



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-157
Wakefield - WAVERLY 115 KV
60 MW Capacity / 100 MW Energy**

July, 2019

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1 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.

2 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Sussex County, Virginia. The installed facilities will have a total capability of 100 MW with 60 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-157
Project Name	WAKEFIELD-WAVERLY 115 KV
Interconnection Customer	
State	Virginia
County	Sussex
Transmission Owner	Dominion
MFO	100
MWE	100
MWC	60
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

2.1.1 Primary Point of Interconnection

AE2-157 “Wakefield – Waverly 115 kV” will interconnect with the Dominion’s transmission system through a new three breaker 115 kV switching station which will be adjacent to the transmission right-of-way. This is the primary Point of Interconnection (POI) chose by the IC with the ITO’s transmission system. The IC is responsible for securing right-of-way, permits and constructing the proposed attachment line from the solar facility site to the proposed new switching station. Attachment 1 shows a one-line diagram of the proposed interconnection facilities. The IC may not install any facilities on Dominion’s right-of-way without first obtaining the necessary approval from Dominion Energy.

2.1.2 Secondary Point of Interconnection

The IC requested that a secondary POI “Bell Ave – Bakers Pond 115 kV” be reviewed for network impacts (Option 2). This report does not provide costs for the physical interconnection of Option 2. It was just analyzed for network impacts. Results are shown in the Network Impacts – Option 2 section of this report.

2.2 Cost Summary

The AE2-157 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 1,700,000
Direct Connection Network Upgrade	\$ 7,100,000
Non Direct Connection Network Upgrades	\$ TBD in Facilities Study Phase
Total Costs	\$8,800,000

In addition, the AE2-157 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$182,192,000

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

3 Transmission Owner Scope of Work

Dominion assessed the impact of the proposed Queue Project AE2-157 was evaluated as a 60.0 MW Capacity (100.0 MW Energy) injection at the AE2-157 115 kV substation in the Dominion Transmission System, for compliance with NERC Reliability Criteria on Dominion Transmission System. The system was assessed using the summer 2022 AE2 case provided to Dominion by PJM. When performing a generation analysis, Dominion's main analysis will be load flow study results under single contingency (both normal and stressed system conditions). Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at: <http://www.dominionenergy.com>.

The results of these studies evaluate the system under a limited set of operating conditions and do not guarantee the full delivery of the capacity and associated energy of this proposed generation facility under all operating conditions. NERC Planning and Operating Reliability Criteria allow for the re-dispatch of generating units to resolve projected and actual deficiencies in real time and planning studies. Specifically in Planning Studies NERC Category C Contingency Conditions (Bus Fault, Tower Line, N-1-1, and Stuck Breaker scenarios) allow for re-dispatch of generating units to resolve potential reliability deficiencies. For Dominion Planning Criteria the re-dispatch of generating units for these contingency conditions is allowed as long as the projected loading does not exceed 100% of a facility Load Dump Rating.

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of the AE2-157 generation project to the Dominion Transmission System is detailed in the following sections. The associated one-line with the generation project attachment facilities and primary direct and non-direct connection are shown in Attachment 1.

Note that the ITO findings were made from a conceptual review of this project. A more detailed review of the connection facilities and their cost will be identified in a future study phases. Further note that the cost estimate data contained in this document should be considered high level estimates since it was produced without a detailed engineering review. The applicant will be responsible for the actual cost of construction. ITO herein reserves the right to return to any issues in this document and, upon appropriate justification, request additional monies to complete any reinforcements to the transmission systems.

4 Attachment Facilities

To accommodate the proposed AE2-157 Project, Dominion Energy will install one span of overhead 115 kV line to the point of interconnection (“POI”) including 115 kV interconnection metering. The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Substation (Metering)	\$ 500,000
Transmission (one span)	\$ 1,200,000
Total Attachment Facility Costs	\$ 1,700,000

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

5 Direct Connection Cost Estimate

To accommodate the proposed AE2-157 Project, Dominion Energy will build a new three breaker 115 kV Switching Station and re-arrange the existing section of line between Wakefield and Waverly substations to allow for the proposed interconnection. The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Three Breaker Ring and Associated Equipment	\$ 5,500,000
Transmission (one span)	\$ 1,600,000
Total Direct Connection Facility Costs	\$ 7,100,000

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

6 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Remote Terminal Work	\$TBD in Facilities Study Phase
	\$
	\$
Total Non-Direct Connection Facility Costs	\$ TBD in Facilities Study Phase

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.

7 Schedule

Elapsed time for Attachment Facility and Direct Connection work is provided in Sections 4 and 5 of the report. The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the “System Reinforcements” section of the report.

