



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE1-173
CARSON-SUFFOLK 500 KV
480 MW Capacity / 800 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 and storage generating facility located in Sussex County, Virginia. The installed facilities will have a capability of 800 MW with 480 MW of this output being recognized by PJM as Capacity. The proposed in-service date for the AE1-173 project is 12/31/2021. This study does not imply an ITO commitment to either in-service date.

Queue Number	AE1-173
Project Name	CARSON-SUFFOLK 500 KV
Interconnection Customer	
State	Virginia
County	Sussex
Transmission Owner	Dominion
MFO	800
MWE	800
MWC	480
Fuel	Solar
Basecase Study Year	2022

Point of Interconnection

AE1-173 will interconnect with the Dominion transmission system via a new three breaker ring bus switching station that connects on the Carson – Suffolk 500kV line # 544. See one line in **Attachment 1**.

Cost Summary

The AE1-173 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 AE1-173 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	\$739,250,000

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 \$800,000.

Transmission: Construct approximately one span of 500 kV Attachment line between the generation substation and a new AE1-173 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.

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

Direct Connection Cost Estimate

Substation: Establish the new 500 kV AE1-173 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 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

The Queue Project AE1-173 was evaluated as a 800 MW (Capacity 480 MW) injection tapping the Carson to Suffolk 500kV line in the ITO area. Project AE1-173 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-173 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
471492	314386	6KINGS M	DVP	314296	6PENNINGMAN	DVP	1	DVP_P1-2: LN 567	single	441.8	98.14	101.38	DC	31.48
472044	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	single	3218.56	98.7	101.48	DC	88.09
471680	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPL	1	DVP_P1-2: LN 570	single	718.0	97.16	102.1	DC	35.75
472027	934610	AD1-087 TAP	DVP	314697	6SEEDGE HILL	DVP	1	DVP_P1-2: LN 570	single	814.98	98.03	103.3	DC	43.25

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
471052	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	104.17	108.19	DC	48.25
471130	314316	6LOCKS	DVP	314301	6HARR205	DVP	1	DVP_P4-2: 562T563	breaker	541.0	94.91	99.06	DC	49.79
471054	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	104.19	108.21	DC	48.25
471132	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P4-2: 541T569	breaker	3144.0	98.51	100.18	DC	118.52
471146	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	91.89	99.84	DC	249.33

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
471463	314209	6SKIIF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	single	441.8	157.59	160.43	DC	27.6
471466	314209	6SKIIF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 567	single	441.8	105.91	109.14	DC	31.48

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
470821	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	140.76	144.9	DC	62.35
471893	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	single	559.3	115.96	121.64	DC	31.71
470849	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	137.74	141.87	DC	62.35
471928	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	single	559.3	112.26	117.94	DC	31.71
470696	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P4-2: 562T563	breaker	549.0	161.31	165.72	DC	53.34
471339	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	153.65	156.67	DC	29.71
471538	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	single	441.8	146.21	149.04	DC	27.6
471489	314386	6KINGS M	DVP	314296	6PENNIMAN	DVP	1	DVP_P1-2: LN 557	single	441.8	149.83	152.66	DC	27.6
471661	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	single	441.8	131.09	133.92	DC	27.6
470900	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	126.35	132.43	DC	292.5
470901	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: H2T557	breaker	3938.0	119.23	125.21	DC	285.72
470916	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	116.74	129.55	DC	133.15
471618	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	single	3218.56	105.87	111.14	DC	168.23
470816	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	140.19	143.74	DC	244.86
470817	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T572	breaker	3144.0	135.8	139.41	DC	248.87
471429	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 576	single	2442.12	133.49	136.02	DC	136.01
471430	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	133.43	136.03	DC	139.84
471434	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	single	2442.12	107.31	109.17	DC	100.05
470992	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: H1T594	breaker	3351.0	115.54	117.68	DC	157.08
470993	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P4-2: 573T594	breaker	3351.0	114.97	117.1	DC	156.58
471531	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	128.14	129.91	DC	93.99
471532	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 573	single	2442.12	123.98	125.72	DC	92.23
470736	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: WT576	breaker	3351.0	150.61	154.0	DC	249.14

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
470737	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: 57602	breaker	3351.0	150.61	154.0	DC	249.14
471309	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	161.97	164.78	DC	149.5
471312	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 563	single	2442.12	145.77	148.19	DC	127.84
470943	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	120.02	122.17	DC	158.28
470944	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: 57302	breaker	3351.0	117.89	120.09	DC	160.01
470945	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: XT573	breaker	3351.0	117.89	120.09	DC	160.0
471639	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	117.62	119.23	DC	95.44
471640	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 594	single	2738.22	115.31	116.85	DC	91.68
471844	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 581	single	2442.12	114.44	115.9	DC	77.72
471845	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 552	single	2442.12	113.21	114.67	DC	77.52
470844	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P4-2: 557T574	breaker	3637.0	137.6	141.86	DC	274.93
471365	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	140.16	146.45	DC	152.61
471368	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 557	single	2442.12	130.19	136.39	DC	150.0
471039	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P4-2: H1T581	breaker	3938.0	107.62	112.26	DC	179.86
471787	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 568	single	3218.56	109.39	112.58	DC	100.91
471788	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	single	3218.56	106.76	110.2	DC	108.5
471746	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 568	single	3218.56	111.55	114.68	DC	100.08
471747	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	single	3218.56	108.89	112.29	DC	107.28
472350	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	111.73	116.34	DC	178.28

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
471462	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	operation	441.8	170.47	175.2	DC	46.0
472059	314225	6CHARCTY	DVP	314227	6LAKESIDE	DVP	1	DVP_P1-2: LN 557	operation	984.18	105.25	107.45	DC	47.53
471892	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P1-2: LN 563	operation	559.3	125.88	130.15	DC	52.86
471927	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P1-2: LN 563	operation	559.3	122.18	126.45	DC	52.86
471337	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	operation	449.32	189.13	194.15	DC	49.52
472038	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P1-2: LN 557	operation	984.18	108.97	111.17	DC	47.53
471537	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	operation	441.8	159.08	163.81	DC	46.0
472083	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	operation	441.8	98.39	102.66	DC	41.86
472080	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	operation	441.8	98.41	102.68	DC	41.86
471488	314386	6KINGS M	DVP	314296	6PENNIMAN	DVP	1	DVP_P1-2: LN 557	operation	441.8	162.7	167.44	DC	46.0
471660	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	operation	441.8	143.96	148.69	DC	46.0
471613	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P1-2: LN 557	operation	3218.56	143.48	150.65	DC	280.38
471619	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	Base Case	operation	3218.56	100.18	107.22	DC	225.58
472145	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P1-2: LN 563	operation	903.9	89.93	102.35	DC	112.22
471423	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	173.14	177.49	DC	233.07
471428	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	Base Case	operation	2442.12	137.84	140.95	DC	166.75
471528	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	operation	2442.12	157.6	160.55	DC	156.66
471306	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	206.52	211.17	DC	249.16
471636	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	operation	2738.22	143.85	146.52	DC	159.07
471840	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 581	operation	2442.12	127.8	130.23	DC	129.53

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
471361	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	186.16	193.04	DC	254.35
471367	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	Base Case	operation	2442.12	132.28	140.38	DC	202.78
471782	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 581	operation	3218.56	131.32	137.04	DC	180.84
471789	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	Base Case	operation	3218.56	102.82	107.21	DC	138.6
472042	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	operation	3218.56	110.26	112.4	DC	146.82
472126	314923	8SEPTA	DVP	314924	8SURREY	DVP	1	DVP_P1-2: LN 563	operation	2442.12	97.28	103.74	DC	156.95
471974	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 563	operation	2442.12	114.92	119.04	DC	222.32
471741	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P1-2: LN 552	operation	3218.56	136.1	141.75	DC	178.8
471748	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	Base Case	operation	3218.56	107.33	111.34	DC	137.18

System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
471844,471845	22	8LADYSMITH 500.0 kV - 8POSSUM 500.0 kV Ckt 1	Description : Rebuild / Uprate 44 miles of 500kV 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
470944,470945,471639,471640,470943	21	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
471466,471463	10	6SKIFF CREEK 230.0 kV - 6KINGS M 230.0 kV Ckt 1	Description : PJM baseline upgrade b3057: Rebuild 6.1 miles of Waller-Skiffess Creek 230 kV Line (#2154) between Waller and Kings Mill to current standards with a minimum summer emergency rating of 1047 MVA utilizing single circuit steel structures. Remove this 6.1 mile section of Line #58 between Waller and Kings Mill. Rebuild the 1.6 miles of Line #2154 and #19 between Kings Mill and Skiffes Creek to current standards with a minimum summer emergency rating of 1047 MVA at 230 kV for Line #2154 and 261 MVA at 115 kV for Line #19, utilizing double circuit steel structures. The baseline project has an projected in-service date of 12/30/2024.	\$0
470992,470993,471531,471532	19	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
471618,470900,470901	16	8CARSON 500.0 kV - 8MDLTHAN 500.0 kV Ckt 1	Description : Wreck & rebuild 38 miles of 500kV Line # 563 between Carson and Midlothian substations. A VA CPCN will be required. Add a breaker at Chickenhomny 500kV to keep transformer energized. Time Estimate : 44-48 Months Cost : \$113,230,000	\$113,230,000
471132	8	8OX 500.0 kV - 8CLIFTON 500.0 kV Ckt 1	Description : Replace the Wave Trap at Clifton substation Time Estimate : 12-16 Months Cost : \$500,000	\$500,000
471130	6	6LOCKS 230.0 kV - 6HARR205 230.0 kV Ckt 1	Description : No Violation. Facility loading does not exceed 100%.	\$0
471661	15	6WALR209 230.0 kV - 6LIGH209 230.0 kV Ckt 1	Description : PJM baseline upgrade b3056: Partial Rebuild 230 kV Line #2113 Waller to Lightfoot. The baseline project has an projected in-service date of 12/30/2024.	\$0
470816,470817,471434,471429,471430	18	8CHCKAHM 500.0 kV - 8ELMONT 500.0 kV Ckt 1	Description : Rebuild / Uprate 28 miles of 500kV Line # 557 between Chickahomny and Elmont substations. A VA CPCN will be required. Time Estimate : 36-44 Months Cost : \$84,000,000	\$84,000,000

ID	Index	Facility	Upgrade Description	Cost
471538	14	6PENNIMAN 230.0 kV - 6WALR209 230.0 kV Ckt 1	Description : PJM baseline upgrade b3057: Rebuild 6.1 miles of Waller-Skiffess Creek 230 kV Line (#2154) between Waller and Kings Mill to current standards with a minimum summer emergency rating of 1047 MVA utilizing single circuit steel structures. Remove this 6.1 mile section of Line #58 between Waller and Kings Mill. Rebuild the 1.6 miles of Line #2154 and #19 between Kings Mill and Skiffes Creek to current standards with a minimum summer emergency rating of 1047 MVA at 230 kV for Line #2154 and 261 MVA at 115 kV for Line #19, utilizing double circuit steel structures. The baseline project has an projected in-service date of 12/30/2024.	\$0
472027	4	AD1-087 TAP 230.0 kV - 6SEEDGE HILL 230.0 kV Ckt 1	Description : Wreck & rebuild 12 miles of 230kV Line # 2068 between Sedge Hill substation and Queue AD1-087. A VA CPCN will be required. Time Estimate : 30-36 Months Cost : \$30,000,000	\$30,000,000
470696,471339	13	6CHESTF B 230.0 kV - 6BASIN 230.0 kV Ckt 1	Description : Re-Conductor and structure replace of 230kV Line # 259 between Basin and Chesterfield substations. Time Estimate : 30-36 Months Cost : \$16,500,000	\$16,500,000
470736,470737,471309,471312	20	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. In addition to PJM baseline project b3020. Install a 2nd 230 kV circuit between Elmont and Ladysmith substations. Time Estimate : 36-44 Months Cost : \$30,000,000	\$30,000,000
471680	3	AC1-221 TAP 230.0 kV - 6PERSON230 T 230.0 kV Ckt 1	Description : The line rating at DVP side is 904MVA (normal), 904MVA (Emergency) and 1105 MVA (normal). Therefore, the line limit element is not overloaded at VEPCO side. <u>CPL</u> The external (i.e. Non-PJM) Transmission Owner, CPL, will not evaluate this violation until the impact study phase.	\$0
470916	17	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
471489,471492	1	6KINGS M 230.0 kV - 6PENNIMAN 230.0 kV Ckt 1	Description : PJM baseline upgrade b3057: Rebuild 6.1 miles of Waller-Skiffess Creek 230 kV Line (#2154) between Waller and Kings Mill to current standards with a minimum summer emergency rating of 1047 MVA utilizing single circuit steel structures. Remove this 6.1 mile section of Line #58 between Waller and Kings Mill. Rebuild the 1.6 miles of Line #2154 and #19 between Kings Mill and Skiffes Creek to current standards with a minimum summer emergency rating of 1047 MVA at 230 kV for Line #2154 and 261 MVA at 115 kV for Line #19, utilizing double circuit steel structures. The baseline project has an projected in-service date of 12/30/2024.	\$0

ID	Index	Facility	Upgrade Description	Cost
471928,470849	12	6CHRL249 230.0 kV - 6LOCKS 230.0 kV Ckt 1	Description : Wreck & rebuild 3 miles of 230kV Line # 249 between Chaparral and Locks substations. A VA CPCN is required. Time Estimate : 44-48 Months Cost : \$7,500,000	\$7,500,000
471368,470844,471365	23	8MDLTHAN 500.0 kV - 8NO ANNA 500.0 kV Ckt 1	Description : Wreck & Rebuild 41.13 miles of 500kV Line # 576 between Midlothian and North Anna substations. A VA CPCN will be required. Add a breaker at Chickenhomny 500kV to keep transformer energized. Time Estimate : 24-30 Months Cost : \$123,400,000	\$123,400,000
471146	9	8SURREY 500.0 kV - 8CHCKAHM 500.0 kV Ckt 1	Description : No Violation. Facility loading does not exceed 100%.	\$0
471787,471788,471039	24	8NO ANNA 500.0 kV - 8SPOTSYL 500.0 kV Ckt 1	Description : Wreck & rebuild 14 miles of 500kV Line # 573 between North Anna and Spotsylvania substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : \$42,000,000	\$42,000,000
470821,471893	11	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
472044	2	8NO ANNA 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	Description : Wreck & Rebuild 12 miles of 500kV Line # 575 between Ladysmith and North Anna substations. A VA CPCN will be required. Time Estimate : 44-48 Months Cost : \$43,620,000	\$43,620,000
471052	5	6HARROWG 230.0 kV - 6TYLER1 230.0 kV Ckt 1	Description : Wreck & rebuild 2 miles of 230kV Line # 2003 between Harrowgate and Tyler substations. The remaining portion is this line is 2-636 ACSR which is sufficient. A VA CPCN will be required. Time Estimate : 40-48 Months Cost : \$17,000,000	\$17,000,000
471746,471747,472350	25	8SPOTSYL 500.0 kV - 8MORRSVL 500.0 kV Ckt 1	Description : Wreck & rebuild 17 miles of 500kV Line # 594 between 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
471054	7	6POE 230.0 kV - 6HARROWG 230.0 kV Ckt 1	Description : Wreck & rebuild 2 miles of 230kV Line # 2003 between Harrowgate and Poe substations. The remaining portion of this line is 2-721 ACAR which is sufficient. A VA CPCN will be required. Time Estimate : 40-44 Months Cost : \$6,000,000	\$6,000,000
			TOTAL COST	\$739,250,000

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 gauge 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
471489	314386	6KINGS M	DVP	314296	6PENNINGMAN	DVP	1	DVP_P1-2: LN 557	single	441.8	149.83	152.66	DC	27.6

Bus #	Bus	MW Impact
314421	6WINCHST	0.11
314507	3THOMPSN	0.13
315090	1YORKTN1	23.0
315091	1YORKTN2	23.87
315092	1YORKTN3	17.61
315098	1CHESPKA	0.17
315099	1CHESPKB	0.41
315108	1ELIZAR1	1.23
315109	1ELIZAR2	1.2
315110	1ELIZAR3	1.24
315233	1SURRY 2	12.53
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
916191	Z1-068 C	0.02
919151	AA1-139 C	0.93
923801	AB2-015 C O1	2.73
924241	AB2-068 O1	102.66
925281	AB2-186 C	0.23
925291	AB2-188 C O1	0.81
925521	AC1-027 C	0.13
926291	AC1-107 O1	154.96
926661	AC1-147 C	0.14
926751	AC1-161 C O1	13.97
932041	AC2-012 C	4.15
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.97
933731	AC2-196 C	0.11
933991	AD1-023 C	4.14
934061	AD1-033 C	3.08
934521	AD1-076 C	17.62
935111	AD1-144 C	0.11
936391	AD2-049 C	1.14
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.69
938172	AE1-026 C2 O	1.26

Bus #	Bus	MW Impact
938181	AE1-027 C	0.96
938191	AE1-028 C	0.55
938461	AE1-065 C O1	11.6
938471	AE1-066 C O1	11.92
938481	AE1-067 C O1	10.84
938531	AE1-072 C O1	7.04
938771	AE1-103 C O1	1.18
939041	AE1-133 C	13.82
939311	AE1-162 C	0.78
939411	AE1-173 C	27.6
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
CARR	CARR	0.19
CBM-S1	CBM-S1	2.48
CBM-S2	CBM-S2	3.14
CBM-W1	CBM-W1	2.07
CBM-W2	CBM-W2	15.87
CIN	CIN	0.97
CPLE	CPLE	1.65
IPL	IPL	0.6
LGEE	LGEE	0.28
MEC	MEC	2.28
MECS	MECS	0.71
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.26

Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
472044	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 573	single	3218.56	98.7	101.48	DC	88.09

