047 C	3.72
934331	AD1-057 C O1	4.03
934571	AD1-082 C	4.47
935161	AD1-151 C O1	9.42
935211	AD1-156 C	0.25
936041	AD2-007	1.01
936051	AD2-008 C	1.65
936401	AD2-051 C O1	3.33
936661	AD2-085 C	1.69
936711	AD2-090 C O1	2.83
937571	AD2-169 C	4.53
938221	AE1-035 C	0.84
938491	AE1-068 C O1	20.11
938501	AE1-069 C O1	15.73
938631	AE1-085 C O1	7.83
938771	AE1-103 C O1	1.42
939071	AE1-135 C O1	11.84
939191	AE1-149 C O1	8.22
939311	AE1-162 C	0.86
939411	AE1-173 C	29.65
940061	AE1-248 C O1	9.3
940071	AE1-249 C	4.62
940481	AE2-033 C	10.34
940521	AE2-037 C O1	3.06
940541	AE2-040	2.11
940641	AE2-051 C O1	5.69
940651	AE2-052	2.75
940891	AE2-078 C	0.97
940901	AE2-079 C	0.97
940911	AE2-080 C	0.97
941031	AE2-094 C	13.19
941101	AE2-104 C O1	1.33
941541	AE2-151 C	0.41
941601	AE2-157 C O1	6.75
942001	AE2-212 C	2.53
942151	AE2-227 C O1	2.53
942161	AE2-228 C O1	2.53
942211	AE2-233 C	4.31
942341	AE2-247 C	0.73
942371	AE2-250 C O1	6.22
942471	AE2-260 C O1	8.16
942551	AE2-270	15.71
942711	AE2-287 C O1	5.38
942931	AE2-313 C	11.81
943171	AE2-346 C	0.67
AA2-074	AA2-074	1.68
CARR	CARR	0.32
CBM-S1	CBM-S1	3.53

Bus #	Bus	MW Impact
CBM-S2	CBM-S2	4.67
CBM-W1	CBM-W1	2.7
CBM-W2	CBM-W2	22.14
CIN	CIN	1.28
CPL	CPL	2.47
IPL	IPL	0.79
LGEE	LGEE	0.37
MEC	MEC	3.11
MECS	MECS	0.79
RENSSELAER	RENSSELAER	0.26
WEC	WEC	0.34

12.6.21 Index 20

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
7868143	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	102.5	105.38	DC	23.49

Bus #	Bus	MW Impact
314421	6WINCHST	0.04
314507	3THOMPSN	0.1
315090	1YORKTN1	10.65
315091	1YORKTN2	11.05
315092	1YORKTN3	6.44
315098	1CHESPKA	0.13
315099	1CHESPKB	0.31
315102	1BRUNSWICKG1	4.13
315103	1BRUNSWICKG2	4.13
315104	1BRUNSWICKG3	4.13
315105	1BRUNSWICKS1	8.59
315108	1ELIZAR1	0.93
315109	1ELIZAR2	0.92
315110	1ELIZAR3	0.94
315116	1SURRY 1	6.74
315153	1CLOVER1	16.29
315154	1CLOVER2	16.08
315191	1BEARGRDN G1	1.24
315192	1BEARGRDN G2	1.24
315193	1BEARGRDN S1	2.54
315233	1SURRY 2	7.49
315260	1GOSPORTA	0.1
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
916191	Z1-068 C	0.01
916301	Z1-086 C	24.14
920291	AA2-127	0.26
924031	AB2-045 C	0.15
925521	AC1-027 C	0.09
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.14
932041	AC2-012 C	3.97
932511	AC2-071 C	0.15
933291	AC2-141 C	13.14
933731	AC2-196 C	0.08
934061	AD1-033 C	2.86
934233	AD1-050 BAT	5.08
934621	AD1-088 C	17.85
937251	AD2-164	1.77
938181	AE1-027 C	0.87
938191	AE1-028 C	0.51

