Generation Interconnection

Feasibility Study Report

for

Queue Project AE1-068

CARSON-ROGERS ROAD 500 kV

322.1 MW Capacity / 500 MW Energy

January, 2019

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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).

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.

General

The IC has proposed a solar generating facility located in Greensville County, Virginia. The installed facilities will have a capability of 500 MW with 322.1 MW of this output being recognized by PJM as Capacity. The proposed in-service date for the AE1-068 project is 12/01/2021. This study does not imply an ITO commitment to either in-service date.

Queue Number	AE1-068
Project Name	CARSON-ROGERS ROAD 500 KV
Interconnection Customer	
State	Virginia
County	Greensville
Transmission Owner	Dominion
MFO	500
MWE	500
MWC	322.1
Fuel	Solar
Basecase Study Year	2022

Point of Interconnection

Primary Point of Interconnection

AE1-068 will interconnect with the ITO transmission system via a new three breaker ring bus switching station that connects on the Carson to Rogers Rd 500 kV line # 585. See one line in **Attachment 1**.

Secondary Point of Interconnection

AE1-068 will interconnect with the ITO transmission system via into the existing Rogers Rd 500 kV switching station.

Cost Summary

The AE1-068 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$ 2,800,000
Direct Connection Network Upgrade	$14,000,000
Non Direct Connection Network Upgrades	$ 2,500,000
Total Costs	$19,300,000

In addition, the AE1-068 project may be responsible for a contribution to the following costs

(Reference System Reinforcements in the Network Impacts section for details):

Description	Total Cost
System Upgrades	$594,630,000

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

Note: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. The allocation of costs for a network upgrade will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

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.

Transmission Owner Scope of Work

Attachment Facilities

Generation Substation: Install metering and associated protection equipment. Estimated Cost is $800,000.

Transmission: Construct approximately one span of 500 kV Attachment line between the generation substation and a new AE1-068 Switching Station. The estimated cost for this work is $2,000,000.

The estimated total cost of the Attachment Facilities is $2,800,000. It is estimated to take 18-24 months to complete this work. 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. The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up. The single line is shown below in Attachment 1.

Description	Total Cost
Substation	$ 800,000
Transmission	$2,000,000
Total Attachment Facility Costs	$2,800,000

Direct Connection Cost Estimate

Substation: Establish the new 500 kV AE1-068 Switching Substation (interconnection substation). The estimated cost of this work scope is $14,000,000. It is estimated to take 24-36 months to complete this work.

Non-Direct Connection Cost Estimate

Transmission: Install transmission structure in-line with transmission line to allow the proposed interconnection switching station to be interconnected with the transmission system. Estimated cost is $2,500,000 and it is estimated to take 24-30 months to complete.

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.

Interconnection Customer Requirements

ITO's Facility Connection Requirements as posted on PJM's website
http://www.pjm.com/~/media/planning/plan-standards/private-dominion/facility-connection-requirements1.ashx

Voltage Ride Through Requirements - The Customer Facility shall be designed to remain in service (not trip) for voltages and times as specified for the Eastern Interconnection in Attachment 1 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

Frequency Ride Through Requirements - The Customer Facility shall be designed to remain in service (not trip) for frequencies and times as specified in Attachment 2 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

Reactive Power - The Generation Interconnection Customer shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

Revenue Metering and SCADA Requirements

PJM Requirements

The IC 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 Appendix 2.

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

Network Impacts - Option 1

The Queue Project AE1-068 was evaluated as a 500 MW (Capacity 322.1 MW) injection tapping the Carson to Rogers Rd 500 kV line in the ITO area. Project AE1-068 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-068 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

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
114737	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	single	3218.56	96.01	99.62	DC	115.22
114667	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	single	2442.12	100.91	101.91	DC	53.66
114897	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	single	3218.56	100.18	101.2	DC	70.54
114898	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 575	single	3218.56	98.13	100.29	DC	68.7
114845	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	single	3218.56	102.33	103.34	DC	69.77
114846	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	single	3218.56	100.47	102.5	DC	65.45
114980	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	single	4070.2	92.55	97.3	DC	191.17

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
114299	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	120.4	125.13	DC	185.58
114300	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: H2T557	breaker	3938.0	113.17	117.8	DC	181.79
114348	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	99.04	109.6	DC	109.87
114434	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: 568T575	breaker	3938.0	98.72	101.63	DC	111.05
114435	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: H1T581	breaker	3938.0	99.81	102.63	DC	109.1
115211	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	104.74	106.01	DC	108.02

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
114250	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	125.39	132.97	DC	51.73
114906	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	single	559.3	104.8	109.35	DC	25.37
114270	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	122.38	129.96	DC	51.73
114928	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	single	559.3	101.1	105.65	DC	25.37
114569	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	142.72	144.81	DC	20.17
114281	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	130.77	132.72	DC	135.13
114282	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 56372	breaker	3144.0	127.26	129.29	DC	139.61
114662	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	124.96	126.49	DC	82.44
114663	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 576	single	2442.12	125.01	126.48	DC	78.84
114387	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: H1T594	breaker	3351.0	109.01	110.28	DC	93.47
114388	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: 573T594	breaker	3351.0	108.48	109.75	DC	93.15
114704	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	121.26	122.41	DC	60.04
114705	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 573	single	2442.12	115.85	116.97	DC	58.89
114222	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: WT576	breaker	3351.0	142.11	144.08	DC	144.92
114223	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: 57602	breaker	3351.0	142.11	144.08	DC	144.92
114540	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	154.22	155.98	DC	93.35
114543	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 563	single	2442.12	139.78	141.27	DC	79.16
114364	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	112.66	113.93	DC	94.04
114365	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: 57302	breaker	3351.0	109.94	111.25	DC	95.08
114366	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: XT573	breaker	3351.0	109.94	111.24	DC	95.07
114798	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	110.46	111.49	DC	60.89
114799	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 594	single	2738.22	108.4	109.4	DC	58.42
114866	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	108.88	109.84	DC	50.51

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
114232	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	134.35	137.79	DC	169.46
114564	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	127.41	131.65	DC	102.76
114567	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 557	single	2442.12	118.24	122.37	DC	100.25

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
114905	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	operation	559.3	115.84	119.03	DC	39.38
114927	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	operation	559.3	112.14	115.32	DC	39.38
114568	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	operation	449.32	184.24	187.45	DC	31.31
115062	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P1-2: LN 557	operation	984.18	100.07	101.34	DC	27.19
114732	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	operation	3218.56	135.92	141.49	DC	178.85
114656	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	161.68	164.07	DC	127.98
114661	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	operation	2442.12	129.34	130.9	DC	83.3
114701	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	operation	2442.12	148.7	150.46	DC	93.19
114537	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	194.85	197.56	DC	144.91
114795	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	operation	2738.22	134.17	135.76	DC	94.53

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
114859	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	operation	2442.12	124.97	126.44	DC	78.41
114560	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	180.41	186.08	DC	159.52
114566	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	operation	2442.12	117.67	123.1	DC	132.27
114892	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	operation	3218.56	122.16	123.72	DC	109.5
114900	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	Base Case	operation	3218.56	95.99	98.69	DC	84.89
115007	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	operation	3218.56	103.41	106.59	DC	98.59
114983	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	operation	2442.12	105.23	107.45	DC	120.43
114839	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	operation	3218.56	124.13	127.35	DC	101.59
114844	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	Base Case	operation	3218.56	100.22	102.89	DC	83.99
114978	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	operation	4070.2	97.15	104.5	DC	296.76
115003	938490	AE1-068 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511	operation	4070.2	95.05	102.97	DC	320.12

System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
114737,114299,114300	1	8CARSON 500.0 kV - 8MDLTHAN 500.0 kV Ckt 1	Description : Wreck & Rebuild 39 miles of 500kV Line # 563 between Carson and Midlothian substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : $112,230,000	$112,230,000
114897,114434,114435,114898	3	8NO ANNA 500.0 kV - 8SPOTSYL 500.0 kV Ckt 1	Description : Wreck & Rebuild 14 miles of 500kV Line # 573 North Anna and Spotsylvania substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : $42,000,000	$42,000,000
114232,114564,114567	14	8MDLTHAN 500.0 kV - 8NO ANNA 500.0 kV Ckt 1	Description : Rebuild / Uprate 41.13 miles of 500kV Line # 576 between Midlothian and North Anna substations. A VA CPCN will be required. Time Estimate : 24-30 Months Cost : $123,400,000	$123,400,000
114281,114282,114667,114662,114663	2	8CHCKAHM 500.0 kV - 8ELMONT 500.0 kV Ckt 1	Description : Rebuild / Uprate 28 miles of Line # 557 between Chickahominy and Elmont substations. A VA CPCN will be required. Time Estimate : 36-44 Months Cost : $84,000,000	$84,000,000
114866	13	8LADYSMITH 500.0 kV - 8POSSUM 500.0 kV Ckt 1	Description : Rebuild / Uprate 44 miles of Line # 568 between Ladysmith and Possum Point substations. A VA CPCN will be required. Time Estimate : 36-44 Months Cost : $132,000,000	$132,000,000
114364,114365,114798,114799, 114366	12	8LADYSMITH 500.0 kV - 8CHANCE 500.0 kV Ckt 1	Description : 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.	$0
114569	9	6CHESTF B 230.0 kV - 6BASIN 230.0 kV Ckt 1	Description : PJM baseline upgrade b2990: Chesterfield to Basin 230 kV line - Replace 0.14 miles of 1109 ACAR with a conductor which will increase the line rating to approximately 706 MVA. The baseline project went in-service on 04/27/2018.	$0
114704,114705,114387,114388	10	8CHANCE 500.0 kV - 8BRISTER 500.0 kV Ckt 1	Description : 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.	$0
115211,114845,114846	4	8SPOTSYL 500.0 kV - 8MORRSVL 500.0 kV Ckt 1	Description : Wreck & Rebuild 17 miles of Line # 594 between 17 mi Morrisville and Spotsylvania substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : $60,000,000	$60,000,000

ID	Index	Facility	Upgrade Description	Cost
114980	5	8RAWLINGS 500.0 kV - 8CARSON 500.0 kV Ckt 1	Description : No Violation. Facility loading does not exceed 100%.	$0
114543,114540,114222,114223	11	8ELMONT 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	Description : 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.	$0
114250,114906	7	6CARSON 230.0 kV - 6CHRL249 230.0 kV Ckt 1	Description : Wreck & Rebuild 7.5 miles of 230kV Line # 249 between Carson and Chaparral substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : $18,500,000	$18,500,000
114348	6	8CARSON 500.0 kV - 6CARSON 500.0 kV Ckt 1	Description : Add second 500-230 kV Transformer at Carson Substation Time Estimate : 20-24 Months Cost : $15,000,000	$15,000,000
114928,114270	8	6CHRL249 230.0 kV - 6LOCKS 230.0 kV Ckt 1	Description : Wreck & Rebuild 230kV Line # 249 between Chaparral and Locks substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : $7,500,000	$7,500,000
			TOTAL COST	**$594,630,000**

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.

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114299	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	120.4	125.13	DC	185.58

Bus #	Bus	MW Impact
314539	3UNCAMP	3.9
314541	3WATKINS	1.1
314554	3BTLEBRO	1.2
314557	3BETHELC	1.22
314566	3CRESWEL	3.95
314572	3EMPORIA	0.62
314574	6EVERETS	6.48
314578	3HORNRTN	4.99
314582	3KELFORD	5.44
314594	6PLYMOTH	1.38
314603	3SCOT NK	5.06
314617	3TUNIS	1.32
314620	6CASHIE	1.36
314623	3WITAKRS	2.03
314648	6SUNBURY	1.5
314651	6WINFALL	2.97
315090	1YORKTN1	40.62
315091	1YORKTN2	42.16
315102	1BRUNSWICKG1	16.87
315103	1BRUNSWICKG2	16.87
315104	1BRUNSWICKG3	16.87
315105	1BRUNSWICKS1	35.05
315108	1ELIZAR1	5.8
315109	1ELIZAR2	5.7
315110	1ELIZAR3	5.87
315131	1EDGECMA	13.89
315132	1EDGECMB	13.89
315150	1BUGGS 1	14.89
315151	1BUGGS 2	14.89
315233	1SURRY 2	45.77
900672	V4-068 E	0.47
901082	W1-029 E	77.64
907092	X1-038 E	9.75
913392	Y1-086 E	3.75
916042	Z1-036 E	76.32
916191	Z1-068 C	0.08
916192	Z1-068 E	3.24
916301	Z1-086 C	102.98
916302	Z1-086 E	18.72
917122	Z2-027 E	1.8

Bus #	Bus	MW Impact
917332	Z2-043 E	1.55
917342	Z2-044 E	0.87
917512	Z2-088 E OP1	5.99
918492	AA1-063AE OP	6.12
918512	AA1-065 E OP	7.02
918532	AA1-067 E	1.14
918562	AA1-072 E	0.26
919151	AA1-139 C	4.44
919152	AA1-139 E	11.05
919692	AA2-053 E	5.69
919701	AA2-057 C	10.73
919702	AA2-057 E	5.36
920042	AA2-088 E OP	16.58
920592	AA2-165 E	0.71
920672	AA2-174 E	0.66
920692	AA2-178 E	6.77
923801	AB2-015 C O1	13.82
923802	AB2-015 E O1	11.33
923832	AB2-022 E	2.12
923852	AB2-025 E	1.64
923911	AB2-031 C O1	3.35
923912	AB2-031 E O1	1.65
923941	AB2-035 C	0.51
923942	AB2-035 E	0.22
923992	AB2-040 E O1	8.99
924022	AB2-043 E O1	6.43
924152	AB2-059 E O1	8.13
924162	AB2-060 E O1	5.28
924241	AB2-068 O1	333.94
924302	AB2-077 E O1	1.67
924312	AB2-078 E O1	1.67
924322	AB2-079 E O1	1.67
924391	AB2-088 C	0.66
924392	AB2-088 E	0.32
924401	AB2-089 C	2.95
924402	AB2-089 E	1.52
924491	AB2-098 C	0.89
924492	AB2-098 E	0.38
924501	AB2-099 C	0.92
924502	AB2-099 E	0.39
924511	AB2-100 C	17.28
924512	AB2-100 E	8.51
924812	AB2-134 E O1	14.4
925061	AB2-161 C O1	4.86
925062	AB2-161 E O1	7.93
925122	AB2-169 E	9.3
925171	AB2-174 C O1	10.49
925172	AB2-174 E O1	9.49
925281	AB2-186 C	1.03
925282	AB2-186 E	0.44
925291	AB2-188 C O1	3.89
925292	AB2-188 E O1	1.75

Bus #	Bus	MW Impact
925331	AB2-190 C	22.91
925332	AB2-190 E	9.82
925521	AC1-027 C	0.59
925522	AC1-027 E	1.97
925591	AC1-034 C	10.22
925592	AC1-034 E	7.71
925781	AC1-054 C O1	10.09
925782	AC1-054 E O1	4.65
926071	AC1-086 C	31.41
926072	AC1-086 E	14.3
926201	AC1-098 C	9.4
926202	AC1-098 E	5.6
926211	AC1-099 C	3.15
926212	AC1-099 E	1.85
926271	AC1-105 C O1	7.5
926272	AC1-105 E O1	3.73
926291	AC1-107 O1	504.06
926662	AC1-147 E	2.27
926751	AC1-161 C O1	55.61
926752	AC1-161 E O1	23.74
927021	AC1-189 C	13.41
927022	AC1-189 E	6.68
927141	AC1-208 C	13.7
927142	AC1-208 E	6.09
927221	AC1-216 C O1	11.57
927222	AC1-216 E O1	9.1
927251	AC1-221 C	3.14
927252	AC1-221 E	3.14
927261	AC1-222 C	4.86
927262	AC1-222 E	4.63
930402	AB1-081 E O1	5.74
930862	AB1-132 E O1	9.14
931232	AB1-173 E	1.57
931242	AB1-173AE	1.57
932041	AC2-012 C	17.47
932042	AC2-012 E	28.5
932581	AC2-078 C O1	5.18
932582	AC2-078 E O1	8.44
932591	AC2-079 C O1	8.83
932592	AC2-079 E O1	14.41
932631	AC2-084 C	13.41
932632	AC2-084 E	6.6
932761	AC2-100 C	7.23
932762	AC2-100 E	3.53
933291	AC2-141 C	55.61
933292	AC2-141 E	23.74
933731	AC2-196 C	0.53
933732	AC2-196 E	2.07
933991	AD1-023 C	21.24
933992	AD1-023 E	11.56
934011	AD1-025 C	19.89
934012	AD1-025 E	11.78

Bus #	Bus	MW Impact
934061	AD1-033 C	13.01
934062	AD1-033 E	8.68
934201	AD1-047 C	11.99
934202	AD1-047 E	7.99
934231	AD1-050 C	6.51
934232	AD1-050 E	3.56
934311	AD1-055 C	3.38
934312	AD1-055 E	0.87
934331	AD1-057 C O1	15.07
934332	AD1-057 E O1	8.04
934341	AD1-058 C	7.87
934342	AD1-058 E	2.0
934521	AD1-076 C	88.52
934522	AD1-076 E	45.07
934571	AD1-082 C	11.07
934572	AD1-082 E	6.31
934611	AD1-087 C O1	12.77
934612	AD1-087 E O1	6.0
934621	AD1-088 C	17.21
934622	AD1-088 E	8.08
934991	AD1-131 C	2.58
934992	AD1-131 E	1.72
935112	AD1-144 E	1.54
935161	AD1-151 C O1	18.41
935162	AD1-151 E O1	12.27
935171	AD1-152 C O1	12.69
935172	AD1-152 E O1	8.46
935212	AD1-156 E	1.73
936041	AD2-007	2.11
936051	AD2-008 C	3.46
936052	AD2-008 E	7.54
936331	AD2-043 C	6.32
936332	AD2-043 E	7.48
936361	AD2-046 C O1	11.9
936362	AD2-046 E O1	5.47
936391	AD2-049 C	2.65
936392	AD2-049 E	2.65
936401	AD2-051 C O1	13.77
936402	AD2-051 E O1	5.91
936481	AD2-063 C O1	17.89
936482	AD2-063 E O1	11.93
936531	AD2-068 C	7.89
936532	AD2-068 E	4.07
936661	AD2-085 C	5.28
936662	AD2-085 E	8.61
936701	AD2-089 C	11.02
936702	AD2-089 E	7.35
936711	AD2-090 C O1	11.44
936712	AD2-090 E O1	7.62
937221	AD2-160 C O1	10.1
937222	AD2-160 E O1	5.3
937251	AD2-164	6.91

Bus #	Bus	MW Impact
937481	AD2-202 C O1	3.52
937482	AD2-202 E O1	1.77
937541	AD2-215 C	2.84
937542	AD2-215 E	1.51
937571	AD2-169 C	14.99
937572	AD2-169 E	9.99
938171	AE1-026 C1 O	45.11
938172	AE1-026 C2 O	6.53
938173	AE1-026 E O1	13.62
938181	AE1-027 C	4.05
938182	AE1-027 E	2.13
938191	AE1-028 C	2.35
938192	AE1-028 E	1.36
938221	AE1-035 C	3.56
938222	AE1-035 E	1.76
938461	AE1-065 C O1	48.97
938462	AE1-065 E O1	197.59
938471	AE1-066 C O1	50.32
938472	AE1-066 E O1	196.23
938481	AE1-067 C O1	45.76
938482	AE1-067 E O1	200.79
938491	AE1-068 C O1	119.55
938492	AE1-068 E O1	66.03
938501	AE1-069 C O1	93.4
938502	AE1-069 E O1	53.4
938531	AE1-072 C O1	30.18
938532	AE1-072 E O1	15.73
AA2-074	AA2-074	8.89
AB2-013	AB2-013	5.7
AE1-033	AE1-033	5.94
AE1-042	AE1-042	14.39
CARR	CARR	1.71
CBM-S1	CBM-S1	21.98
CBM-S2	CBM-S2	25.61
CBM-W1	CBM-W1	20.03
CBM-W2	CBM-W2	142.14
CIN	CIN	9.32
CPLE	CPLE	13.07
G-007	G-007	5.64
IPL	IPL	5.81
LGEE	LGEE	2.72
MEC	MEC	21.15
MECS	MECS	7.49
O-066	O-066	18.81
RENSSELAER	RENSSELAER	1.35
WEC	WEC	2.47
Z1-043	Z1-043	9.72

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114281	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	130.77	132.72	DC	135.13

Bus #	Bus	MW Impact
314189	6PAPERMILL	10.95
314421	6WINCHST	0.29
314539	3UNCAMP	3.9
314541	3WATKINS	1.09
314554	3BTLEBRO	1.03
314557	3BETHELC	1.08
314566	3CRESWEL	3.92
314572	3EMPORIA	0.55
314574	6EVERETS	5.93
314578	3HORNRTN	4.49
314582	3KELFORD	5.04
314594	6PLYMOTH	1.36
314603	3SCOT NK	4.6
314617	3TUNIS	1.25
314620	6CASHIE	1.31
314623	3WITAKRS	1.76
314648	6SUNBURY	1.55
314651	6WINFALL	3.05
315073	1STONECA	8.72
315074	1HOPCGN1	10.52
315075	1HOPCGN2	10.38
315090	1YORKTN1	53.51
315091	1YORKTN2	55.53
315092	1YORKTN3	45.83
315110	1ELIZAR3	6.23
315131	1EDGECMA	11.92
315132	1EDGECMB	11.92
315233	1SURRY 2	55.26
900672	V4-068 E	0.45
901082	W1-029 E	80.05
907092	X1-038 E	9.75
913392	Y1-086 E	3.89
916042	Z1-036 E	77.65
916192	Z1-068 E	3.42
916302	Z1-086 E	13.64
917122	Z2-027 E	1.86
917332	Z2-043 E	1.43
917342	Z2-044 E	0.75
917512	Z2-088 E OP1	5.37
918492	AA1-063AE OP	5.61

Bus #	Bus	MW Impact
918512	AA1-065 E OP	6.66
918532	AA1-067 E	1.05
918562	AA1-072 E	0.24
919152	AA1-139 E	11.57
919692	AA2-053 E	5.18
919701	AA2-057 C	9.4
919702	AA2-057 E	4.7
920042	AA2-088 E OP	15.98
920592	AA2-165 E	0.62
920672	AA2-174 E	0.6
920692	AA2-178 E	6.71
923801	AB2-015 C O1	13.74
923802	AB2-015 E O1	11.26
923832	AB2-022 E	2.2
923842	AB2-024 E	1.84
923852	AB2-025 E	1.45
923911	AB2-031 C O1	2.99
923912	AB2-031 E O1	1.47
923941	AB2-035 C	0.45
923942	AB2-035 E	0.19
923992	AB2-040 E O1	8.03
924152	AB2-059 E O1	6.98
924241	AB2-068 O1	619.73
924391	AB2-088 C	0.58
924392	AB2-088 E	0.28
924491	AB2-098 C	0.81
924492	AB2-098 E	0.35
924501	AB2-099 C	0.87
924502	AB2-099 E	0.37
924511	AB2-100 C	15.35
924512	AB2-100 E	7.56
924812	AB2-134 E O1	18.14
925051	AB2-160 C O1	6.27
925052	AB2-160 E O1	10.23
925061	AB2-161 C O1	5.12
925062	AB2-161 E O1	8.36
925122	AB2-169 E	8.81
925171	AB2-174 C O1	9.34
925172	AB2-174 E O1	8.45
925281	AB2-186 C	1.06
925282	AB2-186 E	0.45
925291	AB2-188 C O1	3.86
925292	AB2-188 E O1	1.73
925331	AB2-190 C	29.21
925332	AB2-190 E	12.52
925522	AC1-027 E	2.08
925591	AC1-034 C	8.77
925592	AC1-034 E	6.62
925861	AC1-065 C	5.37
925862	AC1-065 E	8.76
926071	AC1-086 C	28.17
926072	AC1-086 E	12.82