Bus #	Bus	MW Impact
315102	1BRUNSWICKG1	8.0
315103	1BRUNSWICKG2	8.0
315104	1BRUNSWICKG3	8.0
315105	1BRUNSWICKS1	16.63
315150	1BUGGS 1	9.28
315151	1BUGGS 2	9.28
315153	1CLOVER1	11.37
315154	1CLOVER2	11.22
315172	1LOISA A	2.71
315173	1LOISA B	2.72
315174	1LOISA C	2.72
315175	1LOISA D	2.72
315176	1LOISA E	5.55
315177	1S ANNAG1	1.9
315178	1S ANNAS1	0.98
315179	1S ANNAG2	1.9
315180	1S ANNAS2	0.98
315225	1N ANNA1	100.23
315226	1N ANNA2	100.45
916191	Z1-068 C	0.03
916301	Z1-086 C	48.74
919151	AA1-139 C	1.85
919701	AA2-057 C	5.79
923801	AB2-015 C O1	6.98
923851	AB2-025 C	0.32
923861	AB2-026 C	0.38
923911	AB2-031 C O1	1.88
924401	AB2-089 C	1.77
924491	AB2-098 C	0.46
924501	AB2-099 C	0.48
924511	AB2-100 C	9.73
925021	AB2-158 C	3.81
925061	AB2-161 C O1	2.59
925171	AB2-174 C O1	5.92
925281	AB2-186 C	0.49
925291	AB2-188 C O1	1.91
925521	AC1-027 C	0.25
925781	AC1-054 C O1	5.97
926071	AC1-086 C	17.14
926201	AC1-098 C	5.03

Bus #	Bus	MW Impact
926211	AC1-099 C	1.69
926271	AC1-105 C O1	4.58
926751	AC1-161 C O1	24.42
926761	AC1-162 C	25.85
927021	AC1-189 C	7.02
927141	AC1-208 C	7.4
932041	AC2-012 C	8.14
932581	AC2-078 C O1	3.03
932591	AC2-079 C O1	4.48
932631	AC2-084 C	7.17
933291	AC2-141 C	24.42
933501	AC2-165 C	9.88
933731	AC2-196 C	0.22
933991	AD1-023 C	10.67
934061	AD1-033 C	6.04
934201	AD1-047 C	6.74
934231	AD1-050 C	3.89
934331	AD1-057 C O1	8.17
934521	AD1-076 C	44.14
934571	AD1-082 C	5.91
934611	AD1-087 C O1	7.48
934621	AD1-088 C	12.03
935171	AD1-152 C O1	7.44
935231	AD1-160 C	0.93
936261	AD2-033 C	10.8
936361	AD2-046 C O1	7.32
936401	AD2-051 C O1	7.14
936481	AD2-063 C O1	12.37
936651	AD2-082 C	1.43
936661	AD2-085 C	2.69
936711	AD2-090 C O1	5.84
937221	AD2-160 C O1	4.71
937481	AD2-202 C O1	2.06
937541	AD2-215 C	1.35
937571	AD2-169 C	8.38
938171	AE1-026 C1 O	22.73
938172	AE1-026 C2 O	3.29
938181	AE1-027 C	1.88
938191	AE1-028 C	1.09
938221	AE1-035 C	1.82
938371	AE1-056 C	5.5
938461	AE1-065 C O1	22.78
938471	AE1-066 C O1	23.41
938481	AE1-067 C O1	21.29
938491	AE1-068 C O1	63.42
938501	AE1-069 C O1	49.63
938531	AE1-072 C O1	14.12
938551	AE1-074 C	2.12
938561	AE1-075 C	2.19
938631	AE1-085 C O1	8.15
938661	AE1-088	1.43
938771	AE1-103 C O1	2.93

Bus #	Bus	MW Impact
938841	AE1-109AC O1	6.96
939041	AE1-133 C	28.58
939071	AE1-135 C O1	17.52
939181	AE1-148 C O1	7.23
939191	AE1-149 C O1	7.91
939201	AE1-150 C O1	8.61
939231	AE1-154 C	4.08
939311	AE1-162 C	1.58
939371	AE1-168 C	12.62
939411	AE1-173 C	88.09
940061	AE1-248 C O1	12.28
AA2-074	AA2-074	4.88
AE1-042	AE1-042	7.75
CARR	CARR	1.52
CBM-S1	CBM-S1	11.72
CBM-S2	CBM-S2	14.08
CBM-W1	CBM-W1	9.43
CBM-W2	CBM-W2	74.39
CIN	CIN	4.57
CPL	CPL	7.17
IPL	IPL	2.83
LGEE	LGEE	1.35
MEC	MEC	10.64
MECS	MECS	2.83
RENSSELAER	RENSSELAER	1.21
WEC	WEC	1.19

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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
471680	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPL	1	DVP_P1-2: LN 570	single	718.0	97.16	102.1	DC	35.75

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.27
314704	3LAWRENC	0.12
315102	1BRUNSWICKG1	4.18
315103	1BRUNSWICKG2	4.18
315104	1BRUNSWICKG3	4.18
315105	1BRUNSWICKS1	8.69
315150	1BUGGS 1	9.83
315151	1BUGGS 2	9.83
315153	1CLOVER1	15.68
315154	1CLOVER2	15.48
315159	1KERR 2	0.48
315164	1KERR 7	0.47
315191	1BEARGRDN G1	1.68
315192	1BEARGRDN G2	1.68
315193	1BEARGRDN S1	3.45
315233	1SURREY 2	7.95
315266	1PLYWOOD A	1.9
916301	Z1-086 C	24.49
920291	AA2-127	0.35
923861	AB2-026 C	0.13
924021	AB2-043 C O1	0.37
924031	AB2-045 C	0.21
924161	AB2-060 C O1	1.05
924301	AB2-077 C O1	0.24
924311	AB2-078 C O1	0.24
924321	AB2-079 C O1	0.24
925611	AC1-036 C	0.11
925831	AC1-062	0.04
925991	AC1-075 C	7.29
926021	AC1-080 C	2.43
926271	AC1-105 C O1	9.33
926751	AC1-161 C O1	11.0
926761	AC1-162 C	27.16
927251	AC1-221 C	9.89
927261	AC1-222 C	6.55
932511	AC2-071 C	0.21
932761	AC2-100 C	22.75
932821	AC2-107 C	12.95
933291	AC2-141 C	11.0
933501	AC2-165 C	3.65

Bus #	Bus	MW Impact
934311	AD1-055 C	4.55
934341	AD1-058 C	24.78
934611	AD1-087 C O1	15.28
934621	AD1-088 C	14.65
934991	AD1-131 C	8.13
935171	AD1-152 C O1	15.19
935221	AD1-157 C	0.17
935231	AD1-160 C	0.83
936261	AD2-033 C	9.83
936331	AD2-043 C	8.48
936361	AD2-046 C O1	3.79
936481	AD2-063 C O1	11.34
936651	AD2-082 C	1.27
937481	AD2-202 C O1	4.21
938371	AE1-056 C	4.87
938491	AE1-068 C O1	30.89
938501	AE1-069 C O1	24.94
938561	AE1-075 C	0.76
939181	AE1-148 C O1	3.92
939201	AE1-150 C O1	7.53
939371	AE1-168 C	11.32
939411	AE1-173 C	35.75
AC1-133	AC1-133	43.88
AE1-112	AE1-112	32.66
BAYOU	BAYOU	6.35
BIG_CAJUN1	BIG_CAJUN1	10.03
BIG_CAJUN2	BIG_CAJUN2	20.17
BLUEG	BLUEG	17.66
CALDERWOOD	CALDERWOOD	3.8
CANNELTON	CANNELTON	1.21
CATAWBA	CATAWBA	3.83
CBM-N	CBM-N	0.59
CHEOAH	CHEOAH	3.55
CHILHOWEE	CHILHOWEE	1.23
CHOCTAW	CHOCTAW	6.83
COFFEEN	COFFEEN	2.08
COTTONWOOD	COTTONWOOD	24.84
DEARBORN	DEARBORN	2.15
DUCKCREEK	DUCKCREEK	4.24
EDWARDS	EDWARDS	1.89
ELMERSMITH	ELMERSMITH	2.15
FARMERCITY	FARMERCITY	1.51
G-007A	G-007A	2.67
GIBSON	GIBSON	0.76
HAMLET	HAMLET	14.64
NEWTON	NEWTON	5.4
NYISO	NYISO	2.56
O-066A	O-066A	1.22
PRAIRIE	PRAIRIE	11.41
SANTEETLA	SANTEETLA	1.06
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.55

Bus #	Bus	MW Impact
TILTON	TILTON	2.23
TRIMBLE	TRIMBLE	1.94
TVA	TVA	10.54
UNIONPOWER	UNIONPOWER	5.28
VFT	VFT	7.09

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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
472027	934610	AD1-087 TAP	DVP	314697	6SEGE HILL	DVP	1	DVP_P1-2: LN 570	single	814.98	98.03	103.3	DC	43.25

Bus #	Bus	MW Impact
314421	6WINCHST	0.05
314507	3THOMPSN	0.12
315090	1YORKTN1	10.65
315091	1YORKTN2	11.05
315092	1YORKTN3	8.11
315098	1CHESPKA	0.16
315099	1CHESPKB	0.4
315102	1BRUNSWICKG1	5.2
315103	1BRUNSWICKG2	5.2
315104	1BRUNSWICKG3	5.2
315105	1BRUNSWICKS1	10.81
315108	1ELIZAR1	1.17
315109	1ELIZAR2	1.15
315110	1ELIZAR3	1.19
315153	1CLOVER1	20.5
315154	1CLOVER2	20.23
315191	1BEARGRDN G1	1.56
315192	1BEARGRDN G2	1.56
315193	1BEARGRDN S1	3.2
315233	1SURRY 2	9.43
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.16
315262	1GOSPORTC	0.14
916191	Z1-068 C	0.02
916301	Z1-086 C	30.38
920291	AA2-127	0.32
924031	AB2-045 C	0.19
925521	AC1-027 C	0.12
926661	AC1-147 C	0.13
926751	AC1-161 C O1	13.14
926761	AC1-162 C	29.88
932041	AC2-012 C	3.97
932511	AC2-071 C	0.19
932823	AC2-107 BAT	25.76
933291	AC2-141 C	13.14
933731	AC2-196 C	0.1
934061	AD1-033 C	2.86
934233	AD1-050 BAT	5.08
934611	AD1-087 C O1	20.5
934621	AD1-088 C	17.85

Bus #	Bus	MW Impact
935171	AD1-152 C O1	20.38
937251	AD2-164	1.77
937481	AD2-202 C O1	5.65
938181	AE1-027 C	0.87
938191	AE1-028 C	0.51
938461	AE1-065 C O1	10.92
938471	AE1-066 C O1	11.22
938481	AE1-067 C O1	10.2
938491	AE1-068 C O1	38.25
938501	AE1-069 C O1	30.94
939311	AE1-162 C	0.81
939411	AE1-173 C	43.25
AC1-133	AC1-133	39.05
AE1-112	AE1-112	30.03
BAYOU	BAYOU	6.18
BIG_CAJUN1	BIG_CAJUN1	9.74
BIG_CAJUN2	BIG_CAJUN2	19.59
BLUEG	BLUEG	18.5
CALDERWOOD	CALDERWOOD	3.67
CANNELTON	CANNELTON	1.25
CATAWBA	CATAWBA	3.52
CBM-N	CBM-N	0.67
CHEOAH	CHEOAH	3.42
CHILHOWEE	CHILHOWEE	1.19
CHOCTAW	CHOCTAW	6.63
COFFEEN	COFFEEN	2.13
COTTONWOOD	COTTONWOOD	24.22
DEARBORN	DEARBORN	2.29
DUCKCREEK	DUCKCREEK	4.37
EDWARDS	EDWARDS	1.96
ELMERSMITH	ELMERSMITH	2.2
FARMERCITY	FARMERCITY	1.53
G-007A	G-007A	3.01
GIBSON	GIBSON	0.79
HAMLET	HAMLET	13.25
NEWTON	NEWTON	5.54
NYISO	NYISO	2.91
O-066A	O-066A	1.38
PRAIRIE	PRAIRIE	11.51
SANTEETLA	SANTEETLA	1.02
SMITHLAND	SMITHLAND	1.02
TATANKA	TATANKA	2.59
TILTON	TILTON	2.32
TRIMBLE	TRIMBLE	2.03
TVA	TVA	10.31
UNIONPOWER	UNIONPOWER	5.07
VFT	VFT	8.01

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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
471052	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	104.17	108.19	DC	48.25

Bus #	Bus	MW Impact
314539	3UNCAMP	0.82
314541	3WATKINS	0.24
314554	3BTLEBRO	0.31
314557	3BETHELC	0.3
314572	3EMPORIA	0.24
314574	6EVERETS	1.42
314578	3HORNRTN	1.47
314582	3KELFORD	1.3
314603	3SCOT NK	1.27
314617	3TUNIS	0.31
314620	6CASHIE	0.26
314623	3WITAKRS	0.53
315131	1EDGECEMA	3.6
315132	1EDGECEMB	3.6
315150	1BUGGS 1	3.84
315151	1BUGGS 2	3.84
900672	V4-068 E	0.11
907092	X1-038 E	2.05
916302	Z1-086 E	3.85
917332	Z2-043 E	0.37
917342	Z2-044 E	0.23
917512	Z2-088 E OP1	1.38
918492	AA1-063AE OP	1.65
918512	AA1-065 E OP	1.48
918532	AA1-067 E	0.25
918562	AA1-072 E	0.06
919692	AA2-053 E	1.61
919701	AA2-057 C	2.82
919702	AA2-057 E	1.41
920042	AA2-088 E OP	3.95
920592	AA2-165 E	0.19
920672	AA2-174 E	0.19
923801	AB2-015 C O1	2.98
923802	AB2-015 E O1	2.44
923851	AB2-025 C	0.31
923852	AB2-025 E	0.92
923911	AB2-031 C O1	1.19
923912	AB2-031 E O1	0.58
923941	AB2-035 C	0.13
923942	AB2-035 E	0.05

Bus #	Bus	MW Impact
923992	AB2-040 E O1	3.19
924022	AB2-043 E O1	1.73
924152	AB2-059 E O1	2.1
924162	AB2-060 E O1	1.41
924302	AB2-077 E O1	0.45
924312	AB2-078 E O1	0.45
924322	AB2-079 E O1	0.45
924391	AB2-088 C	0.16
924392	AB2-088 E	0.08
924401	AB2-089 C	0.81
924402	AB2-089 E	0.42
924491	AB2-098 C	0.19
924492	AB2-098 E	0.08
924501	AB2-099 C	0.21
924502	AB2-099 E	0.09
924511	AB2-100 C	7.66
924512	AB2-100 E	3.78
925061	AB2-161 C O1	2.57
925062	AB2-161 E O1	4.2
925122	AB2-169 E	1.81
925171	AB2-174 C O1	3.84
925172	AB2-174 E O1	3.48
925591	AC1-034 C	2.64
925592	AC1-034 E	1.99
925781	AC1-054 C O1	2.79
925782	AC1-054 E O1	1.29
926071	AC1-086 C	10.49
926072	AC1-086 E	4.77
926201	AC1-098 C	2.43
926202	AC1-098 E	1.45
926211	AC1-099 C	0.82
926212	AC1-099 E	0.48
926271	AC1-105 C O1	1.75
926272	AC1-105 E O1	0.87
927021	AC1-189 C	3.04
927022	AC1-189 E	1.52
927141	AC1-208 C	3.71
927142	AC1-208 E	1.65
930402	AB1-081 E O1	1.48
930862	AB1-132 E O1	3.05
931232	AB1-173 E	0.56
931242	AB1-173AE	0.56
932581	AC2-078 C O1	4.58
932582	AC2-078 E O1	7.47
932591	AC2-079 C O1	3.07
932592	AC2-079 E O1	5.02
932631	AC2-084 C	3.47
932632	AC2-084 E	1.71
933991	AD1-023 C	3.91
933992	AD1-023 E	2.13
934201	AD1-047 C	4.25
934202	AD1-047 E	2.84

Bus #	Bus	MW Impact
934231	AD1-050 C	1.78
934232	AD1-050 E	0.97
934331	AD1-057 C O1	4.42
934332	AD1-057 E O1	2.36
934571	AD1-082 C	5.87
934572	AD1-082 E	3.35
934611	AD1-087 C O1	2.72
934612	AD1-087 E O1	1.28
935171	AD1-152 C O1	2.7
935172	AD1-152 E O1	1.8
935211	AD1-156 C	0.72
935212	AD1-156 E	3.14
936361	AD2-046 C O1	3.18
936362	AD2-046 E O1	1.46
936401	AD2-051 C O1	3.13
936402	AD2-051 E O1	1.34
936481	AD2-063 C O1	4.73
936482	AD2-063 E O1	3.15
936531	AD2-068 C	1.77
936532	AD2-068 E	0.91
936661	AD2-085 C	1.89
936662	AD2-085 E	3.08
936701	AD2-089 C	2.69
936702	AD2-089 E	1.79
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	0.75
937482	AD2-202 E O1	0.38
937571	AD2-169 C	5.13
937572	AD2-169 E	3.42
938171	AE1-026 C1 O	8.55
938172	AE1-026 C2 O	1.24
938173	AE1-026 E O1	2.58
938221	AE1-035 C	0.75
938222	AE1-035 E	0.37
938491	AE1-068 C O1	24.55
938492	AE1-068 E O1	13.56
938501	AE1-069 C O1	19.2
938502	AE1-069 E O1	10.98
938631	AE1-085 C O1	11.8
938632	AE1-085 E O1	7.86
938661	AE1-088	0.55
938771	AE1-103 C O1	1.23
938772	AE1-103 E O1	1.7
938841	AE1-109AC O1	6.94
938842	AE1-109AE O1	4.63
939071	AE1-135 C O1	14.17
939072	AE1-135 E O1	9.45
939181	AE1-148 C O1	3.13
939182	AE1-148 E O1	2.09
939191	AE1-149 C O1	12.84
939192	AE1-149 E O1	8.56

Bus #	Bus	MW Impact
939411	AE1-173 C	28.95
939412	AE1-173 E	19.3
940061	AE1-248 C O1	12.2
940062	AE1-248 E O1	8.13
AA2-074	AA2-074	1.98
CARR	CARR	0.23
CBM-S1	CBM-S1	4.98
CBM-S2	CBM-S2	5.67
CBM-W1	CBM-W1	4.94
CBM-W2	CBM-W2	32.66
CIN	CIN	2.24
CPLE	CPLE	2.91
G-007	G-007	0.79
IPL	IPL	1.4
LGEE	LGEE	0.65
MEC	MEC	5.0
MECS	MECS	2.06
O-066	O-066	2.64
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.6

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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
471130	314316	6LOCKS	DVP	314301	6HARR205	DVP	1	DVP_P4-2: 562T563	breaker	541.0	94.91	99.06	DC	49.79