8 Transmission Owner Analysis

8.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2022 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system. At the Primary POI, the AE2-157 project contributes to overloads on the Dominion transmission system as shown in the “Network Impact – Option 1” section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads is also provided. At the Secondary POI, the AE2-157 project contributes to overloads on the Dominion transmission system as shown in the “Network Impacts – Option 2” section of the report. Cost estimates are not provided for the secondary POI.

8.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-157 project to the system does not result in any newly overdutied circuit breakers on the Dominion transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers

8.3 Stability Analysis

PJM will complete a dynamic stability analysis, if necessary, as part of the System Impact Study. The results of this analysis will be reviewed by Dominion. Should stability concerns be identified in PJM’s study, Dominion will develop appropriate system reinforcement(s) and included the estimated cost of any reinforcement(s) in Dominion’s System Impact Study report.

9 Interconnection Customer Requirements

9.1 System Protection

The IC must design its Customer Facilities in accordance with all applicable standards, including the standards in Dominion's "Dominion Energy Electric Transmission Generator Interconnection Requirements" documented in Dominion's Facility Interconnection Requirements "Exhibit C" located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>. Preliminary Protection requirements will be provided as part of the Facilities Study. Detailed Protection Requirements will be provided once the project enters the construction phase.

9.2 Compliance Issues and Interconnection Customer Requirements

The proposed Customer Facilities must be designed in accordance with Dominion's "Dominion's Facility Interconnection Requirements" document located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>. In particular, the IC is responsible for the following:

1. The purchase and installation of a fully rated protection device (circuit breaker, circuit switcher, fuse) to protect the IC's GSU transformer(s).
2. The purchase and installation of the minimum required Dominion generation interconnection relaying and control facilities as described in the System Protection noted above. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.
3. The purchase and installation of supervisory control and data acquisition ("SCADA") equipment to provide information in a compatible format to the Dominion Transmission System Control Center.
4. Compliance with the Dominion and PJM generator power factor and voltage control requirements.

The GSU(s) associated with the IC queue request shall meet the grounding requirements as noted in Dominion's "Dominion's Facility Interconnection Requirements" document located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>.

The IC will also be required to meet all PJM, SERC, and NERC reliability criteria and operating procedures for standards compliance. For example, the IC will need to properly locate and report the over and under voltage and over and under frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and SERC audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the Dominion system.

9.3 Power Factor Requirements

The IC shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformer(s) connected to the Dominion transmission system.

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

10.2 Dominion Requirements

See Section 3.4.6 "Metering and Telecommunications" of Dominion's "Dominion's Facility Interconnection Requirements" document located at: <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>.

11 Network Impacts- Primary Point of Interconnection

The Queue Project AE2-157 was evaluated as a 100.0 MW (Capacity 60.0 MW) injection tapping the Waverly to Wakefield 115 kV line in the Dominion area. Project AE2-157 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-157 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

11.1 Generation Deliverability

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

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
1900601	313803	3OAKRI44	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	66.88	120.97	DC	60.0
1900625	313878	3BELL AVE 1	DVP	314542	3WINDSOR	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	68.79	122.88	DC	60.0
7942459	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	single	441.8	89.54	91.66	DC	9.47
7942456	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	single	441.8	89.56	91.69	DC	9.47
1900620	314347	3WAKEFLD	DVP	313878	3BELL AVE 1	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	68.79	122.88	DC	60.0
1900595	314531	3MYRTLE	DVP	313803	3OAKRI44	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	66.88	120.97	DC	60.0
1900588	314542	3WINDSOR	DVP	314531	3MYRTLE	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	77.15	131.25	DC	60.0
1900612	939190	AE1-149 TAP	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 44	single	110.92	68.79	122.88	DC	60.0
7941429	939190	AE1-149 TAP	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 15-B-B	single	110.92	75.82	129.91	DC	60.0
1900615	941600	AE2-157 TAP	DVP	314347	3WAKEFLD	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	75.82	129.91	DC	60.0

11.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
7643540	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	89.1	92.03	DC	15.86
8203823	314314	3LOCKS	DVP	940430	AE2-027 TAP	DVP	1	DVP_P7-1: LN 208-259	tower	169.0	84.8	86.13	DC	5.0
1900539	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P4-2: 2002T2003	breaker	301.0	87.25	102.38	DC	45.54
1900540	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P4-2: 23T44	breaker	301.0	89.45	102.39	DC	38.94
1901832	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 2002-2003	tower	301.0	87.25	102.38	DC	45.54
1901833	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 23-44-B	tower	301.0	89.45	102.39	DC	38.94
7643538	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	89.12	92.05	DC	15.86
1901830	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P7-1: LN 15-106-A-A	tower	297.2	93.52	104.21	DC	31.79