Bus #	Bus	MW Impact
926201	AC1-098 C	8.45
926202	AC1-098 E	5.04
926211	AC1-099 C	2.83
926212	AC1-099 E	1.66
926291	AC1-107 O1	935.44
926662	AC1-147 E	2.41
926751	AC1-161 C O1	59.53
926752	AC1-161 E O1	25.41
926781	AC1-164 C	68.02
926782	AC1-164 E	30.56
927021	AC1-189 C	12.1
927022	AC1-189 E	6.03
927141	AC1-208 C	12.2
927142	AC1-208 E	5.42
927221	AC1-216 C O1	14.57
927222	AC1-216 E O1	11.46
930402	AB1-081 E O1	4.92
930862	AB1-132 E O1	8.2
931232	AB1-173 E	1.4
931242	AB1-173AE	1.4
932041	AC2-012 C	18.56
932042	AC2-012 E	30.29
932532	AC2-073 E	1.96
932581	AC2-078 C O1	5.52
932582	AC2-078 E O1	9.01
932591	AC2-079 C O1	9.26
932592	AC2-079 E O1	15.11
932631	AC2-084 C	12.05
932632	AC2-084 E	5.94
932831	AC2-110 C	2.15
932832	AC2-110 E	3.5
933061	AC2-130	3.1
933071	AC2-131 1	2.1
933081	AC2-131 2	0.95
933111	AC2-132 1	1.1
933121	AC2-132 2	0.56
933262	AC2-137 E	1.87
933272	AC2-138 E	1.18
933291	AC2-141 C	59.53
933292	AC2-141 E	25.41
933732	AC2-196 E	2.17
933991	AD1-023 C	20.59
933992	AD1-023 E	11.21
934011	AD1-025 C	25.05
934012	AD1-025 E	14.84
934061	AD1-033 C	13.7
934062	AD1-033 E	9.13
934141	AD1-041 C	8.5
934142	AD1-041 E	5.66
934201	AD1-047 C	10.7
934202	AD1-047 E	7.13
934212	AD1-048 E	1.38

Bus #	Bus	MW Impact
934331	AD1-057 C O1	13.19
934332	AD1-057 E O1	7.04
934392	AD1-063 E	1.75
934521	AD1-076 C	86.43
934522	AD1-076 E	44.01
934571	AD1-082 C	11.68
934572	AD1-082 E	6.66
934611	AD1-087 C O1	9.65
934612	AD1-087 E O1	4.53
935112	AD1-144 E	1.67
935161	AD1-151 C O1	23.47
935162	AD1-151 E O1	15.65
935171	AD1-152 C O1	9.59
935172	AD1-152 E O1	6.39
935212	AD1-156 E	1.73
936041	AD2-007	2.66
936051	AD2-008 C	4.36
936052	AD2-008 E	9.49
936151	AD2-021	0.33
936241	AD2-030 C	3.72
936242	AD2-030 E	1.9
936301	AD2-039 C	2.15
936302	AD2-039 E	3.5
936341	AD2-044 C	0.3
936342	AD2-044 E	0.33
936391	AD2-049 C	3.25
936392	AD2-049 E	3.25
936401	AD2-051 C O1	12.94
936402	AD2-051 E O1	5.55
936531	AD2-068 C	6.84
936532	AD2-068 E	3.52
936591	AD2-074 C	7.46
936592	AD2-074 E	12.17
936661	AD2-085 C	5.54
936662	AD2-085 E	9.04
936701	AD2-089 C	9.69
936702	AD2-089 E	6.46
936711	AD2-090 C O1	11.21
936712	AD2-090 E O1	7.48
937221	AD2-160 C O1	10.59
937222	AD2-160 E O1	5.55
937251	AD2-164	8.87
937481	AD2-202 C O1	2.66
937482	AD2-202 E O1	1.34
937541	AD2-215 C	3.09
937542	AD2-215 E	1.64
937571	AD2-169 C	13.41
937572	AD2-169 E	8.94
938031	AE1-004 C	2.15
938032	AE1-004 E	3.5
938171	AE1-026 C1 O	43.53
938172	AE1-026 C2 O	6.3

Bus #	Bus	MW Impact
938173	AE1-026 E O1	13.15
938181	AE1-027 C	4.26
938182	AE1-027 E	2.24
938191	AE1-028 C	2.47
938192	AE1-028 E	1.43
938221	AE1-035 C	3.38
938222	AE1-035 E	1.66
938461	AE1-065 C O1	51.77
938462	AE1-065 E O1	208.9
938471	AE1-066 C O1	53.2
938472	AE1-066 E O1	207.47
938481	AE1-067 C O1	48.38
938482	AE1-067 E O1	212.29
938491	AE1-068 C O1	87.05
938492	AE1-068 E O1	48.08
938501	AE1-069 C O1	68.07
938502	AE1-069 E O1	38.92
938531	AE1-072 C O1	31.55
938532	AE1-072 E O1	16.45
AA2-074	AA2-074	6.79
AE1-042	AE1-042	9.43
CARR	CARR	1.31
CBM-S1	CBM-S1	13.87
CBM-S2	CBM-S2	18.86
CBM-W1	CBM-W1	10.0
CBM-W2	CBM-W2	87.36
CIN	CIN	4.78
CPLE	CPLE	9.98
G-007	G-007	4.21
IPL	IPL	2.93
LGEE	LGEE	1.39
MEC	MEC	11.89
MECS	MECS	2.63
O-066	O-066	14.06
RENSSELAER	RENSSELAER	1.04
WEC	WEC	1.26

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114435	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: H1T581	breaker	3938.0	99.81	102.63	DC	109.1

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.61
314250	6ROCKVILLE	0.42
314539	3UNCAMP	2.85
314541	3WATKINS	0.8
314566	3CRESWEL	2.8
314572	3EMPORIA	0.48
314574	6EVERETS	4.58
314578	3HORNRTN	3.67
314582	3KELFORD	3.91
314594	6PLYMOTH	0.98
314603	3SCOT NK	3.64
314617	3TUNIS	0.96
314620	6CASHIE	0.97
314648	6SUNBURY	1.06
314651	6WINFALL	2.1
315053	1BELMED1	20.68
315054	1BELMED2	20.68
315055	1BELMED3	17.16
315058	1CHESTF3	21.39
315059	1CHESTF4	34.67
315073	1STONECA	8.27
315074	1HOPCGN1	9.97
315075	1HOPCGN2	9.84
315083	1SPRUNCA	12.85
315084	1SPRUNCB	12.85
315085	1SPRUNCC	9.53
315086	1SPRUNCD	9.53
315090	1YORKTN1	34.25
315091	1YORKTN2	35.54
315110	1ELIZAR3	4.16
315225	1N ANNA1	65.35
315226	1N ANNA2	65.5
315233	1SURRY 2	31.88
900672	V4-068 E	0.34
901082	W1-029 E	54.97
907092	X1-038 E	7.13
913392	Y1-086 E	2.64
916042	Z1-036 E	54.04
916192	Z1-068 E	2.29
916302	Z1-086 E	11.03

Bus #	Bus	MW Impact
917122	Z2-027 E	1.27
917332	Z2-043 E	1.11
918492	AA1-063AE OP	4.47
918512	AA1-065 E OP	5.02
918532	AA1-067 E	0.81
918562	AA1-072 E	0.19
919152	AA1-139 E	7.77
919692	AA2-053 E	4.18
920042	AA2-088 E OP	12.13
920672	AA2-174 E	0.48
920692	AA2-178 E	4.8
923801	AB2-015 C O1	10.11
923802	AB2-015 E O1	8.29
923832	AB2-022 E	1.49
923842	AB2-024 E	1.28
923852	AB2-025 E	1.3
923862	AB2-026 E	1.25
923911	AB2-031 C O1	2.53
923912	AB2-031 E O1	1.24
923992	AB2-040 E O1	6.78
924241	AB2-068 O1	230.22
924491	AB2-098 C	0.63
924492	AB2-098 E	0.27
924501	AB2-099 C	0.66
924502	AB2-099 E	0.28
924511	AB2-100 C	13.27
924512	AB2-100 E	6.53
924812	AB2-134 E O1	14.72
925022	AB2-158 E	5.81
925051	AB2-160 C O1	6.56
925052	AB2-160 E O1	10.7
925061	AB2-161 C O1	4.08
925062	AB2-161 E O1	6.66
925122	AB2-169 E	6.59
925171	AB2-174 C O1	7.95
925172	AB2-174 E O1	7.19
925281	AB2-186 C	0.73
925282	AB2-186 E	0.31
925291	AB2-188 C O1	2.76
925292	AB2-188 E O1	1.24
925331	AB2-190 C	24.17
925332	AB2-190 E	10.36
925522	AC1-027 E	1.39
925861	AC1-065 C	3.85
925862	AC1-065 E	6.29
926071	AC1-086 C	23.21
926072	AC1-086 E	10.56
926201	AC1-098 C	6.76
926202	AC1-098 E	4.03
926211	AC1-099 C	2.26
926212	AC1-099 E	1.33
926291	AC1-107 O1	347.5

Bus #	Bus	MW Impact
926412	AC1-112 E	1.28
926662	AC1-147 E	1.61
926751	AC1-161 C O1	37.22
926752	AC1-161 E O1	15.89
926781	AC1-164 C	46.83
926782	AC1-164 E	21.04
927041	AC1-191 C O1	10.57
927042	AC1-191 E O1	5.26
927141	AC1-208 C	9.88
927142	AC1-208 E	4.39
927221	AC1-216 C O1	11.83
927222	AC1-216 E O1	9.3
930122	AB1-027 E	1.26
930862	AB1-132 E O1	6.76
931232	AB1-173 E	1.19
931242	AB1-173AE	1.19
932041	AC2-012 C	12.43
932042	AC2-012 E	20.28
932502	AC2-070 E	0.8
932532	AC2-073 E	1.37
932581	AC2-078 C O1	4.92
932582	AC2-078 E O1	8.02
932591	AC2-079 C O1	6.92
932592	AC2-079 E O1	11.29
932631	AC2-084 C	9.63
932632	AC2-084 E	4.74
932831	AC2-110 C	1.54
932832	AC2-110 E	2.52
933061	AC2-130	2.83
933071	AC2-131 1	1.92
933081	AC2-131 2	0.87
933111	AC2-132 1	1.01
933121	AC2-132 2	0.51
933262	AC2-137 E	1.57
933291	AC2-141 C	37.22
933292	AC2-141 E	15.89
933501	AC2-165 C	10.97
933502	AC2-165 E	8.26
933732	AC2-196 E	1.45
933991	AD1-023 C	15.11
933992	AD1-023 E	8.23
934011	AD1-025 C	20.33
934012	AD1-025 E	12.04
934061	AD1-033 C	9.14
934062	AD1-033 E	6.09
934141	AD1-041 C	6.05
934142	AD1-041 E	4.03
934201	AD1-047 C	9.05
934202	AD1-047 E	6.03
934212	AD1-048 E	1.43
934392	AD1-063 E	1.22
934521	AD1-076 C	62.89

Bus #	Bus	MW Impact
934522	AD1-076 E	32.02
934571	AD1-082 C	9.3
934572	AD1-082 E	5.31
934621	AD1-088 C	13.48
934622	AD1-088 E	6.33
935112	AD1-144 E	1.14
935161	AD1-151 C O1	19.42
935162	AD1-151 E O1	12.95
935212	AD1-156 E	1.72
936041	AD2-007	2.16
936051	AD2-008 C	3.54
936052	AD2-008 E	7.71
936151	AD2-021	0.28
936241	AD2-030 C	2.62
936242	AD2-030 E	1.34
936301	AD2-039 C	1.54
936302	AD2-039 E	2.52
936391	AD2-049 C	2.15
936392	AD2-049 E	2.15
936401	AD2-051 C O1	9.9
936402	AD2-051 E O1	4.25
936661	AD2-085 C	4.15
936662	AD2-085 E	6.78
936711	AD2-090 C O1	8.37
936712	AD2-090 E O1	5.58
937221	AD2-160 C O1	7.09
937222	AD2-160 E O1	3.72
937251	AD2-164	5.75
937541	AD2-215 C	2.11
937542	AD2-215 E	1.12
937571	AD2-169 C	11.26
937572	AD2-169 E	7.5
938031	AE1-004 C	1.54
938032	AE1-004 E	2.52
938081	AE1-010	3.61
938171	AE1-026 C1 O	32.12
938172	AE1-026 C2 O	4.65
938173	AE1-026 E O1	9.7
938181	AE1-027 C	2.84
938182	AE1-027 E	1.5
938191	AE1-028 C	1.65
938192	AE1-028 E	0.96
938221	AE1-035 C	2.55
938222	AE1-035 E	1.25
938461	AE1-065 C O1	34.6
938462	AE1-065 E O1	139.61
938471	AE1-066 C O1	35.56
938472	AE1-066 E O1	138.66
938481	AE1-067 C O1	32.33
938482	AE1-067 E O1	141.88
938491	AE1-068 C O1	70.29
938492	AE1-068 E O1	38.82

Bus #	Bus	MW Impact
938501	AE1-069 C O1	55.06
938502	AE1-069 E O1	31.48
938531	AE1-072 C O1	21.22
938532	AE1-072 E O1	11.06
938551	AE1-074 C	3.04
938552	AE1-074 E	1.53
938561	AE1-075 C	2.44
938562	AE1-075 E	1.19
AA2-074	AA2-074	5.91
AE1-042	AE1-042	9.29
CARR	CARR	1.77
CBM-S1	CBM-S1	13.94
CBM-S2	CBM-S2	17.07
CBM-W1	CBM-W1	9.76
CBM-W2	CBM-W2	86.7
CIN	CIN	4.97
CPLE	CPLE	8.68
G-007	G-007	5.57
IPL	IPL	3.06
LGEE	LGEE	1.49
MEC	MEC	11.91
MECS	MECS	2.06
O-066	O-066	18.63
RENSSELAER	RENSSELAER	1.4
WEC	WEC	1.27

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115211	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	104.74	106.01	DC	108.02

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.74
314250	6ROCKVILLE	0.43
314539	3UNCAMP	2.84
314541	3WATKINS	0.8
314566	3CRESWEL	2.79
314572	3EMPORIA	0.48
314582	3KELFORD	3.9
314594	6PLYMOTH	0.98
314617	3TUNIS	0.95
314620	6CASHIE	0.96
314648	6SUNBURY	1.06
314651	6WINFALL	2.09
315053	1BELMED1	20.9
315054	1BELMED2	20.9
315055	1BELMED3	17.35
315058	1CHESTF3	21.66
315059	1CHESTF4	35.11
315073	1STONECA	8.33
315074	1HOPCGN1	10.04
315075	1HOPCGN2	9.91
315083	1SPRUNCA	12.97
315084	1SPRUNCB	12.97
315085	1SPRUNCC	9.61
315086	1SPRUNCD	9.61
315090	1YORKTN1	34.28
315091	1YORKTN2	35.57
315225	1N ANNA1	62.94
315226	1N ANNA2	63.08
315233	1SURRY 2	31.7
900672	V4-068 E	0.34
901082	W1-029 E	54.71
907092	X1-038 E	7.1
913392	Y1-086 E	2.63
916042	Z1-036 E	53.79
916192	Z1-068 E	2.27
916302	Z1-086 E	10.93
917122	Z2-027 E	1.27
917332	Z2-043 E	1.11
918492	AA1-063AE OP	4.46
918512	AA1-065 E OP	5.0

Bus #	Bus	MW Impact
918562	AA1-072 E	0.18
919152	AA1-139 E	7.73
919692	AA2-053 E	4.16
920042	AA2-088 E OP	12.09
920672	AA2-174 E	0.48
920692	AA2-178 E	4.78
923801	AB2-015 C O1	10.07
923802	AB2-015 E O1	8.26
923832	AB2-022 E	1.48
923842	AB2-024 E	1.3
923852	AB2-025 E	1.3
923862	AB2-026 E	1.26
923911	AB2-031 C O1	2.52
923912	AB2-031 E O1	1.24
923992	AB2-040 E O1	6.77
924241	AB2-068 O1	228.21
924501	AB2-099 C	0.66
924502	AB2-099 E	0.28
924511	AB2-100 C	13.23
924512	AB2-100 E	6.52
924812	AB2-134 E O1	14.77
925021	AB2-158 C	2.41
925022	AB2-158 E	6.25
925051	AB2-160 C O1	6.6
925052	AB2-160 E O1	10.77
925061	AB2-161 C O1	4.08
925062	AB2-161 E O1	6.65
925122	AB2-169 E	6.56
925171	AB2-174 C O1	7.93
925172	AB2-174 E O1	7.17
925281	AB2-186 C	0.73
925282	AB2-186 E	0.31
925291	AB2-188 C O1	2.75
925292	AB2-188 E O1	1.23
925331	AB2-190 C	24.26
925332	AB2-190 E	10.4
925522	AC1-027 E	1.39
925861	AC1-065 C	3.94
925862	AC1-065 E	6.43
926001	AC1-076 C	7.23
926002	AC1-076 E	11.76
926071	AC1-086 C	23.13
926072	AC1-086 E	10.53
926291	AC1-107 O1	344.46
926412	AC1-112 E	1.31
926662	AC1-147 E	1.61
926731	AC1-158 C	194.13
926732	AC1-158 E	85.19
926751	AC1-161 C O1	36.97
926752	AC1-161 E O1	15.78
926781	AC1-164 C	47.27
926782	AC1-164 E	21.24

Bus #	Bus	MW Impact
927041	AC1-191 C O1	10.96
927042	AC1-191 E O1	5.46
927221	AC1-216 C O1	11.87
927222	AC1-216 E O1	9.33
930122	AB1-027 E	1.29
930862	AB1-132 E O1	6.73
931232	AB1-173 E	1.18
931242	AB1-173AE	1.18
932041	AC2-012 C	12.37
932042	AC2-012 E	20.18
932502	AC2-070 E	0.81
932532	AC2-073 E	1.39
932581	AC2-078 C O1	4.93
932582	AC2-078 E O1	8.04
932591	AC2-079 C O1	6.91
932592	AC2-079 E O1	11.27
932831	AC2-110 C	1.58
932832	AC2-110 E	2.57
933011	AC2-125	2.82
933021	AC2-126	2.84
933031	AC2-127	1.55
933041	AC2-128	1.5
933051	AC2-129	1.4
933061	AC2-130	2.86
933071	AC2-131 1	1.93
933081	AC2-131 2	0.88
933111	AC2-132 1	1.02
933121	AC2-132 2	0.52
933262	AC2-137 E	1.59
933291	AC2-141 C	36.97
933292	AC2-141 E	15.78
933501	AC2-165 C	11.11
933502	AC2-165 E	8.36
933732	AC2-196 E	1.44
933991	AD1-023 C	15.05
933992	AD1-023 E	8.19
934011	AD1-025 C	20.4
934012	AD1-025 E	12.08
934061	AD1-033 C	9.09
934062	AD1-033 E	6.06
934141	AD1-041 C	6.19
934142	AD1-041 E	4.13
934201	AD1-047 C	9.02
934202	AD1-047 E	6.02
934212	AD1-048 E	1.45
934392	AD1-063 E	1.25
934521	AD1-076 C	62.6
934522	AD1-076 E	31.88
934541	AD1-078 C	4.43
934542	AD1-078 E	2.6
934571	AD1-082 C	9.29
934572	AD1-082 E	5.3

Bus #	Bus	MW Impact
935112	AD1-144 E	1.14
935161	AD1-151 C O1	19.49
935162	AD1-151 E O1	13.0
935212	AD1-156 E	1.72
936041	AD2-007	2.17
936051	AD2-008 C	3.55
936052	AD2-008 E	7.73
936151	AD2-021	0.28
936241	AD2-030 C	2.69
936242	AD2-030 E	1.37
936301	AD2-039 C	1.58
936302	AD2-039 E	2.57
936391	AD2-049 C	2.15
936392	AD2-049 E	2.15
936401	AD2-051 C O1	9.86
936402	AD2-051 E O1	4.23
936591	AD2-074 C	6.12
936592	AD2-074 E	9.99
936661	AD2-085 C	4.14
936662	AD2-085 E	6.76
936711	AD2-090 C O1	8.34
936712	AD2-090 E O1	5.56
937221	AD2-160 C O1	7.06
937222	AD2-160 E O1	3.7
937251	AD2-164	5.75
937541	AD2-215 C	2.1
937542	AD2-215 E	1.12
937571	AD2-169 C	11.22
937572	AD2-169 E	7.48
938031	AE1-004 C	1.58
938032	AE1-004 E	2.57
938081	AE1-010	10.03
938171	AE1-026 C1 O	31.98
938172	AE1-026 C2 O	4.63
938173	AE1-026 E O1	9.66
938181	AE1-027 C	2.83
938182	AE1-027 E	1.49
938191	AE1-028 C	1.64
938192	AE1-028 E	0.95
938221	AE1-035 C	2.54
938222	AE1-035 E	1.25
938461	AE1-065 C O1	34.43
938462	AE1-065 E O1	138.94
938471	AE1-066 C O1	35.38
938472	AE1-066 E O1	137.98
938481	AE1-067 C O1	32.18
938482	AE1-067 E O1	141.19
938491	AE1-068 C O1	69.59
938492	AE1-068 E O1	38.43
938501	AE1-069 C O1	54.52
938502	AE1-069 E O1	31.17
938531	AE1-072 C O1	21.12

Bus #	Bus	MW Impact
938532	AE1-072 E O1	11.01
938551	AE1-074 C	3.06
938552	AE1-074 E	1.54
938561	AE1-075 C	2.47
938562	AE1-075 E	1.2
AA2-074	AA2-074	5.87
AE1-042	AE1-042	9.2
CARR	CARR	1.81
CBM-S1	CBM-S1	13.78
CBM-S2	CBM-S2	16.96
CBM-W1	CBM-W1	9.46
CBM-W2	CBM-W2	85.52
CIN	CIN	4.85
CPLE	CPLE	8.63
G-007	G-007	5.67
IPL	IPL	2.98
LGEE	LGEE	1.46
MEC	MEC	11.67
MECS	MECS	1.88
O-066	O-066	18.96
RENSSELAER	RENSSELAER	1.43
WEC	WEC	1.24

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114980	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	single	4070.2	92.55	97.3	DC	191.17

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.42
315102	1BRUNSWICKG1	27.69
315103	1BRUNSWICKG2	27.69
315104	1BRUNSWICKG3	27.69
315105	1BRUNSWICKS1	57.53
315150	1BUGGS 1	13.35
315151	1BUGGS 2	13.35
315153	1CLOVER1	35.12
315154	1CLOVER2	34.66
315159	1KERR 2	1.41
315163	1KERR 6	1.39
315164	1KERR 7	1.39
315266	1PLYWOOD A	2.13
916301	Z1-086 C	166.54
924021	AB2-043 C O1	0.56
924161	AB2-060 C O1	1.61
924301	AB2-077 C O1	0.36
924311	AB2-078 C O1	0.36
924321	AB2-079 C O1	0.36
925611	AC1-036 C	0.17
925831	AC1-062	0.06
925991	AC1-075 C	8.47
926021	AC1-080 C	2.83
926271	AC1-105 C O1	9.17
926761	AC1-162 C	45.79
927251	AC1-221 C	4.03
927261	AC1-222 C	6.39
932761	AC2-100 C	9.28
932821	AC2-107 C	15.06
934311	AD1-055 C	4.43
934341	AD1-058 C	10.11
934611	AD1-087 C O1	19.58
934621	AD1-088 C	27.29
934991	AD1-131 C	3.31
935171	AD1-152 C O1	19.46
935221	AD1-157 C	0.27
935231	AD1-160 C	1.15
936161	AD2-022 C O1	13.39
936171	AD2-023 C O1	7.84
936261	AD2-033 C	13.44

Bus #	Bus	MW Impact
936331	AD2-043 C	8.3
936361	AD2-046 C O1	8.62
936391	AD2-049 C	1.61
936481	AD2-063 C O1	15.46
936651	AD2-082 C	1.75
937481	AD2-202 C O1	5.39
938371	AE1-056 C	6.73
938491	AE1-068 C O1	191.17
938501	AE1-069 C O1	151.06
AA2-074	AA2-074	9.99
AB2-013	AB2-013	7.59
AE1-033	AE1-033	7.92
AE1-042	AE1-042	17.59
CARR	CARR	1.26
CBM-S1	CBM-S1	27.18
CBM-S2	CBM-S2	29.97
CBM-W1	CBM-W1	27.24
CBM-W2	CBM-W2	178.29
CIN	CIN	12.37
CPLE	CPLE	14.69
IPL	IPL	7.75
LGEE	LGEE	3.58
MEC	MEC	27.42
MECS	MECS	11.47
RENSSELAER	RENSSELAER	1.0
WEC	WEC	3.3
Z1-043	Z1-043	12.99