Bus #	Bus	MW Impact
314314	3LOCKS	0.39
314541	3WATKINS	0.2
314554	3BTLEBRO	0.32
314557	3BETHEL	0.31
314572	3EMPORIA	0.26
314574	6EVERETS	1.43
314578	3HORNRTN	1.52
314582	3KELFORD	1.3
314603	3SCOT NK	1.29
314617	3TUNIS	0.3
314620	6CASHIE	0.25
314623	3WITAKRS	0.55
315131	1EDGECEMA	3.75
315132	1EDGECEMB	3.75
315150	1BUGGS 1	4.05
315151	1BUGGS 2	4.05
900672	V4-068 E	0.1
916302	Z1-086 E	4.11
917332	Z2-043 E	0.37
917342	Z2-044 E	0.23
917512	Z2-088 E OP1	1.41
918492	AA1-063AE OP	1.68
918512	AA1-065 E OP	1.47
918532	AA1-067 E	0.25
918562	AA1-072 E	0.06
919692	AA2-053 E	1.65
919701	AA2-057 C	2.91
919702	AA2-057 E	1.46
920042	AA2-088 E OP	3.58
920592	AA2-165 E	0.19
920672	AA2-174 E	0.19
923851	AB2-025 C	0.34
923852	AB2-025 E	1.01
923911	AB2-031 C O1	1.26
923912	AB2-031 E O1	0.62
923941	AB2-035 C	0.13
923942	AB2-035 E	0.06
923992	AB2-040 E O1	3.38
924022	AB2-043 E O1	1.83
924152	AB2-059 E O1	2.18

Bus #	Bus	MW Impact
924162	AB2-060 E O1	1.5
924302	AB2-077 E O1	0.47
924312	AB2-078 E O1	0.47
924322	AB2-079 E O1	0.47
924391	AB2-088 C	0.17
924392	AB2-088 E	0.08
924401	AB2-089 C	0.85
924402	AB2-089 E	0.44
924491	AB2-098 C	0.2
924492	AB2-098 E	0.08
924501	AB2-099 C	0.21
924502	AB2-099 E	0.09
924511	AB2-100 C	8.3
924512	AB2-100 E	4.09
925051	AB2-160 C O1	7.97
925052	AB2-160 E O1	13.0
925122	AB2-169 E	1.78
925171	AB2-174 C O1	4.09
925172	AB2-174 E O1	3.7
925591	AC1-034 C	2.74
925592	AC1-034 E	2.07
925612	AC1-036 E	0.47
925781	AC1-054 C O1	2.92
925782	AC1-054 E O1	1.34
925821	AC1-061	0.01
926071	AC1-086 C	11.08
926072	AC1-086 E	5.04
926201	AC1-098 C	2.49
926202	AC1-098 E	1.48
926211	AC1-099 C	0.83
926212	AC1-099 E	0.49
926271	AC1-105 C O1	1.86
926272	AC1-105 E O1	0.93
927021	AC1-189 C	3.09
927022	AC1-189 E	1.54
927141	AC1-208 C	3.82
927142	AC1-208 E	1.69
927251	AC1-221 C	0.73
927252	AC1-221 E	0.73
927261	AC1-222 C	1.16
927262	AC1-222 E	1.1
930402	AB1-081 E O1	1.54
930862	AB1-132 E O1	3.22
931232	AB1-173 E	0.59
931242	AB1-173AE	0.59
932581	AC2-078 C O1	1.33
932582	AC2-078 E O1	2.17
932631	AC2-084 C	3.55
932632	AC2-084 E	1.75
932761	AC2-100 C	1.69
932762	AC2-100 E	0.82
934201	AD1-047 C	4.5

Bus #	Bus	MW Impact
934202	AD1-047 E	3.0
934231	AD1-050 C	1.87
934232	AD1-050 E	1.02
934311	AD1-055 C	0.81
934312	AD1-055 E	0.21
934331	AD1-057 C O1	4.63
934332	AD1-057 E O1	2.47
934341	AD1-058 C	1.84
934342	AD1-058 E	0.47
934611	AD1-087 C O1	2.89
934612	AD1-087 E O1	1.36
934621	AD1-088 C	3.8
934622	AD1-088 E	1.78
934991	AD1-131 C	0.6
934992	AD1-131 E	0.4
935171	AD1-152 C O1	2.87
935172	AD1-152 E O1	1.91
935212	AD1-156 E	0.48
936261	AD2-033 C	4.06
936262	AD2-033 E	2.71
936331	AD2-043 C	1.51
936332	AD2-043 E	1.78
936361	AD2-046 C O1	3.35
936362	AD2-046 E O1	1.54
936401	AD2-051 C O1	3.1
936402	AD2-051 E O1	1.33
936481	AD2-063 C O1	5.01
936482	AD2-063 E O1	3.34
936531	AD2-068 C	1.81
936532	AD2-068 E	0.93
936701	AD2-089 C	2.77
936702	AD2-089 E	1.84
936711	AD2-090 C O1	2.22
936712	AD2-090 E O1	1.48
937481	AD2-202 C O1	0.8
937482	AD2-202 E O1	0.4
937571	AD2-169 C	5.4
937572	AD2-169 E	3.6
938171	AE1-026 C1 O	8.32
938172	AE1-026 C2 O	1.2
938173	AE1-026 E O1	2.51
938221	AE1-035 C	0.74
938222	AE1-035 E	0.37
938491	AE1-068 C O1	26.21
938492	AE1-068 E O1	14.48
938501	AE1-069 C O1	20.49
938502	AE1-069 E O1	11.72
938631	AE1-085 C O1	3.48
938632	AE1-085 E O1	2.32
938661	AE1-088	0.54
939071	AE1-135 C O1	15.38
939072	AE1-135 E O1	10.25

Bus #	Bus	MW Impact
939181	AE1-148 C O1	3.3
939182	AE1-148 E O1	2.2
939191	AE1-149 C O1	3.64
939192	AE1-149 E O1	2.43
939411	AE1-173 C	29.88
939412	AE1-173 E	19.92
940071	AE1-249 C	10.51
940072	AE1-249 E	7.84
AA2-074	AA2-074	2.08
CARR	CARR	0.24
CBM-S1	CBM-S1	5.29
CBM-S2	CBM-S2	5.98
CBM-W1	CBM-W1	5.29
CBM-W2	CBM-W2	34.71
CIN	CIN	2.4
CPL	CPL	3.06
G-007	G-007	0.82
IPL	IPL	1.5
LGEE	LGEE	0.69
MEC	MEC	5.33
MECS	MECS	2.23
O-066	O-066	2.71
RENSSELAER	RENSSELAER	0.19
WEC	WEC	0.64

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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
471054	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	104.19	108.21	DC	48.25

Bus #	Bus	MW Impact
314539	3UNCAMP	0.82
314541	3WATKINS	0.24
314554	3BTLEBRO	0.31
314557	3BETHELC	0.3
314572	3EMPORIA	0.24
314574	6EVERETS	1.42
314578	3HORNRTN	1.47
314582	3KELFORD	1.3
314603	3SCOT NK	1.27
314617	3TUNIS	0.31
314620	6CASHIE	0.26
314623	3WITAKRS	0.53
315131	1EDGECEMA	3.6
315132	1EDGECEMB	3.6
315150	1BUGGS 1	3.84
315151	1BUGGS 2	3.84
900672	V4-068 E	0.11
907092	X1-038 E	2.05
916302	Z1-086 E	3.85
917332	Z2-043 E	0.37
917342	Z2-044 E	0.23
917512	Z2-088 E OP1	1.38
918492	AA1-063AE OP	1.65
918512	AA1-065 E OP	1.48
918532	AA1-067 E	0.25
918562	AA1-072 E	0.06
919692	AA2-053 E	1.61
919701	AA2-057 C	2.82
919702	AA2-057 E	1.41
920042	AA2-088 E OP	3.95
920592	AA2-165 E	0.19
920672	AA2-174 E	0.19
923801	AB2-015 C O1	2.98
923802	AB2-015 E O1	2.44
923851	AB2-025 C	0.31
923852	AB2-025 E	0.92
923911	AB2-031 C O1	1.19
923912	AB2-031 E O1	0.58
923941	AB2-035 C	0.13
923942	AB2-035 E	0.05

Bus #	Bus	MW Impact
923992	AB2-040 E O1	3.19
924022	AB2-043 E O1	1.73
924152	AB2-059 E O1	2.1
924162	AB2-060 E O1	1.41
924302	AB2-077 E O1	0.45
924312	AB2-078 E O1	0.45
924322	AB2-079 E O1	0.45
924391	AB2-088 C	0.16
924392	AB2-088 E	0.08
924401	AB2-089 C	0.81
924402	AB2-089 E	0.42
924491	AB2-098 C	0.19
924492	AB2-098 E	0.08
924501	AB2-099 C	0.21
924502	AB2-099 E	0.09
924511	AB2-100 C	7.66
924512	AB2-100 E	3.78
925061	AB2-161 C O1	2.57
925062	AB2-161 E O1	4.2
925122	AB2-169 E	1.81
925171	AB2-174 C O1	3.84
925172	AB2-174 E O1	3.48
925591	AC1-034 C	2.64
925592	AC1-034 E	1.99
925781	AC1-054 C O1	2.79
925782	AC1-054 E O1	1.29
926071	AC1-086 C	10.49
926072	AC1-086 E	4.77
926201	AC1-098 C	2.43
926202	AC1-098 E	1.45
926211	AC1-099 C	0.82
926212	AC1-099 E	0.48
926271	AC1-105 C O1	1.75
926272	AC1-105 E O1	0.87
927021	AC1-189 C	3.04
927022	AC1-189 E	1.52
927141	AC1-208 C	3.71
927142	AC1-208 E	1.65
930402	AB1-081 E O1	1.48
930862	AB1-132 E O1	3.05
931232	AB1-173 E	0.56
931242	AB1-173AE	0.56
932581	AC2-078 C O1	4.58
932582	AC2-078 E O1	7.47
932591	AC2-079 C O1	3.07
932592	AC2-079 E O1	5.02
932631	AC2-084 C	3.47
932632	AC2-084 E	1.71
933991	AD1-023 C	3.91
933992	AD1-023 E	2.13
934201	AD1-047 C	4.25
934202	AD1-047 E	2.84

Bus #	Bus	MW Impact
934231	AD1-050 C	1.78
934232	AD1-050 E	0.97
934331	AD1-057 C O1	4.42
934332	AD1-057 E O1	2.36
934571	AD1-082 C	5.87
934572	AD1-082 E	3.35
934611	AD1-087 C O1	2.72
934612	AD1-087 E O1	1.28
935171	AD1-152 C O1	2.7
935172	AD1-152 E O1	1.8
935211	AD1-156 C	0.72
935212	AD1-156 E	3.14
936361	AD2-046 C O1	3.18
936362	AD2-046 E O1	1.46
936401	AD2-051 C O1	3.13
936402	AD2-051 E O1	1.34
936481	AD2-063 C O1	4.73
936482	AD2-063 E O1	3.15
936531	AD2-068 C	1.77
936532	AD2-068 E	0.91
936661	AD2-085 C	1.89
936662	AD2-085 E	3.08
936701	AD2-089 C	2.69
936702	AD2-089 E	1.79
936711	AD2-090 C O1	2.58
936712	AD2-090 E O1	1.72
937481	AD2-202 C O1	0.75
937482	AD2-202 E O1	0.38
937571	AD2-169 C	5.13
937572	AD2-169 E	3.42
938171	AE1-026 C1 O	8.55
938172	AE1-026 C2 O	1.24
938173	AE1-026 E O1	2.58
938221	AE1-035 C	0.75
938222	AE1-035 E	0.37
938491	AE1-068 C O1	24.55
938492	AE1-068 E O1	13.56
938501	AE1-069 C O1	19.2
938502	AE1-069 E O1	10.98
938631	AE1-085 C O1	11.8
938632	AE1-085 E O1	7.86
938661	AE1-088	0.55
938771	AE1-103 C O1	1.23
938772	AE1-103 E O1	1.7
938841	AE1-109AC O1	6.94
938842	AE1-109AE O1	4.63
939071	AE1-135 C O1	14.17
939072	AE1-135 E O1	9.45
939181	AE1-148 C O1	3.13
939182	AE1-148 E O1	2.09
939191	AE1-149 C O1	12.84
939192	AE1-149 E O1	8.56

Bus #	Bus	MW Impact
939411	AE1-173 C	28.95
939412	AE1-173 E	19.3
940061	AE1-248 C O1	12.2
940062	AE1-248 E O1	8.13
AA2-074	AA2-074	1.98
CARR	CARR	0.23
CBM-S1	CBM-S1	4.98
CBM-S2	CBM-S2	5.67
CBM-W1	CBM-W1	4.94
CBM-W2	CBM-W2	32.66
CIN	CIN	2.24
CPLE	CPLE	2.91
G-007	G-007	0.79
IPL	IPL	1.4
LGEE	LGEE	0.65
MEC	MEC	5.0
MECS	MECS	2.06
O-066	O-066	2.64
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.6

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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
471132	314919	8OX	DVP	314904	8CLIFTON	DVP	1	DVP_P4-2: 541T569	breaker	3144.0	98.51	100.18	DC	118.52

Bus #	Bus	MW Impact
314093	6WARRNTN	0.31
314189	6PAPER MILL	5.81
314648	6SUNBURY	0.72
314651	6WINFALL	1.42
315037	1LDYSMT1	4.2
315038	1LDYSMT2	4.19
315039	1LDYSMT3	4.44
315040	1LDYSMT4	4.45
315041	1LDYSMT5	4.46
315053	1BELMED1	14.96
315054	1BELMED2	14.96
315055	1BELMED3	12.41
315058	1CHESTF3	15.73
315059	1CHESTF4	25.5
315073	1STONECA	5.95
315074	1HOPCGN1	7.17
315075	1HOPCGN2	7.08
315083	1SPRUNCA	9.17
315084	1SPRUNCB	9.17
315085	1SPRUNCC	6.8
315086	1SPRUNCD	6.8
315090	1YORKTN1	24.29
315091	1YORKTN2	25.21
315225	1N ANNA1	29.95
315226	1N ANNA2	30.01
901082	W1-029 E	37.31
913392	Y1-086 E	1.8
916042	Z1-036 E	36.57
916192	Z1-068 E	1.56
917122	Z2-027 E	0.86
919152	AA1-139 E	5.29
923832	AB2-022 E	1.01
923842	AB2-024 E	0.97
923852	AB2-025 E	0.88
923892	AB2-029 E	1.94
924241	AB2-068 O1	169.33
924281	AB2-072 C	1.94
924282	AB2-072 E	0.92
924812	AB2-134 E O1	10.43
925021	AB2-158 C	1.61

Bus #	Bus	MW Impact
925022	AB2-158 E	4.67
925051	AB2-160 C O1	4.66
925052	AB2-160 E O1	7.6
925061	AB2-161 C O1	2.82
925062	AB2-161 E O1	4.6
925281	AB2-186 C	0.49
925282	AB2-186 E	0.21
925331	AB2-190 C	17.15
925332	AB2-190 E	7.35
925522	AC1-027 E	0.95
925671	AC1-043 C	6.62
925672	AC1-043 E	10.8
925861	AC1-065 C	2.98
925862	AC1-065 E	4.86
926001	AC1-076 C	4.59
926002	AC1-076 E	7.47
926291	AC1-107 O1	255.6
926412	AC1-112 E	0.98
926472	AC1-118 E	1.08
926481	AC1-120 C O1	7.02
926482	AC1-120 E O1	3.62
926501	AC1-121 C O1	2.41
926502	AC1-121 E O1	1.13
926611	AC1-143 C O1	6.75
926612	AC1-143 E O1	3.08
926662	AC1-147 E	1.1
926731	AC1-158 C	74.93
926732	AC1-158 E	32.89
926751	AC1-161 C O1	25.34
926752	AC1-161 E O1	10.82
926781	AC1-164 C	34.9
926782	AC1-164 E	15.68
927041	AC1-191 C O1	8.6
927042	AC1-191 E O1	4.28
927221	AC1-216 C O1	8.38
927222	AC1-216 E O1	6.59
930122	AB1-027 E	0.96
932041	AC2-012 C	8.49
932042	AC2-012 E	13.85
932502	AC2-070 E	0.61
932532	AC2-073 E	1.05
932581	AC2-078 C O1	3.43
932582	AC2-078 E O1	5.59
932591	AC2-079 C O1	4.75
932592	AC2-079 E O1	7.75
932781	AC2-102 C	5.37
932782	AC2-102 E	8.75
932831	AC2-110 C	1.19
932832	AC2-110 E	1.94
933011	AC2-125	2.7
933021	AC2-126	2.72
933031	AC2-127	1.48

Bus #	Bus	MW Impact
933041	AC2-128	1.43
933051	AC2-129	1.34
933061	AC2-130	2.08
933071	AC2-131 1	1.41
933081	AC2-131 2	0.64
933111	AC2-132 1	0.74
933121	AC2-132 2	0.38
933262	AC2-137 E	1.17
933272	AC2-138 E	0.95
933291	AC2-141 C	25.34
933292	AC2-141 E	10.82
933732	AC2-196 E	0.99
934011	AD1-025 C	14.4
934012	AD1-025 E	8.53
934061	AD1-033 C	6.23
934062	AD1-033 E	4.15
934141	AD1-041 C	4.7
934142	AD1-041 E	3.13
934191	AD1-046 C	4.87
934192	AD1-046 E	3.25
934212	AD1-048 E	1.06
934392	AD1-063 E	0.94
934541	AD1-078 C	2.51
934542	AD1-078 E	1.48
934571	AD1-082 C	6.42
934572	AD1-082 E	3.66
934781	AD1-105 C	7.23
934782	AD1-105 E	5.03
934861	AD1-115 C	3.31
934862	AD1-115 E	5.4
935112	AD1-144 E	0.78
935161	AD1-151 C O1	13.78
935162	AD1-151 E O1	9.19
935212	AD1-156 E	1.19
936041	AD2-007	1.53
936051	AD2-008 C	2.51
936052	AD2-008 E	5.46
936151	AD2-021	0.21
936241	AD2-030 C	2.05
936242	AD2-030 E	1.05
936301	AD2-039 C	1.19
936302	AD2-039 E	1.94
936341	AD2-044 C	0.24
936342	AD2-044 E	0.27
936391	AD2-049 C	1.51
936392	AD2-049 E	1.51
936581	AD2-073 C	2.11
936582	AD2-073 E	1.04
936591	AD2-074 C	5.14
936592	AD2-074 E	8.39
936661	AD2-085 C	2.85
936662	AD2-085 E	4.65