11.3 Contribution to Previously Identified Overloads

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

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
1900072	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	172.64	173.49	DC	19.4
1900692	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	149.23	150.74	DC	6.75
1900694	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 217	single	449.32	146.06	147.79	DC	7.78
1900701	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	Base Case	single	449.32	103.77	105.01	DC	5.58
1900443	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	112.59	116.66	DC	22.01
1901179	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	single	449.32	136.73	138.01	DC	6.61
1901182	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 259	single	449.32	131.64	133.3	DC	7.58
1901188	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	Base Case	single	449.32	104.9	106.27	DC	6.2
1900442	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	112.61	116.68	DC	22.01
1900211	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-3: SUFFOLK H542	breaker	297.2	134.5	146.1	DC	34.48
1900212	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-5: L1TL5	breaker	297.2	134.14	145.85	DC	34.81
1900257	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	3	DVP_P4-3: YTH5	breaker	307.0	128.13	139.19	DC	33.94
1901749	940430	AE2-027 TAP	DVP	314298	3HARROWG	DVP	1	DVP_P7-1: LN 208-259	tower	169.0	120.37	121.7	DC	5.0

11.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

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
1900599	313803	3OAKRI44	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	164.98	255.14	DC	100.0
7941416	313803	3OAKRI44	DVP	314536	3SUFFOLK	DVP	1	Base Case	operation	110.92	53.14	93.22	DC	44.46
1900623	313878	3BELL AVE 1	DVP	314542	3WINDSOR	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	138.39	228.54	DC	100.0
1901361	314214	6CHCKAHM	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 567	operation	828.8	114.71	115.34	DC	11.5
1901290	314218	6ELMONT	DVP	314908	8ELMONT	DVP	2	DVP_P1-2: LN 557	operation	879.84	123.5	124.15	DC	12.4
1901356	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 557	operation	920.92	119.59	120.21	DC	12.46
1901445	314225	6CHARCTY	DVP	314227	6LAKESIDE	DVP	1	DVP_P1-2: LN 557	operation	984.18	110.45	111.61	DC	11.28
7942699	314227	6LAKESIDE	DVP	314218	6ELMONT	DVP	1	DVP_P1-2: LN 557	operation	740.72	92.26	92.87	DC	9.97
1900690	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	operation	449.32	179.96	182.48	DC	11.25
1900699	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	Base Case	operation	449.32	113.34	114.28	DC	9.3
1901404	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P1-2: LN 557	operation	984.18	114.16	115.32	DC	11.28
7942400	314292	3DISPUTN	DVP	939190	AE1-149 TAP	DVP	1	DVP_P1-2: LN 15-B-B	operation	110.92	37.32	127.48	DC	100.0
1901461	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	operation	441.8	107.52	111.1	DC	15.78
1901178	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	operation	449.32	140.69	141.79	DC	11.02
1901189	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	Base Case	operation	449.32	102.04	103.08	DC	10.34
1901398	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P1-2: LN 23-B	operation	224.66	109.52	119.1	DC	21.52
1901459	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	operation	441.8	107.55	111.12	DC	15.78
1900618	314347	3WAKEFLD	DVP	313878	3BELL AVE 1	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	138.39	228.54	DC	100.0
1900593	314531	3MYRTLE	DVP	313803	3OAKRI44	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	164.98	255.14	DC	100.0
7941409	314531	3MYRTLE	DVP	313803	3OAKRI44	DVP	1	Base Case	operation	110.92	53.23	93.31	DC	44.46
1901546	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P1-3: 6SUFFOLK-TX#5	operation	248.44	92.57	100.88	DC	20.64
1900586	314542	3WINDSOR	DVP	314531	3MYRTLE	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	175.26	265.42	DC	100.0
1900592	314542	3WINDSOR	DVP	314531	3MYRTLE	DVP	1	Base Case	operation	110.92	63.42	103.5	DC	44.46
1900633	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	215.33	215.92	DC	31.92
1900710	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	186.62	186.78	DC	27.81
7942345	932580	AC2-078 TAP	DVP	314292	3DISPUTN	DVP	1	DVP_P1-2: LN 15-B-B	operation	110.92	40.93	131.09	DC	100.0
1900610	939190	AE1-149 TAP	DVP	314329	3POE	DVP	1	Base Case	operation	110.92	115.68	165.75	DC	55.54
7941423	939190	AE1-149 TAP	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 15-B-B	operation	110.92	145.42	235.58	DC	100.0
1900613	941600	AE2-157 TAP	DVP	314347	3WAKEFLD	DVP	1	DVP_P1-2: LN 15-A-A	operation	110.92	145.42	235.58	DC	100.0