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114348	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	99.04	109.6	DC	109.87

Bus #	Bus	MW Impact
315102	1BRUNSWICKG1	9.87
315103	1BRUNSWICKG2	9.87
315104	1BRUNSWICKG3	9.87
315105	1BRUNSWICKS1	20.5
315153	1CLOVER1	11.51
315154	1CLOVER2	11.36
916301	Z1-086 C	60.65
916302	Z1-086 E	11.02
934611	AD1-087 C O1	6.28
934612	AD1-087 E O1	2.95
934621	AD1-088 C	8.71
934622	AD1-088 E	4.09
935171	AD1-152 C O1	6.24
935172	AD1-152 E O1	4.16
937481	AD2-202 C O1	1.73
937482	AD2-202 E O1	0.87
938491	AE1-068 C O1	70.78
938492	AE1-068 E O1	39.09
938501	AE1-069 C O1	55.01
938502	AE1-069 E O1	31.45
AA2-074	AA2-074	3.01
CARR	CARR	0.39
CBM-S1	CBM-S1	8.28
CBM-S2	CBM-S2	9.13
CBM-W1	CBM-W1	8.23
CBM-W2	CBM-W2	54.26
CIN	CIN	3.74
CPLE	CPLE	4.42
G-007	G-007	1.32
IPL	IPL	2.34
LGEE	LGEE	1.08
MEC	MEC	8.32
MECS	MECS	3.44
O-066	O-066	4.39
RENSSELAER	RENSSELAER	0.31
WEC	WEC	1.0

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114250	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	125.39	132.97	DC	51.73

Bus #	Bus	MW Impact
314541	3WATKINS	0.23
314554	3BTLEBRO	0.4
314557	3BETHELC	0.39
314572	3EMPORIA	0.33
314574	6EVERETS	1.77
314578	3HORNRTN	1.92
314582	3KELFORD	1.62
314603	3SCOT NK	1.61
314617	3TUNIS	0.36
314620	6CASHIE	0.31
314623	3WITAKRS	0.69
314704	3LAWRENC	0.24
315102	1BRUNSWICKG1	4.71
315103	1BRUNSWICKG2	4.71
315104	1BRUNSWICKG3	4.71
315105	1BRUNSWICKS1	9.79
315131	1EDGECMA	4.73
315132	1EDGECMB	4.73
315136	1ROSEMG1	1.49
315137	1ROSEMS1	0.92
315138	1ROSEMG2	0.7
315139	1GASTONA	2.15
315141	1GASTONB	2.15
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	28.73
916302	Z1-086 E	5.22
917332	Z2-043 E	0.46
917342	Z2-044 E	0.3
917512	Z2-088 E OP1	1.76
918492	AA1-063AE OP	2.11
918512	AA1-065 E OP	1.81
918532	AA1-067 E	0.31
918562	AA1-072 E	0.08
919692	AA2-053 E	2.08
919701	AA2-057 C	3.67
919702	AA2-057 E	1.83
920042	AA2-088 E OP	4.28
920592	AA2-165 E	0.24

Bus #	Bus	MW Impact
920672	AA2-174 E	0.24
923851	AB2-025 C	0.5
923852	AB2-025 E	1.3
923911	AB2-031 C O1	1.6
923912	AB2-031 E O1	0.79
923941	AB2-035 C	0.16
923942	AB2-035 E	0.07
923991	AB2-040 C O1	0.9
923992	AB2-040 E O1	4.29
924022	AB2-043 E O1	2.32
924152	AB2-059 E O1	2.75
924162	AB2-060 E O1	1.9
924302	AB2-077 E O1	0.6
924312	AB2-078 E O1	0.6
924322	AB2-079 E O1	0.6
924391	AB2-088 C	0.21
924392	AB2-088 E	0.1
924401	AB2-089 C	1.07
924402	AB2-089 E	0.55
924491	AB2-098 C	0.24
924492	AB2-098 E	0.1
924501	AB2-099 C	0.26
924502	AB2-099 E	0.11
924511	AB2-100 C	10.63
924512	AB2-100 E	5.23
925122	AB2-169 E	2.2
925171	AB2-174 C O1	5.2
925172	AB2-174 E O1	4.71
925591	AC1-034 C	3.46
925592	AC1-034 E	2.61
925612	AC1-036 E	0.6
925781	AC1-054 C O1	3.69
925782	AC1-054 E O1	1.7
926071	AC1-086 C	14.06
926072	AC1-086 E	6.4
926201	AC1-098 C	3.12
926202	AC1-098 E	1.86
926211	AC1-099 C	1.04
926212	AC1-099 E	0.61
926271	AC1-105 C O1	2.36
926272	AC1-105 E O1	1.18
927021	AC1-189 C	3.85
927022	AC1-189 E	1.92
927141	AC1-208 C	4.79
927142	AC1-208 E	2.13
927251	AC1-221 C	0.93
927252	AC1-221 E	0.93
927261	AC1-222 C	1.47
927262	AC1-222 E	1.4
930402	AB1-081 E O1	1.94
930861	AB1-132 C O1	1.64
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.28
931232	AB1-173 E	0.75
931241	AB1-173AC	0.28
931242	AB1-173AE	0.75
932631	AC2-084 C	4.44
932632	AC2-084 E	2.19
932761	AC2-100 C	2.14
932762	AC2-100 E	1.04
933991	AD1-023 C	4.64
933992	AD1-023 E	2.53
934201	AD1-047 C	5.72
934202	AD1-047 E	3.81
934231	AD1-050 C	2.36
934232	AD1-050 E	1.29
934311	AD1-055 C	1.02
934312	AD1-055 E	0.26
934331	AD1-057 C O1	5.86
934332	AD1-057 E O1	3.13
934341	AD1-058 C	2.33
934342	AD1-058 E	0.59
934521	AD1-076 C	18.16
934522	AD1-076 E	9.25
934611	AD1-087 C O1	3.67
934612	AD1-087 E O1	1.73
934621	AD1-088 C	4.84
934622	AD1-088 E	2.27
934991	AD1-131 C	0.76
934992	AD1-131 E	0.51
935171	AD1-152 C O1	3.65
935172	AD1-152 E O1	2.43
935212	AD1-156 E	0.63
936261	AD2-033 C	5.16
936262	AD2-033 E	3.44
936331	AD2-043 C	1.91
936332	AD2-043 E	2.27
936361	AD2-046 C O1	4.25
936362	AD2-046 E O1	1.95
936401	AD2-051 C O1	3.84
936402	AD2-051 E O1	1.65
936481	AD2-063 C O1	6.37
936482	AD2-063 E O1	4.25
936531	AD2-068 C	2.27
936532	AD2-068 E	1.17
936701	AD2-089 C	3.47
936702	AD2-089 E	2.31
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	1.01
937482	AD2-202 E O1	0.51
937571	AD2-169 C	6.85
937572	AD2-169 E	4.57
938171	AE1-026 C1 O	10.21

Bus #	Bus	MW Impact
938172	AE1-026 C2 O	1.48
938173	AE1-026 E O1	3.08
938221	AE1-035 C	0.92
938222	AE1-035 E	0.45
938491	AE1-068 C O1	33.33
938492	AE1-068 E O1	18.41
938501	AE1-069 C O1	26.06
938502	AE1-069 E O1	14.9
AA2-074	AA2-074	2.63
CARR	CARR	0.31
CBM-S1	CBM-S1	6.67
CBM-S2	CBM-S2	7.56
CBM-W1	CBM-W1	6.65
CBM-W2	CBM-W2	43.74
CIN	CIN	3.01
CPLE	CPLE	3.87
G-007	G-007	1.05
IPL	IPL	1.89
LGEE	LGEE	0.87
MEC	MEC	6.71
MECS	MECS	2.79
O-066	O-066	3.49
RENSSELAER	RENSSELAER	0.24
WEC	WEC	0.81

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114270	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	122.38	129.96	DC	51.73

Bus #	Bus	MW Impact
314541	3WATKINS	0.23
314554	3BTLEBRO	0.4
314557	3BETHELC	0.39
314572	3EMPORIA	0.33
314574	6EVERETS	1.77
314578	3HORNRTN	1.92
314582	3KELFORD	1.62
314603	3SCOT NK	1.61
314617	3TUNIS	0.36
314620	6CASHIE	0.31
314623	3WITAKRS	0.69
314704	3LAWRENC	0.24
315102	1BRUNSWICKG1	4.71
315103	1BRUNSWICKG2	4.71
315104	1BRUNSWICKG3	4.71
315105	1BRUNSWICKS1	9.79
315131	1EDGECMA	4.73
315132	1EDGECMB	4.73
315136	1ROSEMG1	1.49
315137	1ROSEMS1	0.92
315138	1ROSEMG2	0.7
315139	1GASTONA	2.15
315141	1GASTONB	2.15
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	28.73
916302	Z1-086 E	5.22
917332	Z2-043 E	0.46
917342	Z2-044 E	0.3
917512	Z2-088 E OP1	1.76
918492	AA1-063AE OP	2.11
918512	AA1-065 E OP	1.81
918532	AA1-067 E	0.31
918562	AA1-072 E	0.08
919692	AA2-053 E	2.08
919701	AA2-057 C	3.67
919702	AA2-057 E	1.83
920042	AA2-088 E OP	4.28
920592	AA2-165 E	0.24

Bus #	Bus	MW Impact
920672	AA2-174 E	0.24
923851	AB2-025 C	0.5
923852	AB2-025 E	1.3
923911	AB2-031 C O1	1.6
923912	AB2-031 E O1	0.79
923941	AB2-035 C	0.16
923942	AB2-035 E	0.07
923991	AB2-040 C O1	0.9
923992	AB2-040 E O1	4.29
924022	AB2-043 E O1	2.32
924152	AB2-059 E O1	2.75
924162	AB2-060 E O1	1.9
924302	AB2-077 E O1	0.6
924312	AB2-078 E O1	0.6
924322	AB2-079 E O1	0.6
924391	AB2-088 C	0.21
924392	AB2-088 E	0.1
924401	AB2-089 C	1.07
924402	AB2-089 E	0.55
924491	AB2-098 C	0.24
924492	AB2-098 E	0.1
924501	AB2-099 C	0.26
924502	AB2-099 E	0.11
924511	AB2-100 C	10.63
924512	AB2-100 E	5.23
925122	AB2-169 E	2.2
925171	AB2-174 C O1	5.2
925172	AB2-174 E O1	4.71
925591	AC1-034 C	3.46
925592	AC1-034 E	2.61
925612	AC1-036 E	0.6
925781	AC1-054 C O1	3.69
925782	AC1-054 E O1	1.7
926071	AC1-086 C	14.06
926072	AC1-086 E	6.4
926201	AC1-098 C	3.12
926202	AC1-098 E	1.86
926211	AC1-099 C	1.04
926212	AC1-099 E	0.61
926271	AC1-105 C O1	2.36
926272	AC1-105 E O1	1.18
927021	AC1-189 C	3.85
927022	AC1-189 E	1.92
927141	AC1-208 C	4.79
927142	AC1-208 E	2.13
927251	AC1-221 C	0.93
927252	AC1-221 E	0.93
927261	AC1-222 C	1.47
927262	AC1-222 E	1.4
930402	AB1-081 E O1	1.94
930861	AB1-132 C O1	1.64
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.28
931232	AB1-173 E	0.75
931241	AB1-173AC	0.28
931242	AB1-173AE	0.75
932631	AC2-084 C	4.44
932632	AC2-084 E	2.19
932761	AC2-100 C	2.14
932762	AC2-100 E	1.04
933991	AD1-023 C	4.64
933992	AD1-023 E	2.53
934201	AD1-047 C	5.72
934202	AD1-047 E	3.81
934231	AD1-050 C	2.36
934232	AD1-050 E	1.29
934311	AD1-055 C	1.02
934312	AD1-055 E	0.26
934331	AD1-057 C O1	5.86
934332	AD1-057 E O1	3.13
934341	AD1-058 C	2.33
934342	AD1-058 E	0.59
934521	AD1-076 C	18.16
934522	AD1-076 E	9.25
934611	AD1-087 C O1	3.67
934612	AD1-087 E O1	1.73
934621	AD1-088 C	4.84
934622	AD1-088 E	2.27
934991	AD1-131 C	0.76
934992	AD1-131 E	0.51
935171	AD1-152 C O1	3.65
935172	AD1-152 E O1	2.43
935212	AD1-156 E	0.63
936261	AD2-033 C	5.16
936262	AD2-033 E	3.44
936331	AD2-043 C	1.91
936332	AD2-043 E	2.27
936361	AD2-046 C O1	4.25
936362	AD2-046 E O1	1.95
936401	AD2-051 C O1	3.84
936402	AD2-051 E O1	1.65
936481	AD2-063 C O1	6.37
936482	AD2-063 E O1	4.25
936531	AD2-068 C	2.27
936532	AD2-068 E	1.17
936701	AD2-089 C	3.47
936702	AD2-089 E	2.31
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	1.01
937482	AD2-202 E O1	0.51
937571	AD2-169 C	6.85
937572	AD2-169 E	4.57
938171	AE1-026 C1 O	10.21

Bus #	Bus	MW Impact
938172	AE1-026 C2 O	1.48
938173	AE1-026 E O1	3.08
938221	AE1-035 C	0.92
938222	AE1-035 E	0.45
938491	AE1-068 C O1	33.33
938492	AE1-068 E O1	18.41
938501	AE1-069 C O1	26.06
938502	AE1-069 E O1	14.9
AA2-074	AA2-074	2.63
CARR	CARR	0.31
CBM-S1	CBM-S1	6.67
CBM-S2	CBM-S2	7.56
CBM-W1	CBM-W1	6.65
CBM-W2	CBM-W2	43.74
CIN	CIN	3.01
CPLE	CPLE	3.87
G-007	G-007	1.05
IPL	IPL	1.89
LGEE	LGEE	0.87
MEC	MEC	6.71
MECS	MECS	2.79
O-066	O-066	3.49
RENSSELAER	RENSSELAER	0.24
WEC	WEC	0.81

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114569	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	142.72	144.81	DC	20.17

Bus #	Bus	MW Impact
314314	3LOCKS	0.19
315065	1CHESTF6	29.64
315074	1HOPCGN1	6.05
315075	1HOPCGN2	5.97
315076	1HOPPOLC	1.19
315077	1HOPHCF1	1.87
315078	1HOPHCF2	1.87
315079	1HOPHCF3	1.87
315080	1HOPHCF4	2.83
315116	1SURRY 1	11.5
315117	1GRAVELC	0.4
315119	1GRAVEL3	1.17
315120	1GRAVEL4	1.18
315121	1GRAVEL5	1.17
315122	1GRAVEL6	1.18
315136	1ROSEMG1	1.01
315137	1ROSEMS1	0.63
315138	1ROSEMG2	0.47
315139	1GASTONA	1.45
315141	1GASTONB	1.45
919701	AA2-057 C	2.66
923801	AB2-015 C O1	3.38
923851	AB2-025 C	0.28
923911	AB2-031 C O1	1.04
923991	AB2-040 C O1	0.59
924501	AB2-099 C	0.23
924511	AB2-100 C	6.45
924811	AB2-134 C O1	1.25
925051	AB2-160 C O1	3.51
925061	AB2-161 C O1	1.97
925171	AB2-174 C O1	3.34
925281	AB2-186 C	0.21
925291	AB2-188 C O1	0.84
925331	AB2-190 C	11.74
925821	AC1-061	0.0
926071	AC1-086 C	9.48
926201	AC1-098 C	2.36
926211	AC1-099 C	0.79
927141	AC1-208 C	3.5
927221	AC1-216 C O1	5.53

Bus #	Bus	MW Impact
930861	AB1-132 C O1	1.11
931231	AB1-173 C	0.18
931241	AB1-173AC	0.18
932041	AC2-012 C	3.41
932581	AC2-078 C O1	3.0
932591	AC2-079 C O1	2.78
932631	AC2-084 C	3.37
933991	AD1-023 C	4.77
934011	AD1-025 C	9.51
934201	AD1-047 C	3.73
934331	AD1-057 C O1	4.04
934521	AD1-076 C	19.56
934571	AD1-082 C	4.48
935161	AD1-151 C O1	9.44
935211	AD1-156 C	0.35
936041	AD2-007	1.01
936051	AD2-008 C	1.66
936401	AD2-051 C O1	3.34
936661	AD2-085 C	1.69
936711	AD2-090 C O1	2.84
937541	AD2-215 C	0.6
937571	AD2-169 C	4.54
938171	AE1-026 C1 O	10.23
938172	AE1-026 C2 O	1.48
938221	AE1-035 C	0.84
938461	AE1-065 C O1	9.39
938471	AE1-066 C O1	9.65
938481	AE1-067 C O1	8.77
938491	AE1-068 C O1	20.17
938501	AE1-069 C O1	15.77
AA2-074	AA2-074	1.69
CARR	CARR	0.32
CBM-S1	CBM-S1	3.59
CBM-S2	CBM-S2	4.7
CBM-W1	CBM-W1	2.8
CBM-W2	CBM-W2	22.8
CIN	CIN	1.32
CPLE	CPLE	2.48
IPL	IPL	0.82
LGEE	LGEE	0.38
MEC	MEC	3.19
MECS	MECS	0.85
RENSSELAER	RENSSELAER	0.25
WEC	WEC	0.35

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114704	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	121.26	122.41	DC	60.04

Bus #	Bus	MW Impact
314229	6MT RD221	0.15
314236	6NRTHEST	0.22
314250	6ROCKVILLE	0.4
315037	1LDYSMT1	5.4
315038	1LDYSMT2	5.39
315039	1LDYSMT3	5.71
315040	1LDYSMT4	5.72
315041	1LDYSMT5	5.74
315043	1FOUR RIVERA	4.28
315044	1FOUR RIVERB	3.32
315045	1FOUR RIVERC	4.28
315046	1FOUR RIVERD	3.32
315047	1FOUR RIVERE	3.32
315048	1FOUR RIVERF	4.28
315053	1BELMED1	19.56
315054	1BELMED2	19.56
315055	1BELMED3	16.23
315058	1CHESTF3	20.52
315059	1CHESTF4	33.27
315067	1DARBY 1	3.07
315068	1DARBY 2	3.07
315069	1DARBY 3	3.08
315070	1DARBY 4	3.08
315074	1HOPCGN1	9.41
315075	1HOPCGN2	9.29
315083	1SPRUNCA	11.98
315084	1SPRUNCB	11.98
315085	1SPRUNCC	8.88
315086	1SPRUNCD	8.88
315090	1YORKTN1	31.94
315091	1YORKTN2	33.14
315225	1N ANNA1	43.91
315226	1N ANNA2	44.01
919211	AA1-145	12.38
923801	AB2-015 C O1	9.1
923911	AB2-031 C O1	2.25
924061	AB2-050	0.73
924241	AB2-068 O1	227.05
924501	AB2-099 C	0.6
924511	AB2-100 C	11.86

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.11
925061	AB2-161 C O1	3.72
925171	AB2-174 C O1	7.09
925281	AB2-186 C	0.66
925291	AB2-188 C O1	2.48
925331	AB2-190 C	22.56
925861	AC1-065 C	3.77
926001	AC1-076 C	4.94
926071	AC1-086 C	20.72
926291	AC1-107 O1	342.72
926411	AC1-112 C	0.39
926551	AC1-134	1.82
926731	AC1-158 C	93.45
926751	AC1-161 C O1	33.58
926781	AC1-164 C	45.66
927041	AC1-191 C O1	10.8
927221	AC1-216 C O1	11.02
930121	AB1-027 C	0.51
932041	AC2-012 C	11.24
932501	AC2-070 C	0.33
932581	AC2-078 C O1	4.51
932591	AC2-079 C O1	6.29
932831	AC2-110 C	1.51
933011	AC2-125	3.09
933021	AC2-126	3.11
933031	AC2-127	1.7
933041	AC2-128	1.64
933051	AC2-129	1.54
933061	AC2-130	2.72
933071	AC2-131 1	1.84
933081	AC2-131 2	0.84
933111	AC2-132 1	0.97
933121	AC2-132 2	0.49
933261	AC2-137 C	0.41
933291	AC2-141 C	33.58
933501	AC2-165 C	9.63
933991	AD1-023 C	13.56
934011	AD1-025 C	18.95
934061	AD1-033 C	8.25
934141	AD1-041 C	5.93
934201	AD1-047 C	8.07
934211	AD1-048 C	0.48
934521	AD1-076 C	56.45
934541	AD1-078 C	3.05
934571	AD1-082 C	8.48
934781	AD1-105 C	7.81
935161	AD1-151 C O1	18.13
936041	AD2-007	2.01
936051	AD2-008 C	3.3
936151	AD2-021	0.27
936241	AD2-030 C	2.57
936301	AD2-039 C	1.51

Bus #	Bus	MW Impact
936341	AD2-044 C	0.26
936391	AD2-049 C	1.99
936401	AD2-051 C O1	8.86
936581	AD2-073 C	2.23
936591	AD2-074 C	5.95
936661	AD2-085 C	3.77
936711	AD2-090 C O1	7.52
937221	AD2-160 C O1	6.4
937251	AD2-164	5.35
937541	AD2-215 C	1.92
937571	AD2-169 C	10.04
938031	AE1-004 C	1.51
938081	AE1-010	6.85
938171	AE1-026 C1 O	28.81
938172	AE1-026 C2 O	4.17
938181	AE1-027 C	2.57
938191	AE1-028 C	1.49
938221	AE1-035 C	2.28
938461	AE1-065 C O1	31.26
938471	AE1-066 C O1	32.13
938481	AE1-067 C O1	29.22
938491	AE1-068 C O1	60.04
938501	AE1-069 C O1	47.05
938531	AE1-072 C O1	19.15
938551	AE1-074 C	2.75
938561	AE1-075 C	2.14
AA2-074	AA2-074	5.21
AE1-042	AE1-042	8.47
CARR	CARR	1.66
CBM-S1	CBM-S1	12.82
CBM-S2	CBM-S2	15.15
CBM-W1	CBM-W1	9.54
CBM-W2	CBM-W2	80.27
CIN	CIN	4.81
CPLE	CPLE	7.65
IPL	IPL	2.97
LGEE	LGEE	1.44
MEC	MEC	11.26
MECS	MECS	2.34
RENSSELAER	RENSSELAER	1.31
WEC	WEC	1.23

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114540	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	154.22	155.98	DC	93.35

Bus #	Bus	MW Impact
314229	6MT RD221	0.24
314236	6NRTHEST	0.37
314309	6IRON208	0.87
315053	1BELMED1	31.59
315054	1BELMED2	31.59
315055	1BELMED3	26.22
315058	1CHESTF3	33.56
315059	1CHESTF4	54.4
315060	1CHESTF5	19.83
315061	1CHESTG7	7.77
315062	1CHESTS7	3.53
315063	1CHESTG8	7.62
315064	1CHESTS8	3.93
315067	1DARBY 1	5.07
315068	1DARBY 2	5.08
315069	1DARBY 3	5.09
315070	1DARBY 4	5.1
315074	1HOPCGN1	15.47
315075	1HOPCGN2	15.27
315083	1SPRUNCA	19.12
315084	1SPRUNCB	19.12
315085	1SPRUNCC	14.17
315086	1SPRUNCD	14.17
315090	1YORKTN1	53.35
315091	1YORKTN2	55.36
315092	1YORKTN3	45.59
315233	1SURRY 2	49.51
923801	AB2-015 C O1	14.88
923911	AB2-031 C O1	3.63
924241	AB2-068 O1	428.75
924501	AB2-099 C	0.97
924511	AB2-100 C	19.07
925051	AB2-160 C O1	9.9
925061	AB2-161 C O1	6.07
925171	AB2-174 C O1	11.43
925281	AB2-186 C	1.08
925291	AB2-188 C O1	4.07
925331	AB2-190 C	37.17
925861	AC1-065 C	6.04
926071	AC1-086 C	33.58