Bus #	Bus	MW Impact
937221	AD2-160 C O1	4.83
937222	AD2-160 E O1	2.53
937251	AD2-164	4.06
937541	AD2-215 C	1.45
937542	AD2-215 E	0.77
938031	AE1-004 C	1.19
938032	AE1-004 E	1.94
938081	AE1-010	6.37
938181	AE1-027 C	1.94
938182	AE1-027 E	1.02
938191	AE1-028 C	1.12
938192	AE1-028 E	0.65
938291	AE1-044 C O1	20.41
938292	AE1-044 E O1	16.1
938461	AE1-065 C O1	23.6
938462	AE1-065 E O1	95.25
938471	AE1-066 C O1	24.26
938472	AE1-066 E O1	94.6
938481	AE1-067 C O1	22.06
938482	AE1-067 E O1	96.8
938491	AE1-068 C O1	45.17
938492	AE1-068 E O1	24.95
938531	AE1-072 C O1	14.44
938532	AE1-072 E O1	7.53
938551	AE1-074 C	2.11
938552	AE1-074 E	1.06
938631	AE1-085 C O1	9.18
938632	AE1-085 E O1	6.12
938841	AE1-109AC O1	7.56
938842	AE1-109AE O1	5.04
938961	AE1-124 C	2.11
938962	AE1-124 E	1.06
939041	AE1-133 C	28.95
939042	AE1-133 E	14.26
939191	AE1-149 C O1	9.04
939192	AE1-149 E O1	6.02
939221	AE1-153 C O1	13.67
939222	AE1-153 E O1	9.11
939231	AE1-154 C	1.72
939232	AE1-154 E	1.2
939241	AE1-155 C	14.07
939242	AE1-155 E	9.38
939261	AE1-157 C O1	13.77
939262	AE1-157 E O1	7.47
939271	AE1-158 C O1	14.05
939272	AE1-158 E O1	7.19
939281	AE1-159 C O1	11.85
939282	AE1-159 E O1	7.01
939311	AE1-162 C	1.81
939312	AE1-162 E	1.2
939411	AE1-173 C	71.11
939412	AE1-173 E	47.41

Bus #	Bus	MW Impact
939421	AE1-174 C	0.16
939422	AE1-174 E	0.25
939431	AE1-175 C	2.06
939432	AE1-175 E	1.02
939511	AE1-180 C	2.05
939512	AE1-180 E	1.37
939611	AE1-191 C	9.39
939612	AE1-191 E	6.26
939751	AE1-206 C O1	29.85
939752	AE1-206 E O1	19.9
940061	AE1-248 C O1	13.35
940062	AE1-248 E O1	8.9
940071	AE1-249 C	6.14
940072	AE1-249 E	4.58
AA2-074	AA2-074	3.66
BLUEG	BLUEG	0.17
CARR	CARR	1.39
CBM-S1	CBM-S1	5.45
CBM-S2	CBM-S2	10.1
CBM-W2	CBM-W2	28.18
CPL	CPL	5.37
DEARBORN	DEARBORN	1.15
EDWARDS	EDWARDS	0.04
G-007	G-007	3.94
LGEE	LGEE	0.03
MEC	MEC	1.71
O-066	O-066	13.28
RENSSELAER	RENSSELAER	1.1
TILTON	TILTON	0.06
TRIMBLE	TRIMBLE	0.04

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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
471146	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	91.89	99.84	DC	249.33

Bus #	Bus	MW Impact
314539	3UNCAMP	3.29
314541	3WATKINS	0.91
314554	3BTLEBRO	0.85
314557	3BETHEL	0.9
314566	3CRESWEL	3.48
314574	6EVERETS	5.04
314578	3HORNRTN	3.35
314582	3KELFORD	4.11
314594	6PLYMOTH	1.19
314603	3SCOT NK	3.72
314617	3TUNIS	1.02
314620	6CASHIE	1.13
314623	3WITAKRS	1.43
314648	6SUNBURY	1.43
314651	6WINFALL	2.8
315090	1YORKTN1	39.44
315091	1YORKTN2	40.93
315099	1CHESPKB	1.73
315108	1ELIZAR1	5.14
315109	1ELIZAR2	5.05
315110	1ELIZAR3	5.2
315131	1EDGECEMA	9.79
315132	1EDGECEMB	9.79
315150	1BUGGS 1	10.25
315151	1BUGGS 2	10.25
315233	1SURREY 2	50.93
900672	V4-068 E	0.36
901082	W1-029 E	73.46
907092	X1-038 E	8.23
913392	Y1-086 E	3.62
916042	Z1-036 E	70.58
916191	Z1-068 C	0.07
916192	Z1-068 E	3.22
916302	Z1-086 E	14.14
917122	Z2-027 E	1.73
917332	Z2-043 E	1.17
917342	Z2-044 E	0.61
917512	Z2-088 E OP1	4.53
918492	AA1-063AE OP	4.36
918512	AA1-065 E OP	5.61
918532	AA1-067 E	0.89

Bus #	Bus	MW Impact
918562	AA1-072 E	0.2
919152	AA1-139 E	10.88
919692	AA2-053 E	3.93
919701	AA2-057 C	7.58
919702	AA2-057 E	3.79
920042	AA2-088 E OP	13.0
920592	AA2-165 E	0.5
920672	AA2-174 E	0.45
920692	AA2-178 E	5.97
923801	AB2-015 C O1	11.51
923802	AB2-015 E O1	9.44
923832	AB2-022 E	2.04
923911	AB2-031 C O1	1.97
923912	AB2-031 E O1	0.97
923941	AB2-035 C	0.38
923942	AB2-035 E	0.16
923992	AB2-040 E O1	5.3
924152	AB2-059 E O1	5.75
924391	AB2-088 C	0.48
924392	AB2-088 E	0.23
924401	AB2-089 C	2.01
924402	AB2-089 E	1.03
924491	AB2-098 C	0.69
924492	AB2-098 E	0.3
924501	AB2-099 C	0.72
924502	AB2-099 E	0.31
925061	AB2-161 C O1	3.4
925062	AB2-161 E O1	5.55
925122	AB2-169 E	7.62
925281	AB2-186 C	0.97
925282	AB2-186 E	0.41
925291	AB2-188 C O1	3.43
925292	AB2-188 E O1	1.54
925521	AC1-027 C	0.53
925522	AC1-027 E	1.96
925591	AC1-034 C	7.23
925592	AC1-034 E	5.45
925781	AC1-054 C O1	6.84
925782	AC1-054 E O1	3.15
926071	AC1-086 C	19.43
926072	AC1-086 E	8.84
926201	AC1-098 C	6.77
926202	AC1-098 E	4.04
926211	AC1-099 C	2.27
926212	AC1-099 E	1.33
926271	AC1-105 C O1	5.32
926272	AC1-105 E O1	2.65
926662	AC1-147 E	2.25
926751	AC1-161 C O1	60.99
926752	AC1-161 E O1	26.03
927021	AC1-189 C	10.23
927022	AC1-189 E	5.1

Bus #	Bus	MW Impact
927141	AC1-208 C	9.62
927142	AC1-208 E	4.27
927251	AC1-221 C	2.27
927252	AC1-221 E	2.27
927261	AC1-222 C	3.46
927262	AC1-222 E	3.3
930402	AB1-081 E O1	4.06
930862	AB1-132 E O1	5.65
931232	AB1-173 E	0.93
931242	AB1-173AE	0.93
932041	AC2-012 C	17.32
932042	AC2-012 E	28.26
932591	AC2-079 C O1	7.16
932592	AC2-079 E O1	11.68
932631	AC2-084 C	9.66
932632	AC2-084 E	4.76
932761	AC2-100 C	5.22
932762	AC2-100 E	2.55
933291	AC2-141 C	60.99
933292	AC2-141 E	26.03
933731	AC2-196 C	0.47
933732	AC2-196 E	2.06
933991	AD1-023 C	17.86
933992	AD1-023 E	9.72
934061	AD1-033 C	12.96
934062	AD1-033 E	8.64
934201	AD1-047 C	7.06
934202	AD1-047 E	4.71
934231	AD1-050 C	4.43
934232	AD1-050 E	2.42
934311	AD1-055 C	2.41
934312	AD1-055 E	0.62
934331	AD1-057 C O1	10.03
934332	AD1-057 E O1	5.35
934341	AD1-058 C	5.69
934342	AD1-058 E	1.44
934521	AD1-076 C	75.69
934522	AD1-076 E	38.54
934571	AD1-082 C	7.75
934572	AD1-082 E	4.42
934611	AD1-087 C O1	9.44
934612	AD1-087 E O1	4.43
934621	AD1-088 C	12.82
934622	AD1-088 E	6.02
934991	AD1-131 C	1.86
934992	AD1-131 E	1.24
935112	AD1-144 E	1.46
935171	AD1-152 C O1	9.38
935172	AD1-152 E O1	6.25
936331	AD2-043 C	4.5
936332	AD2-043 E	5.33
936361	AD2-046 C O1	8.11

Bus #	Bus	MW Impact
936362	AD2-046 E O1	3.73
936391	AD2-049 C	2.52
936392	AD2-049 E	2.52
936401	AD2-051 C O1	10.68
936402	AD2-051 E O1	4.59
936531	AD2-068 C	5.95
936532	AD2-068 E	3.07
936661	AD2-085 C	4.25
936662	AD2-085 E	6.93
936701	AD2-089 C	8.08
936702	AD2-089 E	5.38
936711	AD2-090 C O1	9.28
936712	AD2-090 E O1	6.19
937221	AD2-160 C O1	9.98
937222	AD2-160 E O1	5.23
937251	AD2-164	6.64
937481	AD2-202 C O1	2.6
937482	AD2-202 E O1	1.31
937541	AD2-215 C	2.7
937542	AD2-215 E	1.43
937571	AD2-169 C	9.1
937572	AD2-169 E	6.07
938171	AE1-026 C1 O	37.54
938172	AE1-026 C2 O	5.43
938173	AE1-026 E O1	11.34
938181	AE1-027 C	4.03
938182	AE1-027 E	2.12
938191	AE1-028 C	2.34
938192	AE1-028 E	1.35
938221	AE1-035 C	2.85
938222	AE1-035 E	1.4
938461	AE1-065 C O1	48.64
938462	AE1-065 E O1	196.27
938471	AE1-066 C O1	49.99
938472	AE1-066 E O1	194.92
938481	AE1-067 C O1	45.46
938482	AE1-067 E O1	199.45
938491	AE1-068 C O1	90.34
938492	AE1-068 E O1	49.89
938501	AE1-069 C O1	70.54
938502	AE1-069 E O1	40.33
938531	AE1-072 C O1	29.61
938532	AE1-072 E O1	15.44
938661	AE1-088	2.31
938771	AE1-103 C O1	4.94
938772	AE1-103 E O1	6.82
938841	AE1-109AC O1	9.09
938842	AE1-109AE O1	6.06
939041	AE1-133 C	57.9
939042	AE1-133 E	28.52
939181	AE1-148 C O1	7.96
939182	AE1-148 E O1	5.31

Bus #	Bus	MW Impact
939311	AE1-162 C	2.95
939312	AE1-162 E	1.97
939411	AE1-173 C	149.6
939412	AE1-173 E	99.73
939421	AE1-174 C	0.17
939422	AE1-174 E	0.26
939431	AE1-175 C	2.18
939432	AE1-175 E	1.08
940061	AE1-248 C O1	16.11
940062	AE1-248 E O1	10.74
AA2-074	AA2-074	6.41
AE1-042	AE1-042	9.43
CARR	CARR	1.1
CBM-S1	CBM-S1	14.08
CBM-S2	CBM-S2	18.06
CBM-W1	CBM-W1	11.43
CBM-W2	CBM-W2	89.86
CIN	CIN	5.34
CPL	CPL	9.42
G-007	G-007	3.56
IPL	IPL	3.31
LGEE	LGEE	1.55
MEC	MEC	12.76
MECS	MECS	3.74
O-066	O-066	11.89
RENSSELAER	RENSSELAER	0.87
WEC	WEC	1.42

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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
471463	314209	6SKIFF CREEK	DVP	314386	6KINGS M	DVP	1	DVP_P1-2: LN 557	single	441.8	157.59	160.43	DC	27.6

Bus #	Bus	MW Impact
314421	6WINCHST	0.11
314507	3THOMPSN	0.13
315090	1YORKTN1	23.0
315091	1YORKTN2	23.87
315092	1YORKTN3	17.61
315098	1CHESPKA	0.17
315099	1CHESPKB	0.41
315108	1ELIZAR1	1.23
315109	1ELIZAR2	1.2
315110	1ELIZAR3	1.24
315233	1SURRY 2	12.53
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
916191	Z1-068 C	0.02
919151	AA1-139 C	0.93
923801	AB2-015 C O1	2.73
924241	AB2-068 O1	102.66
925281	AB2-186 C	0.23
925291	AB2-188 C O1	0.81
925521	AC1-027 C	0.13
926291	AC1-107 O1	154.96
926661	AC1-147 C	0.14
926751	AC1-161 C O1	13.97
932041	AC2-012 C	4.15
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.97
933731	AC2-196 C	0.11
933991	AD1-023 C	4.14
934061	AD1-033 C	3.08
934521	AD1-076 C	17.62
935111	AD1-144 C	0.11
936391	AD2-049 C	1.14
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.69
938172	AE1-026 C2 O	1.26

Bus #	Bus	MW Impact
938181	AE1-027 C	0.96
938191	AE1-028 C	0.55
938461	AE1-065 C O1	11.6
938471	AE1-066 C O1	11.92
938481	AE1-067 C O1	10.84
938531	AE1-072 C O1	7.04
938771	AE1-103 C O1	1.18
939041	AE1-133 C	13.82
939311	AE1-162 C	0.78
939411	AE1-173 C	27.6
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
CARR	CARR	0.19
CBM-S1	CBM-S1	2.48
CBM-S2	CBM-S2	3.14
CBM-W1	CBM-W1	2.07
CBM-W2	CBM-W2	15.87
CIN	CIN	0.97
CPL	CPL	1.65
IPL	IPL	0.6
LGEE	LGEE	0.28
MEC	MEC	2.28
MECS	MECS	0.71
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.26

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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
470821	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	140.76	144.9	DC	62.35

Bus #	Bus	MW Impact
314541	3WATKINS	0.23
314554	3BTLEBRO	0.4
314557	3BETHEL	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	0.22
315102	1BRUNSWICKG1	4.2
315103	1BRUNSWICKG2	4.2
315104	1BRUNSWICKG3	4.2
315105	1BRUNSWICKS1	8.72
315131	1EDGECEMA	4.73
315132	1EDGECEMB	4.73
315136	1ROSEMG1	1.33
315137	1ROSEMS1	0.82
315138	1ROSEMG2	0.62
315139	1GASTONA	1.92
315141	1GASTONB	1.92
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	25.59
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	0.44
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	0.8
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	1.46
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.25
931232	AB1-173 E	0.75
931241	AB1-173AC	0.25
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
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	10.21
938172	AE1-026 C2 O	1.48
938173	AE1-026 E O1	3.08

Bus #	Bus	MW Impact
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
938661	AE1-088	0.67
939071	AE1-135 C O1	19.71
939072	AE1-135 E O1	13.14
939181	AE1-148 C O1	4.18
939182	AE1-148 E O1	2.78
939371	AE1-168 C	5.23
939372	AE1-168 E	3.49
939411	AE1-173 C	37.41
939412	AE1-173 E	24.94
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
CPL	CPL	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
470849	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	137.74	141.87	DC	62.35

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	0.22
315102	1BRUNSWICKG1	4.2
315103	1BRUNSWICKG2	4.2
315104	1BRUNSWICKG3	4.2
315105	1BRUNSWICKS1	8.72
315131	1EDGECEMA	4.73
315132	1EDGECEMB	4.73
315136	1ROSEMG1	1.33
315137	1ROSEMS1	0.82
315138	1ROSEMG2	0.62
315139	1GASTONA	1.92
315141	1GASTONB	1.92
315150	1BUGGS 1	5.14
315151	1BUGGS 2	5.14
900672	V4-068 E	0.13
916301	Z1-086 C	25.59
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	0.44
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	0.8
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	1.46
930862	AB1-132 E O1	4.09

Bus #	Bus	MW Impact
931231	AB1-173 C	0.25
931232	AB1-173 E	0.75
931241	AB1-173AC	0.25
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
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	10.21
938172	AE1-026 C2 O	1.48
938173	AE1-026 E O1	3.08

Bus #	Bus	MW Impact
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
938661	AE1-088	0.67
939071	AE1-135 C O1	19.71
939072	AE1-135 E O1	13.14
939181	AE1-148 C O1	4.18
939182	AE1-148 E O1	2.78
939371	AE1-168 C	5.23
939372	AE1-168 E	3.49
939411	AE1-173 C	37.41
939412	AE1-173 E	24.94
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
CPL	CPL	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
470696	314287	6CHESTFB	DVP	314276	6BASIN	DVP	1	DVP_P4-2:562T563	breaker	549.0	161.31	165.72	DC	53.34

Bus #	Bus	MW Impact
314314	3LOCKS	0.17
314539	3UNCAMP	0.93
314541	3WATKINS	0.27
314554	3BTLEBRO	0.3
314557	3BETHEL	0.3
314572	3EMPORIA	0.21
314574	6EVERETS	1.53
314578	3HORNRTN	1.41
314582	3KELFORD	1.36
314594	6PLYMOTH	0.3
314603	3SCOT NK	1.29
314617	3TUNIS	0.33
314620	6CASHIE	0.31
314623	3WITAKRS	0.52
315065	1CHESTF6	26.38
315073	1STONECA	4.95
315074	1HOPCGN1	5.97
315075	1HOPCGN2	5.89
315076	1HOPPOLC	1.05
315077	1HOPHCF1	1.64
315078	1HOPHCF2	1.64
315079	1HOPHCF3	1.64
315080	1HOPHCF4	2.49
315131	1EDGECEMA	3.51
315132	1EDGECEMB	3.51
900672	V4-068 E	0.12
907092	X1-038 E	2.32
916302	Z1-086 E	3.66
917332	Z2-043 E	0.39
917342	Z2-044 E	0.22
917512	Z2-088 E OP1	1.44
918492	AA1-063AE OP	1.65
918512	AA1-065 E OP	1.66
918532	AA1-067 E	0.27
918562	AA1-072 E	0.06
919692	AA2-053 E	1.57
919701	AA2-057 C	2.76
919702	AA2-057 E	1.38
920042	AA2-088 E OP	4.19
920592	AA2-165 E	0.18