11.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
1900601	1	3OAKRI44 115.0 kV - 3SUFFOLK 115.0 kV Ckt 1	dom-054 (140) : Rebuild 2.59 miles of 115 kV Line 44 from Oak Ridge to Suffolk with 636 ACSR. Project Type : FAC Cost : \$3,367,000 Time Estimate : 30-36 Months	\$3,367,000
1900211,1900212,1901830	12	3SUFFOLK 115.0 kV - 6SUFFOLK 230.0 kV Ckt 1	dom-015 (74) : Add additional 230/115 kV transformer at Suffolk substation. Project Type : CON Cost : \$6,000,000 Time Estimate : 16-18 Months	\$18,000,000
1900588	7	3WINDSOR 115.0 kV - 3MYRTLE 115.0 kV Ckt 1	dom-052 (136) : Rebuild 5.9 miles of 115 kV Line 44 from Windsor DP to Myrtle with 636 ACSR. Project Type : FAC Cost : \$7,670,000 Time Estimate : 30-36 Months	\$7,670,000
1900620	5	3WAKEFLD 115.0 kV - 3BELL AVE 1 115.0 kV Ckt 1	dom-109 (223) : Rebuild 5.92 miles of 115 kV Line 15 from Wakefield to Bell Ave with 636 ACSR. Project Type : FAC Cost : \$7,696,000 Time Estimate : 30-36 Months	\$7,696,000
8203823	10	3LOCKS 115.0 kV - AE2- 027 TAP 115.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	\$0
7942456,1900442,7643538	4	6POE 230.0 kV - 6HARROWG 230.0 kV Ckt 1	dom-037 (106) : Rebuild 12.3 miles of 230 kV Line 2003 from Poe to Harrowgate with 2-636 ACSR. Project Type : FAC Cost : \$30,750,000 Time Estimate : 30-36 Months	\$30,750,000
1900257	16	3SUFFOLK 115.0 kV - 6SUFFOLK 230.0 kV Ckt 3	dom-015 (74) : Add additional 230/115 kV transformer at Suffolk substation. Project Type : CON Cost : \$6,000,000 Time Estimate : 16-18 Months	\$6,000,000
7941429,1900612	8	AE1-149 TAP 115.0 kV - 3POE 115.0 kV Ckt 1	dom-060 (148) : Rebuild 6.6 miles of 115 kV Line 15 from AE1-149 Tap to Poe with 636 ACSR. Project Type : FAC Cost : \$8,580,000 Time Estimate : 30-36 Months	\$8,580,000
1900625	2	3BELL AVE 1 115.0 kV - 3WINDSOR 115.0 kV Ckt 1	dom-055 (142) : Rebuild 9.39 miles of 115 kV Line 44 from Bell Ave to Windsor DP with 636 ACSR. Project Type : FAC Cost : \$12,207,000 Time Estimate : 30-36 Months	\$12,207,000

ID	Index	Facility	Upgrade Description	Cost
1901179,1901182,1901188	15	6HOPEWLL 230.0 kV - 6CHESTF A 230.0 kV Ckt 1	dom-074 (169) : Rebuild 3 miles of 230 kV Line 228 from Hopewell to Chesterfield with 2-636 ACSR. Project Type : FAC Cost : \$7,500,000 Time Estimate : 30-36 Months b2922 (280) : PJM Baseline Upgrade b2922. Rebuild 8 of 11 miles of 230kV Lines #211 and #228 to current standard with a summer emergency rating of 1046 MVA for rebuilt section. Proposed conductor is 2-636 ACSR. The baseline project has an projected in-service date of 12/01/2020. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$7,500,000
1900694,1900692,1900701	14	6CHESTF B 230.0 kV - 6BASIN 230.0 kV Ckt 1	dom-012 (70) : Rebuild 12.4 miles of 230 kV Line 259 from Chesterfield to Basin with 2-636 ACSR. Project Type : FAC Cost : \$31,000,000 Time Estimate : 30-36 Months	\$31,000,000
1900072	13	6ELMONT 230.0 kV - 8ELMONT 500.0 kV Ckt 1	dom-013 (71) : Add additional 500/230 kV transformer at Elmont Substation Project Type : CON Cost : \$22,000,000 Time Estimate : 16-18 Months	\$22,000,000
1900595	6	3MYRTLE 115.0 kV - 3OAKRI44 115.0 kV Ckt 1	dom-053 (138) : Rebuild 5.24 miles of 115 kV Line 44 from Myrtle to Oak Ridge with 636 ACSR. Project Type : FAC Cost : \$6,812,000 Time Estimate : 30-36 Months	\$6,812,000
1900539,1900540,1901833,1901832	11	3POE 115.0 kV - 3PRGEORG 115.0 kV Ckt 1	dom-043 (115) : Rebuild 3.45 miles of 115 kV Line 121 from Poe to Prince George with 768 ACSS. Project Type : FAC Cost : \$4,485,000 Time Estimate : 30-36 Months	\$4,485,000
1901749	17	AE2-027 TAP 115.0 kV - 3HARROWG 115.0 kV Ckt 1	dom-097 (201) : Rebuild 0.90 miles of 115 kV Line 100 from AE2-027 Tap to Harrowgate with 768 ACSS. Project Type : FAC Cost : \$1,170,000 Time Estimate : 30-36 Months	\$1,170,000
1900615	9	AE2-157 TAP 115.0 kV - 3WAKEFLD 115.0 kV Ckt 1	dom-108 (221) : Rebuild 2.85 miles of 115 kV Line 15 from AE2-157 Tap to Wakefield with 636 ACSR. Project Type : FAC Cost : \$3,705,000 Time Estimate : 30-36 Months	\$3,705,000