Bus #	Bus	MW Impact
926291	AC1-107 O1	647.17
926411	AC1-112 C	0.66
926751	AC1-161 C O1	55.63
926781	AC1-164 C	77.8
927041	AC1-191 C O1	17.07
927221	AC1-216 C O1	18.16
930121	AB1-027 C	0.85
932041	AC2-012 C	18.51
932501	AC2-070 C	0.56
932581	AC2-078 C O1	7.33
932591	AC2-079 C O1	10.28
932831	AC2-110 C	2.42
933061	AC2-130	4.51
933071	AC2-131 1	3.06
933081	AC2-131 2	1.39
933111	AC2-132 1	1.61
933121	AC2-132 2	0.82
933261	AC2-137 C	0.69
933291	AC2-141 C	55.63
933991	AD1-023 C	22.21
934011	AD1-025 C	31.22
934061	AD1-033 C	13.58
934141	AD1-041 C	9.42
934201	AD1-047 C	13.02
934211	AD1-048 C	0.79
934521	AD1-076 C	92.52
934571	AD1-082 C	13.84
935161	AD1-151 C O1	29.87
936041	AD2-007	3.31
936051	AD2-008 C	5.44
936151	AD2-021	0.45
936241	AD2-030 C	4.05
936301	AD2-039 C	2.42
936391	AD2-049 C	3.31
936401	AD2-051 C O1	14.46
936661	AD2-085 C	6.17
936711	AD2-090 C O1	12.28
937221	AD2-160 C O1	10.54
937251	AD2-164	8.91
937541	AD2-215 C	3.16
937571	AD2-169 C	16.22
938031	AE1-004 C	2.42
938171	AE1-026 C1 O	47.17
938172	AE1-026 C2 O	6.82
938181	AE1-027 C	4.23
938191	AE1-028 C	2.45
938221	AE1-035 C	3.73
938461	AE1-065 C O1	51.48
938471	AE1-066 C O1	52.9
938481	AE1-067 C O1	48.11
938491	AE1-068 C O1	93.35
938501	AE1-069 C O1	73.22

Bus #	Bus	MW Impact
938531	AE1-072 C O1	31.51
938551	AE1-074 C	4.29
AA2-074	AA2-074	8.69
AB2-013	AB2-013	8.01
AE1-033	AE1-033	8.34
AE1-042	AE1-042	17.0
CARR	CARR	2.56
CBM-S1	CBM-S1	27.03
CBM-S2	CBM-S2	26.21
CBM-W1	CBM-W1	28.48
CBM-W2	CBM-W2	177.58
CIN	CIN	13.28
CPLE	CPLE	12.77
IPL	IPL	8.37
LGEE	LGEE	3.91
MEC	MEC	28.22
MECS	MECS	11.98
RENSSELAER	RENSSELAER	2.02
WEC	WEC	3.49
Z1-043	Z1-043	13.73

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114364	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	112.66	113.93	DC	94.04

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.53
314229	6MT RD221	0.15
314250	6ROCKVILLE	0.4
314539	3UNCAMP	2.59
314541	3WATKINS	0.73
314566	3CRESWEL	2.54
314572	3EMPORIA	0.43
314594	6PLYMOTH	0.89
314617	3TUNIS	0.86
314620	6CASHIE	0.88
314648	6SUNBURY	0.97
314651	6WINFALL	1.91
315040	1LDYSMT4	5.84
315041	1LDYSMT5	5.86
315043	1FOUR RIVERA	4.35
315044	1FOUR RIVERB	3.37
315045	1FOUR RIVERC	4.35
315046	1FOUR RIVERD	3.37
315047	1FOUR RIVERE	3.37
315048	1FOUR RIVERF	4.35
315053	1BELMED1	19.79
315054	1BELMED2	19.79
315055	1BELMED3	16.42
315058	1CHESTF3	20.78
315059	1CHESTF4	33.68
315073	1STONECA	7.9
315074	1HOPCGN1	9.53
315075	1HOPCGN2	9.4
315083	1SPRUNCA	12.11
315084	1SPRUNCB	12.11
315085	1SPRUNCC	8.98
315086	1SPRUNCD	8.98
315090	1YORKTN1	32.32
315091	1YORKTN2	33.54
315225	1N ANNA1	44.38
315226	1N ANNA2	44.48
900672	V4-068 E	0.31
901082	W1-029 E	50.1
907092	X1-038 E	6.49
913392	Y1-086 E	2.41

Bus #	Bus	MW Impact
916042	Z1-036 E	49.18
916192	Z1-068 E	2.09
916302	Z1-086 E	9.51
917122	Z2-027 E	1.16
918492	AA1-063AE OP	4.03
918512	AA1-065 E OP	4.54
919152	AA1-139 E	7.09
919211	AA1-145	12.57
920042	AA2-088 E OP	10.99
920692	AA2-178 E	4.36
923801	AB2-015 C O1	9.19
923802	AB2-015 E O1	7.53
923832	AB2-022 E	1.36
923842	AB2-024 E	1.26
923852	AB2-025 E	1.18
923862	AB2-026 E	1.09
923911	AB2-031 C O1	2.27
923912	AB2-031 E O1	1.12
923992	AB2-040 E O1	6.1
924061	AB2-050	0.74
924241	AB2-068 O1	230.26
924501	AB2-099 C	0.6
924502	AB2-099 E	0.26
924511	AB2-100 C	11.96
924512	AB2-100 E	5.89
924812	AB2-134 E O1	13.88
925051	AB2-160 C O1	6.18
925052	AB2-160 E O1	10.09
925061	AB2-161 C O1	3.76
925062	AB2-161 E O1	6.14
925122	AB2-169 E	5.95
925171	AB2-174 C O1	7.15
925172	AB2-174 E O1	6.47
925281	AB2-186 C	0.67
925282	AB2-186 E	0.29
925291	AB2-188 C O1	2.51
925292	AB2-188 E O1	1.13
925331	AB2-190 C	22.83
925332	AB2-190 E	9.78
925522	AC1-027 E	1.27
925861	AC1-065 C	3.82
925862	AC1-065 E	6.24
926071	AC1-086 C	20.9
926072	AC1-086 E	9.51
926291	AC1-107 O1	347.57
926411	AC1-112 C	0.4
926412	AC1-112 E	1.3
926551	AC1-134	1.85
926662	AC1-147 E	1.48
926731	AC1-158 C	94.39
926732	AC1-158 E	41.42
926751	AC1-161 C O1	33.96

Bus #	Bus	MW Impact
926752	AC1-161 E O1	14.5
926781	AC1-164 C	46.27
926782	AC1-164 E	20.79
927041	AC1-191 C O1	10.96
927042	AC1-191 E O1	5.46
927221	AC1-216 C O1	11.15
927222	AC1-216 E O1	8.77
930121	AB1-027 C	0.51
930122	AB1-027 E	1.28
930862	AB1-132 E O1	6.08
931232	AB1-173 E	1.07
931242	AB1-173AE	1.07
932041	AC2-012 C	11.37
932042	AC2-012 E	18.55
932501	AC2-070 C	0.34
932502	AC2-070 E	0.81
932532	AC2-073 E	1.35
932581	AC2-078 C O1	4.57
932582	AC2-078 E O1	7.45
932591	AC2-079 C O1	6.36
932592	AC2-079 E O1	10.37
932831	AC2-110 C	1.53
932832	AC2-110 E	2.5
933011	AC2-125	3.16
933021	AC2-126	3.18
933031	AC2-127	1.74
933041	AC2-128	1.67
933051	AC2-129	1.57
933061	AC2-130	2.75
933071	AC2-131 1	1.86
933081	AC2-131 2	0.85
933111	AC2-132 1	0.98
933121	AC2-132 2	0.5
933262	AC2-137 E	1.55
933272	AC2-138 E	1.06
933291	AC2-141 C	33.96
933292	AC2-141 E	14.5
933732	AC2-196 E	1.32
933991	AD1-023 C	13.69
933992	AD1-023 E	7.45
934011	AD1-025 C	19.17
934012	AD1-025 E	11.36
934061	AD1-033 C	8.34
934062	AD1-033 E	5.56
934141	AD1-041 C	6.01
934142	AD1-041 E	4.01
934201	AD1-047 C	8.14
934202	AD1-047 E	5.42
934212	AD1-048 E	1.41
934392	AD1-063 E	1.21
934521	AD1-076 C	57.0
934522	AD1-076 E	29.02

Bus #	Bus	MW Impact
934571	AD1-082 C	8.58
934572	AD1-082 E	4.89
934781	AD1-105 C	7.94
934782	AD1-105 E	5.52
935112	AD1-144 E	1.05
935161	AD1-151 C O1	18.34
935162	AD1-151 E O1	12.23
935212	AD1-156 E	1.59
936041	AD2-007	2.04
936051	AD2-008 C	3.34
936052	AD2-008 E	7.27
936151	AD2-021	0.27
936241	AD2-030 C	2.61
936242	AD2-030 E	1.33
936301	AD2-039 C	1.53
936302	AD2-039 E	2.5
936341	AD2-044 C	0.27
936342	AD2-044 E	0.3
936391	AD2-049 C	2.01
936392	AD2-049 E	2.01
936401	AD2-051 C O1	8.94
936402	AD2-051 E O1	3.84
936581	AD2-073 C	2.27
936582	AD2-073 E	1.12
936591	AD2-074 C	6.04
936592	AD2-074 E	9.86
936661	AD2-085 C	3.81
936662	AD2-085 E	6.22
936711	AD2-090 C O1	7.59
936712	AD2-090 E O1	5.06
937221	AD2-160 C O1	6.47
937222	AD2-160 E O1	3.39
937251	AD2-164	5.41
937541	AD2-215 C	1.94
937542	AD2-215 E	1.03
937571	AD2-169 C	10.12
937572	AD2-169 E	6.75
938031	AE1-004 C	1.53
938032	AE1-004 E	2.5
938081	AE1-010	7.47
938171	AE1-026 C1 O	29.08
938172	AE1-026 C2 O	4.21
938173	AE1-026 E O1	8.78
938181	AE1-027 C	2.6
938182	AE1-027 E	1.37
938191	AE1-028 C	1.51
938192	AE1-028 E	0.87
938221	AE1-035 C	2.3
938222	AE1-035 E	1.13
938461	AE1-065 C O1	31.61
938462	AE1-065 E O1	127.57
938471	AE1-066 C O1	32.49

Bus #	Bus	MW Impact
938472	AE1-066 E O1	126.7
938481	AE1-067 C O1	29.55
938482	AE1-067 E O1	129.64
938491	AE1-068 C O1	60.58
938492	AE1-068 E O1	33.46
938501	AE1-069 C O1	47.48
938502	AE1-069 E O1	27.14
938531	AE1-072 C O1	19.36
938532	AE1-072 E O1	10.09
938551	AE1-074 C	2.78
938552	AE1-074 E	1.4
938561	AE1-075 C	2.13
938562	AE1-075 E	1.04
AA2-074	AA2-074	5.23
AE1-042	AE1-042	8.45
CARR	CARR	1.65
CBM-S1	CBM-S1	12.76
CBM-S2	CBM-S2	15.19
CBM-W1	CBM-W1	9.37
CBM-W2	CBM-W2	79.77
CIN	CIN	4.74
CPLE	CPLE	7.69
G-007	G-007	5.2
IPL	IPL	2.93
LGEE	LGEE	1.42
MEC	MEC	11.14
MECS	MECS	2.24
O-066	O-066	17.39
RENSSELAER	RENSSELAER	1.3
WEC	WEC	1.21

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114866	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	108.88	109.84	DC	50.51

Bus #	Bus	MW Impact
314229	6MT RD221	0.12
314236	6NRTHEST	0.18
314250	6ROCKVILLE	0.33
314309	6IRON208	0.44
315053	1BELMED1	16.07
315054	1BELMED2	16.07
315055	1BELMED3	13.34
315058	1CHESTF3	16.82
315059	1CHESTF4	27.26
315060	1CHESTF5	9.79
315061	1CHESTG7	3.84
315062	1CHESTS7	1.74
315063	1CHESTG8	3.76
315064	1CHESTS8	1.94
315067	1DARBY 1	2.51
315068	1DARBY 2	2.51
315069	1DARBY 3	2.52
315070	1DARBY 4	2.52
315074	1HOPCGN1	7.75
315075	1HOPCGN2	7.65
315083	1SPRUNCA	9.86
315084	1SPRUNCB	9.86
315085	1SPRUNCC	7.31
315086	1SPRUNCD	7.31
315090	1YORKTN1	26.34
315091	1YORKTN2	27.34
315225	1N ANNA1	35.84
315226	1N ANNA2	35.92
924241	AB2-068 O1	187.3
925051	AB2-160 C O1	5.04
925061	AB2-161 C O1	3.09
925281	AB2-186 C	0.55
925331	AB2-190 C	18.62
925861	AC1-065 C	3.04
926291	AC1-107 O1	282.72
926411	AC1-112 C	0.32
926751	AC1-161 C O1	27.9
926781	AC1-164 C	37.36
927041	AC1-191 C O1	8.64
927221	AC1-216 C O1	9.1

Bus #	Bus	MW Impact
930121	AB1-027 C	0.41
932041	AC2-012 C	9.35
932501	AC2-070 C	0.27
932581	AC2-078 C O1	3.74
932591	AC2-079 C O1	5.23
932831	AC2-110 C	1.22
933061	AC2-130	2.23
933071	AC2-131 1	1.51
933081	AC2-131 2	0.69
933111	AC2-132 1	0.79
933121	AC2-132 2	0.41
933261	AC2-137 C	0.33
933291	AC2-141 C	27.9
934011	AD1-025 C	15.65
934061	AD1-033 C	6.86
934141	AD1-041 C	4.77
934211	AD1-048 C	0.39
934571	AD1-082 C	7.05
935161	AD1-151 C O1	14.96
936041	AD2-007	1.66
936051	AD2-008 C	2.72
936151	AD2-021	0.22
936241	AD2-030 C	2.07
936301	AD2-039 C	1.22
936391	AD2-049 C	1.65
936661	AD2-085 C	3.14
937221	AD2-160 C O1	5.33
937251	AD2-164	4.41
937541	AD2-215 C	1.59
938031	AE1-004 C	1.22
938181	AE1-027 C	2.14
938191	AE1-028 C	1.24
938461	AE1-065 C O1	26.0
938471	AE1-066 C O1	26.72
938481	AE1-067 C O1	24.3
938491	AE1-068 C O1	50.51
938501	AE1-069 C O1	39.64
938531	AE1-072 C O1	15.96
938551	AE1-074 C	2.27
AA2-074	AA2-074	4.76
AB2-013	AB2-013	5.06
AE1-033	AE1-033	5.27
AE1-042	AE1-042	9.91
CARR	CARR	1.82
CBM-S1	CBM-S1	15.98
CBM-S2	CBM-S2	14.56
CBM-W1	CBM-W1	18.2
CBM-W2	CBM-W2	106.44
CIN	CIN	8.38
CPLE	CPLE	7.0
IPL	IPL	5.3
LGEE	LGEE	2.46

Bus #	Bus	MW Impact
MEC	MEC	17.44
MECS	MECS	8.19
RENSSELAER	RENSSELAER	1.44
WEC	WEC	2.21
Z1-043	Z1-043	8.69

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114232	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	134.35	137.79	DC	169.46

Bus #	Bus	MW Impact
314539	3UNCAMP	4.14
314541	3WATKINS	1.17
314557	3BETHELC	1.27
314566	3CRESWEL	4.1
314572	3EMPORIA	0.69
314574	6EVERETS	6.74
314578	3HORNRTN	5.35
314582	3KELFORD	5.73
314594	6PLYMOTH	1.44
314603	3SCOT NK	5.33
314617	3TUNIS	1.39
314620	6CASHIE	1.42
314623	3WITAKRS	2.12
314648	6SUNBURY	1.55
314651	6WINFALL	3.07
315053	1BELMED1	25.14
315054	1BELMED2	25.14
315055	1BELMED3	20.87
315058	1CHESTF3	25.47
315059	1CHESTF4	41.29
315073	1STONECA	10.44
315074	1HOPCGN1	12.59
315075	1HOPCGN2	12.42
315083	1SPRUNCA	16.1
315084	1SPRUNCB	16.1
315085	1SPRUNCC	11.94
315086	1SPRUNCD	11.94
315090	1YORKTN1	47.18
315091	1YORKTN2	48.96
315102	1BRUNSWICKG1	15.48
315103	1BRUNSWICKG2	15.48
315104	1BRUNSWICKG3	15.48
315105	1BRUNSWICKS1	32.16
315108	1ELIZAR1	6.0
315109	1ELIZAR2	5.89
315110	1ELIZAR3	6.07
315233	1SURRY 2	46.74
900672	V4-068 E	0.5
901082	W1-029 E	80.38
907092	X1-038 E	10.35

Bus #	Bus	MW Impact
913392	Y1-086 E	3.87
916042	Z1-036 E	79.08
916191	Z1-068 C	0.08
916192	Z1-068 E	3.34
916301	Z1-086 C	94.23
916302	Z1-086 E	17.13
917122	Z2-027 E	1.86
917332	Z2-043 E	1.63
917342	Z2-044 E	0.91
917512	Z2-088 E OP1	6.23
918492	AA1-063AE OP	6.52
918512	AA1-065 E OP	7.35
918532	AA1-067 E	1.19
918562	AA1-072 E	0.27
919152	AA1-139 E	11.37
919692	AA2-053 E	6.09
919701	AA2-057 C	11.25
919702	AA2-057 E	5.62
920042	AA2-088 E OP	17.64
920592	AA2-165 E	0.74
920672	AA2-174 E	0.7
920692	AA2-178 E	7.03
923801	AB2-015 C O1	14.68
923802	AB2-015 E O1	12.03
923832	AB2-022 E	2.18
923852	AB2-025 E	1.85
923862	AB2-026 E	1.7
923911	AB2-031 C O1	3.65
923912	AB2-031 E O1	1.8
923941	AB2-035 C	0.53
923942	AB2-035 E	0.23
923992	AB2-040 E O1	9.81
924241	AB2-068 O1	340.98
924391	AB2-088 C	0.69
924392	AB2-088 E	0.33
924491	AB2-098 C	0.93
924492	AB2-098 E	0.4
924501	AB2-099 C	0.97
924502	AB2-099 E	0.42
924511	AB2-100 C	19.06
924512	AB2-100 E	9.39
924812	AB2-134 E O1	19.56
925051	AB2-160 C O1	8.46
925052	AB2-160 E O1	13.8
925061	AB2-161 C O1	5.7
925062	AB2-161 E O1	9.3
925122	AB2-169 E	9.67
925171	AB2-174 C O1	11.48
925172	AB2-174 E O1	10.39
925281	AB2-186 C	1.07
925282	AB2-186 E	0.46
925291	AB2-188 C O1	4.04

Bus #	Bus	MW Impact
925292	AB2-188 E O1	1.82
925331	AB2-190 C	31.9
925332	AB2-190 E	13.67
925521	AC1-027 C	0.61
925522	AC1-027 E	2.04
926071	AC1-086 C	33.74
926072	AC1-086 E	15.36
926201	AC1-098 C	9.91
926202	AC1-098 E	5.9
926211	AC1-099 C	3.32
926212	AC1-099 E	1.95
926291	AC1-107 O1	514.69
926662	AC1-147 E	2.35
926751	AC1-161 C O1	55.26
926752	AC1-161 E O1	23.59
926781	AC1-164 C	48.23
926782	AC1-164 E	21.67
927021	AC1-189 C	13.94
927022	AC1-189 E	6.95
927141	AC1-208 C	14.48
927142	AC1-208 E	6.43
927221	AC1-216 C O1	15.72
927222	AC1-216 E O1	12.36
930862	AB1-132 E O1	9.82
931232	AB1-173 E	1.72
931242	AB1-173AE	1.72
932041	AC2-012 C	18.12
932042	AC2-012 E	29.57
932581	AC2-078 C O1	6.67
932582	AC2-078 E O1	10.88
932591	AC2-079 C O1	9.84
932592	AC2-079 E O1	16.05
932631	AC2-084 C	14.13
932632	AC2-084 E	6.96
933061	AC2-130	3.41
933071	AC2-131 1	2.31
933081	AC2-131 2	1.05
933111	AC2-132 1	1.21
933121	AC2-132 2	0.62
933291	AC2-141 C	55.26
933292	AC2-141 E	23.59
933501	AC2-165 C	14.6
933502	AC2-165 E	10.99
933731	AC2-196 C	0.55
933732	AC2-196 E	2.12
933991	AD1-023 C	22.14
933992	AD1-023 E	12.05
934011	AD1-025 C	27.02
934012	AD1-025 E	16.01
934061	AD1-033 C	13.38
934062	AD1-033 E	8.92
934201	AD1-047 C	13.08

Bus #	Bus	MW Impact
934202	AD1-047 E	8.72
934331	AD1-057 C O1	15.89
934332	AD1-057 E O1	8.48
934521	AD1-076 C	92.14
934522	AD1-076 E	46.92
934571	AD1-082 C	12.99
934572	AD1-082 E	7.41
934611	AD1-087 C O1	12.84
934612	AD1-087 E O1	6.03
934621	AD1-088 C	19.56
934622	AD1-088 E	9.18
935112	AD1-144 E	1.64
935161	AD1-151 C O1	25.64
935162	AD1-151 E O1	17.09
935171	AD1-152 C O1	12.76
935172	AD1-152 E O1	8.51
935212	AD1-156 E	2.31
936041	AD2-007	2.87
936051	AD2-008 C	4.7
936052	AD2-008 E	10.24
936391	AD2-049 C	3.01
936392	AD2-049 E	3.01
936401	AD2-051 C O1	14.48
936402	AD2-051 E O1	6.22
936661	AD2-085 C	5.9
936662	AD2-085 E	9.62
936701	AD2-089 C	11.46
936702	AD2-089 E	7.64
936711	AD2-090 C O1	12.16
936712	AD2-090 E O1	8.1
937221	AD2-160 C O1	10.39
937222	AD2-160 E O1	5.45
937251	AD2-164	7.96
937481	AD2-202 C O1	3.54
937482	AD2-202 E O1	1.78
937541	AD2-215 C	3.04
937542	AD2-215 E	1.61
937571	AD2-169 C	16.3
937572	AD2-169 E	10.87
938171	AE1-026 C1 O	47.05
938172	AE1-026 C2 O	6.81
938173	AE1-026 E O1	14.21
938181	AE1-027 C	4.16
938182	AE1-027 E	2.19
938191	AE1-028 C	2.42
938192	AE1-028 E	1.4
938221	AE1-035 C	3.73
938222	AE1-035 E	1.84
938461	AE1-065 C O1	50.56
938462	AE1-065 E O1	204.02
938471	AE1-066 C O1	51.96
938472	AE1-066 E O1	202.62

Bus #	Bus	MW Impact
938481	AE1-067 C O1	47.25
938482	AE1-067 E O1	207.33
938491	AE1-068 C O1	109.16
938492	AE1-068 E O1	60.29
938501	AE1-069 C O1	85.46
938502	AE1-069 E O1	48.86
938531	AE1-072 C O1	31.07
938532	AE1-072 E O1	16.2
938551	AE1-074 C	4.01
938552	AE1-074 E	2.02
938561	AE1-075 C	3.31
938562	AE1-075 E	1.62
AA2-074	AA2-074	8.98
AB2-013	AB2-013	6.5
AE1-033	AE1-033	6.77
AE1-042	AE1-042	15.47
CARR	CARR	2.09
CBM-S1	CBM-S1	23.98
CBM-S2	CBM-S2	26.24
CBM-W1	CBM-W1	22.91
CBM-W2	CBM-W2	155.72
CIN	CIN	10.7
CPLE	CPLE	13.2
G-007	G-007	6.94
IPL	IPL	6.7
LGEE	LGEE	3.14
MEC	MEC	23.69
MECS	MECS	8.88
O-066	O-066	23.15
RENSSELAER	RENSSELAER	1.66
WEC	WEC	2.82
Z1-043	Z1-043	11.11