Bus #	Bus	MW Impact
920672	AA2-174 E	0.18
923801	AB2-015 C O1	3.33
923802	AB2-015 E O1	2.73
923851	AB2-025 C	0.26
923852	AB2-025 E	0.77
923911	AB2-031 C O1	1.08
923912	AB2-031 E O1	0.53
923941	AB2-035 C	0.13
923942	AB2-035 E	0.05
923992	AB2-040 E O1	2.89
924152	AB2-059 E O1	2.04
924391	AB2-088 C	0.16
924392	AB2-088 E	0.08
924491	AB2-098 C	0.21
924492	AB2-098 E	0.09
924501	AB2-099 C	0.23
924502	AB2-099 E	0.1
924511	AB2-100 C	6.68
924512	AB2-100 E	3.29
924812	AB2-134 E O1	6.69
925051	AB2-160 C O1	3.53
925052	AB2-160 E O1	5.77
925061	AB2-161 C O1	1.95
925062	AB2-161 E O1	3.17
925122	AB2-169 E	2.1
925171	AB2-174 C O1	3.46
925172	AB2-174 E O1	3.13
925331	AB2-190 C	11.44
925332	AB2-190 E	4.9
925591	AC1-034 C	2.57
925592	AC1-034 E	1.94
925821	AC1-061	0.0
926071	AC1-086 C	9.77
926072	AC1-086 E	4.45
926201	AC1-098 C	2.43
926202	AC1-098 E	1.45
926211	AC1-099 C	0.81
926212	AC1-099 E	0.48
927021	AC1-189 C	3.2
927022	AC1-189 E	1.6
927141	AC1-208 C	3.62
927142	AC1-208 E	1.61
927221	AC1-216 C O1	5.37
927222	AC1-216 E O1	4.23
930402	AB1-081 E O1	1.44
930862	AB1-132 E O1	2.84
931232	AB1-173 E	0.51
931242	AB1-173AE	0.51
932581	AC2-078 C O1	3.0
932582	AC2-078 E O1	4.9
932591	AC2-079 C O1	2.72
932592	AC2-079 E O1	4.44

Bus #	Bus	MW Impact
932631	AC2-084 C	3.46
932632	AC2-084 E	1.71
933991	AD1-023 C	4.73
933992	AD1-023 E	2.57
934011	AD1-025 C	9.24
934012	AD1-025 E	5.47
934201	AD1-047 C	3.86
934202	AD1-047 E	2.57
934331	AD1-057 C O1	4.2
934332	AD1-057 E O1	2.24
934521	AD1-076 C	19.28
934522	AD1-076 E	9.82
934571	AD1-082 C	4.43
934572	AD1-082 E	2.53
935161	AD1-151 C O1	9.19
935162	AD1-151 E O1	6.13
935211	AD1-156 C	0.32
935212	AD1-156 E	1.39
936041	AD2-007	0.98
936051	AD2-008 C	1.61
936052	AD2-008 E	3.5
936401	AD2-051 C O1	3.38
936402	AD2-051 E O1	1.45
936661	AD2-085 C	1.65
936662	AD2-085 E	2.7
936701	AD2-089 C	2.71
936702	AD2-089 E	1.81
936711	AD2-090 C O1	2.82
936712	AD2-090 E O1	1.88
937571	AD2-169 C	4.7
937572	AD2-169 E	3.13
938171	AE1-026 C1 O	10.16
938172	AE1-026 C2 O	1.47
938173	AE1-026 E O1	3.07
938221	AE1-035 C	0.84
938222	AE1-035 E	0.42
938491	AE1-068 C O1	23.35
938492	AE1-068 E O1	12.89
938501	AE1-069 C O1	18.25
938502	AE1-069 E O1	10.43
938631	AE1-085 C O1	7.84
938632	AE1-085 E O1	5.23
938661	AE1-088	0.64
938771	AE1-103 C O1	1.39
938772	AE1-103 E O1	1.93
938841	AE1-109AC O1	5.24
938842	AE1-109AE O1	3.49
939071	AE1-135 C O1	12.27
939072	AE1-135 E O1	8.18
939191	AE1-149 C O1	8.26
939192	AE1-149 E O1	5.51
939311	AE1-162 C	0.81

Bus #	Bus	MW Impact
939312	AE1-162 E	0.54
939411	AE1-173 C	32.0
939412	AE1-173 E	21.33
940061	AE1-248 C O1	9.22
940062	AE1-248 E O1	6.15
940071	AE1-249 C	4.66
940072	AE1-249 E	3.48
AA2-074	AA2-074	1.86
CARR	CARR	0.34
CBM-S1	CBM-S1	4.04
CBM-S2	CBM-S2	5.21
CBM-W1	CBM-W1	3.24
CBM-W2	CBM-W2	25.75
CIN	CIN	1.52
CPL	CPL	2.73
G-007	G-007	1.1
IPL	IPL	0.94
LGEE	LGEE	0.44
MEC	MEC	3.65
MECS	MECS	1.03
O-066	O-066	3.66
RENSSELAER	RENSSELAER	0.27
WEC	WEC	0.4

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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
471538	314296	6PENNIMAN	DVP	314415	6WALR209	DVP	1	DVP_P1-2: LN 557	single	441.8	146.21	149.04	DC	27.6

Bus #	Bus	MW Impact
314421	6WINCHST	0.11
314507	3THOMPSN	0.13
315090	1YORKTN1	23.0
315091	1YORKTN2	23.87
315092	1YORKTN3	17.61
315098	1CHESPKA	0.17
315099	1CHESPKB	0.41
315108	1ELIZAR1	1.23
315109	1ELIZAR2	1.2
315110	1ELIZAR3	1.24
315233	1SURRY 2	12.53
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
916191	Z1-068 C	0.02
919151	AA1-139 C	0.93
923801	AB2-015 C O1	2.73
924241	AB2-068 O1	102.66
925281	AB2-186 C	0.23
925291	AB2-188 C O1	0.81
925521	AC1-027 C	0.13
926291	AC1-107 O1	154.96
926661	AC1-147 C	0.14
926751	AC1-161 C O1	13.97
932041	AC2-012 C	4.15
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.97
933731	AC2-196 C	0.11
933991	AD1-023 C	4.14
934061	AD1-033 C	3.08
934521	AD1-076 C	17.62
935111	AD1-144 C	0.11
936391	AD2-049 C	1.14
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.69
938172	AE1-026 C2 O	1.26

Bus #	Bus	MW Impact
938181	AE1-027 C	0.96
938191	AE1-028 C	0.55
938461	AE1-065 C O1	11.6
938471	AE1-066 C O1	11.92
938481	AE1-067 C O1	10.84
938531	AE1-072 C O1	7.04
938771	AE1-103 C O1	1.18
939041	AE1-133 C	13.82
939311	AE1-162 C	0.78
939411	AE1-173 C	27.6
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
CARR	CARR	0.19
CBM-S1	CBM-S1	2.48
CBM-S2	CBM-S2	3.14
CBM-W1	CBM-W1	2.07
CBM-W2	CBM-W2	15.87
CIN	CIN	0.97
CPLE	CPLE	1.65
IPL	IPL	0.6
LGEE	LGEE	0.28
MEC	MEC	2.28
MECS	MECS	0.71
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.26

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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
471661	314415	6WALR209	DVP	314391	6LIGH209	DVP	1	DVP_P1-2: LN 557	single	441.8	131.09	133.92	DC	27.6

Bus #	Bus	MW Impact
314421	6WINCHST	0.11
314507	3THOMPSN	0.13
315090	1YORKTN1	23.0
315091	1YORKTN2	23.87
315092	1YORKTN3	17.61
315098	1CHESPKA	0.17
315099	1CHESPKB	0.41
315108	1ELIZAR1	1.23
315109	1ELIZAR2	1.2
315110	1ELIZAR3	1.24
315233	1SURRY 2	12.53
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
916191	Z1-068 C	0.02
919151	AA1-139 C	0.93
923801	AB2-015 C O1	2.73
924241	AB2-068 O1	102.66
925281	AB2-186 C	0.23
925291	AB2-188 C O1	0.81
925521	AC1-027 C	0.13
926291	AC1-107 O1	154.96
926661	AC1-147 C	0.14
926751	AC1-161 C O1	13.97
932041	AC2-012 C	4.15
932591	AC2-079 C O1	1.66
933291	AC2-141 C	13.97
933731	AC2-196 C	0.11
933991	AD1-023 C	4.14
934061	AD1-033 C	3.08
934521	AD1-076 C	17.62
935111	AD1-144 C	0.11
936391	AD2-049 C	1.14
936661	AD2-085 C	0.98
936711	AD2-090 C O1	2.18
937221	AD2-160 C O1	2.37
937251	AD2-164	3.53
937541	AD2-215 C	0.75
938171	AE1-026 C1 O	8.69
938172	AE1-026 C2 O	1.26

Bus #	Bus	MW Impact
938181	AE1-027 C	0.96
938191	AE1-028 C	0.55
938461	AE1-065 C O1	11.6
938471	AE1-066 C O1	11.92
938481	AE1-067 C O1	10.84
938531	AE1-072 C O1	7.04
938771	AE1-103 C O1	1.18
939041	AE1-133 C	13.82
939311	AE1-162 C	0.78
939411	AE1-173 C	27.6
939421	AE1-174 C	0.16
939431	AE1-175 C	1.08
CARR	CARR	0.19
CBM-S1	CBM-S1	2.48
CBM-S2	CBM-S2	3.14
CBM-W1	CBM-W1	2.07
CBM-W2	CBM-W2	15.87
CIN	CIN	0.97
CPLE	CPLE	1.65
IPL	IPL	0.6
LGEE	LGEE	0.28
MEC	MEC	2.28
MECS	MECS	0.71
RENSSELAER	RENSSELAER	0.15
WEC	WEC	0.26

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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
470900	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	126.35	132.43	DC	292.5

Bus #	Bus	MW Impact
314539	3UNCAMP	3.9
314541	3WATKINS	1.1
314554	3BTLEBRO	1.19
314557	3BETHEL	1.22
314566	3CRESWEL	3.94
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	40.59
315091	1YORKTN2	42.12
315102	1BRUNSWICKG1	15.02
315103	1BRUNSWICKG2	15.02
315104	1BRUNSWICKG3	15.02
315105	1BRUNSWICKS1	31.2
315108	1ELIZAR1	5.16
315109	1ELIZAR2	5.07
315110	1ELIZAR3	5.23
315131	1EDGECEMA	13.88
315132	1EDGECEMB	13.88
315233	1SURRY 2	40.74
900672	V4-068 E	0.47
901082	W1-029 E	77.59
907092	X1-038 E	9.74
913392	Y1-086 E	3.74
916042	Z1-036 E	76.27
916191	Z1-068 C	0.07
916192	Z1-068 E	3.23
916301	Z1-086 C	91.67
916302	Z1-086 E	18.71
917122	Z2-027 E	1.8
917332	Z2-043 E	1.55
917342	Z2-044 E	0.87

Bus #	Bus	MW Impact
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	3.95
919152	AA1-139 E	11.04
919692	AA2-053 E	5.68
919701	AA2-057 C	10.72
919702	AA2-057 E	5.36
920042	AA2-088 E OP	16.57
920592	AA2-165 E	0.71
920672	AA2-174 E	0.66
920692	AA2-178 E	6.76
923801	AB2-015 C O1	13.81
923802	AB2-015 E O1	11.32
923832	AB2-022 E	2.11
923852	AB2-025 E	1.64
923911	AB2-031 C O1	3.34
923912	AB2-031 E O1	1.65
923941	AB2-035 C	0.51
923942	AB2-035 E	0.22
923992	AB2-040 E O1	8.98
924152	AB2-059 E O1	8.12
924241	AB2-068 O1	333.72
924391	AB2-088 C	0.66
924392	AB2-088 E	0.32
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	17.26
924512	AB2-100 E	8.5
925061	AB2-161 C O1	4.85
925062	AB2-161 E O1	7.92
925122	AB2-169 E	9.29
925171	AB2-174 C O1	10.48
925172	AB2-174 E O1	9.48
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
925521	AC1-027 C	0.53
925522	AC1-027 E	1.97
925591	AC1-034 C	10.22
925592	AC1-034 E	7.71
925781	AC1-054 C O1	6.77
925782	AC1-054 E O1	3.12
926071	AC1-086 C	31.39
926072	AC1-086 E	14.29
926201	AC1-098 C	9.4
926202	AC1-098 E	5.6

Bus #	Bus	MW Impact
926211	AC1-099 C	3.15
926212	AC1-099 E	1.85
926291	AC1-107 O1	503.73
926662	AC1-147 E	2.27
926751	AC1-161 C O1	55.57
926752	AC1-161 E O1	23.72
927021	AC1-189 C	13.4
927022	AC1-189 E	6.68
927141	AC1-208 C	13.69
927142	AC1-208 E	6.08
930402	AB1-081 E O1	5.74
930862	AB1-132 E O1	9.13
931232	AB1-173 E	1.57
931242	AB1-173AE	1.57
932041	AC2-012 C	17.46
932042	AC2-012 E	28.48
932581	AC2-078 C O1	5.17
932582	AC2-078 E O1	8.44
932591	AC2-079 C O1	8.82
932592	AC2-079 E O1	14.4
932631	AC2-084 C	13.39
932632	AC2-084 E	6.6
933291	AC2-141 C	55.57
933292	AC2-141 E	23.72
933731	AC2-196 C	0.48
933732	AC2-196 E	2.06
933991	AD1-023 C	21.23
933992	AD1-023 E	11.56
934061	AD1-033 C	13.0
934062	AD1-033 E	8.67
934201	AD1-047 C	11.98
934202	AD1-047 E	7.98
934331	AD1-057 C O1	15.05
934332	AD1-057 E O1	8.03
934521	AD1-076 C	88.45
934522	AD1-076 E	45.04
934571	AD1-082 C	11.06
934572	AD1-082 E	6.31
934611	AD1-087 C O1	12.76
934612	AD1-087 E O1	6.0
934621	AD1-088 C	17.19
934622	AD1-088 E	8.07
935112	AD1-144 E	1.54
935171	AD1-152 C O1	12.68
935172	AD1-152 E O1	8.45
936391	AD2-049 C	2.65
936392	AD2-049 E	2.65
936401	AD2-051 C O1	13.75
936402	AD2-051 E O1	5.91
936531	AD2-068 C	7.89
936532	AD2-068 E	4.06
936661	AD2-085 C	5.27

Bus #	Bus	MW Impact
936662	AD2-085 E	8.6
936701	AD2-089 C	11.01
936702	AD2-089 E	7.34
936711	AD2-090 C O1	11.43
936712	AD2-090 E O1	7.62
937221	AD2-160 C O1	10.09
937222	AD2-160 E O1	5.29
937251	AD2-164	6.9
937481	AD2-202 C O1	3.51
937482	AD2-202 E O1	1.77
937541	AD2-215 C	2.84
937542	AD2-215 E	1.51
937571	AD2-169 C	14.97
937572	AD2-169 E	9.98
938171	AE1-026 C1 O	45.07
938172	AE1-026 C2 O	6.52
938173	AE1-026 E O1	13.61
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	1.75
938461	AE1-065 C O1	48.93
938462	AE1-065 E O1	197.45
938471	AE1-066 C O1	50.29
938472	AE1-066 E O1	196.1
938481	AE1-067 C O1	45.73
938482	AE1-067 E O1	200.65
938491	AE1-068 C O1	119.48
938492	AE1-068 E O1	65.99
938501	AE1-069 C O1	93.35
938502	AE1-069 E O1	53.37
938531	AE1-072 C O1	30.16
938532	AE1-072 E O1	15.72
938631	AE1-085 C O1	14.1
938632	AE1-085 E O1	9.4
938661	AE1-088	2.81
938771	AE1-103 C O1	5.84
938772	AE1-103 E O1	8.07
938841	AE1-109AC O1	13.01
938842	AE1-109AE O1	8.68
939041	AE1-133 C	60.35
939042	AE1-133 E	29.72
939071	AE1-135 C O1	30.98
939072	AE1-135 E O1	20.65
939311	AE1-162 C	3.24
939312	AE1-162 E	2.16
939411	AE1-173 C	175.5
939412	AE1-173 E	117.0
940061	AE1-248 C O1	22.99
940062	AE1-248 E O1	15.33

Bus #	Bus	MW Impact
AA2-074	AA2-074	8.88
AB2-013	AB2-013	5.67
AE1-033	AE1-033	5.91
AE1-042	AE1-042	14.35
CARR	CARR	1.71
CBM-S1	CBM-S1	21.92
CBM-S2	CBM-S2	25.58
CBM-W1	CBM-W1	19.91
CBM-W2	CBM-W2	141.65
CIN	CIN	9.27
CPL	CPL	13.06
G-007	G-007	5.66
IPL	IPL	5.78
LGEE	LGEE	2.7
MEC	MEC	21.05
MECS	MECS	7.42
O-066	O-066	18.88
RENSSELAER	RENSSELAER	1.36
WEC	WEC	2.45
Z1-043	Z1-043	9.67

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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
470916	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	116.74	129.55	DC	133.15

Bus #	Bus	MW Impact
315102	1BRUNSWICKG1	8.79
315103	1BRUNSWICKG2	8.79
315104	1BRUNSWICKG3	8.79
315105	1BRUNSWICKS1	18.26
315153	1CLOVER1	10.25
315154	1CLOVER2	10.11
916301	Z1-086 C	54.02
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
939411	AE1-173 C	79.89
939412	AE1-173 E	53.26
AA2-074	AA2-074	3.01
CARR	CARR	0.38
CBM-S1	CBM-S1	8.29
CBM-S2	CBM-S2	9.14
CBM-W1	CBM-W1	8.24
CBM-W2	CBM-W2	54.28
CIN	CIN	3.74
CPL	CPL	4.42
G-007	G-007	1.32
IPL	IPL	2.34
LGEE	LGEE	1.08
MEC	MEC	8.32
MECS	MECS	3.45
O-066	O-066	4.39
RENSSELAER	RENSSELAER	0.3
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
470816	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: 563T576	breaker	3144.0	140.19	143.74	DC	244.86