ID	Index	Facility	Upgrade Description	Cost
7643540,1900443,79 42459	3	6HARROWG 230.0 kV - 6TYLER1 230.0 kV Ckt 1	dom-036 (104) : Rebuild 4.5 miles of 230 kV Line 2003 from Harrowgate to Tyler with 2-636 ACSR. Project Type : FAC Cost : \$11,250,000 Time Estimate : 30-36 Months	\$11,250,000
			TOTAL COST	\$182,192,000

11.6 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

11.7 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1900601	313803	3OAKRI44	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	66.88	120.97	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
936661	AD2-085 C	19.38
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0
942341	AE2-247 C	8.4

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
1900625	313878	3BELL AVE 1	DVP	314542	3WINDSOR	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	68.79	122.88	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0

Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1900443	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	112.59	116.66	DC	22.01

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

Bus #	Bus	MW Impact
923911	AB2-031 C O1	2.72
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91

Bus #	Bus	MW Impact
934232	AD1-050 E	1.59
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O1	5.01
940522	AE2-037 E O1	2.42
940541	AE2-040	7.45
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O1	13.21
941602	AE2-157 E O1	8.81
941951	AE2-207	1.8
942341	AE2-247 C	1.08
942342	AE2-247 E	1.49

Bus #	Bus	MW Impact
942451	AE2-258	1.17
942471	AE2-260 C O1	25.73
942472	AE2-260 E O1	36.5
942711	AE2-287 C O1	14.19
942712	AE2-287 E O1	9.46
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1900442	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	112.61	116.68	DC	22.01

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

Bus #	Bus	MW Impact
923911	AB2-031 C O1	2.72
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91

Bus #	Bus	MW Impact
934232	AD1-050 E	1.59
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O1	5.01
940522	AE2-037 E O1	2.42
940541	AE2-040	7.45
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O1	13.21
941602	AE2-157 E O1	8.81
941951	AE2-207	1.8
942341	AE2-247 C	1.08
942342	AE2-247 E	1.49

Bus #	Bus	MW Impact
942451	AE2-258	1.17
942471	AE2-260 C O1	25.73
942472	AE2-260 E O1	36.5
942711	AE2-287 C O1	14.19
942712	AE2-287 E O1	9.46
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

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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
1900620	314347	3WAKEFLD	DVP	313878	3BELL AVE 1	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	68.79	122.88	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0

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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
1900595	314531	3MYRTLE	DVP	313803	3OAKRI44	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	66.88	120.97	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
936661	AD2-085 C	19.38
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0
942341	AE2-247 C	8.4

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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
1900588	314542	3WINDSOR	DVP	314531	3MYRTLE	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	77.15	131.25	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
936661	AD2-085 C	19.38
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0
942341	AE2-247 C	8.4

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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
7941429	939190	AE1-149 TAP	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 15-B-B	single	110.92	75.82	129.91	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0

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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
1900615	941600	AE2-157 TAP	DVP	314347	3WAKEFLD	DVP	1	DVP_P1-2: LN 15-A-A	single	110.92	75.82	129.91	DC	60.0

Bus #	Bus	MW Impact
932581	AC2-078 C O1	22.8
939191	AE1-149 C O1	60.0
940651	AE2-052	20.1
941601	AE2-157 C O1	60.0

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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
8203823	314314	3LOCKS	DVP	940430	AE2-027 TAP	DVP	1	DVP_P7-1: LN 208-259	tower	169.0	84.8	86.13	DC	5.0