Bus #	Bus	MW Impact
938491	AE1-068 C O1	38.23
938501	AE1-069 C O1	30.93
939311	AE1-162 C	0.81
939411	AE1-173 C	43.23
940251	AE2-007	67.63
940471	AE2-031 C O1	15.34
940641	AE2-051 C O1	8.77
940891	AE2-078 C	0.87
940901	AE2-079 C	0.87
940911	AE2-080 C	0.87
941031	AE2-094 C	23.49
941281	AE2-122 C O1	10.89
941291	AE2-123 C O1	11.19
941301	AE2-124 C O1	10.16
941591	AE2-156	6.99
941791	AE2-182 C	3.23
942211	AE2-233 C	7.68
942921	AE2-311 C O1	22.14
942931	AE2-313 C	23.68
943051	AE2-328 C	11.8
AC1-131	AC1-131	9.78
BLUEG	BLUEG	18.52
CALDERWOOD	CALDERWOOD	3.67
CANNELTON	CANNELTON	1.25
CATAWBA	CATAWBA	3.52
CBM-N	CBM-N	0.67
CHEOAH	CHEOAH	3.42
CHILHOWEE	CHILHOWEE	1.19
COFFEEN	COFFEEN	2.13
COTTONWOOD	COTTONWOOD	12.22
DUCKCREEK	DUCKCREEK	4.38
EDWARDS	EDWARDS	1.96
ELMERSMITH	ELMERSMITH	2.2
FARMERCITY	FARMERCITY	1.53
G-007A	G-007A	3.0
GIBSON	GIBSON	0.79
HAMLET	HAMLET	6.6
NEWTON	NEWTON	5.55
NYISO	NYISO	2.9
PRAIRIE	PRAIRIE	11.52
SANTEETLA	SANTEETLA	1.02
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.59
TILTON	TILTON	2.32
TRIMBLE	TRIMBLE	2.04
TVA	TVA	10.31
UNIONPOWER	UNIONPOWER	5.07
VFT	VFT	7.99

12.6.22 Index 21

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
7867706	314697	6SEGE HILL	DVP	927250	AC1-221 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	674.92	108.41	111.23	DC	19.05

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.21
314704	3LAWRENC	0.09
315102	1BRUNSWICKG1	3.32
315103	1BRUNSWICKG2	3.32
315104	1BRUNSWICKG3	3.32
315105	1BRUNSWICKS1	6.9
315108	1ELIZAR1	0.79
315109	1ELIZAR2	0.77
315110	1ELIZAR3	0.8
315150	1BUGGS 1	9.82
315151	1BUGGS 2	9.82
315153	1CLOVER1	12.46
315154	1CLOVER2	12.3
315158	1KERR 1	0.09
315159	1KERR 2	0.38
315160	1KERR 3	0.38
315161	1KERR 4	0.38
315162	1KERR 5	0.38
315163	1KERR 6	0.38
315164	1KERR 7	0.38
315191	1BEARGRDN G1	1.33
315192	1BEARGRDN G2	1.33
315193	1BEARGRDN S1	2.74
315233	1SURRY 2	6.31
315266	1PLYWOOD A	1.51
916301	Z1-086 C	19.45
920291	AA2-127	0.28
923861	AB2-026 C	0.11
924021	AB2-043 C O1	0.29
924031	AB2-045 C	0.17
924161	AB2-060 C O1	0.84
924301	AB2-077 C O1	0.19
924311	AB2-078 C O1	0.19
924321	AB2-079 C O1	0.19
925611	AC1-036 C	0.09
925831	AC1-062	0.03
925991	AC1-075 C	7.28
926021	AC1-080 C	2.43
926271	AC1-105 C O1	9.33
926751	AC1-161 C O1	10.99
927261	AC1-222 C	6.55