Bus #	Bus	MW Impact
314189	6PAPERMILL	10.93
314421	6WINCHST	0.25
314539	3UNCAMP	3.9
314541	3WATKINS	1.09
314554	3BTLEBRO	1.02
314557	3BETHEL	1.08
314566	3CRESWEL	3.91
314572	3EMPORIA	0.55
314574	6EVERETS	5.92
314578	3HORNRTN	4.48
314582	3KELFORD	5.03
314594	6PLYMOTH	1.35
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	8.71
315074	1HOPCGN1	10.5
315075	1HOPCGN2	10.37
315090	1YORKTN1	53.47
315091	1YORKTN2	55.48
315092	1YORKTN3	40.79
315110	1ELIZAR3	5.54
315131	1EDGECEMA	11.91
315132	1EDGECEMB	11.91
315233	1SURRY 2	49.18
900672	V4-068 E	0.45
901082	W1-029 E	79.97
907092	X1-038 E	9.74
913392	Y1-086 E	3.89
916042	Z1-036 E	77.57
916192	Z1-068 E	3.42
916302	Z1-086 E	13.63
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	6.65
918532	AA1-067 E	1.04
918562	AA1-072 E	0.24
919152	AA1-139 E	11.56
919692	AA2-053 E	5.17
919701	AA2-057 C	9.39
919702	AA2-057 E	4.69
920042	AA2-088 E OP	15.96
920592	AA2-165 E	0.62
920672	AA2-174 E	0.6
920692	AA2-178 E	6.71
923801	AB2-015 C O1	13.72
923802	AB2-015 E O1	11.25
923832	AB2-022 E	2.19
923842	AB2-024 E	1.84
923852	AB2-025 E	1.45
923911	AB2-031 C O1	2.98
923912	AB2-031 E O1	1.47
923941	AB2-035 C	0.45
923942	AB2-035 E	0.19
923992	AB2-040 E O1	8.02
924152	AB2-059 E O1	6.97
924241	AB2-068 O1	619.41
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	15.33
924512	AB2-100 E	7.55
924812	AB2-134 E O1	18.11
925051	AB2-160 C O1	6.26
925052	AB2-160 E O1	10.22
925061	AB2-161 C O1	5.12
925062	AB2-161 E O1	8.35
925122	AB2-169 E	8.8
925171	AB2-174 C O1	9.33
925172	AB2-174 E O1	8.44
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	29.18
925332	AB2-190 E	12.5
925522	AC1-027 E	2.08
925591	AC1-034 C	8.76
925592	AC1-034 E	6.61
925861	AC1-065 C	5.36
925862	AC1-065 E	8.75
926071	AC1-086 C	28.13
926072	AC1-086 E	12.8

Bus #	Bus	MW Impact
926201	AC1-098 C	8.44
926202	AC1-098 E	5.03
926211	AC1-099 C	2.83
926212	AC1-099 E	1.66
926291	AC1-107 O1	934.96
926662	AC1-147 E	2.41
926751	AC1-161 C O1	59.48
926752	AC1-161 E O1	25.39
926781	AC1-164 C	67.95
926782	AC1-164 E	30.53
927021	AC1-189 C	12.09
927022	AC1-189 E	6.02
927141	AC1-208 C	12.18
927142	AC1-208 E	5.41
927221	AC1-216 C O1	14.56
927222	AC1-216 E O1	11.45
930402	AB1-081 E O1	4.92
930862	AB1-132 E O1	8.19
931232	AB1-173 E	1.4
931242	AB1-173AE	1.4
932041	AC2-012 C	18.55
932042	AC2-012 E	30.26
932532	AC2-073 E	1.95
932581	AC2-078 C O1	5.51
932582	AC2-078 E O1	9.0
932591	AC2-079 C O1	9.25
932592	AC2-079 E O1	15.1
932631	AC2-084 C	12.04
932632	AC2-084 E	5.93
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	59.48
933292	AC2-141 E	25.39
933732	AC2-196 E	2.17
933991	AD1-023 C	20.57
933992	AD1-023 E	11.2
934011	AD1-025 C	25.02
934012	AD1-025 E	14.82
934061	AD1-033 C	13.69
934062	AD1-033 E	9.13
934141	AD1-041 C	8.49
934142	AD1-041 E	5.66
934201	AD1-047 C	10.69
934202	AD1-047 E	7.13
934212	AD1-048 E	1.38

Bus #	Bus	MW Impact
934331	AD1-057 C O1	13.17
934332	AD1-057 E O1	7.03
934392	AD1-063 E	1.75
934521	AD1-076 C	86.33
934522	AD1-076 E	43.96
934571	AD1-082 C	11.67
934572	AD1-082 E	6.65
934611	AD1-087 C O1	9.63
934612	AD1-087 E O1	4.53
935112	AD1-144 E	1.67
935161	AD1-151 C O1	23.45
935162	AD1-151 E O1	15.63
935171	AD1-152 C O1	9.57
935172	AD1-152 E O1	6.38
935212	AD1-156 E	1.73
936041	AD2-007	2.66
936051	AD2-008 C	4.36
936052	AD2-008 E	9.48
936151	AD2-021	0.33
936241	AD2-030 C	3.71
936242	AD2-030 E	1.9
936301	AD2-039 C	2.15
936302	AD2-039 E	3.5
936341	AD2-044 C	0.29
936342	AD2-044 E	0.33
936391	AD2-049 C	3.25
936392	AD2-049 E	3.25
936401	AD2-051 C O1	12.92
936402	AD2-051 E O1	5.55
936531	AD2-068 C	6.83
936532	AD2-068 E	3.52
936591	AD2-074 C	7.45
936592	AD2-074 E	12.16
936661	AD2-085 C	5.53
936662	AD2-085 E	9.03
936701	AD2-089 C	9.68
936702	AD2-089 E	6.45
936711	AD2-090 C O1	11.2
936712	AD2-090 E O1	7.47
937221	AD2-160 C O1	10.58
937222	AD2-160 E O1	5.55
937251	AD2-164	8.86
937481	AD2-202 C O1	2.65
937482	AD2-202 E O1	1.34
937541	AD2-215 C	3.09
937542	AD2-215 E	1.64
937571	AD2-169 C	13.39
937572	AD2-169 E	8.93
938031	AE1-004 C	2.15
938032	AE1-004 E	3.5
938171	AE1-026 C1 O	43.48
938172	AE1-026 C2 O	6.29

Bus #	Bus	MW Impact
938173	AE1-026 E O1	13.13
938181	AE1-027 C	4.25
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	51.72
938462	AE1-065 E O1	208.71
938471	AE1-066 C O1	53.15
938472	AE1-066 E O1	207.28
938481	AE1-067 C O1	48.34
938482	AE1-067 E O1	212.1
938491	AE1-068 C O1	86.96
938492	AE1-068 E O1	48.03
938501	AE1-069 C O1	68.0
938502	AE1-069 E O1	38.87
938531	AE1-072 C O1	31.52
938532	AE1-072 E O1	16.43
938631	AE1-085 C O1	15.01
938632	AE1-085 E O1	10.01
938661	AE1-088	2.67
938771	AE1-103 C O1	5.85
938772	AE1-103 E O1	8.07
938841	AE1-109AC O1	13.73
938842	AE1-109AE O1	9.15
939041	AE1-133 C	62.46
939042	AE1-133 E	30.76
939071	AE1-135 C O1	27.48
939072	AE1-135 E O1	18.32
939191	AE1-149 C O1	14.18
939192	AE1-149 E O1	9.45
939241	AE1-155 C	19.75
939242	AE1-155 E	13.16
939311	AE1-162 C	3.68
939312	AE1-162 E	2.45
939411	AE1-173 C	146.92
939412	AE1-173 E	97.95
939421	AE1-174 C	0.66
939422	AE1-174 E	1.0
939431	AE1-175 C	4.42
939432	AE1-175 E	2.19
939611	AE1-191 C	16.97
939612	AE1-191 E	11.32
940061	AE1-248 C O1	24.25
940062	AE1-248 E O1	16.17
940071	AE1-249 C	8.26
940072	AE1-249 E	6.16
AA2-074	AA2-074	6.78
AE1-042	AE1-042	9.38
CARR	CARR	1.33
CBM-S1	CBM-S1	13.77

Bus #	Bus	MW Impact
CBM-S2	CBM-S2	18.81
CBM-W1	CBM-W1	9.82
CBM-W2	CBM-W2	86.63
CIN	CIN	4.7
CPLE	CPLE	9.96
G-007	G-007	4.24
IPL	IPL	2.88
LGEE	LGEE	1.37
MEC	MEC	11.75
MECS	MECS	2.52
O-066	O-066	14.17
RENSSELAER	RENSSELAER	1.05
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
471531	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	128.14	129.91	DC	93.99

Bus #	Bus	MW Impact
314229	6MT RD221	0.13
314236	6NRTHEST	0.2
314250	6ROCKVILLE	0.35
315037	1LDYSMT1	4.8
315038	1LDYSMT2	4.8
315039	1LDYSMT3	5.07
315040	1LDYSMT4	5.08
315041	1LDYSMT5	5.1
315043	1FOUR RIVERA	3.81
315044	1FOUR RIVERB	2.95
315045	1FOUR RIVERC	3.81
315046	1FOUR RIVERD	2.95
315047	1FOUR RIVERE	2.95
315048	1FOUR RIVERF	3.8
315053	1BELMED1	19.52
315054	1BELMED2	19.52
315055	1BELMED3	16.2
315058	1CHESTF3	20.48
315059	1CHESTF4	33.2
315067	1DARBY 1	2.72
315068	1DARBY 2	2.73
315069	1DARBY 3	2.74
315070	1DARBY 4	2.74
315074	1HOPCGN1	9.39
315075	1HOPCGN2	9.27
315083	1SPRUNCA	11.95
315084	1SPRUNCB	11.95
315085	1SPRUNCC	8.86
315086	1SPRUNCD	8.86
315090	1YORKTN1	31.87
315091	1YORKTN2	33.07
315225	1N ANNA1	39.05
315226	1N ANNA2	39.14
919211	AA1-145	11.0
923801	AB2-015 C O1	9.08
924061	AB2-050	0.65
924241	AB2-068 O1	226.61
924501	AB2-099 C	0.59
924511	AB2-100 C	11.83
925051	AB2-160 C O1	6.1

Bus #	Bus	MW Impact
925061	AB2-161 C O1	3.71
925171	AB2-174 C O1	7.08
925281	AB2-186 C	0.66
925291	AB2-188 C O1	2.48
925331	AB2-190 C	22.51
925861	AC1-065 C	3.77
926001	AC1-076 C	4.93
926291	AC1-107 O1	342.05
926411	AC1-112 C	0.35
926551	AC1-134	1.62
926731	AC1-158 C	93.31
926751	AC1-161 C O1	33.51
926781	AC1-164 C	45.57
927041	AC1-191 C O1	10.78
927221	AC1-216 C O1	11.0
930121	AB1-027 C	0.45
932041	AC2-012 C	11.22
932501	AC2-070 C	0.3
932581	AC2-078 C O1	4.5
932591	AC2-079 C O1	6.27
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	1.53
933061	AC2-130	2.71
933071	AC2-131 1	1.84
933081	AC2-131 2	0.83
933111	AC2-132 1	0.97
933121	AC2-132 2	0.49
933261	AC2-137 C	0.36
933291	AC2-141 C	33.51
933501	AC2-165 C	9.61
933991	AD1-023 C	13.53
934011	AD1-025 C	18.91
934061	AD1-033 C	8.23
934141	AD1-041 C	5.92
934211	AD1-048 C	0.42
934521	AD1-076 C	56.31
934541	AD1-078 C	3.04
934571	AD1-082 C	8.46
934781	AD1-105 C	7.79
935161	AD1-151 C O1	18.09
936041	AD2-007	2.01
936051	AD2-008 C	3.29
936151	AD2-021	0.27
936241	AD2-030 C	2.57
936301	AD2-039 C	1.51
936341	AD2-044 C	0.26
936391	AD2-049 C	1.99
936401	AD2-051 C O1	8.84

Bus #	Bus	MW Impact
936591	AD2-074 C	5.94
936661	AD2-085 C	3.76
936711	AD2-090 C O1	7.5
937221	AD2-160 C O1	6.39
937251	AD2-164	5.33
937541	AD2-215 C	1.91
938031	AE1-004 C	1.51
938081	AE1-010	6.84
938171	AE1-026 C1 O	28.74
938172	AE1-026 C2 O	4.16
938181	AE1-027 C	2.56
938191	AE1-028 C	1.49
938221	AE1-035 C	2.28
938461	AE1-065 C O1	31.2
938471	AE1-066 C O1	32.06
938481	AE1-067 C O1	29.15
938491	AE1-068 C O1	59.9
938501	AE1-069 C O1	46.95
938531	AE1-072 C O1	19.11
938551	AE1-074 C	2.75
938561	AE1-075 C	2.13
938631	AE1-085 C O1	12.08
938771	AE1-103 C O1	3.84
938841	AE1-109AC O1	9.97
939041	AE1-133 C	38.35
939071	AE1-135 C O1	21.33
939191	AE1-149 C O1	11.88
939241	AE1-155 C	16.08
939261	AE1-157 C O1	16.2
939271	AE1-158 C O1	16.54
939311	AE1-162 C	2.38
939411	AE1-173 C	93.99
939421	AE1-174 C	0.21
939431	AE1-175 C	2.7
939611	AE1-191 C	11.83
939751	AE1-206 C O1	38.04
940061	AE1-248 C O1	17.59
940071	AE1-249 C	8.05
AA2-074	AA2-074	5.19
AE1-042	AE1-042	8.4
CARR	CARR	1.67
CBM-S1	CBM-S1	12.69
CBM-S2	CBM-S2	15.08
CBM-W1	CBM-W1	9.29
CBM-W2	CBM-W2	79.28
CIN	CIN	4.7
CPL	CPL	7.63
IPL	IPL	2.91
LGEE	LGEE	1.41
MEC	MEC	11.07
MECS	MECS	2.19
RENSSELAER	RENSSELAER	1.32

Bus #	Bus	MW Impact
WEC	WEC	1.2

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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
471309	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	161.97	164.78	DC	149.5

Bus #	Bus	MW Impact
314229	6MT RD221	0.21
314236	6NRTHEST	0.33
314309	6IRON208	0.78
315053	1BELMED1	31.58
315054	1BELMED2	31.58
315055	1BELMED3	26.21
315058	1CHESTF3	33.54
315059	1CHESTF4	54.37
315060	1CHESTF5	17.65
315061	1CHESTG7	6.92
315062	1CHESTS7	3.14
315063	1CHESTG8	6.79
315064	1CHESTS8	3.5
315067	1DARBY 1	4.51
315068	1DARBY 2	4.52
315069	1DARBY 3	4.54
315070	1DARBY 4	4.54
315074	1HOPCGN1	15.47
315075	1HOPCGN2	15.27
315083	1SPRUNCA	19.11
315084	1SPRUNCB	19.11
315085	1SPRUNCC	14.17
315086	1SPRUNCD	14.17
315090	1YORKTN1	53.32
315091	1YORKTN2	55.33
315092	1YORKTN3	40.59
315233	1SURREY 2	44.07
923801	AB2-015 C O1	14.87
923911	AB2-031 C O1	3.63
924241	AB2-068 O1	428.58
924501	AB2-099 C	0.97
924511	AB2-100 C	19.05
925051	AB2-160 C O1	9.9
925061	AB2-161 C O1	6.07
925171	AB2-174 C O1	11.42
925281	AB2-186 C	1.08
925291	AB2-188 C O1	4.07
925331	AB2-190 C	37.15
925861	AC1-065 C	6.03
926071	AC1-086 C	33.56

Bus #	Bus	MW Impact
926291	AC1-107 O1	646.91
926411	AC1-112 C	0.59
926751	AC1-161 C O1	55.61
926781	AC1-164 C	77.77
927041	AC1-191 C O1	17.06
927221	AC1-216 C O1	18.16
930121	AB1-027 C	0.76
932041	AC2-012 C	18.51
932501	AC2-070 C	0.5
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	0.61
933291	AC2-141 C	55.61
933991	AD1-023 C	22.2
934011	AD1-025 C	31.21
934061	AD1-033 C	13.57
934141	AD1-041 C	9.42
934201	AD1-047 C	13.01
934211	AD1-048 C	0.71
934521	AD1-076 C	92.46
934571	AD1-082 C	13.83
935161	AD1-151 C O1	29.85
936041	AD2-007	3.31
936051	AD2-008 C	5.43
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	14.45
936661	AD2-085 C	6.17
936711	AD2-090 C O1	12.28
937221	AD2-160 C O1	10.53
937251	AD2-164	8.9
937541	AD2-215 C	3.16
937571	AD2-169 C	16.21
938031	AE1-004 C	2.41
938171	AE1-026 C1 O	47.14
938172	AE1-026 C2 O	6.82
938181	AE1-027 C	4.22
938191	AE1-028 C	2.45
938221	AE1-035 C	3.73
938461	AE1-065 C O1	51.45
938471	AE1-066 C O1	52.88
938481	AE1-067 C O1	48.08
938491	AE1-068 C O1	93.3
938501	AE1-069 C O1	73.18

Bus #	Bus	MW Impact
938531	AE1-072 C O1	31.5
938551	AE1-074 C	4.28
938631	AE1-085 C O1	19.65
938661	AE1-088	2.92
938771	AE1-103 C O1	6.3
938841	AE1-109AC O1	16.29
939041	AE1-133 C	63.16
939071	AE1-135 C O1	34.32
939191	AE1-149 C O1	19.3
939311	AE1-162 C	3.93
939411	AE1-173 C	149.5
939421	AE1-174 C	0.68
939431	AE1-175 C	4.55
939611	AE1-191 C	18.84
939751	AE1-206 C O1	50.38
940061	AE1-248 C O1	28.75
940071	AE1-249 C	13.06
AA2-074	AA2-074	8.68
AB2-013	AB2-013	7.98
AE1-033	AE1-033	8.32
AE1-042	AE1-042	16.97
CARR	CARR	2.56
CBM-S1	CBM-S1	26.97
CBM-S2	CBM-S2	26.18
CBM-W1	CBM-W1	28.38
CBM-W2	CBM-W2	177.18
CIN	CIN	13.24
CPL	CPL	12.76
IPL	IPL	8.34
LGEE	LGEE	3.9
MEC	MEC	28.14
MECS	MECS	11.92
RENSSELAER	RENSSELAER	2.03
WEC	WEC	3.48
Z1-043	Z1-043	13.69

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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
470943	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3351.0	120.02	122.17	DC	158.28