Bus #	Bus	MW Impact
314314	3LOCKS	0.33
925051	AB2-160 C O1	8.5
925052	AB2-160 E O1	13.87
925821	AC1-061	0.01
932581	AC2-078 C O1	1.46
932582	AC2-078 E O1	2.37
935212	AD1-156 E	0.42
938631	AE1-085 C O1	3.75
938632	AE1-085 E O1	2.5
939191	AE1-149 C O1	4.08
939192	AE1-149 E O1	2.72
940071	AE1-249 C	11.22
940072	AE1-249 E	8.36
940651	AE2-052	1.37
941601	AE2-157 C O1	3.0
941602	AE2-157 E O1	2.0
942001	AE2-212 C	0.84
942002	AE2-212 E	0.56
942151	AE2-227 C O1	0.84
942152	AE2-227 E O1	0.56
942161	AE2-228 C O1	0.84
942162	AE2-228 E O1	0.56
942371	AE2-250 C O1	15.1
942372	AE2-250 E O1	7.97
CARR	CARR	0.06
CBM-S1	CBM-S1	0.9
CBM-S2	CBM-S2	1.13
CBM-W1	CBM-W1	0.79
CBM-W2	CBM-W2	5.75
CIN	CIN	0.36
CPL	CPL	0.6
G-007	G-007	0.19
IPL	IPL	0.23
LGEE	LGEE	0.11
MEC	MEC	0.85
MECS	MECS	0.29
O-066	O-066	1.24
RENSSELAER	RENSSELAER	0.05
WEC	WEC	0.1

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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
1901833	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 23-44-B	tower	301.0	89.45	102.39	DC	38.94

Bus #	Bus	MW Impact
925061	AB2-161 C O1	7.4
925062	AB2-161 E O1	12.07
932581	AC2-078 C O1	8.88
932582	AC2-078 E O1	14.49
932591	AC2-079 C O1	12.58
932592	AC2-079 E O1	20.52
934571	AD1-082 C	16.86
934572	AD1-082 E	9.62
935211	AD1-156 C	0.15
935212	AD1-156 E	0.83
938631	AE1-085 C O1	23.83
938632	AE1-085 E O1	15.89
939191	AE1-149 C O1	23.36
939192	AE1-149 E O1	15.58
940061	AE1-248 C O1	35.05
940062	AE1-248 E O1	23.37
940651	AE2-052	7.83
941601	AE2-157 C O1	23.37
941602	AE2-157 E O1	15.58
CARR	CARR	0.01
CBM-S1	CBM-S1	0.57
CBM-S2	CBM-S2	0.61
CBM-W1	CBM-W1	0.63
CBM-W2	CBM-W2	3.8
CIN	CIN	0.28
CPLE	CPLE	0.31
G-007	G-007	0.05
IPL	IPL	0.18
LGEE	LGEE	0.08
MEC	MEC	0.61
MECS	MECS	0.29
O-066	O-066	0.3
RENSSELAER	RENSSELAER	0.01
WEC	WEC	0.08

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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
1900211	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-3: SUFFOLK H542	breaker	297.2	134.5	146.1	DC	34.48

Bus #	Bus	MW Impact
314539	3UNCAMP	6.28
314541	3WATKINS	1.56
314589	3MURPHYS	0.07
314617	3TUNIS	0.57
315115	1S HAMPT1	2.47
900672	V4-068 E	0.32
907092	X1-038 E	15.71
920041	AA2-088 C OP	1.24
920042	AA2-088 E OP	16.62
923801	AB2-015 C O1	20.72
923802	AB2-015 E O1	16.99
925061	AB2-161 C O1	7.84
925062	AB2-161 E O1	12.78
932581	AC2-078 C O1	4.71
932582	AC2-078 E O1	7.68
932591	AC2-079 C O1	17.43
932592	AC2-079 E O1	28.44
934571	AD1-082 C	17.86
934572	AD1-082 E	10.19
936661	AD2-085 C	10.31
936662	AD2-085 E	16.83
936711	AD2-090 C O1	14.6
936712	AD2-090 E O1	9.73
938631	AE1-085 C O1	14.19
938632	AE1-085 E O1	9.46
938771	AE1-103 C O1	9.42
938772	AE1-103 E O1	13.01
939191	AE1-149 C O1	9.89
939192	AE1-149 E O1	6.6
940061	AE1-248 C O1	37.12
940062	AE1-248 E O1	24.74
940651	AE2-052	3.31
941101	AE2-104 C O1	13.3
941102	AE2-104 E O1	21.13
941601	AE2-157 C O1	20.69
941602	AE2-157 E O1	13.79
942341	AE2-247 C	4.47
942342	AE2-247 E	6.17
CARR	CARR	0.02
CBM-S1	CBM-S1	0.36

Bus #	Bus	MW Impact
CBM-S2	CBM-S2	0.41
CBM-W1	CBM-W1	0.36
CBM-W2	CBM-W2	2.33
CIN	CIN	0.17
CPLE	CPLE	0.23
G-007	G-007	0.06
IPL	IPL	0.1
LGEE	LGEE	0.05
MEC	MEC	0.36
MECS	MECS	0.15
O-066	O-066	0.36
RENSSELAER	RENSSELAER	0.01
WEC	WEC	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
1900072	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	172.64	173.49	DC	19.4