Bus #	Bus	MW Impact
932511	AC2-071 C	0.16
933291	AC2-141 C	10.99
933501	AC2-165 C	3.64
934311	AD1-055 C	4.55
934611	AD1-087 C O1	15.28
934621	AD1-088 C	14.64
935171	AD1-152 C O1	15.18
935221	AD1-157 C	0.14
935231	AD1-160 C	0.83
936261	AD2-033 C	9.82
936331	AD2-043 C	8.48
936361	AD2-046 C O1	3.79
936481	AD2-063 C O1	11.33
937481	AD2-202 C O1	4.21
938371	AE1-056 C	4.87
938491	AE1-068 C O1	30.87
938501	AE1-069 C O1	24.92
938561	AE1-075 C	0.76
939181	AE1-148 C O1	3.91
939371	AE1-168 C	11.32
939411	AE1-173 C	35.72
940241	AE2-006	0.36
940251	AE2-007	57.07
940471	AE2-031 C O1	12.7
940641	AE2-051 C O1	7.2
940661	AE2-053	1.46
941031	AE2-094 C	19.05
941791	AE2-182 C	2.65
942211	AE2-233 C	6.22
942451	AE2-258	1.78
942461	AE2-259 C O1	7.53
942711	AE2-287 C O1	5.52
942751	AE2-291 C O1	9.12
942761	AE2-292 C O1	11.36
942921	AE2-311 C O1	18.27
942931	AE2-313 C	19.03
943051	AE2-328 C	10.81
AC1-131	AC1-131	10.99
BLUEG	BLUEG	17.69
CALDERWOOD	CALDERWOOD	3.8
CANNELTON	CANNELTON	1.22
CATAWBA	CATAWBA	3.83
CBM-N	CBM-N	0.59
CHEOAH	CHEOAH	3.55
CHILHOWEE	CHILHOWEE	1.23
COFFEEN	COFFEEN	2.08
COTTONWOOD	COTTONWOOD	12.53
DUCKCREEK	DUCKCREEK	4.25
EDWARDS	EDWARDS	1.9
ELMERSMITH	ELMERSMITH	2.15
FARMERCITY	FARMERCITY	1.51
G-007A	G-007A	2.66

Bus #	Bus	MW Impact
GIBSON	GIBSON	0.77
HAMLET	HAMLET	7.29
NEWTON	NEWTON	5.41
NYISO	NYISO	2.54
PRAIRIE	PRAIRIE	11.42
SANTEETLA	SANTEETLA	1.06
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.55
TILTON	TILTON	2.24
TRIMBLE	TRIMBLE	1.94
TVA	TVA	10.54
UNIONPOWER	UNIONPOWER	5.28
VFT	VFT	7.06

12.6.23 Index 22

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
1789657	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	147.24	148.23	DC	53.94

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

12.6.24 Index 23

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
1789870	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	129.86	130.6	DC	39.03

Bus #	Bus	MW Impact
314229	6MT RD221	0.1
314236	6NRTHEST	0.16
314250	6ROCKVILLE	0.28
314309	6IRON208	0.37
315037	1LDYSMT1	3.81
315038	1LDYSMT2	3.8
315039	1LDYSMT3	4.02
315040	1LDYSMT4	4.03
315041	1LDYSMT5	4.04
315043	1FOUR RIVERA	3.02
315044	1FOUR RIVERB	2.34
315045	1FOUR RIVERC	3.02
315046	1FOUR RIVERD	2.34
315047	1FOUR RIVERE	2.34
315048	1FOUR RIVERF	3.02
315053	1BELMED1	19.48
315054	1BELMED2	19.48
315055	1BELMED3	16.17
315058	1CHESTF3	20.44
315059	1CHESTF4	33.13
315067	1DARBY 1	2.16
315068	1DARBY 2	2.16
315069	1DARBY 3	2.17
315070	1DARBY 4	2.17
315074	1HOPCGN1	9.37
315075	1HOPCGN2	9.25
315083	1SPRUNCA	11.93
315084	1SPRUNCB	11.93
315085	1SPRUNCC	8.84
315086	1SPRUNCD	8.84
315090	1YORKTN1	31.8
315091	1YORKTN2	33.0
315225	1N ANNA1	30.98
315226	1N ANNA2	31.05
919211	AA1-145	8.72
923801	AB2-015 C O1	9.06
924061	AB2-050	0.51
924241	AB2-068 O1	226.15
924501	AB2-099 C	0.59
924511	AB2-100 C	11.8
925051	AB2-160 C O1	6.09