Contingency Name	Contingency Defintion
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
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 314923 CKT 1 /* 8CARSON 500.00 - 8SEPTA 500.00 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

Contingency Name	Contingency Defintion
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 594	CONTINGENCY 'DVP_P1-2: LN 594' OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
DVP_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_P4-2: H1T581	CONTINGENCY 'DVP_P4-2: H1T581' /* LADYSMITH 500 KV 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 OPEN BRANCH FROM BUS 314196 TO BUS 314911 CKT 1 /* 6LADYSMITH 230.00 - 8LADYSMITH 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 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

Contingency Name	Contingency Defintion
DVP_P1-2: LN 575	CONTINGENCY 'DVP_P1-2: LN 575' OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 500.00 - 8NO ANNA 500.00 END
DVP_P1-2: LN 574	CONTINGENCY 'DVP_P1-2: LN 574' OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P1-2: LN 576	CONTINGENCY 'DVP_P1-2: LN 576' OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: 557T574	CONTINGENCY 'DVP_P4-2: 557T574' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: 57602	CONTINGENCY 'DVP_P4-2: 57602' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
Base Case	
DVP_P4-2: 563T576	CONTINGENCY 'DVP_P4-2: 563T576' /* MIDLOTHIAN 500 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END

Contingency Name	Contingency Defintion
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_P1-2: LN 585-A	CONTINGENCY 'DVP_P1-2: LN 585-A' OPEN BRANCH FROM BUS 314902 TO BUS 938490 CKT 1 /* 8CARSON 500.00 - AE1-068 TAP 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

Short Circuit

Short Circuit

(Summary of impacted circuit breakers)

New circuit breakers found to be over-duty:

None

Contributions to previously identified circuit breakers found to be over-duty:

None

Network Impacts - Option 2

The Queue Project AE1-068 was evaluated as a 500 MW (Capacity 322.1 MW) injection at the Rogers Rd 500 kV substation in the ITO area. Project AE1-068 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-068 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

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
115159	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	single	3218.56	96.05	99.62	DC	113.99
115076	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	single	2442.12	100.93	101.92	DC	53.17
115323	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	single	3218.56	100.2	101.21	DC	69.99
115324	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 575	single	3218.56	98.15	100.3	DC	68.12
115255	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	single	3218.56	102.35	103.34	DC	69.23
115256	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	single	3218.56	100.48	102.5	DC	64.95
115402	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	single	4070.2	92.55	97.3	DC	191.18
115425	938500	AE1-069 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511	single	4070.2	91.07	96.04	DC	200.33

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
114698	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	120.43	125.11	DC	183.67
114699	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: H2T557	breaker	3938.0	113.2	117.78	DC	179.85
114752	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	99.14	109.55	DC	108.19
114827	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: 568T575	breaker	3938.0	98.73	101.62	DC	110.11
114828	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: H1T581	breaker	3938.0	99.86	101.13	DC	108.25
114811	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P4-2: H1T568	breaker	3938.0	101.73	104.36	DC	101.41
115641	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	104.75	106.01	DC	107.18

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
114647	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	125.44	132.94	DC	51.24
115333	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	single	559.3	104.84	109.36	DC	25.15
114667	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	122.41	129.92	DC	51.24
115353	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	single	559.3	101.14	105.66	DC	25.15
114963	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	142.76	144.83	DC	19.98
114678	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	130.78	132.72	DC	133.84
114679	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 56372	breaker	3144.0	127.28	129.28	DC	138.16
115071	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	124.98	126.5	DC	81.63
115072	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 576	single	2442.12	125.03	126.49	DC	78.12
114778	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: H1T594	breaker	3351.0	109.02	110.29	DC	92.78
114779	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: 573T594	breaker	3351.0	108.49	109.74	DC	92.46
115126	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	121.28	122.42	DC	59.59
115127	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 573	single	2442.12	115.86	116.98	DC	58.45
114609	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: 57602	breaker	3351.0	142.12	144.08	DC	143.94
114610	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: WT576	breaker	3351.0	142.12	144.08	DC	143.94
114932	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	154.24	155.99	DC	92.72
114935	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 563	single	2442.12	139.79	141.28	DC	78.6
114763	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	112.67	113.93	DC	93.34
114764	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: 57302	breaker	3351.0	109.95	111.25	DC	94.36
114765	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: XT573	breaker	3351.0	109.94	111.24	DC	94.36

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
115219	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	110.47	111.5	DC	60.44
115220	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 594	single	2738.22	108.41	109.4	DC	57.98
115284	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	108.89	109.84	DC	50.2
114631	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	134.37	137.77	DC	168.03
114957	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	127.45	131.65	DC	101.91
114961	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 557	single	2442.12	118.27	122.37	DC	99.34

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
115332	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	operation	559.3	115.88	119.04	DC	39.04
115352	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	operation	559.3	112.18	115.34	DC	39.04
114962	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	operation	449.32	184.27	187.45	DC	31.01
115485	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P1-2: LN 557	operation	984.18	100.07	101.33	DC	26.98
115154	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	operation	3218.56	135.96	141.48	DC	176.95
115065	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	161.7	164.06	DC	126.72
115070	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	operation	2442.12	129.36	130.9	DC	82.54

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
115123	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	operation	2442.12	148.72	150.46	DC	92.51
114929	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	194.87	197.56	DC	143.93
115216	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	operation	2738.22	134.18	135.76	DC	93.81
115277	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	operation	2442.12	124.98	126.45	DC	77.92
114954	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	180.44	186.06	DC	158.2
114960	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	operation	2442.12	117.71	123.09	DC	131.06
115318	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	operation	3218.56	122.17	123.72	DC	108.64
115326	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	Base Case	operation	3218.56	96.0	98.68	DC	84.21
115429	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	operation	3218.56	103.44	104.86	DC	97.72
115412	314924	8SURRY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	operation	2442.12	105.26	107.46	DC	119.21
115249	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	operation	3218.56	124.14	127.34	DC	100.82
115254	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	Base Case	operation	3218.56	100.23	102.88	DC	83.31
115401	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	operation	4070.2	97.15	104.5	DC	296.77
115424	938500	AE1-069 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511	operation	4070.2	95.4	103.09	DC	310.97

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.

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114698	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	120.43	125.11	DC	183.67

Bus #	Bus	MW Impact
314539	3UNCAMP	3.9
314541	3WATKINS	1.1
314554	3BTLEBRO	1.2
314557	3BETHELC	1.22
314566	3CRESWEL	3.95
314572	3EMPORIA	0.62
314574	6EVERETS	6.49
314578	3HORNRTN	4.99
314582	3KELFORD	5.44
314594	6PLYMOTH	1.38
314603	3SCOT NK	5.06
314617	3TUNIS	1.32
314620	6CASHIE	1.36
314623	3WITAKRS	2.03
314648	6SUNBURY	1.5
314651	6WINFALL	2.97
315090	1YORKTN1	40.61
315091	1YORKTN2	42.15
315102	1BRUNSWICKG1	16.89
315103	1BRUNSWICKG2	16.89
315104	1BRUNSWICKG3	16.89
315105	1BRUNSWICKS1	35.08
315108	1ELIZAR1	5.8
315109	1ELIZAR2	5.69
315110	1ELIZAR3	5.87
315131	1EDGECMA	13.89
315132	1EDGECMB	13.89
315150	1BUGGS 1	14.9
315151	1BUGGS 2	14.9
315233	1SURRY 2	45.76
900672	V4-068 E	0.47
901082	W1-029 E	77.63
907092	X1-038 E	9.74
913392	Y1-086 E	3.75
916042	Z1-036 E	76.31
916191	Z1-068 C	0.08
916192	Z1-068 E	3.24
916301	Z1-086 C	103.07
916302	Z1-086 E	18.73
917122	Z2-027 E	1.8

Bus #	Bus	MW Impact
917332	Z2-043 E	1.55
917342	Z2-044 E	0.87
917512	Z2-088 E OP1	5.99
918492	AA1-063AE OP	6.12
918512	AA1-065 E OP	7.02
918532	AA1-067 E	1.14
918562	AA1-072 E	0.26
919151	AA1-139 C	4.44
919152	AA1-139 E	11.05
919692	AA2-053 E	5.69
919701	AA2-057 C	10.73
919702	AA2-057 E	5.36
920042	AA2-088 E OP	16.58
920592	AA2-165 E	0.71
920672	AA2-174 E	0.66
920692	AA2-178 E	6.77
923801	AB2-015 C O1	13.82
923802	AB2-015 E O1	11.33
923832	AB2-022 E	2.11
923852	AB2-025 E	1.64
923911	AB2-031 C O1	3.35
923912	AB2-031 E O1	1.65
923941	AB2-035 C	0.51
923942	AB2-035 E	0.22
923992	AB2-040 E O1	8.99
924022	AB2-043 E O1	6.43
924152	AB2-059 E O1	8.13
924162	AB2-060 E O1	5.28
924241	AB2-068 O1	333.87
924302	AB2-077 E O1	1.67
924312	AB2-078 E O1	1.67
924322	AB2-079 E O1	1.67
924391	AB2-088 C	0.66
924392	AB2-088 E	0.32
924401	AB2-089 C	2.96
924402	AB2-089 E	1.52
924491	AB2-098 C	0.89
924492	AB2-098 E	0.38
924501	AB2-099 C	0.92
924502	AB2-099 E	0.39
924511	AB2-100 C	17.27
924512	AB2-100 E	8.51
924812	AB2-134 E O1	14.39
925061	AB2-161 C O1	4.86
925062	AB2-161 E O1	7.92
925122	AB2-169 E	9.3
925171	AB2-174 C O1	10.49
925172	AB2-174 E O1	9.49
925281	AB2-186 C	1.03
925282	AB2-186 E	0.44
925291	AB2-188 C O1	3.89
925292	AB2-188 E O1	1.75

Bus #	Bus	MW Impact
925331	AB2-190 C	22.91
925332	AB2-190 E	9.82
925521	AC1-027 C	0.59
925522	AC1-027 E	1.97
925591	AC1-034 C	10.23
925592	AC1-034 E	7.71
925781	AC1-054 C O1	10.09
925782	AC1-054 E O1	4.65
926071	AC1-086 C	31.41
926072	AC1-086 E	14.3
926201	AC1-098 C	9.4
926202	AC1-098 E	5.6
926211	AC1-099 C	3.15
926212	AC1-099 E	1.85
926271	AC1-105 C O1	7.51
926272	AC1-105 E O1	3.74
926291	AC1-107 O1	503.95
926662	AC1-147 E	2.27
926751	AC1-161 C O1	55.59
926752	AC1-161 E O1	23.73
927021	AC1-189 C	13.41
927022	AC1-189 E	6.68
927141	AC1-208 C	13.7
927142	AC1-208 E	6.09
927221	AC1-216 C O1	11.57
927222	AC1-216 E O1	9.1
927251	AC1-221 C	3.14
927252	AC1-221 E	3.14
927261	AC1-222 C	4.86
927262	AC1-222 E	4.63
930402	AB1-081 E O1	5.74
930862	AB1-132 E O1	9.14
931232	AB1-173 E	1.57
931242	AB1-173AE	1.57
932041	AC2-012 C	17.46
932042	AC2-012 E	28.49
932581	AC2-078 C O1	5.17
932582	AC2-078 E O1	8.44
932591	AC2-079 C O1	8.83
932592	AC2-079 E O1	14.4
932631	AC2-084 C	13.41
932632	AC2-084 E	6.6
932761	AC2-100 C	7.23
932762	AC2-100 E	3.53
933291	AC2-141 C	55.59
933292	AC2-141 E	23.73
933731	AC2-196 C	0.53
933732	AC2-196 E	2.06
933991	AD1-023 C	21.24
933992	AD1-023 E	11.56
934011	AD1-025 C	19.88
934012	AD1-025 E	11.78

Bus #	Bus	MW Impact
934061	AD1-033 C	13.01
934062	AD1-033 E	8.67
934201	AD1-047 C	11.99
934202	AD1-047 E	7.99
934231	AD1-050 C	6.51
934232	AD1-050 E	3.56
934311	AD1-055 C	3.38
934312	AD1-055 E	0.87
934331	AD1-057 C O1	15.07
934332	AD1-057 E O1	8.04
934341	AD1-058 C	7.88
934342	AD1-058 E	2.0
934521	AD1-076 C	88.51
934522	AD1-076 E	45.07
934571	AD1-082 C	11.07
934572	AD1-082 E	6.31
934611	AD1-087 C O1	12.77
934612	AD1-087 E O1	6.0
934621	AD1-088 C	17.21
934622	AD1-088 E	8.08
934991	AD1-131 C	2.58
934992	AD1-131 E	1.72
935112	AD1-144 E	1.54
935161	AD1-151 C O1	18.41
935162	AD1-151 E O1	12.27
935171	AD1-152 C O1	12.69
935172	AD1-152 E O1	8.46
935212	AD1-156 E	1.73
936041	AD2-007	2.11
936051	AD2-008 C	3.46
936052	AD2-008 E	7.53
936331	AD2-043 C	6.33
936332	AD2-043 E	7.49
936361	AD2-046 C O1	11.9
936362	AD2-046 E O1	5.47
936391	AD2-049 C	2.65
936392	AD2-049 E	2.65
936401	AD2-051 C O1	13.76
936402	AD2-051 E O1	5.91
936481	AD2-063 C O1	17.9
936482	AD2-063 E O1	11.93
936531	AD2-068 C	7.89
936532	AD2-068 E	4.07
936661	AD2-085 C	5.28
936662	AD2-085 E	8.61
936701	AD2-089 C	11.02
936702	AD2-089 E	7.35
936711	AD2-090 C O1	11.44
936712	AD2-090 E O1	7.62
937221	AD2-160 C O1	10.1
937222	AD2-160 E O1	5.29
937251	AD2-164	6.91

Bus #	Bus	MW Impact
937481	AD2-202 C O1	3.52
937482	AD2-202 E O1	1.77
937541	AD2-215 C	2.84
937542	AD2-215 E	1.51
937571	AD2-169 C	14.99
937572	AD2-169 E	9.99
938171	AE1-026 C1 O	45.12
938172	AE1-026 C2 O	6.53
938173	AE1-026 E O2	13.63
938181	AE1-027 C	4.05
938182	AE1-027 E	2.13
938191	AE1-028 C	2.35
938192	AE1-028 E	1.36
938221	AE1-035 C	3.56
938222	AE1-035 E	1.76
938461	AE1-065 C O2	48.97
938462	AE1-065 E O2	197.6
938471	AE1-066 C O2	50.33
938472	AE1-066 E O2	196.25
938481	AE1-067 C O2	45.76
938482	AE1-067 E O2	200.81
938491	AE1-068 C O2	118.32
938492	AE1-068 E O2	65.35
938501	AE1-069 C O2	93.92
938502	AE1-069 E O2	53.7
938531	AE1-072 C O2	30.17
938532	AE1-072 E O2	15.73
AA2-074	AA2-074	8.9
AB2-013	AB2-013	5.7
AE1-033	AE1-033	5.95
AE1-042	AE1-042	14.39
CARR	CARR	1.71
CBM-S1	CBM-S1	22.0
CBM-S2	CBM-S2	25.63
CBM-W1	CBM-W1	20.05
CBM-W2	CBM-W2	142.21
CIN	CIN	9.32
CPLE	CPLE	13.08
G-007	G-007	5.64
IPL	IPL	5.82
LGEE	LGEE	2.72
MEC	MEC	21.16
MECS	MECS	7.5
O-066	O-066	18.81
RENSSELAER	RENSSELAER	1.35
WEC	WEC	2.47
Z1-043	Z1-043	9.73

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114678	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	130.78	132.72	DC	133.84

Bus #	Bus	MW Impact
314189	6PAPERMILL	10.94
314421	6WINCHST	0.29
314539	3UNCAMP	3.9
314541	3WATKINS	1.09
314554	3BTLEBRO	1.03
314557	3BETHELC	1.08
314566	3CRESWEL	3.92
314572	3EMPORIA	0.55
314574	6EVERETS	5.93
314578	3HORNRTN	4.49
314582	3KELFORD	5.04
314594	6PLYMOTH	1.36
314603	3SCOT NK	4.6
314617	3TUNIS	1.25
314620	6CASHIE	1.31
314623	3WITAKRS	1.76
314648	6SUNBURY	1.55
314651	6WINFALL	3.05
315073	1STONECA	8.72
315074	1HOPCGN1	10.52
315075	1HOPCGN2	10.38
315090	1YORKTN1	53.51
315091	1YORKTN2	55.53
315092	1YORKTN3	45.83
315110	1ELIZAR3	6.23
315131	1EDGECMA	11.92
315132	1EDGECMB	11.92
315233	1SURRY 2	55.25
900672	V4-068 E	0.45
901082	W1-029 E	80.04
907092	X1-038 E	9.75
913392	Y1-086 E	3.89
916042	Z1-036 E	77.63
916192	Z1-068 E	3.42
916302	Z1-086 E	13.65
917122	Z2-027 E	1.86
917332	Z2-043 E	1.43
917342	Z2-044 E	0.75
917512	Z2-088 E OP1	5.37
918492	AA1-063AE OP	5.61

Bus #	Bus	MW Impact
918512	AA1-065 E OP	6.66
918532	AA1-067 E	1.05
918562	AA1-072 E	0.24
919152	AA1-139 E	11.57
919692	AA2-053 E	5.18
919701	AA2-057 C	9.4
919702	AA2-057 E	4.7
920042	AA2-088 E OP	15.98
920592	AA2-165 E	0.62
920672	AA2-174 E	0.6
920692	AA2-178 E	6.71
923801	AB2-015 C O1	13.73
923802	AB2-015 E O1	11.26
923832	AB2-022 E	2.2
923842	AB2-024 E	1.84
923852	AB2-025 E	1.45
923911	AB2-031 C O1	2.99
923912	AB2-031 E O1	1.47
923941	AB2-035 C	0.45
923942	AB2-035 E	0.19
923992	AB2-040 E O1	8.03
924152	AB2-059 E O1	6.98
924241	AB2-068 O1	619.69
924391	AB2-088 C	0.58
924392	AB2-088 E	0.28
924491	AB2-098 C	0.81
924492	AB2-098 E	0.35
924501	AB2-099 C	0.87
924502	AB2-099 E	0.37
924511	AB2-100 C	15.35
924512	AB2-100 E	7.56
924812	AB2-134 E O1	18.13
925051	AB2-160 C O1	6.27
925052	AB2-160 E O1	10.23
925061	AB2-161 C O1	5.12
925062	AB2-161 E O1	8.36
925122	AB2-169 E	8.81
925171	AB2-174 C O1	9.34
925172	AB2-174 E O1	8.45
925281	AB2-186 C	1.06
925282	AB2-186 E	0.45
925291	AB2-188 C O1	3.86
925292	AB2-188 E O1	1.73
925331	AB2-190 C	29.21
925332	AB2-190 E	12.52
925522	AC1-027 E	2.08
925591	AC1-034 C	8.77
925592	AC1-034 E	6.62
925861	AC1-065 C	5.37
925862	AC1-065 E	8.76
926071	AC1-086 C	28.17
926072	AC1-086 E	12.82

Bus #	Bus	MW Impact
926201	AC1-098 C	8.45
926202	AC1-098 E	5.04
926211	AC1-099 C	2.83
926212	AC1-099 E	1.66
926291	AC1-107 O1	935.38
926662	AC1-147 E	2.41
926751	AC1-161 C O1	59.52
926752	AC1-161 E O1	25.41
926781	AC1-164 C	68.01
926782	AC1-164 E	30.55
927021	AC1-189 C	12.1
927022	AC1-189 E	6.03
927141	AC1-208 C	12.2
927142	AC1-208 E	5.42
927221	AC1-216 C O1	14.57
927222	AC1-216 E O1	11.46
930402	AB1-081 E O1	4.93
930862	AB1-132 E O1	8.2
931232	AB1-173 E	1.4
931242	AB1-173AE	1.4
932041	AC2-012 C	18.56
932042	AC2-012 E	30.28
932532	AC2-073 E	1.96
932581	AC2-078 C O1	5.52
932582	AC2-078 E O1	9.01
932591	AC2-079 C O1	9.26
932592	AC2-079 E O1	15.11
932631	AC2-084 C	12.05
932632	AC2-084 E	5.94
932831	AC2-110 C	2.15
932832	AC2-110 E	3.5
933061	AC2-130	3.1
933071	AC2-131 1	2.1
933081	AC2-131 2	0.95
933111	AC2-132 1	1.1
933121	AC2-132 2	0.56
933262	AC2-137 E	1.87
933272	AC2-138 E	1.18
933291	AC2-141 C	59.52
933292	AC2-141 E	25.41
933732	AC2-196 E	2.17
933991	AD1-023 C	20.59
933992	AD1-023 E	11.21
934011	AD1-025 C	25.04
934012	AD1-025 E	14.83
934061	AD1-033 C	13.7
934062	AD1-033 E	9.13
934141	AD1-041 C	8.49
934142	AD1-041 E	5.66
934201	AD1-047 C	10.7
934202	AD1-047 E	7.13
934212	AD1-048 E	1.38

Bus #	Bus	MW Impact
934331	AD1-057 C O1	13.19
934332	AD1-057 E O1	7.04
934392	AD1-063 E	1.75
934521	AD1-076 C	86.42
934522	AD1-076 E	44.01
934571	AD1-082 C	11.68
934572	AD1-082 E	6.66
934611	AD1-087 C O1	9.65
934612	AD1-087 E O1	4.54
935112	AD1-144 E	1.67
935161	AD1-151 C O1	23.47
935162	AD1-151 E O1	15.65
935171	AD1-152 C O1	9.59
935172	AD1-152 E O1	6.39
935212	AD1-156 E	1.73
936041	AD2-007	2.66
936051	AD2-008 C	4.36
936052	AD2-008 E	9.49
936151	AD2-021	0.33
936241	AD2-030 C	3.72
936242	AD2-030 E	1.9
936301	AD2-039 C	2.15
936302	AD2-039 E	3.5
936341	AD2-044 C	0.3
936342	AD2-044 E	0.33
936391	AD2-049 C	3.25
936392	AD2-049 E	3.25
936401	AD2-051 C O1	12.94
936402	AD2-051 E O1	5.55
936531	AD2-068 C	6.84
936532	AD2-068 E	3.52
936591	AD2-074 C	7.46
936592	AD2-074 E	12.17
936661	AD2-085 C	5.54
936662	AD2-085 E	9.03
936701	AD2-089 C	9.7
936702	AD2-089 E	6.46
936711	AD2-090 C O1	11.21
936712	AD2-090 E O1	7.47
937221	AD2-160 C O1	10.59
937222	AD2-160 E O1	5.55
937251	AD2-164	8.87
937481	AD2-202 C O1	2.66
937482	AD2-202 E O1	1.34
937541	AD2-215 C	3.09
937542	AD2-215 E	1.64
937571	AD2-169 C	13.41
937572	AD2-169 E	8.94
938031	AE1-004 C	2.15
938032	AE1-004 E	3.5
938171	AE1-026 C1 O	43.56
938172	AE1-026 C2 O	6.3

Bus #	Bus	MW Impact
938173	AE1-026 E O2	13.15
938181	AE1-027 C	4.26
938182	AE1-027 E	2.24
938191	AE1-028 C	2.47
938192	AE1-028 E	1.43
938221	AE1-035 C	3.38
938222	AE1-035 E	1.66
938461	AE1-065 C O2	51.76
938462	AE1-065 E O2	208.87
938471	AE1-066 C O2	53.19
938472	AE1-066 E O2	207.44
938481	AE1-067 C O2	48.37
938482	AE1-067 E O2	212.26
938491	AE1-068 C O2	86.22
938492	AE1-068 E O2	47.62
938501	AE1-069 C O2	68.42
938502	AE1-069 E O2	39.12
938531	AE1-072 C O2	31.54
938532	AE1-072 E O2	16.44
AA2-074	AA2-074	6.79
AE1-042	AE1-042	9.44
CARR	CARR	1.31
CBM-S1	CBM-S1	13.88
CBM-S2	CBM-S2	18.86
CBM-W1	CBM-W1	10.01
CBM-W2	CBM-W2	87.39
CIN	CIN	4.78
CPLE	CPLE	9.98
G-007	G-007	4.21
IPL	IPL	2.93
LGEE	LGEE	1.39
MEC	MEC	11.9
MECS	MECS	2.63
O-066	O-066	14.06
RENSSELAER	RENSSELAER	1.04
WEC	WEC	1.26