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

Bus #	Bus	MW Impact
919211	AA1-145	12.27
923801	AB2-015 C O1	7.63
923802	AB2-015 E O1	6.25
923832	AB2-022 E	1.12
923842	AB2-024 E	1.47
923852	AB2-025 E	1.07
924061	AB2-050	0.72
924241	AB2-068 O1	175.77
924511	AB2-100 C	10.3
924512	AB2-100 E	5.07
924812	AB2-134 E O1	14.7
925051	AB2-160 C O1	7.07
925052	AB2-160 E O1	11.54
925061	AB2-161 C O1	3.58
925062	AB2-161 E O1	5.84
925331	AB2-190 C	24.53
925332	AB2-190 E	10.51
925522	AC1-027 E	1.06
925861	AC1-065 C	4.33
925862	AC1-065 E	7.06
926291	AC1-107 O1	265.31
926411	AC1-112 C	0.42
926412	AC1-112 E	1.92
926472	AC1-118 E	1.06
926551	AC1-134	1.8
926662	AC1-147 E	1.23
926751	AC1-161 C O1	26.82
926752	AC1-161 E O1	11.45
926781	AC1-164 C	57.92
926782	AC1-164 E	26.02
927041	AC1-191 C O1	17.43
927042	AC1-191 E O1	8.68
927221	AC1-216 C O1	11.81
927222	AC1-216 E O1	9.29
930121	AB1-027 C	0.54
930122	AB1-027 E	1.89
932041	AC2-012 C	9.5
932042	AC2-012 E	15.5
932501	AC2-070 C	0.35
932502	AC2-070 E	1.2
932532	AC2-073 E	1.54
932581	AC2-078 C O1	4.69
932582	AC2-078 E O1	7.65
932591	AC2-079 C O1	5.74
932592	AC2-079 E O1	9.36
932831	AC2-110 C	1.73
932832	AC2-110 E	2.83
933061	AC2-130	3.44
933261	AC2-137 C	0.38
933262	AC2-137 E	2.03
933272	AC2-138 E	1.07
933291	AC2-141 C	26.82

Bus #	Bus	MW Impact
933292	AC2-141 E	11.45
933732	AC2-196 E	1.09
934011	AD1-025 C	20.31
934012	AD1-025 E	12.03
934061	AD1-033 C	6.88
934062	AD1-033 E	4.59
934141	AD1-041 C	6.72
934142	AD1-041 E	4.48
934211	AD1-048 C	0.46
934212	AD1-048 E	1.91
934392	AD1-063 E	1.38
934571	AD1-082 C	8.15
934572	AD1-082 E	4.65
934781	AD1-105 C	11.44
934782	AD1-105 E	7.95
935112	AD1-144 E	0.91
935161	AD1-151 C O1	19.71
935162	AD1-151 E O1	13.14
935212	AD1-156 E	1.68
936041	AD2-007	2.16
936051	AD2-008 C	3.54
936052	AD2-008 E	7.7
936151	AD2-021	0.36
936241	AD2-030 C	2.87
936242	AD2-030 E	1.47
936301	AD2-039 C	1.73
936302	AD2-039 E	2.83
936341	AD2-044 C	0.27
936342	AD2-044 E	0.3
936391	AD2-049 C	1.86
936392	AD2-049 E	1.86
936581	AD2-073 C	2.22
936582	AD2-073 E	1.1
936591	AD2-074 C	6.32
936592	AD2-074 E	10.32
936661	AD2-085 C	3.45
936662	AD2-085 E	5.64
936711	AD2-090 C O1	6.26
936712	AD2-090 E O1	4.17
937221	AD2-160 C O1	5.33
937222	AD2-160 E O1	2.8
937251	AD2-164	5.08
937541	AD2-215 C	1.67
937542	AD2-215 E	0.89
938031	AE1-004 C	1.73
938032	AE1-004 E	2.83
938181	AE1-027 C	2.14
938182	AE1-027 E	1.13
938191	AE1-028 C	1.24
938192	AE1-028 E	0.72
938531	AE1-072 C O1	15.94
938532	AE1-072 E O1	8.31