Bus #	Bus	MW Impact
925061	AB2-161 C O1	3.71
925331	AB2-190 C	22.46
925861	AC1-065 C	3.76
926001	AC1-076 C	4.92
926291	AC1-107 O1	341.36
926411	AC1-112 C	0.28
926551	AC1-134	1.28
926731	AC1-158 C	93.16
926751	AC1-161 C O1	33.44
926781	AC1-164 C	45.47
927041	AC1-191 C O1	10.76
927221	AC1-216 C O1	10.98
930121	AB1-027 C	0.36
932041	AC2-012 C	11.19
932501	AC2-070 C	0.23
932581	AC2-078 C O1	4.49
932591	AC2-079 C O1	6.26
932831	AC2-110 C	1.5
933011	AC2-125	3.08
933021	AC2-126	3.1
933061	AC2-130	2.7
933261	AC2-137 C	0.29
933291	AC2-141 C	33.44
933991	AD1-023 C	13.49
934011	AD1-025 C	18.87
934061	AD1-033 C	8.21
934141	AD1-041 C	5.9
934211	AD1-048 C	0.34
934521	AD1-076 C	56.18
934541	AD1-078 C	3.04
934571	AD1-082 C	8.45
934781	AD1-105 C	7.77
935161	AD1-151 C O1	18.05
936041	AD2-007	2.0
936051	AD2-008 C	3.28
936151	AD2-021	0.27
936241	AD2-030 C	2.56
936301	AD2-039 C	1.5
936341	AD2-044 C	0.26
936391	AD2-049 C	1.98
936591	AD2-074 C	5.92
936661	AD2-085 C	3.76
936711	AD2-090 C O1	7.49
937221	AD2-160 C O1	6.37
937251	AD2-164	5.32
937541	AD2-215 C	1.91
938031	AE1-004 C	1.5
938171	AE1-026 C1 O	28.67
938172	AE1-026 C2 O	4.15
938181	AE1-027 C	2.56
938191	AE1-028 C	1.48
938221	AE1-035 C	2.27

Bus #	Bus	MW Impact
938491	AE1-068 C O1	59.76
938501	AE1-069 C O1	46.84
938531	AE1-072 C O1	19.07
938551	AE1-074 C	2.74
938561	AE1-075 C	2.13
938631	AE1-085 C O1	12.05
938771	AE1-103 C O1	3.84
939071	AE1-135 C O1	21.27
939191	AE1-149 C O1	11.85
939241	AE1-155 C	16.04
939261	AE1-157 C O1	16.17
939271	AE1-158 C O1	16.5
939311	AE1-162 C	2.37
939411	AE1-173 C	93.79
939421	AE1-174 C	0.21
939431	AE1-175 C	2.69
939611	AE1-191 C	11.81
939751	AE1-206 C O1	37.97
940061	AE1-248 C O1	17.55
940071	AE1-249 C	8.03
940231	AE2-005 C	1.5
940251	AE2-007	190.05
940431	AE2-027 C O1	14.53
940471	AE2-031 C O1	34.27
940481	AE2-033 C	16.54
940491	AE2-034 C	8.77
940541	AE2-040	3.32
940551	AE2-041	7.96
940641	AE2-051 C O1	17.58
940651	AE2-052	3.97
940891	AE2-078 C	2.63
940901	AE2-079 C	2.63
940911	AE2-080 C	2.63
941031	AE2-094 C	39.03
941101	AE2-104 C O1	3.79
941141	AE2-108 C	1.44
941151	AE2-109 C	0.5
941281	AE2-122 C O1	31.12
941291	AE2-123 C O1	31.98
941301	AE2-124 C O1	29.07
941381	AE2-134	3.14
941501	AE2-147 C	17.01
941581	AE2-155 C	0.73
941591	AE2-156	19.66
941601	AE2-157 C O1	11.74
942001	AE2-212 C	2.41
942131	AE2-225 C	2.32
942151	AE2-227 C O1	2.41
942161	AE2-228 C O1	2.41
942171	AE2-229 C	2.32
942191	AE2-231 C O1	6.25
942211	AE2-233 C	12.75