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114828	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: H1T581	breaker	3938.0	99.86	101.13	DC	108.25

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.61
314250	6ROCKVILLE	0.42
314539	3UNCAMP	2.85
314541	3WATKINS	0.8
314566	3CRESWEL	2.8
314572	3EMPORIA	0.48
314574	6EVERETS	4.58
314578	3HORNRTN	3.67
314582	3KELFORD	3.91
314594	6PLYMOTH	0.98
314603	3SCOT NK	3.64
314617	3TUNIS	0.96
314620	6CASHIE	0.97
314648	6SUNBURY	1.06
314651	6WINFALL	2.1
315053	1BELMED1	20.68
315054	1BELMED2	20.68
315055	1BELMED3	17.16
315058	1CHESTF3	21.38
315059	1CHESTF4	34.66
315073	1STONECA	8.27
315074	1HOPCGN1	9.97
315075	1HOPCGN2	9.84
315083	1SPRUNCA	12.85
315084	1SPRUNCB	12.85
315085	1SPRUNCC	9.53
315086	1SPRUNCD	9.53
315090	1YORKTN1	34.24
315091	1YORKTN2	35.54
315110	1ELIZAR3	4.16
315225	1N ANNA1	65.35
315226	1N ANNA2	65.49
315233	1SURRY 2	31.87
900672	V4-068 E	0.34
901082	W1-029 E	54.97
907092	X1-038 E	7.13
913392	Y1-086 E	2.64
916042	Z1-036 E	54.04
916192	Z1-068 E	2.29
916302	Z1-086 E	11.04

Bus #	Bus	MW Impact
917122	Z2-027 E	1.27
917332	Z2-043 E	1.11
918492	AA1-063AE OP	4.47
918512	AA1-065 E OP	5.02
918532	AA1-067 E	0.81
918562	AA1-072 E	0.19
919152	AA1-139 E	7.77
919692	AA2-053 E	4.18
920042	AA2-088 E OP	12.13
920672	AA2-174 E	0.48
920692	AA2-178 E	4.8
923801	AB2-015 C O1	10.11
923802	AB2-015 E O1	8.29
923832	AB2-022 E	1.49
923842	AB2-024 E	1.28
923852	AB2-025 E	1.3
923862	AB2-026 E	1.25
923911	AB2-031 C O1	2.53
923912	AB2-031 E O1	1.24
923992	AB2-040 E O1	6.78
924241	AB2-068 O1	230.2
924491	AB2-098 C	0.63
924492	AB2-098 E	0.27
924501	AB2-099 C	0.66
924502	AB2-099 E	0.28
924511	AB2-100 C	13.27
924512	AB2-100 E	6.53
924812	AB2-134 E O1	14.72
925022	AB2-158 E	5.81
925051	AB2-160 C O1	6.56
925052	AB2-160 E O1	10.7
925061	AB2-161 C O1	4.08
925062	AB2-161 E O1	6.66
925122	AB2-169 E	6.59
925171	AB2-174 C O1	7.95
925172	AB2-174 E O1	7.19
925281	AB2-186 C	0.73
925282	AB2-186 E	0.31
925291	AB2-188 C O1	2.76
925292	AB2-188 E O1	1.24
925331	AB2-190 C	24.17
925332	AB2-190 E	10.36
925522	AC1-027 E	1.39
925861	AC1-065 C	3.85
925862	AC1-065 E	6.29
926071	AC1-086 C	23.21
926072	AC1-086 E	10.56
926201	AC1-098 C	6.76
926202	AC1-098 E	4.03
926211	AC1-099 C	2.26
926212	AC1-099 E	1.33
926291	AC1-107 O1	347.47

Bus #	Bus	MW Impact
926412	AC1-112 E	1.28
926662	AC1-147 E	1.61
926751	AC1-161 C O1	37.21
926752	AC1-161 E O1	15.88
926781	AC1-164 C	46.83
926782	AC1-164 E	21.04
927041	AC1-191 C O1	10.57
927042	AC1-191 E O1	5.26
927141	AC1-208 C	9.88
927142	AC1-208 E	4.39
927221	AC1-216 C O1	11.83
927222	AC1-216 E O1	9.3
930122	AB1-027 E	1.26
930862	AB1-132 E O1	6.76
931232	AB1-173 E	1.19
931242	AB1-173AE	1.19
932041	AC2-012 C	12.43
932042	AC2-012 E	20.28
932502	AC2-070 E	0.8
932532	AC2-073 E	1.37
932581	AC2-078 C O1	4.92
932582	AC2-078 E O1	8.02
932591	AC2-079 C O1	6.92
932592	AC2-079 E O1	11.29
932631	AC2-084 C	9.63
932632	AC2-084 E	4.74
932831	AC2-110 C	1.54
932832	AC2-110 E	2.52
933061	AC2-130	2.83
933071	AC2-131 1	1.92
933081	AC2-131 2	0.87
933111	AC2-132 1	1.01
933121	AC2-132 2	0.51
933262	AC2-137 E	1.57
933291	AC2-141 C	37.21
933292	AC2-141 E	15.88
933501	AC2-165 C	10.97
933502	AC2-165 E	8.26
933732	AC2-196 E	1.45
933991	AD1-023 C	15.11
933992	AD1-023 E	8.23
934011	AD1-025 C	20.33
934012	AD1-025 E	12.04
934061	AD1-033 C	9.14
934062	AD1-033 E	6.09
934141	AD1-041 C	6.05
934142	AD1-041 E	4.03
934201	AD1-047 C	9.05
934202	AD1-047 E	6.03
934212	AD1-048 E	1.43
934392	AD1-063 E	1.22
934521	AD1-076 C	62.89

Bus #	Bus	MW Impact
934522	AD1-076 E	32.02
934571	AD1-082 C	9.3
934572	AD1-082 E	5.3
934621	AD1-088 C	13.49
934622	AD1-088 E	6.33
935112	AD1-144 E	1.14
935161	AD1-151 C O1	19.42
935162	AD1-151 E O1	12.95
935212	AD1-156 E	1.72
936041	AD2-007	2.16
936051	AD2-008 C	3.54
936052	AD2-008 E	7.71
936151	AD2-021	0.28
936241	AD2-030 C	2.62
936242	AD2-030 E	1.34
936301	AD2-039 C	1.54
936302	AD2-039 E	2.52
936391	AD2-049 C	2.15
936392	AD2-049 E	2.15
936401	AD2-051 C O1	9.9
936402	AD2-051 E O1	4.25
936661	AD2-085 C	4.15
936662	AD2-085 E	6.77
936711	AD2-090 C O1	8.37
936712	AD2-090 E O1	5.58
937221	AD2-160 C O1	7.09
937222	AD2-160 E O1	3.72
937251	AD2-164	5.75
937541	AD2-215 C	2.11
937542	AD2-215 E	1.12
937571	AD2-169 C	11.26
937572	AD2-169 E	7.5
938031	AE1-004 C	1.54
938032	AE1-004 E	2.52
938081	AE1-010	3.61
938171	AE1-026 C1 O	32.13
938172	AE1-026 C2 O	4.65
938173	AE1-026 E O2	9.7
938181	AE1-027 C	2.84
938182	AE1-027 E	1.5
938191	AE1-028 C	1.65
938192	AE1-028 E	0.95
938221	AE1-035 C	2.55
938222	AE1-035 E	1.25
938461	AE1-065 C O2	34.59
938462	AE1-065 E O2	139.58
938471	AE1-066 C O2	35.55
938472	AE1-066 E O2	138.63
938481	AE1-067 C O2	32.33
938482	AE1-067 E O2	141.85
938491	AE1-068 C O2	69.73
938492	AE1-068 E O2	38.52

Bus #	Bus	MW Impact
938501	AE1-069 C O2	55.3
938502	AE1-069 E O2	31.61
938531	AE1-072 C O2	21.22
938532	AE1-072 E O2	11.06
938551	AE1-074 C	3.04
938552	AE1-074 E	1.53
938561	AE1-075 C	2.44
938562	AE1-075 E	1.19
AA2-074	AA2-074	5.91
AE1-042	AE1-042	9.3
CARR	CARR	1.78
CBM-S1	CBM-S1	13.94
CBM-S2	CBM-S2	17.07
CBM-W1	CBM-W1	9.76
CBM-W2	CBM-W2	86.73
CIN	CIN	4.97
CPLE	CPLE	8.68
G-007	G-007	5.57
IPL	IPL	3.06
LGEE	LGEE	1.49
MEC	MEC	11.91
MECS	MECS	2.06
O-066	O-066	18.63
RENSSELAER	RENSSELAER	1.41
WEC	WEC	1.27

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115641	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	104.75	106.01	DC	107.18

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.74
314250	6ROCKVILLE	0.43
314539	3UNCAMP	2.84
314541	3WATKINS	0.8
314566	3CRESWEL	2.79
314572	3EMPORIA	0.48
314582	3KELFORD	3.9
314594	6PLYMOTH	0.98
314617	3TUNIS	0.95
314620	6CASHIE	0.96
314648	6SUNBURY	1.06
314651	6WINFALL	2.09
315053	1BELMED1	20.9
315054	1BELMED2	20.9
315055	1BELMED3	17.35
315058	1CHESTF3	21.65
315059	1CHESTF4	35.1
315073	1STONECA	8.33
315074	1HOPCGN1	10.04
315075	1HOPCGN2	9.91
315083	1SPRUNCA	12.96
315084	1SPRUNCB	12.96
315085	1SPRUNCC	9.61
315086	1SPRUNCD	9.61
315090	1YORKTN1	34.27
315091	1YORKTN2	35.57
315225	1N ANNA1	62.93
315226	1N ANNA2	63.07
315233	1SURRY 2	31.7
900672	V4-068 E	0.34
901082	W1-029 E	54.71
907092	X1-038 E	7.1
913392	Y1-086 E	2.63
916042	Z1-036 E	53.78
916192	Z1-068 E	2.27
916302	Z1-086 E	10.93
917122	Z2-027 E	1.27
917332	Z2-043 E	1.11
918492	AA1-063AE OP	4.46
918512	AA1-065 E OP	5.0

Bus #	Bus	MW Impact
918562	AA1-072 E	0.18
919152	AA1-139 E	7.73
919692	AA2-053 E	4.16
920042	AA2-088 E OP	12.09
920672	AA2-174 E	0.48
920692	AA2-178 E	4.78
923801	AB2-015 C O1	10.07
923802	AB2-015 E O1	8.26
923832	AB2-022 E	1.48
923842	AB2-024 E	1.3
923852	AB2-025 E	1.3
923862	AB2-026 E	1.26
923911	AB2-031 C O1	2.52
923912	AB2-031 E O1	1.24
923992	AB2-040 E O1	6.77
924241	AB2-068 O1	228.19
924501	AB2-099 C	0.66
924502	AB2-099 E	0.28
924511	AB2-100 C	13.23
924512	AB2-100 E	6.52
924812	AB2-134 E O1	14.77
925021	AB2-158 C	2.41
925022	AB2-158 E	6.25
925051	AB2-160 C O1	6.6
925052	AB2-160 E O1	10.77
925061	AB2-161 C O1	4.08
925062	AB2-161 E O1	6.65
925122	AB2-169 E	6.56
925171	AB2-174 C O1	7.93
925172	AB2-174 E O1	7.17
925281	AB2-186 C	0.73
925282	AB2-186 E	0.31
925291	AB2-188 C O1	2.75
925292	AB2-188 E O1	1.23
925331	AB2-190 C	24.25
925332	AB2-190 E	10.39
925522	AC1-027 E	1.39
925861	AC1-065 C	3.94
925862	AC1-065 E	6.43
926001	AC1-076 C	7.23
926002	AC1-076 E	11.76
926071	AC1-086 C	23.13
926072	AC1-086 E	10.53
926291	AC1-107 O1	344.43
926412	AC1-112 E	1.31
926662	AC1-147 E	1.61
926731	AC1-158 C	194.13
926732	AC1-158 E	85.19
926751	AC1-161 C O1	36.97
926752	AC1-161 E O1	15.78
926781	AC1-164 C	47.26
926782	AC1-164 E	21.23

Bus #	Bus	MW Impact
927041	AC1-191 C O1	10.96
927042	AC1-191 E O1	5.46
927221	AC1-216 C O1	11.87
927222	AC1-216 E O1	9.33
930122	AB1-027 E	1.29
930862	AB1-132 E O1	6.73
931232	AB1-173 E	1.18
931242	AB1-173AE	1.18
932041	AC2-012 C	12.37
932042	AC2-012 E	20.18
932502	AC2-070 E	0.81
932532	AC2-073 E	1.39
932581	AC2-078 C O1	4.93
932582	AC2-078 E O1	8.04
932591	AC2-079 C O1	6.9
932592	AC2-079 E O1	11.26
932831	AC2-110 C	1.58
932832	AC2-110 E	2.57
933011	AC2-125	2.82
933021	AC2-126	2.84
933031	AC2-127	1.55
933041	AC2-128	1.5
933051	AC2-129	1.4
933061	AC2-130	2.86
933071	AC2-131 1	1.93
933081	AC2-131 2	0.88
933111	AC2-132 1	1.02
933121	AC2-132 2	0.52
933262	AC2-137 E	1.59
933291	AC2-141 C	36.97
933292	AC2-141 E	15.78
933501	AC2-165 C	11.11
933502	AC2-165 E	8.36
933732	AC2-196 E	1.44
933991	AD1-023 C	15.05
933992	AD1-023 E	8.19
934011	AD1-025 C	20.4
934012	AD1-025 E	12.08
934061	AD1-033 C	9.09
934062	AD1-033 E	6.06
934141	AD1-041 C	6.19
934142	AD1-041 E	4.13
934201	AD1-047 C	9.02
934202	AD1-047 E	6.02
934212	AD1-048 E	1.45
934392	AD1-063 E	1.25
934521	AD1-076 C	62.6
934522	AD1-076 E	31.88
934541	AD1-078 C	4.43
934542	AD1-078 E	2.6
934571	AD1-082 C	9.29
934572	AD1-082 E	5.3

Bus #	Bus	MW Impact
935112	AD1-144 E	1.14
935161	AD1-151 C O1	19.49
935162	AD1-151 E O1	12.99
935212	AD1-156 E	1.72
936041	AD2-007	2.17
936051	AD2-008 C	3.55
936052	AD2-008 E	7.73
936151	AD2-021	0.28
936241	AD2-030 C	2.69
936242	AD2-030 E	1.37
936301	AD2-039 C	1.58
936302	AD2-039 E	2.57
936391	AD2-049 C	2.15
936392	AD2-049 E	2.15
936401	AD2-051 C O1	9.86
936402	AD2-051 E O1	4.23
936591	AD2-074 C	6.12
936592	AD2-074 E	9.99
936661	AD2-085 C	4.14
936662	AD2-085 E	6.76
936711	AD2-090 C O1	8.34
936712	AD2-090 E O1	5.56
937221	AD2-160 C O1	7.06
937222	AD2-160 E O1	3.7
937251	AD2-164	5.75
937541	AD2-215 C	2.1
937542	AD2-215 E	1.12
937571	AD2-169 C	11.22
937572	AD2-169 E	7.48
938031	AE1-004 C	1.58
938032	AE1-004 E	2.57
938081	AE1-010	10.03
938171	AE1-026 C1 O	31.99
938172	AE1-026 C2 O	4.63
938173	AE1-026 E O2	9.66
938181	AE1-027 C	2.83
938182	AE1-027 E	1.49
938191	AE1-028 C	1.64
938192	AE1-028 E	0.95
938221	AE1-035 C	2.54
938222	AE1-035 E	1.25
938461	AE1-065 C O2	34.42
938462	AE1-065 E O2	138.9
938471	AE1-066 C O2	35.38
938472	AE1-066 E O2	137.95
938481	AE1-067 C O2	32.17
938482	AE1-067 E O2	141.16
938491	AE1-068 C O2	69.05
938492	AE1-068 E O2	38.13
938501	AE1-069 C O2	54.75
938502	AE1-069 E O2	31.3
938531	AE1-072 C O2	21.11

Bus #	Bus	MW Impact
938532	AE1-072 E O2	11.01
938551	AE1-074 C	3.06
938552	AE1-074 E	1.54
938561	AE1-075 C	2.47
938562	AE1-075 E	1.2
AA2-074	AA2-074	5.87
AE1-042	AE1-042	9.21
CARR	CARR	1.81
CBM-S1	CBM-S1	13.79
CBM-S2	CBM-S2	16.96
CBM-W1	CBM-W1	9.47
CBM-W2	CBM-W2	85.57
CIN	CIN	4.85
CPLE	CPLE	8.63
G-007	G-007	5.67
IPL	IPL	2.99
LGEE	LGEE	1.46
MEC	MEC	11.68
MECS	MECS	1.88
O-066	O-066	18.96
RENSSELAER	RENSSELAER	1.43
WEC	WEC	1.24

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115402	314936	8RAWLINGS	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A	single	4070.2	92.55	97.3	DC	191.18

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.42
315102	1BRUNSWICKG1	27.69
315103	1BRUNSWICKG2	27.69
315104	1BRUNSWICKG3	27.69
315105	1BRUNSWICKS1	57.53
315150	1BUGGS 1	13.35
315151	1BUGGS 2	13.35
315153	1CLOVER1	35.12
315154	1CLOVER2	34.66
315159	1KERR 2	1.41
315163	1KERR 6	1.39
315164	1KERR 7	1.39
315266	1PLYWOOD A	2.13
916301	Z1-086 C	166.54
924021	AB2-043 C O1	0.56
924161	AB2-060 C O1	1.61
924301	AB2-077 C O1	0.36
924311	AB2-078 C O1	0.36
924321	AB2-079 C O1	0.36
925611	AC1-036 C	0.17
925831	AC1-062	0.06
925991	AC1-075 C	8.47
926021	AC1-080 C	2.83
926271	AC1-105 C O1	9.17
926761	AC1-162 C	45.79
927251	AC1-221 C	4.03
927261	AC1-222 C	6.39
932761	AC2-100 C	9.28
932821	AC2-107 C	15.06
934311	AD1-055 C	4.43
934341	AD1-058 C	10.11
934611	AD1-087 C O1	19.58
934621	AD1-088 C	27.29
934991	AD1-131 C	3.31
935171	AD1-152 C O1	19.46
935221	AD1-157 C	0.27
935231	AD1-160 C	1.15
936161	AD2-022 C O1	13.39
936171	AD2-023 C O1	7.84
936261	AD2-033 C	13.44

Bus #	Bus	MW Impact
936331	AD2-043 C	8.3
936361	AD2-046 C O1	8.62
936391	AD2-049 C	1.61
936481	AD2-063 C O1	15.46
936651	AD2-082 C	1.75
937481	AD2-202 C O1	5.39
938371	AE1-056 C	6.73
938491	AE1-068 C O2	191.18
938501	AE1-069 C O2	151.05
AA2-074	AA2-074	9.99
AB2-013	AB2-013	7.59
AE1-033	AE1-033	7.92
AE1-042	AE1-042	17.59
CARR	CARR	1.26
CBM-S1	CBM-S1	27.18
CBM-S2	CBM-S2	29.97
CBM-W1	CBM-W1	27.24
CBM-W2	CBM-W2	178.29
CIN	CIN	12.37
CPLE	CPLE	14.69
IPL	IPL	7.75
LGEE	LGEE	3.58
MEC	MEC	27.42
MECS	MECS	11.47
RENSSELAER	RENSSELAER	1.0
WEC	WEC	3.3
Z1-043	Z1-043	12.99

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115425	938500	AE1-069 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511	single	4070.2	91.07	96.04	DC	200.33

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.38
315102	1BRUNSWICKG1	27.78
315103	1BRUNSWICKG2	27.78
315104	1BRUNSWICKG3	27.78
315105	1BRUNSWICKS1	57.71
315150	1BUGGS 1	12.3
315151	1BUGGS 2	12.3
315153	1CLOVER1	31.64
315154	1CLOVER2	31.23
315159	1KERR 2	1.31
315163	1KERR 6	1.29
315164	1KERR 7	1.29
315266	1PLYWOOD A	1.95
916301	Z1-086 C	174.51
924021	AB2-043 C O1	0.51
924161	AB2-060 C O1	1.47
924301	AB2-077 C O1	0.33
924311	AB2-078 C O1	0.33
924321	AB2-079 C O1	0.33
925611	AC1-036 C	0.15
925831	AC1-062	0.05
925991	AC1-075 C	7.81
926021	AC1-080 C	2.61
926271	AC1-105 C O1	8.42
926761	AC1-162 C	41.02
927251	AC1-221 C	3.81
927261	AC1-222 C	5.87
932761	AC2-100 C	8.78
932821	AC2-107 C	13.88
934311	AD1-055 C	4.07
934341	AD1-058 C	9.56
934611	AD1-087 C O1	17.78
934621	AD1-088 C	24.53
934991	AD1-131 C	3.13
935171	AD1-152 C O1	17.67
935221	AD1-157 C	0.24
935231	AD1-160 C	1.03
936161	AD2-022 C O1	12.88
936171	AD2-023 C O1	7.54
936261	AD2-033 C	12.24

Bus #	Bus	MW Impact
936331	AD2-043 C	7.63
936361	AD2-046 C O1	8.0
936391	AD2-049 C	1.56
936481	AD2-063 C O1	14.13
936651	AD2-082 C	1.58
937481	AD2-202 C O1	4.9
938371	AE1-056 C	6.07
938491	AE1-068 C O2	200.33
938501	AE1-069 C O2	160.44
AA2-074	AA2-074	9.75
AB2-013	AB2-013	7.33
AE1-033	AE1-033	7.64
AE1-042	AE1-042	17.09
CARR	CARR	1.23
CBM-S1	CBM-S1	26.38
CBM-S2	CBM-S2	29.22
CBM-W1	CBM-W1	26.27
CBM-W2	CBM-W2	172.87
CIN	CIN	11.93
CPLE	CPLE	14.33
IPL	IPL	7.47
LGEE	LGEE	3.46
MEC	MEC	26.52
MECS	MECS	11.0
RENSSELAER	RENSSELAER	0.98
WEC	WEC	3.18
Z1-043	Z1-043	12.54

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114752	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	99.14	109.55	DC	108.19

Bus #	Bus	MW Impact
315102	1BRUNSWICKG1	9.88
315103	1BRUNSWICKG2	9.88
315104	1BRUNSWICKG3	9.88
315105	1BRUNSWICKS1	20.52
315153	1CLOVER1	11.51
315154	1CLOVER2	11.36
916301	Z1-086 C	60.72
916302	Z1-086 E	11.04
934611	AD1-087 C O1	6.28
934612	AD1-087 E O1	2.95
934621	AD1-088 C	8.71
934622	AD1-088 E	4.09
935171	AD1-152 C O1	6.24
935172	AD1-152 E O1	4.16
937481	AD2-202 C O1	1.73
937482	AD2-202 E O1	0.87
938491	AE1-068 C O2	69.7
938492	AE1-068 E O2	38.5
938501	AE1-069 C O2	55.45
938502	AE1-069 E O2	31.7
AA2-074	AA2-074	3.01
CARR	CARR	0.39
CBM-S1	CBM-S1	8.29
CBM-S2	CBM-S2	9.14
CBM-W1	CBM-W1	8.24
CBM-W2	CBM-W2	54.3
CIN	CIN	3.74
CPLE	CPLE	4.43
G-007	G-007	1.32
IPL	IPL	2.34
LGEE	LGEE	1.08
MEC	MEC	8.33
MECS	MECS	3.45
O-066	O-066	4.39
RENSSELAER	RENSSELAER	0.31
WEC	WEC	1.0

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114647	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	125.44	132.94	DC	51.24