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.52
314229	6MT RD221	0.13
314250	6ROCKVILLE	0.36
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	0.87
314648	6SUNBURY	0.97
314651	6WINFALL	1.91
315040	1LDYSMT4	5.19
315041	1LDYSMT5	5.21
315043	1FOUR RIVERA	3.87
315044	1FOUR RIVERB	2.99
315045	1FOUR RIVERC	3.87
315046	1FOUR RIVERD	2.99
315047	1FOUR RIVERE	2.99
315048	1FOUR RIVERF	3.86
315053	1BELMED1	19.75
315054	1BELMED2	19.75
315055	1BELMED3	16.39
315058	1CHESTF3	20.74
315059	1CHESTF4	33.62
315073	1STONECA	7.88
315074	1HOPCGN1	9.51
315075	1HOPCGN2	9.38
315083	1SPRUNCA	12.09
315084	1SPRUNCB	12.09
315085	1SPRUNCC	8.96
315086	1SPRUNCD	8.96
315090	1YORKTN1	32.26
315091	1YORKTN2	33.48
315225	1N ANNA1	39.47
315226	1N ANNA2	39.55
900672	V4-068 E	0.31
901082	W1-029 E	49.99
907092	X1-038 E	6.47
913392	Y1-086 E	2.4

Bus #	Bus	MW Impact
916042	Z1-036 E	49.07
916192	Z1-068 E	2.08
916302	Z1-086 E	9.49
917122	Z2-027 E	1.16
918512	AA1-065 E OP	4.52
919152	AA1-139 E	7.07
919211	AA1-145	11.18
920042	AA2-088 E OP	10.97
920692	AA2-178 E	4.35
923801	AB2-015 C O1	9.17
923802	AB2-015 E O1	7.52
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	6.09
924061	AB2-050	0.66
924241	AB2-068 O1	229.82
924501	AB2-099 C	0.6
924502	AB2-099 E	0.26
924511	AB2-100 C	11.94
924512	AB2-100 E	5.88
924812	AB2-134 E O1	13.85
925051	AB2-160 C O1	6.17
925052	AB2-160 E O1	10.07
925061	AB2-161 C O1	3.76
925062	AB2-161 E O1	6.13
925122	AB2-169 E	5.94
925171	AB2-174 C O1	7.13
925172	AB2-174 E O1	6.45
925281	AB2-186 C	0.66
925282	AB2-186 E	0.28
925291	AB2-188 C O1	2.5
925292	AB2-188 E O1	1.12
925331	AB2-190 C	22.78
925332	AB2-190 E	9.76
925522	AC1-027 E	1.27
925861	AC1-065 C	3.82
925862	AC1-065 E	6.23
926291	AC1-107 O1	346.9
926411	AC1-112 C	0.35
926412	AC1-112 E	1.29
926551	AC1-134	1.64
926662	AC1-147 E	1.47
926731	AC1-158 C	94.24
926732	AC1-158 E	41.36
926751	AC1-161 C O1	33.89
926752	AC1-161 E O1	14.47
926781	AC1-164 C	46.18
926782	AC1-164 E	20.75

Bus #	Bus	MW Impact
927041	AC1-191 C O1	10.94
927042	AC1-191 E O1	5.45
927221	AC1-216 C O1	11.13
927222	AC1-216 E O1	8.75
930121	AB1-027 C	0.46
930122	AB1-027 E	1.27
931232	AB1-173 E	1.07
931242	AB1-173AE	1.07
932041	AC2-012 C	11.34
932042	AC2-012 E	18.51
932501	AC2-070 C	0.3
932502	AC2-070 E	0.81
932532	AC2-073 E	1.35
932581	AC2-078 C O1	4.56
932582	AC2-078 E O1	7.43
932591	AC2-079 C O1	6.34
932592	AC2-079 E O1	10.35
932831	AC2-110 C	1.53
932832	AC2-110 E	2.49
933011	AC2-125	3.15
933021	AC2-126	3.17
933031	AC2-127	1.73
933041	AC2-128	1.67
933051	AC2-129	1.57
933061	AC2-130	2.74
933071	AC2-131 1	1.86
933081	AC2-131 2	0.84
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	33.89
933292	AC2-141 E	14.47
933732	AC2-196 E	1.32
933991	AD1-023 C	13.66
933992	AD1-023 E	7.43
934011	AD1-025 C	19.13
934012	AD1-025 E	11.33
934061	AD1-033 C	8.32
934062	AD1-033 E	5.55
934141	AD1-041 C	6.0
934142	AD1-041 E	4.0
934201	AD1-047 C	8.11
934202	AD1-047 E	5.41
934212	AD1-048 E	1.41
934392	AD1-063 E	1.21
934521	AD1-076 C	56.86
934522	AD1-076 E	28.95
934571	AD1-082 C	8.56
934572	AD1-082 E	4.88
934781	AD1-105 C	7.93
934782	AD1-105 E	5.51

Bus #	Bus	MW Impact
935112	AD1-144 E	1.05
935161	AD1-151 C O1	18.31
935162	AD1-151 E O1	12.2
935212	AD1-156 E	1.59
936041	AD2-007	2.03
936051	AD2-008 C	3.33
936052	AD2-008 E	7.25
936151	AD2-021	0.27
936241	AD2-030 C	2.6
936242	AD2-030 E	1.33
936301	AD2-039 C	1.53
936302	AD2-039 E	2.49
936341	AD2-044 C	0.26
936342	AD2-044 E	0.3
936391	AD2-049 C	2.01
936392	AD2-049 E	2.01
936401	AD2-051 C O1	8.91
936402	AD2-051 E O1	3.83
936581	AD2-073 C	2.26
936582	AD2-073 E	1.12
936591	AD2-074 C	6.03
936592	AD2-074 E	9.84
936661	AD2-085 C	3.81
936662	AD2-085 E	6.21
936711	AD2-090 C O1	7.58
936712	AD2-090 E O1	5.05
937221	AD2-160 C O1	6.46
937222	AD2-160 E O1	3.39
937251	AD2-164	5.4
937541	AD2-215 C	1.94
937542	AD2-215 E	1.03
938031	AE1-004 C	1.53
938032	AE1-004 E	2.49
938081	AE1-010	7.48
938171	AE1-026 C1 O	29.01
938172	AE1-026 C2 O	4.2
938173	AE1-026 E O1	8.76
938181	AE1-027 C	2.59
938182	AE1-027 E	1.36
938191	AE1-028 C	1.5
938192	AE1-028 E	0.87
938221	AE1-035 C	2.3
938222	AE1-035 E	1.13
938461	AE1-065 C O1	31.55
938462	AE1-065 E O1	127.3
938471	AE1-066 C O1	32.42
938472	AE1-066 E O1	126.42
938481	AE1-067 C O1	29.48
938482	AE1-067 E O1	129.36
938491	AE1-068 C O1	60.45
938492	AE1-068 E O1	33.39
938501	AE1-069 C O1	47.37

Bus #	Bus	MW Impact
938502	AE1-069 E O1	27.08
938531	AE1-072 C O1	19.32
938532	AE1-072 E O1	10.07
938551	AE1-074 C	2.78
938552	AE1-074 E	1.4
938561	AE1-075 C	2.12
938562	AE1-075 E	1.03
938631	AE1-085 C O1	12.21
938632	AE1-085 E O1	8.14
938661	AE1-088	1.8
938771	AE1-103 C O1	3.88
938772	AE1-103 E O1	5.36
938841	AE1-109AC O1	10.08
938842	AE1-109AE O1	6.72
939041	AE1-133 C	38.77
939042	AE1-133 E	19.09
939071	AE1-135 C O1	21.52
939072	AE1-135 E O1	14.35
939191	AE1-149 C O1	12.01
939192	AE1-149 E O1	8.01
939241	AE1-155 C	16.33
939242	AE1-155 E	10.89
939261	AE1-157 C O1	16.52
939262	AE1-157 E O1	8.96
939271	AE1-158 C O1	16.86
939272	AE1-158 E O1	8.62
939311	AE1-162 C	2.41
939312	AE1-162 E	1.6
939411	AE1-173 C	94.97
939412	AE1-173 E	63.31
939421	AE1-174 C	0.22
939422	AE1-174 E	0.33
939431	AE1-175 C	2.73
939432	AE1-175 E	1.36
939611	AE1-191 C	12.0
939612	AE1-191 E	8.0
939751	AE1-206 C O1	38.64
939752	AE1-206 E O1	25.76
940061	AE1-248 C O1	17.79
940062	AE1-248 E O1	11.86
940071	AE1-249 C	8.14
940072	AE1-249 E	6.07
AA2-074	AA2-074	5.21
AE1-042	AE1-042	8.37
CARR	CARR	1.66
CBM-S1	CBM-S1	12.63
CBM-S2	CBM-S2	15.13
CBM-W1	CBM-W1	9.13
CBM-W2	CBM-W2	78.78
CIN	CIN	4.63
CPL	CPL	7.66
G-007	G-007	5.24

Bus #	Bus	MW Impact
IPL	IPL	2.86
LGEE	LGEE	1.39
MEC	MEC	10.95
MECS	MECS	2.1
O-066	O-066	17.54
RENSSELAER	RENSSELAER	1.32
WEC	WEC	1.18

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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
471844	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 581	single	2442.12	114.44	115.9	DC	77.72

Bus #	Bus	MW Impact
314229	6MT RD221	0.11
314236	6NRTHEST	0.17
314250	6ROCKVILLE	0.3
314309	6IRON208	0.4
315043	1FOUR RIVERA	3.28
315044	1FOUR RIVERB	2.54
315045	1FOUR RIVERC	3.28
315046	1FOUR RIVERD	2.54
315047	1FOUR RIVERE	2.54
315048	1FOUR RIVERF	3.28
315053	1BELMED1	16.55
315054	1BELMED2	16.55
315055	1BELMED3	13.73
315058	1CHESTF3	17.45
315059	1CHESTF4	28.28
315060	1CHESTF5	9.06
315061	1CHESTG7	3.55
315062	1CHESTS7	1.61
315063	1CHESTG8	3.48
315064	1CHESTS8	1.79
315067	1DARBY 1	2.34
315068	1DARBY 2	2.34
315069	1DARBY 3	2.35
315070	1DARBY 4	2.35
315074	1HOPCGN1	7.99
315075	1HOPCGN2	7.88
315083	1SPRUNCA	10.07
315084	1SPRUNCB	10.07
315085	1SPRUNCC	7.47
315086	1SPRUNCD	7.47
315090	1YORKTN1	27.05
315091	1YORKTN2	28.07
315225	1N ANNA1	26.01
315226	1N ANNA2	26.06
919211	AA1-145	9.48
924061	AB2-050	0.56
924241	AB2-068 O1	199.75
925051	AB2-160 C O1	5.16
925061	AB2-161 C O1	3.13
925331	AB2-190 C	19.1

Bus #	Bus	MW Impact
925861	AC1-065 C	3.18
926291	AC1-107 O1	301.5
926411	AC1-112 C	0.3
926551	AC1-134	1.39
926751	AC1-161 C O1	28.19
926781	AC1-164 C	39.21
927041	AC1-191 C O1	9.18
927221	AC1-216 C O1	9.33
930121	AB1-027 C	0.39
932041	AC2-012 C	9.45
932501	AC2-070 C	0.26
932581	AC2-078 C O1	3.8
932591	AC2-079 C O1	5.29
932831	AC2-110 C	1.27
933011	AC2-125	2.58
933021	AC2-126	2.6
933031	AC2-127	1.42
933041	AC2-128	1.37
933051	AC2-129	1.28
933061	AC2-130	2.32
933071	AC2-131 1	1.57
933081	AC2-131 2	0.71
933111	AC2-132 1	0.82
933121	AC2-132 2	0.42
933261	AC2-137 C	0.31
933291	AC2-141 C	28.19
934011	AD1-025 C	16.04
934061	AD1-033 C	6.93
934141	AD1-041 C	4.99
934211	AD1-048 C	0.36
934571	AD1-082 C	7.14
935161	AD1-151 C O1	15.35
936041	AD2-007	1.7
936051	AD2-008 C	2.79
936151	AD2-021	0.23
936241	AD2-030 C	2.16
936301	AD2-039 C	1.27
936391	AD2-049 C	1.68
936661	AD2-085 C	3.18
937221	AD2-160 C O1	5.38
937251	AD2-164	4.52
937541	AD2-215 C	1.62
938031	AE1-004 C	1.27
938181	AE1-027 C	2.16
938191	AE1-028 C	1.25
938461	AE1-065 C O1	26.27
938471	AE1-066 C O1	27.0
938481	AE1-067 C O1	24.55
938531	AE1-072 C O1	16.11
938551	AE1-074 C	2.29
938631	AE1-085 C O1	10.19
938841	AE1-109AC O1	8.42

Bus #	Bus	MW Impact
939041	AE1-133 C	32.39
939191	AE1-149 C O1	10.03
939261	AE1-157 C O1	13.68
939271	AE1-158 C O1	13.96
939311	AE1-162 C	2.01
939411	AE1-173 C	77.72
939421	AE1-174 C	0.18
939431	AE1-175 C	2.3
939611	AE1-191 C	9.98
939751	AE1-206 C O1	32.88
940061	AE1-248 C O1	14.85
940071	AE1-249 C	6.81
AA2-074	AA2-074	4.74
AB2-013	AB2-013	5.2
AE1-033	AE1-033	5.42
AE1-042	AE1-042	10.04
CARR	CARR	1.84
CBM-S1	CBM-S1	16.23
CBM-S2	CBM-S2	14.56
CBM-W1	CBM-W1	18.72
CBM-W2	CBM-W2	108.33
CIN	CIN	8.61
CPL	CPL	6.97
IPL	IPL	5.45
LGEE	LGEE	2.53
MEC	MEC	17.84
MECS	MECS	8.51
RENSSELAER	RENSSELAER	1.46
WEC	WEC	2.27
Z1-043	Z1-043	8.94

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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
471365	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	140.16	146.45	DC	152.61

Bus #	Bus	MW Impact
314507	3THOMPSN	0.5
315053	1BELMED1	25.07
315054	1BELMED2	25.07
315055	1BELMED3	20.8
315058	1CHESTF3	25.13
315059	1CHESTF4	40.74
315074	1HOPCGN1	12.12
315075	1HOPCGN2	11.96
315083	1SPRUNCA	16.04
315084	1SPRUNCB	16.04
315085	1SPRUNCC	11.89
315086	1SPRUNCD	11.89
315090	1YORKTN1	42.49
315091	1YORKTN2	44.09
315098	1CHESPKA	0.66
315099	1CHESPKB	1.63
315102	1BRUNSWICKG1	12.98
315103	1BRUNSWICKG2	12.98
315104	1BRUNSWICKG3	12.98
315105	1BRUNSWICKS1	26.96
315108	1ELIZAR1	4.83
315109	1ELIZAR2	4.74
315110	1ELIZAR3	4.89
315131	1EDGECEMA	13.54
315132	1EDGECEMB	13.54
315150	1BUGGS 1	15.63
315151	1BUGGS 2	15.63
315260	1GOSPORTA	0.52
315261	1GOSPORTB	0.67
315262	1GOSPORTC	0.57
916191	Z1-068 C	0.07
916301	Z1-086 C	78.97
919151	AA1-139 C	3.68
919701	AA2-057 C	10.53
923801	AB2-015 C O1	13.5
923911	AB2-031 C O1	3.44
923941	AB2-035 C	0.5
924241	AB2-068 O1	245.63
924391	AB2-088 C	0.64
924401	AB2-089 C	3.06

Bus #	Bus	MW Impact
924491	AB2-098 C	0.86
924501	AB2-099 C	0.9
924511	AB2-100 C	18.0
925051	AB2-160 C O1	8.2
925061	AB2-161 C O1	5.31
925171	AB2-174 C O1	10.81
925281	AB2-186 C	0.97
925291	AB2-188 C O1	3.7
925331	AB2-190 C	30.02
925521	AC1-027 C	0.49
925591	AC1-034 C	9.97
925781	AC1-054 C O1	10.42
925861	AC1-065 C	4.35
926071	AC1-086 C	31.65
926201	AC1-098 C	9.25
926211	AC1-099 C	3.1
926291	AC1-107 O1	370.77
926661	AC1-147 C	0.56
926751	AC1-161 C O1	49.16
926761	AC1-162 C	38.58
926781	AC1-164 C	52.71
927021	AC1-189 C	12.98
927141	AC1-208 C	13.55
927221	AC1-216 C O1	14.74
932041	AC2-012 C	16.38
932581	AC2-078 C O1	6.32
932591	AC2-079 C O1	9.07
932631	AC2-084 C	13.19
932831	AC2-110 C	1.74
933061	AC2-130	3.31
933071	AC2-131 1	2.24
933081	AC2-131 2	1.02
933111	AC2-132 1	1.18
933121	AC2-132 2	0.6
933291	AC2-141 C	49.16
933501	AC2-165 C	14.55
933731	AC2-196 C	0.44
933991	AD1-023 C	20.37
934011	AD1-025 C	25.34
934061	AD1-033 C	12.08
934141	AD1-041 C	6.82
934201	AD1-047 C	12.31
934231	AD1-050 C	6.75
934331	AD1-057 C O1	14.91
934521	AD1-076 C	84.65
934571	AD1-082 C	12.1
934611	AD1-087 C O1	12.17
934621	AD1-088 C	18.66
935161	AD1-151 C O1	24.12
935171	AD1-152 C O1	12.09
936041	AD2-007	2.69
936051	AD2-008 C	4.41

Bus #	Bus	MW Impact
936151	AD2-021	0.31
936301	AD2-039 C	1.74
936361	AD2-046 C O1	12.51
936391	AD2-049 C	2.72
936401	AD2-051 C O1	13.42
936481	AD2-063 C O1	20.28
936531	AD2-068 C	7.59
936661	AD2-085 C	5.44
936701	AD2-089 C	10.71
936711	AD2-090 C O1	11.21
937221	AD2-160 C O1	9.39
937251	AD2-164	7.18
937481	AD2-202 C O1	3.35
937541	AD2-215 C	2.76
937571	AD2-169 C	15.32
938031	AE1-004 C	1.74
938171	AE1-026 C1 O	43.34
938172	AE1-026 C2 O	6.27
938181	AE1-027 C	3.76
938191	AE1-028 C	2.18
938221	AE1-035 C	3.45
938461	AE1-065 C O1	45.67
938471	AE1-066 C O1	46.93
938481	AE1-067 C O1	42.68
938491	AE1-068 C O1	102.7
938501	AE1-069 C O1	80.41
938531	AE1-072 C O1	28.11
938551	AE1-074 C	4.0
938561	AE1-075 C	3.3
938631	AE1-085 C O1	16.99
938661	AE1-088	2.7
938771	AE1-103 C O1	5.7
938841	AE1-109AC O1	14.25
939041	AE1-133 C	56.57
939071	AE1-135 C O1	32.44
939181	AE1-148 C O1	12.32
939191	AE1-149 C O1	16.61
939311	AE1-162 C	3.35
939411	AE1-173 C	152.61
939421	AE1-174 C	0.27
939431	AE1-175 C	3.42
939611	AE1-191 C	13.63
940061	AE1-248 C O1	25.15
940071	AE1-249 C	10.82
AA2-074	AA2-074	8.51
AB2-013	AB2-013	6.46
AE1-033	AE1-033	6.73
AE1-042	AE1-042	15.03
CARR	CARR	2.05
CBM-S1	CBM-S1	23.41
CBM-S2	CBM-S2	25.03
CBM-W1	CBM-W1	22.82