Bus #	Bus	MW Impact
942341	AE2-247 C	1.63
942371	AE2-250 C O1	10.81
942401	AE2-253 C	6.7
942471	AE2-260 C O1	14.66
942531	AE2-268 C	1.91
942551	AE2-270	30.11
942851	AE2-304 C	0.67
942921	AE2-311 C O1	47.1
942931	AE2-313 C	35.26
943171	AE2-346 C	1.78
AA2-074	AA2-074	5.17
CARR	CARR	1.69
CBM-S1	CBM-S1	12.53
CBM-S2	CBM-S2	15.0
CBM-W1	CBM-W1	9.06
CBM-W2	CBM-W2	77.46
CIN	CIN	4.6
CPLE	CPLE	7.61
IPL	IPL	2.84
LGEE	LGEE	1.38
MEC	MEC	10.87
MECS	MECS	2.05
RENSSELAER	RENSSELAER	1.34
WEC	WEC	1.17

12.6.25 Index 24

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
1789536	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	162.73	163.87	DC	60.66

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

12.6.26 Index 25

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
1789990	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	119.28	119.95	DC	39.6

Bus #	Bus	MW Impact
314229	6MT RD221	0.1
314236	6NRTHEST	0.16
314250	6ROCKVILLE	0.28
314309	6IRON208	0.38
315037	1LDYSMT1	3.9
315038	1LDYSMT2	3.9
315039	1LDYSMT3	4.13
315040	1LDYSMT4	4.14
315041	1LDYSMT5	4.15
315043	1FOUR RIVERA	3.08
315044	1FOUR RIVERB	2.39
315045	1FOUR RIVERC	3.08
315046	1FOUR RIVERD	2.39
315047	1FOUR RIVERE	2.39
315048	1FOUR RIVERF	3.08
315053	1BELMED1	19.81
315054	1BELMED2	19.81
315055	1BELMED3	16.44
315058	1CHESTF3	20.8
315059	1CHESTF4	33.71
315067	1DARBY 1	2.2
315068	1DARBY 2	2.2
315069	1DARBY 3	2.21
315070	1DARBY 4	2.21
315074	1HOPCGN1	9.53
315075	1HOPCGN2	9.41
315083	1SPRUNCA	12.12
315084	1SPRUNCB	12.12
315085	1SPRUNCC	8.99
315086	1SPRUNCD	8.99
315090	1YORKTN1	32.35
315091	1YORKTN2	33.57
315225	1N ANNA1	31.47
315226	1N ANNA2	31.54
919211	AA1-145	8.91
923801	AB2-015 C O1	9.19
923911	AB2-031 C O1	2.27
924061	AB2-050	0.52
924241	AB2-068 O1	230.43
924501	AB2-099 C	0.6
924511	AB2-100 C	11.97

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.19
925061	AB2-161 C O1	3.77
925171	AB2-174 C O1	7.15
925331	AB2-190 C	22.85
925861	AC1-065 C	3.83
926291	AC1-107 O1	347.82
926411	AC1-112 C	0.28
926551	AC1-134	1.31
926751	AC1-161 C O1	33.98
926781	AC1-164 C	46.3
927041	AC1-191 C O1	10.97
927221	AC1-216 C O1	11.16
930121	AB1-027 C	0.36
932041	AC2-012 C	11.38
932501	AC2-070 C	0.24
932581	AC2-078 C O1	4.57
932591	AC2-079 C O1	6.36
932831	AC2-110 C	1.53
933011	AC2-125	3.16
933021	AC2-126	3.18
933061	AC2-130	2.75
933261	AC2-137 C	0.29
933291	AC2-141 C	33.98
933991	AD1-023 C	13.69
934011	AD1-025 C	19.19
934061	AD1-033 C	8.35
934141	AD1-041 C	6.01
934201	AD1-047 C	8.14
934211	AD1-048 C	0.34
934521	AD1-076 C	57.01
934571	AD1-082 C	8.58
934781	AD1-105 C	7.94
935161	AD1-151 C O1	18.36
936041	AD2-007	2.04
936051	AD2-008 C	3.34
936151	AD2-021	0.27
936241	AD2-030 C	2.61
936301	AD2-039 C	1.53
936341	AD2-044 C	0.27
936391	AD2-049 C	2.02
936401	AD2-051 C O1	8.94
936581	AD2-073 C	2.27
936591	AD2-074 C	6.04
936661	AD2-085 C	3.82
936711	AD2-090 C O1	7.6
937221	AD2-160 C O1	6.48
937251	AD2-164	5.41
937541	AD2-215 C	1.94
938031	AE1-004 C	1.53
938171	AE1-026 C1 O	29.09
938172	AE1-026 C2 O	4.21
938181	AE1-027 C	2.6