Bus #	Bus	MW Impact
314541	3WATKINS	0.23
314554	3BTLEBRO	0.4
314557	3BETHELC	0.39
314572	3EMPORIA	0.33
314574	6EVERETS	1.77
314578	3HORNRTN	1.92
314582	3KELFORD	1.62
314603	3SCOT NK	1.61
314617	3TUNIS	0.36
314620	6CASHIE	0.31
314623	3WITAKRS	0.69
314704	3LAWRENC	0.24
315102	1BRUNSWICKG1	4.72
315103	1BRUNSWICKG2	4.72
315104	1BRUNSWICKG3	4.72
315105	1BRUNSWICKS1	9.8
315131	1EDGECMA	4.73
315132	1EDGECMB	4.73
315136	1ROSEMG1	1.49
315137	1ROSEMS1	0.92
315138	1ROSEMG2	0.7
315139	1GASTONA	2.15
315141	1GASTONB	2.15
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	28.75
916302	Z1-086 E	5.23
917332	Z2-043 E	0.46
917342	Z2-044 E	0.3
917512	Z2-088 E OP1	1.76
918492	AA1-063AE OP	2.11
918512	AA1-065 E OP	1.81
918532	AA1-067 E	0.31
918562	AA1-072 E	0.08
919692	AA2-053 E	2.08
919701	AA2-057 C	3.67
919702	AA2-057 E	1.83
920042	AA2-088 E OP	4.28
920592	AA2-165 E	0.24

Bus #	Bus	MW Impact
920672	AA2-174 E	0.24
923851	AB2-025 C	0.5
923852	AB2-025 E	1.3
923911	AB2-031 C O1	1.6
923912	AB2-031 E O1	0.79
923941	AB2-035 C	0.16
923942	AB2-035 E	0.07
923991	AB2-040 C O1	0.9
923992	AB2-040 E O1	4.29
924022	AB2-043 E O1	2.32
924152	AB2-059 E O1	2.75
924162	AB2-060 E O1	1.9
924302	AB2-077 E O1	0.6
924312	AB2-078 E O1	0.6
924322	AB2-079 E O1	0.6
924391	AB2-088 C	0.21
924392	AB2-088 E	0.1
924401	AB2-089 C	1.07
924402	AB2-089 E	0.55
924491	AB2-098 C	0.24
924492	AB2-098 E	0.1
924501	AB2-099 C	0.26
924502	AB2-099 E	0.11
924511	AB2-100 C	10.63
924512	AB2-100 E	5.23
925122	AB2-169 E	2.2
925171	AB2-174 C O1	5.2
925172	AB2-174 E O1	4.7
925591	AC1-034 C	3.46
925592	AC1-034 E	2.61
925612	AC1-036 E	0.6
925781	AC1-054 C O1	3.69
925782	AC1-054 E O1	1.7
926071	AC1-086 C	14.05
926072	AC1-086 E	6.4
926201	AC1-098 C	3.12
926202	AC1-098 E	1.86
926211	AC1-099 C	1.04
926212	AC1-099 E	0.61
926271	AC1-105 C O1	2.36
926272	AC1-105 E O1	1.18
927021	AC1-189 C	3.85
927022	AC1-189 E	1.92
927141	AC1-208 C	4.79
927142	AC1-208 E	2.13
927251	AC1-221 C	0.93
927252	AC1-221 E	0.93
927261	AC1-222 C	1.47
927262	AC1-222 E	1.4
930402	AB1-081 E O1	1.94
930861	AB1-132 C O1	1.64
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.28
931232	AB1-173 E	0.75
931241	AB1-173AC	0.28
931242	AB1-173AE	0.75
932631	AC2-084 C	4.44
932632	AC2-084 E	2.19
932761	AC2-100 C	2.14
932762	AC2-100 E	1.04
933991	AD1-023 C	4.64
933992	AD1-023 E	2.53
934201	AD1-047 C	5.72
934202	AD1-047 E	3.81
934231	AD1-050 C	2.36
934232	AD1-050 E	1.29
934311	AD1-055 C	1.02
934312	AD1-055 E	0.26
934331	AD1-057 C O1	5.86
934332	AD1-057 E O1	3.13
934341	AD1-058 C	2.33
934342	AD1-058 E	0.59
934521	AD1-076 C	18.16
934522	AD1-076 E	9.25
934611	AD1-087 C O1	3.67
934612	AD1-087 E O1	1.73
934621	AD1-088 C	4.84
934622	AD1-088 E	2.27
934991	AD1-131 C	0.76
934992	AD1-131 E	0.51
935171	AD1-152 C O1	3.65
935172	AD1-152 E O1	2.43
935212	AD1-156 E	0.63
936261	AD2-033 C	5.16
936262	AD2-033 E	3.44
936331	AD2-043 C	1.92
936332	AD2-043 E	2.27
936361	AD2-046 C O1	4.25
936362	AD2-046 E O1	1.95
936401	AD2-051 C O1	3.84
936402	AD2-051 E O1	1.65
936481	AD2-063 C O1	6.37
936482	AD2-063 E O1	4.25
936531	AD2-068 C	2.27
936532	AD2-068 E	1.17
936701	AD2-089 C	3.47
936702	AD2-089 E	2.31
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	1.01
937482	AD2-202 E O1	0.51
937571	AD2-169 C	6.85
937572	AD2-169 E	4.57
938171	AE1-026 C1 O	10.19

Bus #	Bus	MW Impact
938172	AE1-026 C2 O	1.47
938173	AE1-026 E O2	3.08
938221	AE1-035 C	0.92
938222	AE1-035 E	0.45
938491	AE1-068 C O2	33.01
938492	AE1-068 E O2	18.23
938501	AE1-069 C O2	26.19
938502	AE1-069 E O2	14.97
AA2-074	AA2-074	2.63
CARR	CARR	0.31
CBM-S1	CBM-S1	6.67
CBM-S2	CBM-S2	7.56
CBM-W1	CBM-W1	6.64
CBM-W2	CBM-W2	43.74
CIN	CIN	3.01
CPLE	CPLE	3.87
G-007	G-007	1.05
IPL	IPL	1.89
LGEE	LGEE	0.87
MEC	MEC	6.7
MECS	MECS	2.78
O-066	O-066	3.49
RENSSELAER	RENSSELAER	0.24
WEC	WEC	0.81

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114667	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	122.41	129.92	DC	51.24

Bus #	Bus	MW Impact
314541	3WATKINS	0.23
314554	3BTLEBRO	0.4
314557	3BETHELC	0.39
314572	3EMPORIA	0.33
314574	6EVERETS	1.77
314578	3HORNRTN	1.92
314582	3KELFORD	1.62
314603	3SCOT NK	1.61
314617	3TUNIS	0.36
314620	6CASHIE	0.31
314623	3WITAKRS	0.69
314704	3LAWRENC	0.24
315102	1BRUNSWICKG1	4.72
315103	1BRUNSWICKG2	4.72
315104	1BRUNSWICKG3	4.72
315105	1BRUNSWICKS1	9.8
315131	1EDGECMA	4.73
315132	1EDGECMB	4.73
315136	1ROSEMG1	1.49
315137	1ROSEMS1	0.92
315138	1ROSEMG2	0.7
315139	1GASTONA	2.15
315141	1GASTONB	2.15
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	28.75
916302	Z1-086 E	5.23
917332	Z2-043 E	0.46
917342	Z2-044 E	0.3
917512	Z2-088 E OP1	1.76
918492	AA1-063AE OP	2.11
918512	AA1-065 E OP	1.81
918532	AA1-067 E	0.31
918562	AA1-072 E	0.08
919692	AA2-053 E	2.08
919701	AA2-057 C	3.67
919702	AA2-057 E	1.83
920042	AA2-088 E OP	4.28
920592	AA2-165 E	0.24

Bus #	Bus	MW Impact
920672	AA2-174 E	0.24
923851	AB2-025 C	0.5
923852	AB2-025 E	1.3
923911	AB2-031 C O1	1.6
923912	AB2-031 E O1	0.79
923941	AB2-035 C	0.16
923942	AB2-035 E	0.07
923991	AB2-040 C O1	0.9
923992	AB2-040 E O1	4.29
924022	AB2-043 E O1	2.32
924152	AB2-059 E O1	2.75
924162	AB2-060 E O1	1.9
924302	AB2-077 E O1	0.6
924312	AB2-078 E O1	0.6
924322	AB2-079 E O1	0.6
924391	AB2-088 C	0.21
924392	AB2-088 E	0.1
924401	AB2-089 C	1.07
924402	AB2-089 E	0.55
924491	AB2-098 C	0.24
924492	AB2-098 E	0.1
924501	AB2-099 C	0.26
924502	AB2-099 E	0.11
924511	AB2-100 C	10.63
924512	AB2-100 E	5.23
925122	AB2-169 E	2.2
925171	AB2-174 C O1	5.2
925172	AB2-174 E O1	4.7
925591	AC1-034 C	3.46
925592	AC1-034 E	2.61
925612	AC1-036 E	0.6
925781	AC1-054 C O1	3.69
925782	AC1-054 E O1	1.7
926071	AC1-086 C	14.05
926072	AC1-086 E	6.4
926201	AC1-098 C	3.12
926202	AC1-098 E	1.86
926211	AC1-099 C	1.04
926212	AC1-099 E	0.61
926271	AC1-105 C O1	2.36
926272	AC1-105 E O1	1.18
927021	AC1-189 C	3.85
927022	AC1-189 E	1.92
927141	AC1-208 C	4.79
927142	AC1-208 E	2.13
927251	AC1-221 C	0.93
927252	AC1-221 E	0.93
927261	AC1-222 C	1.47
927262	AC1-222 E	1.4
930402	AB1-081 E O1	1.94
930861	AB1-132 C O1	1.64
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.28
931232	AB1-173 E	0.75
931241	AB1-173AC	0.28
931242	AB1-173AE	0.75
932631	AC2-084 C	4.44
932632	AC2-084 E	2.19
932761	AC2-100 C	2.14
932762	AC2-100 E	1.04
933991	AD1-023 C	4.64
933992	AD1-023 E	2.53
934201	AD1-047 C	5.72
934202	AD1-047 E	3.81
934231	AD1-050 C	2.36
934232	AD1-050 E	1.29
934311	AD1-055 C	1.02
934312	AD1-055 E	0.26
934331	AD1-057 C O1	5.86
934332	AD1-057 E O1	3.13
934341	AD1-058 C	2.33
934342	AD1-058 E	0.59
934521	AD1-076 C	18.16
934522	AD1-076 E	9.25
934611	AD1-087 C O1	3.67
934612	AD1-087 E O1	1.73
934621	AD1-088 C	4.84
934622	AD1-088 E	2.27
934991	AD1-131 C	0.76
934992	AD1-131 E	0.51
935171	AD1-152 C O1	3.65
935172	AD1-152 E O1	2.43
935212	AD1-156 E	0.63
936261	AD2-033 C	5.16
936262	AD2-033 E	3.44
936331	AD2-043 C	1.92
936332	AD2-043 E	2.27
936361	AD2-046 C O1	4.25
936362	AD2-046 E O1	1.95
936401	AD2-051 C O1	3.84
936402	AD2-051 E O1	1.65
936481	AD2-063 C O1	6.37
936482	AD2-063 E O1	4.25
936531	AD2-068 C	2.27
936532	AD2-068 E	1.17
936701	AD2-089 C	3.47
936702	AD2-089 E	2.31
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	1.01
937482	AD2-202 E O1	0.51
937571	AD2-169 C	6.85
937572	AD2-169 E	4.57
938171	AE1-026 C1 O	10.19

Bus #	Bus	MW Impact
938172	AE1-026 C2 O	1.47
938173	AE1-026 E O2	3.08
938221	AE1-035 C	0.92
938222	AE1-035 E	0.45
938491	AE1-068 C O2	33.01
938492	AE1-068 E O2	18.23
938501	AE1-069 C O2	26.19
938502	AE1-069 E O2	14.97
AA2-074	AA2-074	2.63
CARR	CARR	0.31
CBM-S1	CBM-S1	6.67
CBM-S2	CBM-S2	7.56
CBM-W1	CBM-W1	6.64
CBM-W2	CBM-W2	43.74
CIN	CIN	3.01
CPLE	CPLE	3.87
G-007	G-007	1.05
IPL	IPL	1.89
LGEE	LGEE	0.87
MEC	MEC	6.7
MECS	MECS	2.78
O-066	O-066	3.49
RENSSELAER	RENSSELAER	0.24
WEC	WEC	0.81

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114963	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	142.76	144.83	DC	19.98

Bus #	Bus	MW Impact
314314	3LOCKS	0.19
315065	1CHESTF6	29.63
315074	1HOPCGN1	6.05
315075	1HOPCGN2	5.97
315076	1HOPPOLC	1.19
315077	1HOPHCF1	1.87
315078	1HOPHCF2	1.87
315079	1HOPHCF3	1.87
315080	1HOPHCF4	2.83
315116	1SURRY 1	11.5
315117	1GRAVELC	0.4
315119	1GRAVEL3	1.17
315120	1GRAVEL4	1.18
315121	1GRAVEL5	1.17
315122	1GRAVEL6	1.18
315136	1ROSEMG1	1.01
315137	1ROSEMS1	0.63
315138	1ROSEMG2	0.47
315139	1GASTONA	1.45
315141	1GASTONB	1.45
919701	AA2-057 C	2.66
923801	AB2-015 C O1	3.38
923851	AB2-025 C	0.28
923911	AB2-031 C O1	1.04
923991	AB2-040 C O1	0.59
924501	AB2-099 C	0.23
924511	AB2-100 C	6.45
924811	AB2-134 C O1	1.25
925051	AB2-160 C O1	3.51
925061	AB2-161 C O1	1.97
925171	AB2-174 C O1	3.34
925281	AB2-186 C	0.21
925291	AB2-188 C O1	0.84
925331	AB2-190 C	11.74
925821	AC1-061	0.0
926071	AC1-086 C	9.48
926201	AC1-098 C	2.36
926211	AC1-099 C	0.79
927141	AC1-208 C	3.5
927221	AC1-216 C O1	5.53

Bus #	Bus	MW Impact
930861	AB1-132 C O1	1.11
931231	AB1-173 C	0.18
931241	AB1-173AC	0.18
932041	AC2-012 C	3.41
932581	AC2-078 C O1	3.0
932591	AC2-079 C O1	2.78
932631	AC2-084 C	3.37
933991	AD1-023 C	4.77
934011	AD1-025 C	9.51
934201	AD1-047 C	3.73
934331	AD1-057 C O1	4.04
934521	AD1-076 C	19.56
934571	AD1-082 C	4.48
935161	AD1-151 C O1	9.43
935211	AD1-156 C	0.35
936041	AD2-007	1.01
936051	AD2-008 C	1.66
936401	AD2-051 C O1	3.34
936661	AD2-085 C	1.69
936711	AD2-090 C O1	2.84
937541	AD2-215 C	0.6
937571	AD2-169 C	4.54
938171	AE1-026 C1 O	10.23
938172	AE1-026 C2 O	1.48
938221	AE1-035 C	0.84
938461	AE1-065 C O2	9.38
938471	AE1-066 C O2	9.64
938481	AE1-067 C O2	8.77
938491	AE1-068 C O2	19.98
938501	AE1-069 C O2	15.85
AA2-074	AA2-074	1.69
CARR	CARR	0.32
CBM-S1	CBM-S1	3.59
CBM-S2	CBM-S2	4.7
CBM-W1	CBM-W1	2.8
CBM-W2	CBM-W2	22.8
CIN	CIN	1.32
CPLE	CPLE	2.48
IPL	IPL	0.82
LGEE	LGEE	0.38
MEC	MEC	3.19
MECS	MECS	0.85
RENSSELAER	RENSSELAER	0.25
WEC	WEC	0.35

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115126	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	121.28	122.42	DC	59.59

Bus #	Bus	MW Impact
314229	6MT RD221	0.15
314236	6NRTHEST	0.22
314250	6ROCKVILLE	0.4
315037	1LDYSMT1	5.4
315038	1LDYSMT2	5.39
315039	1LDYSMT3	5.71
315040	1LDYSMT4	5.72
315041	1LDYSMT5	5.74
315043	1FOUR RIVERA	4.28
315044	1FOUR RIVERB	3.32
315045	1FOUR RIVERC	4.28
315046	1FOUR RIVERD	3.32
315047	1FOUR RIVERE	3.32
315048	1FOUR RIVERF	4.28
315053	1BELMED1	19.56
315054	1BELMED2	19.56
315055	1BELMED3	16.23
315058	1CHESTF3	20.52
315059	1CHESTF4	33.26
315067	1DARBY 1	3.06
315068	1DARBY 2	3.07
315069	1DARBY 3	3.08
315070	1DARBY 4	3.08
315074	1HOPCGN1	9.41
315075	1HOPCGN2	9.29
315083	1SPRUNCA	11.98
315084	1SPRUNCB	11.98
315085	1SPRUNCC	8.88
315086	1SPRUNCD	8.88
315090	1YORKTN1	31.93
315091	1YORKTN2	33.14
315225	1N ANNA1	43.91
315226	1N ANNA2	44.0
919211	AA1-145	12.37
923801	AB2-015 C O1	9.1
923911	AB2-031 C O1	2.25
924061	AB2-050	0.73
924241	AB2-068 O1	227.03
924501	AB2-099 C	0.6
924511	AB2-100 C	11.86

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.11
925061	AB2-161 C O1	3.72
925171	AB2-174 C O1	7.09
925281	AB2-186 C	0.66
925291	AB2-188 C O1	2.48
925331	AB2-190 C	22.56
925861	AC1-065 C	3.77
926001	AC1-076 C	4.94
926071	AC1-086 C	20.72
926291	AC1-107 O1	342.69
926411	AC1-112 C	0.39
926551	AC1-134	1.82
926731	AC1-158 C	93.45
926751	AC1-161 C O1	33.57
926781	AC1-164 C	45.65
927041	AC1-191 C O1	10.8
927221	AC1-216 C O1	11.02
930121	AB1-027 C	0.51
932041	AC2-012 C	11.24
932501	AC2-070 C	0.33
932581	AC2-078 C O1	4.51
932591	AC2-079 C O1	6.28
932831	AC2-110 C	1.51
933011	AC2-125	3.09
933021	AC2-126	3.11
933031	AC2-127	1.7
933041	AC2-128	1.64
933051	AC2-129	1.54
933061	AC2-130	2.72
933071	AC2-131 1	1.84
933081	AC2-131 2	0.84
933111	AC2-132 1	0.97
933121	AC2-132 2	0.49
933261	AC2-137 C	0.41
933291	AC2-141 C	33.57
933501	AC2-165 C	9.63
933991	AD1-023 C	13.56
934011	AD1-025 C	18.95
934061	AD1-033 C	8.25
934141	AD1-041 C	5.93
934201	AD1-047 C	8.07
934211	AD1-048 C	0.48
934521	AD1-076 C	56.45
934541	AD1-078 C	3.05
934571	AD1-082 C	8.48
934781	AD1-105 C	7.81
935161	AD1-151 C O1	18.13
936041	AD2-007	2.01
936051	AD2-008 C	3.3
936151	AD2-021	0.27
936241	AD2-030 C	2.57
936301	AD2-039 C	1.51

Bus #	Bus	MW Impact
936341	AD2-044 C	0.26
936391	AD2-049 C	1.99
936401	AD2-051 C O1	8.86
936581	AD2-073 C	2.23
936591	AD2-074 C	5.95
936661	AD2-085 C	3.77
936711	AD2-090 C O1	7.52
937221	AD2-160 C O1	6.4
937251	AD2-164	5.34
937541	AD2-215 C	1.92
937571	AD2-169 C	10.04
938031	AE1-004 C	1.51
938081	AE1-010	6.85
938171	AE1-026 C1 O	28.81
938172	AE1-026 C2 O	4.17
938181	AE1-027 C	2.57
938191	AE1-028 C	1.49
938221	AE1-035 C	2.28
938461	AE1-065 C O2	31.26
938471	AE1-066 C O2	32.12
938481	AE1-067 C O2	29.21
938491	AE1-068 C O2	59.59
938501	AE1-069 C O2	47.24
938531	AE1-072 C O2	19.15
938551	AE1-074 C	2.75
938561	AE1-075 C	2.14
AA2-074	AA2-074	5.21
AE1-042	AE1-042	8.47
CARR	CARR	1.66
CBM-S1	CBM-S1	12.83
CBM-S2	CBM-S2	15.16
CBM-W1	CBM-W1	9.54
CBM-W2	CBM-W2	80.31
CIN	CIN	4.81
CPLE	CPLE	7.65
IPL	IPL	2.98
LGEE	LGEE	1.44
MEC	MEC	11.27
MECS	MECS	2.35
RENSSELAER	RENSSELAER	1.31
WEC	WEC	1.23

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114932	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	154.24	155.99	DC	92.72

Bus #	Bus	MW Impact
314229	6MT RD221	0.24
314236	6NRTHEST	0.37
314309	6IRON208	0.87
315053	1BELMED1	31.59
315054	1BELMED2	31.59
315055	1BELMED3	26.22
315058	1CHESTF3	33.55
315059	1CHESTF4	54.39
315060	1CHESTF5	19.83
315061	1CHESTG7	7.77
315062	1CHESTS7	3.53
315063	1CHESTG8	7.62
315064	1CHESTS8	3.93
315067	1DARBY 1	5.07
315068	1DARBY 2	5.08
315069	1DARBY 3	5.09
315070	1DARBY 4	5.1
315074	1HOPCGN1	15.47
315075	1HOPCGN2	15.27
315083	1SPRUNCA	19.12
315084	1SPRUNCB	19.12
315085	1SPRUNCC	14.17
315086	1SPRUNCD	14.17
315090	1YORKTN1	53.34
315091	1YORKTN2	55.35
315092	1YORKTN3	45.58
315233	1SURRY 2	49.5
923801	AB2-015 C O1	14.87
923911	AB2-031 C O1	3.63
924241	AB2-068 O1	428.72
924501	AB2-099 C	0.97
924511	AB2-100 C	19.06
925051	AB2-160 C O1	9.9
925061	AB2-161 C O1	6.07
925171	AB2-174 C O1	11.43
925281	AB2-186 C	1.08
925291	AB2-188 C O1	4.07
925331	AB2-190 C	37.16
925861	AC1-065 C	6.04
926071	AC1-086 C	33.58

Bus #	Bus	MW Impact
926291	AC1-107 O1	647.12
926411	AC1-112 C	0.66
926751	AC1-161 C O1	55.63
926781	AC1-164 C	77.8
927041	AC1-191 C O1	17.07
927221	AC1-216 C O1	18.16
930121	AB1-027 C	0.85
932041	AC2-012 C	18.51
932501	AC2-070 C	0.56
932581	AC2-078 C O1	7.33
932591	AC2-079 C O1	10.28
932831	AC2-110 C	2.41
933061	AC2-130	4.51
933071	AC2-131 1	3.06
933081	AC2-131 2	1.39
933111	AC2-132 1	1.61
933121	AC2-132 2	0.82
933261	AC2-137 C	0.69
933291	AC2-141 C	55.63
933991	AD1-023 C	22.21
934011	AD1-025 C	31.22
934061	AD1-033 C	13.58
934141	AD1-041 C	9.42
934201	AD1-047 C	13.02
934211	AD1-048 C	0.79
934521	AD1-076 C	92.51
934571	AD1-082 C	13.84
935161	AD1-151 C O1	29.86
936041	AD2-007	3.31
936051	AD2-008 C	5.44
936151	AD2-021	0.45
936241	AD2-030 C	4.05
936301	AD2-039 C	2.41
936391	AD2-049 C	3.31
936401	AD2-051 C O1	14.46
936661	AD2-085 C	6.17
936711	AD2-090 C O1	12.28
937221	AD2-160 C O1	10.54
937251	AD2-164	8.91
937541	AD2-215 C	3.16
937571	AD2-169 C	16.22
938031	AE1-004 C	2.41
938171	AE1-026 C1 O	47.18
938172	AE1-026 C2 O	6.83
938181	AE1-027 C	4.23
938191	AE1-028 C	2.45
938221	AE1-035 C	3.73
938461	AE1-065 C O2	51.46
938471	AE1-066 C O2	52.89
938481	AE1-067 C O2	48.09
938491	AE1-068 C O2	92.72
938501	AE1-069 C O2	73.48