Bus #	Bus	MW Impact
CBM-W2	CBM-W2	152.33
CIN	CIN	10.66
CPL	CPL	12.51
IPL	IPL	6.68
LGEE	LGEE	3.13
MEC	MEC	23.39
MECS	MECS	9.02
RENSSELAER	RENSSELAER	1.62
WEC	WEC	2.81
Z1-043	Z1-043	11.06

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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
471787	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	DVP_P1-2: LN 568	single	3218.56	109.39	112.58	DC	100.91

Bus #	Bus	MW Impact
314250	6ROCKVILLE	0.35
314314	3LOCKS	0.3
314507	3THOMPSN	0.35
315053	1BELMED1	19.27
315054	1BELMED2	19.27
315055	1BELMED3	15.99
315058	1CHESTF3	19.88
315059	1CHESTF4	32.23
315065	1CHESTF6	20.89
315074	1HOPCGN1	9.26
315075	1HOPCGN2	9.14
315083	1SPRUNCA	12.0
315084	1SPRUNCB	12.0
315085	1SPRUNCC	8.89
315086	1SPRUNCD	8.89
315090	1YORKTN1	31.68
315091	1YORKTN2	32.87
315098	1CHESPKA	0.46
315099	1CHESPKB	1.15
315102	1BRUNSWICKG1	8.34
315103	1BRUNSWICKG2	8.34
315104	1BRUNSWICKG3	8.34
315105	1BRUNSWICKS1	17.32
315108	1ELIZAR1	3.4
315109	1ELIZAR2	3.34
315110	1ELIZAR3	3.44
315116	1SURRY 1	25.98
315225	1N ANNA1	55.6
315226	1N ANNA2	55.72
315233	1SURRY 2	26.19
315260	1GOSPORTA	0.37
315261	1GOSPORTB	0.47
315262	1GOSPORTC	0.4
916191	Z1-068 C	0.05
916301	Z1-086 C	50.7
923801	AB2-015 C O1	9.42
923911	AB2-031 C O1	2.37
924241	AB2-068 O1	207.02
924501	AB2-099 C	0.62
924511	AB2-100 C	12.41

Bus #	Bus	MW Impact
925021	AB2-158 C	1.99
925051	AB2-160 C O1	6.11
925061	AB2-161 C O1	3.8
925171	AB2-174 C O1	7.45
925281	AB2-186 C	0.68
925291	AB2-188 C O1	2.57
925331	AB2-190 C	22.43
925521	AC1-027 C	0.35
925821	AC1-061	0.01
925861	AC1-065 C	3.59
926071	AC1-086 C	21.74
926291	AC1-107 O1	312.48
926661	AC1-147 C	0.39
926751	AC1-161 C O1	34.47
926781	AC1-164 C	43.15
927041	AC1-191 C O1	9.89
927221	AC1-216 C O1	10.98
932041	AC2-012 C	11.53
932581	AC2-078 C O1	4.58
932591	AC2-079 C O1	6.43
932831	AC2-110 C	1.44
933061	AC2-130	2.62
933071	AC2-131 1	1.78
933081	AC2-131 2	0.81
933111	AC2-132 1	0.93
933121	AC2-132 2	0.48
933291	AC2-141 C	34.47
933501	AC2-165 C	10.41
933731	AC2-196 C	0.31
933991	AD1-023 C	14.1
934011	AD1-025 C	18.87
934061	AD1-033 C	8.48
934141	AD1-041 C	5.64
934201	AD1-047 C	8.48
934521	AD1-076 C	58.66
934571	AD1-082 C	8.65
935161	AD1-151 C O1	18.03
935211	AD1-156 C	0.37
936041	AD2-007	2.0
936051	AD2-008 C	3.29
936151	AD2-021	0.26
936241	AD2-030 C	2.45
936301	AD2-039 C	1.44
936391	AD2-049 C	2.0
936401	AD2-051 C O1	9.25
936661	AD2-085 C	3.86
936711	AD2-090 C O1	7.8
937221	AD2-160 C O1	6.58
937251	AD2-164	5.32
937541	AD2-215 C	1.96
937571	AD2-169 C	10.55
938031	AE1-004 C	1.44

Bus #	Bus	MW Impact
938171	AE1-026 C1 O	29.98
938172	AE1-026 C2 O	4.34
938181	AE1-027 C	2.64
938191	AE1-028 C	1.53
938221	AE1-035 C	2.38
938461	AE1-065 C O1	32.1
938471	AE1-066 C O1	32.99
938481	AE1-067 C O1	30.0
938491	AE1-068 C O1	65.89
938501	AE1-069 C O1	51.63
938531	AE1-072 C O1	19.7
938551	AE1-074 C	2.85
938561	AE1-075 C	2.32
938631	AE1-085 C O1	12.28
938661	AE1-088	1.86
938771	AE1-103 C O1	3.98
938841	AE1-109AC O1	10.19
939041	AE1-133 C	39.6
939071	AE1-135 C O1	22.38
939191	AE1-149 C O1	12.06
939231	AE1-154 C	2.13
939311	AE1-162 C	2.42
939411	AE1-173 C	100.91
939421	AE1-174 C	0.21
939431	AE1-175 C	2.63
939611	AE1-191 C	11.29
939751	AE1-206 C O1	33.87
940061	AE1-248 C O1	17.98
940071	AE1-249 C	8.06
AA2-074	AA2-074	5.61
AE1-042	AE1-042	9.3
CARR	CARR	1.81
CBM-S1	CBM-S1	14.17
CBM-S2	CBM-S2	16.36
CBM-W1	CBM-W1	11.37
CBM-W2	CBM-W2	89.63
CIN	CIN	5.6
CPL	CPL	8.24
IPL	IPL	3.48
LGEE	LGEE	1.67
MEC	MEC	12.89
MECS	MECS	3.31
RENSSELAER	RENSSELAER	1.44
WEC	WEC	1.45

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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
472350	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	111.73	116.34	DC	178.28

Bus #	Bus	MW Impact
314189	6PAPERMILL	7.72
314250	6ROCKVILLE	0.38
314539	3UNCAMP	2.83
314541	3WATKINS	0.8
314566	3CRESWEL	2.78
314572	3EMPORIA	0.47
314594	6PLYMOTH	0.98
314617	3TUNIS	0.95
314620	6CASHIE	0.96
314648	6SUNBURY	1.05
314651	6WINFALL	2.08
315053	1BELMED1	20.86
315054	1BELMED2	20.86
315055	1BELMED3	17.31
315058	1CHESTF3	21.61
315059	1CHESTF4	35.02
315073	1STONECA	8.31
315074	1HOPCGN1	10.02
315075	1HOPCGN2	9.89
315083	1SPRUNCA	12.94
315084	1SPRUNCB	12.94
315085	1SPRUNCC	9.59
315086	1SPRUNCD	9.59
315090	1YORKTN1	34.2
315091	1YORKTN2	35.49
315225	1N ANNA1	55.99
315226	1N ANNA2	56.11
315233	1SURREY 2	28.17
900672	V4-068 E	0.34
901082	W1-029 E	54.58
907092	X1-038 E	7.09
913392	Y1-086 E	2.62
916042	Z1-036 E	53.66
916192	Z1-068 E	2.27
916302	Z1-086 E	10.9
917122	Z2-027 E	1.26
918492	AA1-063AE OP	4.45
918512	AA1-065 E OP	4.98
919152	AA1-139 E	7.71
920042	AA2-088 E OP	12.06

Bus #	Bus	MW Impact
920692	AA2-178 E	4.77
923801	AB2-015 C O1	10.05
923802	AB2-015 E O1	8.24
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	2.51
923912	AB2-031 E O1	1.24
923992	AB2-040 E O1	6.75
924241	AB2-068 O1	227.67
924501	AB2-099 C	0.66
924502	AB2-099 E	0.28
924511	AB2-100 C	13.2
924512	AB2-100 E	6.5
924812	AB2-134 E O1	14.73
925021	AB2-158 C	2.15
925022	AB2-158 E	6.24
925051	AB2-160 C O1	6.59
925052	AB2-160 E O1	10.75
925061	AB2-161 C O1	4.07
925062	AB2-161 E O1	6.64
925122	AB2-169 E	6.54
925171	AB2-174 C O1	7.91
925172	AB2-174 E O1	7.15
925281	AB2-186 C	0.73
925282	AB2-186 E	0.31
925291	AB2-188 C O1	2.74
925292	AB2-188 E O1	1.23
925331	AB2-190 C	24.2
925332	AB2-190 E	10.37
925522	AC1-027 E	1.38
925861	AC1-065 C	3.93
925862	AC1-065 E	6.41
926001	AC1-076 C	7.22
926002	AC1-076 E	11.74
926071	AC1-086 C	23.07
926072	AC1-086 E	10.5
926291	AC1-107 O1	343.65
926412	AC1-112 E	1.3
926662	AC1-147 E	1.6
926731	AC1-158 C	193.96
926732	AC1-158 E	85.12
926751	AC1-161 C O1	36.89
926752	AC1-161 E O1	15.75
926781	AC1-164 C	47.16
926782	AC1-164 E	21.19
927041	AC1-191 C O1	10.94
927042	AC1-191 E O1	5.45
927221	AC1-216 C O1	11.84
927222	AC1-216 E O1	9.31
930122	AB1-027 E	1.28

Bus #	Bus	MW Impact
930862	AB1-132 E O1	6.71
931232	AB1-173 E	1.18
931242	AB1-173AE	1.18
932041	AC2-012 C	12.34
932042	AC2-012 E	20.14
932502	AC2-070 E	0.81
932532	AC2-073 E	1.39
932581	AC2-078 C O1	4.91
932582	AC2-078 E O1	8.02
932591	AC2-079 C O1	6.89
932592	AC2-079 E O1	11.24
932831	AC2-110 C	1.57
932832	AC2-110 E	2.56
933011	AC2-125	2.82
933021	AC2-126	2.84
933031	AC2-127	1.55
933041	AC2-128	1.49
933051	AC2-129	1.4
933061	AC2-130	2.85
933071	AC2-131 1	1.93
933081	AC2-131 2	0.88
933111	AC2-132 1	1.01
933121	AC2-132 2	0.52
933262	AC2-137 E	1.59
933291	AC2-141 C	36.89
933292	AC2-141 E	15.75
933501	AC2-165 C	11.08
933502	AC2-165 E	8.34
933732	AC2-196 E	1.44
933991	AD1-023 C	15.01
933992	AD1-023 E	8.17
934011	AD1-025 C	20.35
934012	AD1-025 E	12.06
934061	AD1-033 C	9.07
934062	AD1-033 E	6.05
934141	AD1-041 C	6.18
934142	AD1-041 E	4.12
934201	AD1-047 C	9.0
934202	AD1-047 E	6.0
934212	AD1-048 E	1.44
934392	AD1-063 E	1.24
934521	AD1-076 C	62.44
934522	AD1-076 E	31.8
934541	AD1-078 C	4.42
934542	AD1-078 E	2.6
934571	AD1-082 C	9.27
934572	AD1-082 E	5.29
935112	AD1-144 E	1.13
935161	AD1-151 C O1	19.45
935162	AD1-151 E O1	12.97
935212	AD1-156 E	1.72
936041	AD2-007	2.16

Bus #	Bus	MW Impact
936051	AD2-008 C	3.54
936052	AD2-008 E	7.71
936151	AD2-021	0.28
936241	AD2-030 C	2.68
936242	AD2-030 E	1.37
936301	AD2-039 C	1.57
936302	AD2-039 E	2.56
936391	AD2-049 C	2.15
936392	AD2-049 E	2.15
936401	AD2-051 C O1	9.83
936402	AD2-051 E O1	4.22
936591	AD2-074 C	6.11
936592	AD2-074 E	9.96
936661	AD2-085 C	4.13
936662	AD2-085 E	6.75
936711	AD2-090 C O1	8.32
936712	AD2-090 E O1	5.54
937221	AD2-160 C O1	7.04
937222	AD2-160 E O1	3.69
937251	AD2-164	5.74
937541	AD2-215 C	2.1
937542	AD2-215 E	1.11
937571	AD2-169 C	11.19
937572	AD2-169 E	7.46
938031	AE1-004 C	1.57
938032	AE1-004 E	2.56
938081	AE1-010	10.01
938171	AE1-026 C1 O	31.89
938172	AE1-026 C2 O	4.61
938173	AE1-026 E O1	9.63
938181	AE1-027 C	2.82
938182	AE1-027 E	1.49
938191	AE1-028 C	1.64
938192	AE1-028 E	0.95
938221	AE1-035 C	2.53
938222	AE1-035 E	1.25
938461	AE1-065 C O1	34.35
938462	AE1-065 E O1	138.61
938471	AE1-066 C O1	35.3
938472	AE1-066 E O1	137.66
938481	AE1-067 C O1	32.1
938482	AE1-067 E O1	140.86
938491	AE1-068 C O1	69.43
938492	AE1-068 E O1	38.34
938501	AE1-069 C O1	54.39
938502	AE1-069 E O1	31.1
938531	AE1-072 C O1	21.07
938532	AE1-072 E O1	10.98
938551	AE1-074 C	3.05
938552	AE1-074 E	1.54
938561	AE1-075 C	2.46
938562	AE1-075 E	1.2

Bus #	Bus	MW Impact
938631	AE1-085 C O1	13.18
938632	AE1-085 E O1	8.79
938661	AE1-088	1.98
938771	AE1-103 C O1	4.25
938772	AE1-103 E O1	5.87
938841	AE1-109AC O1	10.92
938842	AE1-109AE O1	7.28
939041	AE1-133 C	42.31
939042	AE1-133 E	20.84
939071	AE1-135 C O1	23.8
939072	AE1-135 E O1	15.87
939191	AE1-149 C O1	12.95
939192	AE1-149 E O1	8.63
939231	AE1-154 C	2.29
939232	AE1-154 E	1.61
939261	AE1-157 C O1	15.13
939262	AE1-157 E O1	8.21
939271	AE1-158 C O1	15.44
939272	AE1-158 E O1	7.9
939311	AE1-162 C	2.59
939312	AE1-162 E	1.73
939411	AE1-173 C	106.97
939412	AE1-173 E	71.31
939421	AE1-174 C	0.23
939422	AE1-174 E	0.34
939431	AE1-175 C	2.86
939432	AE1-175 E	1.42
939611	AE1-191 C	12.35
939612	AE1-191 E	8.24
939751	AE1-206 C O1	37.7
939752	AE1-206 E O1	25.13
940061	AE1-248 C O1	19.27
940062	AE1-248 E O1	12.85
940071	AE1-249 C	8.69
940072	AE1-249 E	6.48
AA2-074	AA2-074	5.84
AE1-042	AE1-042	9.11
CARR	CARR	1.83
CBM-S1	CBM-S1	13.62
CBM-S2	CBM-S2	16.87
CBM-W1	CBM-W1	9.17
CBM-W2	CBM-W2	84.32
CIN	CIN	4.73
CPL	CPL	8.59
G-007	G-007	5.72
IPL	IPL	2.9
LGEE	LGEE	1.42
MEC	MEC	11.44
MECS	MECS	1.7
O-066	O-066	19.14
RENSSELAER	RENSSELAER	1.45
WEC	WEC	1.2

Contingency Name	Contingency Definition
DVP_P1-2: LN 567	CONTINGENCY 'DVP_P1-2: LN 567' OPEN BRANCH FROM BUS 314903 TO BUS 314924 CKT 1 /* 8CHCKAHM 500.00 - 8SURRY 500.00 END
DVP_P1-2: LN 563	CONTINGENCY 'DVP_P1-2: LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_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

Contingency Name	Contingency Definition
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_P4-2: 541T569	CONTINGENCY 'DVP_P4-2: 541T569' /* MORRISVILLE 500 KV OPEN BRANCH FROM BUS 314916 TO BUS 314929 CKT 1 /* 8MORRSVL 500.00 - 8FRONT ROYAL500.00 OPEN BRANCH FROM BUS 314913 TO BUS 314916 CKT 1 /* 8LOUDOUN 500.00 - 8MORRSVL 500.00 END
DVP_P1-2: LN 552	CONTINGENCY 'DVP_P1-2: LN 552' OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 1 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314900 TO BUS 314905 CKT 1 /* 8BRISTER 500.00 - 8CHANCE 500.00 END
DVP_P4-2: 573T594	CONTINGENCY 'DVP_P4-2: 573T594' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
DVP_P1-2: LN 557	CONTINGENCY 'DVP_P1-2: LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 570	CONTINGENCY 'DVP_P1-2: LN 570' OPEN BRANCH FROM BUS 304183 TO BUS 918500 CKT 1 /* 8WAKE 500 TT500.00 - AA1-064 TAP 500.00 OPEN BRANCH FROM BUS 314935 TO BUS 918500 CKT 1 /* 8HERITAGE 500.00 - AA1-064 TAP 500.00 OPEN BUS 918500 /* ISLAND: AA1-064 TAP 500.00 END
DVP_P1-2: LN 573	CONTINGENCY 'DVP_P1-2: LN 573' OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 END
DVP_P1-2: LN 574	CONTINGENCY 'DVP_P1-2: LN 574' OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P1-2: LN 576	CONTINGENCY 'DVP_P1-2: LN 576' OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: 557T574	CONTINGENCY 'DVP_P4-2: 557T574' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: 57602	CONTINGENCY 'DVP_P4-2: 57602' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
Base Case	
DVP_P4-2: 563T576	CONTINGENCY 'DVP_P4-2: 563T576' /* MIDLOTHIAN 500 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END

Contingency Name	Contingency Definition
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_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

Attachment 1

Single Line Diagram