Bus #	Bus	MW Impact
938191	AE1-028 C	1.51
938221	AE1-035 C	2.3
938491	AE1-068 C O1	60.62
938501	AE1-069 C O1	47.51
938531	AE1-072 C O1	19.37
938551	AE1-074 C	2.79
938561	AE1-075 C	2.13
938631	AE1-085 C O1	12.25
938661	AE1-088	1.8
938771	AE1-103 C O1	3.89
939071	AE1-135 C O1	21.58
939191	AE1-149 C O1	12.05
939241	AE1-155 C	16.37
939261	AE1-157 C O1	16.56
939271	AE1-158 C O1	16.9
939311	AE1-162 C	2.41
939411	AE1-173 C	95.24
939421	AE1-174 C	0.22
939431	AE1-175 C	2.74
939611	AE1-191 C	12.03
939751	AE1-206 C O1	38.74
940061	AE1-248 C O1	17.84
940071	AE1-249 C	8.16
940231	AE2-005 C	1.53
940251	AE2-007	193.14
940431	AE2-027 C O1	14.78
940471	AE2-031 C O1	34.82
940481	AE2-033 C	16.79
940491	AE2-034 C	8.9
940521	AE2-037 C O1	8.18
940541	AE2-040	3.37
940551	AE2-041	8.11
940641	AE2-051 C O1	17.85
940651	AE2-052	4.04
940891	AE2-078 C	2.67
940901	AE2-079 C	2.67
940911	AE2-080 C	2.67
941031	AE2-094 C	39.6
941101	AE2-104 C O1	3.85
941141	AE2-108 C	1.47
941151	AE2-109 C	0.51
941281	AE2-122 C O1	31.62
941291	AE2-123 C O1	32.5
941301	AE2-124 C O1	29.55
941501	AE2-147 C	17.28
941541	AE2-151 C	1.11
941581	AE2-155 C	0.74
941591	AE2-156	19.98
941601	AE2-157 C O1	11.94
942001	AE2-212 C	2.45
942131	AE2-225 C	2.36
942151	AE2-227 C O1	2.45

Bus #	Bus	MW Impact
942161	AE2-228 C O1	2.45
942171	AE2-229 C	2.36
942191	AE2-231 C O1	6.4
942211	AE2-233 C	12.94
942341	AE2-247 C	1.65
942371	AE2-250 C O1	10.99
942401	AE2-253 C	6.81
942471	AE2-260 C O1	14.87
942531	AE2-268 C	1.94
942551	AE2-270	30.62
942851	AE2-304 C	0.68
942921	AE2-311 C O1	47.83
942931	AE2-313 C	35.77
943171	AE2-346 C	1.8
AA2-074	AA2-074	5.23
CARR	CARR	1.69
CBM-S1	CBM-S1	12.54
CBM-S2	CBM-S2	15.13
CBM-W1	CBM-W1	8.95
CBM-W2	CBM-W2	77.39
CIN	CIN	4.55
CPL	CPL	7.68
IPL	IPL	2.81
LGEE	LGEE	1.37
MEC	MEC	10.81
MECS	MECS	1.96
RENSSELAER	RENSSELAER	1.34
WEC	WEC	1.16

12.6.27 Index 26

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
7867669	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPL	1	DVP_P1-2: LN 6002_FSA	single	718.0	111.05	113.7	DC	19.05