Bus #	Bus	MW Impact
938531	AE1-072 C O2	31.51
938551	AE1-074 C	4.28
AA2-074	AA2-074	8.69
AB2-013	AB2-013	8.01
AE1-033	AE1-033	8.34
AE1-042	AE1-042	17.0
CARR	CARR	2.56
CBM-S1	CBM-S1	27.03
CBM-S2	CBM-S2	26.21
CBM-W1	CBM-W1	28.48
CBM-W2	CBM-W2	177.6
CIN	CIN	13.28
CPLE	CPLE	12.77
IPL	IPL	8.37
LGEE	LGEE	3.91
MEC	MEC	28.22
MECS	MECS	11.98
RENSSELAER	RENSSELAER	2.03
WEC	WEC	3.49
Z1-043	Z1-043	13.73

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114763	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	112.67	113.93	DC	93.34

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.53
314229	6MT RD221	0.15
314250	6ROCKVILLE	0.4
314539	3UNCAMP	2.59
314541	3WATKINS	0.73
314566	3CRESWEL	2.54
314572	3EMPORIA	0.43
314594	6PLYMOTH	0.89
314617	3TUNIS	0.86
314620	6CASHIE	0.88
314648	6SUNBURY	0.97
314651	6WINFALL	1.91
315040	1LDYSMT4	5.84
315041	1LDYSMT5	5.86
315043	1FOUR RIVERA	4.35
315044	1FOUR RIVERB	3.37
315045	1FOUR RIVERC	4.35
315046	1FOUR RIVERD	3.37
315047	1FOUR RIVERE	3.37
315048	1FOUR RIVERF	4.34
315053	1BELMED1	19.79
315054	1BELMED2	19.79
315055	1BELMED3	16.42
315058	1CHESTF3	20.78
315059	1CHESTF4	33.68
315073	1STONECA	7.9
315074	1HOPCGN1	9.52
315075	1HOPCGN2	9.4
315083	1SPRUNCA	12.11
315084	1SPRUNCB	12.11
315085	1SPRUNCC	8.98
315086	1SPRUNCD	8.98
315090	1YORKTN1	32.32
315091	1YORKTN2	33.54
315225	1N ANNA1	44.37
315226	1N ANNA2	44.47
900672	V4-068 E	0.31
901082	W1-029 E	50.09
907092	X1-038 E	6.49
913392	Y1-086 E	2.41

Bus #	Bus	MW Impact
916042	Z1-036 E	49.18
916192	Z1-068 E	2.09
916302	Z1-086 E	9.52
917122	Z2-027 E	1.16
918492	AA1-063AE OP	4.03
918512	AA1-065 E OP	4.54
919152	AA1-139 E	7.09
919211	AA1-145	12.57
920042	AA2-088 E OP	10.99
920692	AA2-178 E	4.36
923801	AB2-015 C O1	9.19
923802	AB2-015 E O1	7.53
923832	AB2-022 E	1.36
923842	AB2-024 E	1.26
923852	AB2-025 E	1.18
923862	AB2-026 E	1.09
923911	AB2-031 C O1	2.27
923912	AB2-031 E O1	1.12
923992	AB2-040 E O1	6.1
924061	AB2-050	0.74
924241	AB2-068 O1	230.24
924501	AB2-099 C	0.6
924502	AB2-099 E	0.26
924511	AB2-100 C	11.96
924512	AB2-100 E	5.89
924812	AB2-134 E O1	13.88
925051	AB2-160 C O1	6.18
925052	AB2-160 E O1	10.09
925061	AB2-161 C O1	3.76
925062	AB2-161 E O1	6.14
925122	AB2-169 E	5.95
925171	AB2-174 C O1	7.15
925172	AB2-174 E O1	6.47
925281	AB2-186 C	0.66
925282	AB2-186 E	0.28
925291	AB2-188 C O1	2.51
925292	AB2-188 E O1	1.13
925331	AB2-190 C	22.83
925332	AB2-190 E	9.78
925522	AC1-027 E	1.27
925861	AC1-065 C	3.82
925862	AC1-065 E	6.24
926071	AC1-086 C	20.9
926072	AC1-086 E	9.51
926291	AC1-107 O1	347.54
926411	AC1-112 C	0.4
926412	AC1-112 E	1.3
926551	AC1-134	1.85
926662	AC1-147 E	1.48
926731	AC1-158 C	94.38
926732	AC1-158 E	41.42
926751	AC1-161 C O1	33.96

Bus #	Bus	MW Impact
926752	AC1-161 E O1	14.49
926781	AC1-164 C	46.27
926782	AC1-164 E	20.79
927041	AC1-191 C O1	10.96
927042	AC1-191 E O1	5.46
927221	AC1-216 C O1	11.15
927222	AC1-216 E O1	8.77
930121	AB1-027 C	0.51
930122	AB1-027 E	1.28
930862	AB1-132 E O1	6.08
931232	AB1-173 E	1.07
931242	AB1-173AE	1.07
932041	AC2-012 C	11.37
932042	AC2-012 E	18.55
932501	AC2-070 C	0.34
932502	AC2-070 E	0.81
932532	AC2-073 E	1.35
932581	AC2-078 C O1	4.56
932582	AC2-078 E O1	7.45
932591	AC2-079 C O1	6.35
932592	AC2-079 E O1	10.37
932831	AC2-110 C	1.53
932832	AC2-110 E	2.5
933011	AC2-125	3.16
933021	AC2-126	3.18
933031	AC2-127	1.74
933041	AC2-128	1.67
933051	AC2-129	1.57
933061	AC2-130	2.75
933071	AC2-131 1	1.86
933081	AC2-131 2	0.85
933111	AC2-132 1	0.98
933121	AC2-132 2	0.5
933262	AC2-137 E	1.55
933272	AC2-138 E	1.06
933291	AC2-141 C	33.96
933292	AC2-141 E	14.49
933732	AC2-196 E	1.32
933991	AD1-023 C	13.69
933992	AD1-023 E	7.45
934011	AD1-025 C	19.17
934012	AD1-025 E	11.36
934061	AD1-033 C	8.34
934062	AD1-033 E	5.56
934141	AD1-041 C	6.01
934142	AD1-041 E	4.01
934201	AD1-047 C	8.14
934202	AD1-047 E	5.42
934212	AD1-048 E	1.41
934392	AD1-063 E	1.21
934521	AD1-076 C	57.0
934522	AD1-076 E	29.02

Bus #	Bus	MW Impact
934571	AD1-082 C	8.58
934572	AD1-082 E	4.89
934781	AD1-105 C	7.94
934782	AD1-105 E	5.52
935112	AD1-144 E	1.05
935161	AD1-151 C O1	18.34
935162	AD1-151 E O1	12.23
935212	AD1-156 E	1.59
936041	AD2-007	2.04
936051	AD2-008 C	3.34
936052	AD2-008 E	7.27
936151	AD2-021	0.27
936241	AD2-030 C	2.61
936242	AD2-030 E	1.33
936301	AD2-039 C	1.53
936302	AD2-039 E	2.5
936341	AD2-044 C	0.27
936342	AD2-044 E	0.3
936391	AD2-049 C	2.01
936392	AD2-049 E	2.01
936401	AD2-051 C O1	8.94
936402	AD2-051 E O1	3.84
936581	AD2-073 C	2.27
936582	AD2-073 E	1.12
936591	AD2-074 C	6.04
936592	AD2-074 E	9.86
936661	AD2-085 C	3.81
936662	AD2-085 E	6.22
936711	AD2-090 C O1	7.59
936712	AD2-090 E O1	5.06
937221	AD2-160 C O1	6.47
937222	AD2-160 E O1	3.39
937251	AD2-164	5.41
937541	AD2-215 C	1.94
937542	AD2-215 E	1.03
937571	AD2-169 C	10.12
937572	AD2-169 E	6.75
938031	AE1-004 C	1.53
938032	AE1-004 E	2.5
938081	AE1-010	7.47
938171	AE1-026 C1 O	29.09
938172	AE1-026 C2 O	4.21
938173	AE1-026 E O2	8.78
938181	AE1-027 C	2.6
938182	AE1-027 E	1.37
938191	AE1-028 C	1.51
938192	AE1-028 E	0.87
938221	AE1-035 C	2.3
938222	AE1-035 E	1.13
938461	AE1-065 C O2	31.61
938462	AE1-065 E O2	127.53
938471	AE1-066 C O2	32.48

Bus #	Bus	MW Impact
938472	AE1-066 E O2	126.66
938481	AE1-067 C O2	29.54
938482	AE1-067 E O2	129.6
938491	AE1-068 C O2	60.13
938492	AE1-068 E O2	33.21
938501	AE1-069 C O2	47.67
938502	AE1-069 E O2	27.26
938531	AE1-072 C O2	19.36
938532	AE1-072 E O2	10.09
938551	AE1-074 C	2.78
938552	AE1-074 E	1.4
938561	AE1-075 C	2.13
938562	AE1-075 E	1.04
AA2-074	AA2-074	5.23
AE1-042	AE1-042	8.45
CARR	CARR	1.65
CBM-S1	CBM-S1	12.76
CBM-S2	CBM-S2	15.2
CBM-W1	CBM-W1	9.39
CBM-W2	CBM-W2	79.82
CIN	CIN	4.74
CPLE	CPLE	7.69
G-007	G-007	5.2
IPL	IPL	2.93
LGEE	LGEE	1.42
MEC	MEC	11.15
MECS	MECS	2.25
O-066	O-066	17.39
RENSSELAER	RENSSELAER	1.3
WEC	WEC	1.21

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
115284	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	108.89	109.84	DC	50.2

Bus #	Bus	MW Impact
314229	6MT RD221	0.12
314236	6NRTHEST	0.18
314250	6ROCKVILLE	0.33
314309	6IRON208	0.44
315053	1BELMED1	16.07
315054	1BELMED2	16.07
315055	1BELMED3	13.34
315058	1CHESTF3	16.81
315059	1CHESTF4	27.26
315060	1CHESTF5	9.78
315061	1CHESTG7	3.83
315062	1CHESTS7	1.74
315063	1CHESTG8	3.76
315064	1CHESTS8	1.94
315067	1DARBY 1	2.51
315068	1DARBY 2	2.51
315069	1DARBY 3	2.52
315070	1DARBY 4	2.52
315074	1HOPCGN1	7.75
315075	1HOPCGN2	7.65
315083	1SPRUNCA	9.86
315084	1SPRUNCB	9.86
315085	1SPRUNCC	7.31
315086	1SPRUNCD	7.31
315090	1YORKTN1	26.34
315091	1YORKTN2	27.34
315225	1N ANNA1	35.84
315226	1N ANNA2	35.92
924241	AB2-068 O1	187.28
925051	AB2-160 C O1	5.04
925061	AB2-161 C O1	3.09
925281	AB2-186 C	0.55
925331	AB2-190 C	18.62
925861	AC1-065 C	3.04
926291	AC1-107 O1	282.69
926411	AC1-112 C	0.32
926751	AC1-161 C O1	27.89
926781	AC1-164 C	37.36
927041	AC1-191 C O1	8.63
927221	AC1-216 C O1	9.1

Bus #	Bus	MW Impact
930121	AB1-027 C	0.41
932041	AC2-012 C	9.34
932501	AC2-070 C	0.27
932581	AC2-078 C O1	3.74
932591	AC2-079 C O1	5.23
932831	AC2-110 C	1.22
933061	AC2-130	2.23
933071	AC2-131 1	1.51
933081	AC2-131 2	0.69
933111	AC2-132 1	0.79
933121	AC2-132 2	0.41
933261	AC2-137 C	0.33
933291	AC2-141 C	27.89
934011	AD1-025 C	15.65
934061	AD1-033 C	6.86
934141	AD1-041 C	4.77
934211	AD1-048 C	0.39
934571	AD1-082 C	7.05
935161	AD1-151 C O1	14.96
936041	AD2-007	1.66
936051	AD2-008 C	2.72
936151	AD2-021	0.22
936241	AD2-030 C	2.07
936301	AD2-039 C	1.22
936391	AD2-049 C	1.65
936661	AD2-085 C	3.14
937221	AD2-160 C O1	5.33
937251	AD2-164	4.41
937541	AD2-215 C	1.59
938031	AE1-004 C	1.22
938181	AE1-027 C	2.14
938191	AE1-028 C	1.24
938461	AE1-065 C O2	26.0
938471	AE1-066 C O2	26.72
938481	AE1-067 C O2	24.3
938491	AE1-068 C O2	50.2
938501	AE1-069 C O2	39.78
938531	AE1-072 C O2	15.96
938551	AE1-074 C	2.27
AA2-074	AA2-074	4.76
AB2-013	AB2-013	5.06
AE1-033	AE1-033	5.27
AE1-042	AE1-042	9.91
CARR	CARR	1.82
CBM-S1	CBM-S1	15.98
CBM-S2	CBM-S2	14.56
CBM-W1	CBM-W1	18.2
CBM-W2	CBM-W2	106.46
CIN	CIN	8.38
CPLE	CPLE	7.0
IPL	IPL	5.3
LGEE	LGEE	2.46

Bus #	Bus	MW Impact
MEC	MEC	17.44
MECS	MECS	8.19
RENSSELAER	RENSSELAER	1.44
WEC	WEC	2.21
Z1-043	Z1-043	8.69

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
114631	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	134.37	137.77	DC	168.03

Bus #	Bus	MW Impact
314539	3UNCAMP	4.14
314541	3WATKINS	1.17
314557	3BETHELC	1.27
314566	3CRESWEL	4.1
314572	3EMPORIA	0.69
314574	6EVERETS	6.74
314578	3HORNRTN	5.35
314582	3KELFORD	5.73
314594	6PLYMOTH	1.44
314603	3SCOT NK	5.33
314617	3TUNIS	1.39
314620	6CASHIE	1.42
314623	3WITAKRS	2.12
314648	6SUNBURY	1.55
314651	6WINFALL	3.07
315053	1BELMED1	25.14
315054	1BELMED2	25.14
315055	1BELMED3	20.87
315058	1CHESTF3	25.46
315059	1CHESTF4	41.28
315073	1STONECA	10.44
315074	1HOPCGN1	12.58
315075	1HOPCGN2	12.42
315083	1SPRUNCA	16.1
315084	1SPRUNCB	16.1
315085	1SPRUNCC	11.93
315086	1SPRUNCD	11.93
315090	1YORKTN1	47.18
315091	1YORKTN2	48.96
315102	1BRUNSWICKG1	15.49
315103	1BRUNSWICKG2	15.49
315104	1BRUNSWICKG3	15.49
315105	1BRUNSWICKS1	32.18
315108	1ELIZAR1	6.0
315109	1ELIZAR2	5.89
315110	1ELIZAR3	6.07
315233	1SURRY 2	46.73
900672	V4-068 E	0.5
901082	W1-029 E	80.37
907092	X1-038 E	10.35

Bus #	Bus	MW Impact
913392	Y1-086 E	3.87
916042	Z1-036 E	79.07
916191	Z1-068 C	0.08
916192	Z1-068 E	3.34
916301	Z1-086 C	94.29
916302	Z1-086 E	17.14
917122	Z2-027 E	1.86
917332	Z2-043 E	1.63
917342	Z2-044 E	0.91
917512	Z2-088 E OP1	6.23
918492	AA1-063AE OP	6.52
918512	AA1-065 E OP	7.35
918532	AA1-067 E	1.19
918562	AA1-072 E	0.27
919152	AA1-139 E	11.37
919692	AA2-053 E	6.09
919701	AA2-057 C	11.25
919702	AA2-057 E	5.62
920042	AA2-088 E OP	17.64
920592	AA2-165 E	0.74
920672	AA2-174 E	0.7
920692	AA2-178 E	7.03
923801	AB2-015 C O1	14.68
923802	AB2-015 E O1	12.03
923832	AB2-022 E	2.18
923852	AB2-025 E	1.85
923862	AB2-026 E	1.7
923911	AB2-031 C O1	3.65
923912	AB2-031 E O1	1.8
923941	AB2-035 C	0.53
923942	AB2-035 E	0.23
923992	AB2-040 E O1	9.81
924241	AB2-068 O1	340.92
924391	AB2-088 C	0.69
924392	AB2-088 E	0.33
924491	AB2-098 C	0.93
924492	AB2-098 E	0.4
924501	AB2-099 C	0.97
924502	AB2-099 E	0.42
924511	AB2-100 C	19.06
924512	AB2-100 E	9.39
924812	AB2-134 E O1	19.56
925051	AB2-160 C O1	8.46
925052	AB2-160 E O1	13.8
925061	AB2-161 C O1	5.7
925062	AB2-161 E O1	9.3
925122	AB2-169 E	9.67
925171	AB2-174 C O1	11.48
925172	AB2-174 E O1	10.39
925281	AB2-186 C	1.07
925282	AB2-186 E	0.46
925291	AB2-188 C O1	4.04

Bus #	Bus	MW Impact
925292	AB2-188 E O1	1.82
925331	AB2-190 C	31.9
925332	AB2-190 E	13.67
925521	AC1-027 C	0.61
925522	AC1-027 E	2.04
926071	AC1-086 C	33.74
926072	AC1-086 E	15.36
926201	AC1-098 C	9.91
926202	AC1-098 E	5.9
926211	AC1-099 C	3.32
926212	AC1-099 E	1.95
926291	AC1-107 O1	514.59
926662	AC1-147 E	2.35
926751	AC1-161 C O1	55.25
926752	AC1-161 E O1	23.59
926781	AC1-164 C	48.22
926782	AC1-164 E	21.66
927021	AC1-189 C	13.94
927022	AC1-189 E	6.95
927141	AC1-208 C	14.48
927142	AC1-208 E	6.43
927221	AC1-216 C O1	15.72
927222	AC1-216 E O1	12.36
930862	AB1-132 E O1	9.82
931232	AB1-173 E	1.72
931242	AB1-173AE	1.72
932041	AC2-012 C	18.12
932042	AC2-012 E	29.56
932581	AC2-078 C O1	6.67
932582	AC2-078 E O1	10.88
932591	AC2-079 C O1	9.83
932592	AC2-079 E O1	16.05
932631	AC2-084 C	14.13
932632	AC2-084 E	6.96
933061	AC2-130	3.4
933071	AC2-131 1	2.31
933081	AC2-131 2	1.05
933111	AC2-132 1	1.21
933121	AC2-132 2	0.62
933291	AC2-141 C	55.25
933292	AC2-141 E	23.59
933501	AC2-165 C	14.6
933502	AC2-165 E	10.99
933731	AC2-196 C	0.55
933732	AC2-196 E	2.12
933991	AD1-023 C	22.14
933992	AD1-023 E	12.05
934011	AD1-025 C	27.01
934012	AD1-025 E	16.0
934061	AD1-033 C	13.37
934062	AD1-033 E	8.92
934201	AD1-047 C	13.08

Bus #	Bus	MW Impact
934202	AD1-047 E	8.72
934331	AD1-057 C O1	15.9
934332	AD1-057 E O1	8.48
934521	AD1-076 C	92.13
934522	AD1-076 E	46.91
934571	AD1-082 C	12.98
934572	AD1-082 E	7.41
934611	AD1-087 C O1	12.84
934612	AD1-087 E O1	6.04
934621	AD1-088 C	19.56
934622	AD1-088 E	9.18
935112	AD1-144 E	1.64
935161	AD1-151 C O1	25.63
935162	AD1-151 E O1	17.09
935171	AD1-152 C O1	12.76
935172	AD1-152 E O1	8.51
935212	AD1-156 E	2.31
936041	AD2-007	2.87
936051	AD2-008 C	4.7
936052	AD2-008 E	10.24
936391	AD2-049 C	3.01
936392	AD2-049 E	3.01
936401	AD2-051 C O1	14.48
936402	AD2-051 E O1	6.22
936661	AD2-085 C	5.9
936662	AD2-085 E	9.62
936701	AD2-089 C	11.46
936702	AD2-089 E	7.64
936711	AD2-090 C O1	12.16
936712	AD2-090 E O1	8.1
937221	AD2-160 C O1	10.39
937222	AD2-160 E O1	5.45
937251	AD2-164	7.96
937481	AD2-202 C O1	3.54
937482	AD2-202 E O1	1.78
937541	AD2-215 C	3.04
937542	AD2-215 E	1.61
937571	AD2-169 C	16.3
937572	AD2-169 E	10.87
938171	AE1-026 C1 O	47.07
938172	AE1-026 C2 O	6.81
938173	AE1-026 E O2	14.21
938181	AE1-027 C	4.16
938182	AE1-027 E	2.19
938191	AE1-028 C	2.42
938192	AE1-028 E	1.4
938221	AE1-035 C	3.73
938222	AE1-035 E	1.84
938461	AE1-065 C O2	50.55
938462	AE1-065 E O2	203.99
938471	AE1-066 C O2	51.95
938472	AE1-066 E O2	202.59

Bus #	Bus	MW Impact
938481	AE1-067 C O2	47.24
938482	AE1-067 E O2	207.29
938491	AE1-068 C O2	108.24
938492	AE1-068 E O2	59.78
938501	AE1-069 C O2	85.85
938502	AE1-069 E O2	49.08
938531	AE1-072 C O2	31.07
938532	AE1-072 E O2	16.19
938551	AE1-074 C	4.01
938552	AE1-074 E	2.02
938561	AE1-075 C	3.31
938562	AE1-075 E	1.62
AA2-074	AA2-074	8.98
AB2-013	AB2-013	6.5
AE1-033	AE1-033	6.78
AE1-042	AE1-042	15.48
CARR	CARR	2.09
CBM-S1	CBM-S1	23.99
CBM-S2	CBM-S2	26.25
CBM-W1	CBM-W1	22.91
CBM-W2	CBM-W2	155.75
CIN	CIN	10.7
CPLE	CPLE	13.2
G-007	G-007	6.95
IPL	IPL	6.7
LGEE	LGEE	3.14
MEC	MEC	23.7
MECS	MECS	8.88
O-066	O-066	23.16
RENSSELAER	RENSSELAER	1.66
WEC	WEC	2.82
Z1-043	Z1-043	11.12

Contingency Name	Contingency Defintion
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
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 314923 CKT 1 /* 8CARSON 500.00 - 8SEPTA 500.00 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

Contingency Name	Contingency Defintion
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 594	CONTINGENCY 'DVP_P1-2: LN 594' OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
DVP_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_P4-2: H1T581	CONTINGENCY 'DVP_P4-2: H1T581' /* LADYSMITH 500 KV 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 OPEN BRANCH FROM BUS 314196 TO BUS 314911 CKT 1 /* 6LADYSMITH 230.00 - 8LADYSMITH 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 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

Contingency Name	Contingency Defintion
DVP_P1-2: LN 575	CONTINGENCY 'DVP_P1-2: LN 575' OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 500.00 - 8NO ANNA 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 511	CONTINGENCY 'DVP_P1-2: LN 511' OPEN BRANCH FROM BUS 314902 TO BUS 314936 CKT 1 /* 8CARSON 500.00 - 8RAWLINGS 500.00 END
DVP_P1-2: LN 576	CONTINGENCY 'DVP_P1-2: LN 576' OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: 557T574	CONTINGENCY 'DVP_P4-2: 557T574' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: H1T568	CONTINGENCY 'DVP_P4-2: H1T568' /* POSSUM POINT 500 500 KV OPEN BRANCH FROM BUS 314911 TO BUS 314922 CKT 1 /* 8LADYSMITH 500.00 - 8POSSUM 500.00 OPEN BRANCH FROM BUS 314074 TO BUS 314922 CKT 1 /* 6POSSUM 230.00 - 8POSSUM 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

Contingency Name	Contingency Defintion
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 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_P1-2: LN 585-A	CONTINGENCY 'DVP_P1-2: LN 585-A' OPEN BRANCH FROM BUS 314902 TO BUS 938500 CKT 1 /* 8CARSON 500.00 - AE1-069 TAP 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

Short Circuit

Short Circuit

The following Breakers are overduty

None

Attachment 1

Single Line Diagram