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.21
314704	3LAWRENC	0.09
315102	1BRUNSWICKG1	3.32
315103	1BRUNSWICKG2	3.32
315104	1BRUNSWICKG3	3.32
315105	1BRUNSWICKS1	6.9
315108	1ELIZAR1	0.79
315109	1ELIZAR2	0.77
315110	1ELIZAR3	0.8
315150	1BUGGS 1	9.82
315151	1BUGGS 2	9.82
315153	1CLOVER1	12.46
315154	1CLOVER2	12.3
315158	1KERR 1	0.09
315159	1KERR 2	0.38
315160	1KERR 3	0.38
315161	1KERR 4	0.38
315162	1KERR 5	0.38
315163	1KERR 6	0.38
315164	1KERR 7	0.38
315191	1BEARGRDN G1	1.33
315192	1BEARGRDN G2	1.33
315193	1BEARGRDN S1	2.74
315233	1SURRY 2	6.31
315266	1PLYWOOD A	1.51
916301	Z1-086 C	19.45
920291	AA2-127	0.28
923861	AB2-026 C	0.11
924021	AB2-043 C O1	0.29
924031	AB2-045 C	0.17
924161	AB2-060 C O1	0.84
924301	AB2-077 C O1	0.19
924311	AB2-078 C O1	0.19
924321	AB2-079 C O1	0.19
925611	AC1-036 C	0.09
925831	AC1-062	0.03
925991	AC1-075 C	7.28
926021	AC1-080 C	2.43
926271	AC1-105 C O1	9.33
926751	AC1-161 C O1	10.99
927251	AC1-221 C	9.89

Bus #	Bus	MW Impact
927261	AC1-222 C	6.55
932511	AC2-071 C	0.16
932761	AC2-100 C	22.75
933291	AC2-141 C	10.99
933501	AC2-165 C	3.64
934311	AD1-055 C	4.55
934341	AD1-058 C	24.78
934611	AD1-087 C O1	15.28
934621	AD1-088 C	14.64
934991	AD1-131 C	8.13
935171	AD1-152 C O1	15.18
935221	AD1-157 C	0.14
935231	AD1-160 C	0.83
936261	AD2-033 C	9.82
936331	AD2-043 C	8.48
936361	AD2-046 C O1	3.79
936481	AD2-063 C O1	11.33
937481	AD2-202 C O1	4.21
938371	AE1-056 C	4.87
938491	AE1-068 C O1	30.87
938501	AE1-069 C O1	24.92
938561	AE1-075 C	0.76
939181	AE1-148 C O1	3.91
939371	AE1-168 C	11.32
939411	AE1-173 C	35.72
940241	AE2-006	0.36
940251	AE2-007	57.07
940471	AE2-031 C O1	12.7
940641	AE2-051 C O1	7.2
940661	AE2-053	1.46
941031	AE2-094 C	19.05
941791	AE2-182 C	2.65
942211	AE2-233 C	6.22
942451	AE2-258	1.78
942461	AE2-259 C O1	7.53
942711	AE2-287 C O1	5.52
942751	AE2-291 C O1	9.12
942761	AE2-292 C O1	11.36
942921	AE2-311 C O1	18.27
942931	AE2-313 C	19.03
943051	AE2-328 C	10.81
AC1-131	AC1-131	10.99
BLUEG	BLUEG	17.69
CALDERWOOD	CALDERWOOD	3.8
CANNELTON	CANNELTON	1.22
CATAWBA	CATAWBA	3.83
CBM-N	CBM-N	0.59
CHEOAH	CHEOAH	3.55
CHILHOWEE	CHILHOWEE	1.23
COFFEEN	COFFEEN	2.08
COTTONWOOD	COTTONWOOD	12.53
DUCKCREEK	DUCKCREEK	4.25

Bus #	Bus	MW Impact
EDWARDS	EDWARDS	1.9
ELMERSMITH	ELMERSMITH	2.15
FARMERCITY	FARMERCITY	1.51
G-007A	G-007A	2.66
GIBSON	GIBSON	0.77
HAMLET	HAMLET	7.29
NEWTON	NEWTON	5.41
NYISO	NYISO	2.54
PRAIRIE	PRAIRIE	11.42
SANTEETLA	SANTEETLA	1.06
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.55
TILTON	TILTON	2.24
TRIMBLE	TRIMBLE	1.94
TVA	TVA	10.54
UNIONPOWER	UNIONPOWER	5.28
VFT	VFT	7.06

12.6.28 Index 27

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
7868073	934610	AD1-087 TAP	DVP	314697	6SEGE HILL	DVP	1	DVP_P1-2: LN 6002_FSA	single	814.98	108.14	111.01	DC	23.49

Bus #	Bus	MW Impact
314421	6WINCHST	0.04
314507	3THOMPSN	0.1
315090	1YORKTN1	10.65
315091	1YORKTN2	11.05
315092	1YORKTN3	6.44
315098	1CHESPKA	0.13
315099	1CHESPKB	0.31
315102	1BRUNSWICKG1	4.13
315103	1BRUNSWICKG2	4.13
315104	1BRUNSWICKG3	4.13
315105	1BRUNSWICKS1	8.59
315108	1ELIZAR1	0.93
315109	1ELIZAR2	0.92
315110	1ELIZAR3	0.94
315116	1SURRY 1	6.74
315153	1CLOVER1	16.29
315154	1CLOVER2	16.08
315191	1BEARGRDN G1	1.24
315192	1BEARGRDN G2	1.24
315193	1BEARGRDN S1	2.54
315233	1SURRY 2	7.49
315260	1GOSPORTA	0.1
315261	1GOSPORTB	0.13
315262	1GOSPORTC	0.11
916191	Z1-068 C	0.01
916301	Z1-086 C	24.14
920291	AA2-127	0.26
924031	AB2-045 C	0.15
925521	AC1-027 C	0.09
926661	AC1-147 C	0.11
926751	AC1-161 C O1	13.14
932041	AC2-012 C	3.97
932511	AC2-071 C	0.15
933291	AC2-141 C	13.14
933731	AC2-196 C	0.08
934061	AD1-033 C	2.86
934233	AD1-050 BAT	5.08
934611	AD1-087 C O1	20.5
934621	AD1-088 C	17.85
935171	AD1-152 C O1	20.38
937251	AD2-164	1.77

Bus #	Bus	MW Impact
937481	AD2-202 C O1	5.65
938181	AE1-027 C	0.87
938191	AE1-028 C	0.51
938491	AE1-068 C O1	38.23
938501	AE1-069 C O1	30.93
939311	AE1-162 C	0.81
939411	AE1-173 C	43.23
940251	AE2-007	67.63
940471	AE2-031 C O1	15.34
940641	AE2-051 C O1	8.77
940891	AE2-078 C	0.87
940901	AE2-079 C	0.87
940911	AE2-080 C	0.87
941031	AE2-094 C	23.49
941281	AE2-122 C O1	10.89
941291	AE2-123 C O1	11.19
941301	AE2-124 C O1	10.16
941591	AE2-156	6.99
941791	AE2-182 C	3.23
942211	AE2-233 C	7.68
942921	AE2-311 C O1	22.14
942931	AE2-313 C	23.68
943051	AE2-328 C	11.8
AC1-131	AC1-131	9.78
BLUEG	BLUEG	18.52
CALDERWOOD	CALDERWOOD	3.67
CANNELTON	CANNELTON	1.25
CATAWBA	CATAWBA	3.52
CBM-N	CBM-N	0.67
CHEOAH	CHEOAH	3.42
CHILHOWEE	CHILHOWEE	1.19
COFFEEN	COFFEEN	2.13
COTTONWOOD	COTTONWOOD	12.22
DUCKCREEK	DUCKCREEK	4.38
EDWARDS	EDWARDS	1.96
ELMERSMITH	ELMERSMITH	2.2
FARMERCITY	FARMERCITY	1.53
G-007A	G-007A	3.0
GIBSON	GIBSON	0.79
HAMLET	HAMLET	6.6
NEWTON	NEWTON	5.55
NYISO	NYISO	2.9
PRAIRIE	PRAIRIE	11.52
SANTEETLA	SANTEETLA	1.02
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.59
TILTON	TILTON	2.32
TRIMBLE	TRIMBLE	2.04
TVA	TVA	10.31
UNIONPOWER	UNIONPOWER	5.07
VFT	VFT	7.99

Short Circuit

12.7 Short Circuit

The following Breakers are overduty: None

Affected Systems

13 Affected Systems

13.1 LG&E

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

13.2 MISO

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

13.3 TVA

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

13.4 Duke Energy Progress

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

13.5 NYISO

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

System Configuration