Bus #	Bus	MW Impact
938551	AE1-074 C	3.1
938552	AE1-074 E	1.56
938631	AE1-085 C O1	12.45
938632	AE1-085 E O1	8.3
938771	AE1-103 C O1	3.24
938772	AE1-103 E O1	4.47
939071	AE1-135 C O1	18.69
939072	AE1-135 E O1	12.46
939191	AE1-149 C O1	12.54
939192	AE1-149 E O1	8.36
939241	AE1-155 C	17.01
939242	AE1-155 E	11.34
939281	AE1-159 C O1	12.01
939282	AE1-159 E O1	7.1
939311	AE1-162 C	2.22
939312	AE1-162 E	1.48
939421	AE1-174 C	0.23
939422	AE1-174 E	0.34
939431	AE1-175 C	2.86
939432	AE1-175 E	1.42
939611	AE1-191 C	13.43
939612	AE1-191 E	8.96
939751	AE1-206 C O1	56.7
939752	AE1-206 E O1	37.8
940061	AE1-248 C O1	16.95
940062	AE1-248 E O1	11.3
940071	AE1-249 C	9.33
940072	AE1-249 E	6.96
940231	AE2-005 C	1.73
940232	AE2-005 E	2.83
940251	AE2-007	160.86
940431	AE2-027 C O1	17.76
940432	AE2-027 E O1	11.84
940471	AE2-031 C O1	25.91
940472	AE2-031 E O1	17.27
940481	AE2-033 C	15.17
940482	AE2-033 E	10.23
940541	AE2-040	3.07
940551	AE2-041	9.23
940651	AE2-052	4.2
940891	AE2-078 C	2.59
940892	AE2-078 E	1.33
940901	AE2-079 C	2.59
940902	AE2-079 E	1.33
940911	AE2-080 C	2.59
940912	AE2-080 E	1.33
941101	AE2-104 C O1	3.27
941102	AE2-104 E O1	5.2
941141	AE2-108 C	2.12
941142	AE2-108 E	2.92
941151	AE2-109 C	0.74
941152	AE2-109 E	1.02

Bus #	Bus	MW Impact
941281	AE2-122 C O1	26.21
941282	AE2-122 E O1	105.77
941291	AE2-123 C O1	26.94
941292	AE2-123 E O1	105.04
941301	AE2-124 C O1	24.47
941302	AE2-124 E O1	107.36
941501	AE2-147 C	14.21
941502	AE2-147 E	9.47
941581	AE2-155 C	1.1
941582	AE2-155 E	0.47
941591	AE2-156	16.67
941601	AE2-157 C O1	11.64
941602	AE2-157 E O1	7.76
942001	AE2-212 C	2.82
942002	AE2-212 E	1.88
942131	AE2-225 C	1.96
942132	AE2-225 E	1.31
942151	AE2-227 C O1	2.82
942152	AE2-227 E O1	1.88
942161	AE2-228 C O1	2.82
942162	AE2-228 E O1	1.88
942171	AE2-229 C	1.96
942172	AE2-229 E	1.31
942191	AE2-231 C O1	5.33
942192	AE2-231 E O1	3.55
942341	AE2-247 C	1.5
942342	AE2-247 E	2.07
942371	AE2-250 C O1	12.57
942372	AE2-250 E O1	6.63
942401	AE2-253 C	5.61
942402	AE2-253 E	2.52
942471	AE2-260 C O1	12.88
942472	AE2-260 E O1	18.27
942531	AE2-268 C	2.21
942532	AE2-268 E	1.24
942551	AE2-270	32.87
942851	AE2-304 C	0.56
942852	AE2-304 E	0.22
AA2-074	AA2-074	3.26
CARR	CARR	0.78
CBM-S1	CBM-S1	4.14
CBM-S2	CBM-S2	8.5
CBM-W2	CBM-W2	22.9
CIN	CIN	0.19
CPL	CPL	4.79
G-007	G-007	2.36
IPL	IPL	0.05
LGEE	LGEE	0.06
MEC	MEC	1.89
O-066	O-066	15.05
RENSSELAER	RENSSELAER	0.61
WEC	WEC	0.04

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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
1900692	314287	6CHESTFB	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	149.23	150.74	DC	6.75

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

Bus #	Bus	MW Impact
931241	AB1-173AC	0.13
932581	AC2-078 C O1	2.99
932591	AC2-079 C O1	2.78
932631	AC2-084 C	3.36
934011	AD1-025 C	9.49
934201	AD1-047 C	3.72
934331	AD1-057 C O1	4.03
934571	AD1-082 C	4.47
935161	AD1-151 C O1	9.42
935211	AD1-156 C	0.25
936041	AD2-007	1.01
936051	AD2-008 C	1.65
936401	AD2-051 C O1	3.33
936661	AD2-085 C	1.69
936711	AD2-090 C O1	2.83
937571	AD2-169 C	4.53
938221	AE1-035 C	0.84
938491	AE1-068 C O1	20.11
938501	AE1-069 C O1	15.73
938631	AE1-085 C O1	7.83
938771	AE1-103 C O1	1.42
939071	AE1-135 C O1	11.84
939191	AE1-149 C O1	8.22
939311	AE1-162 C	0.86
939411	AE1-173 C	29.65
940061	AE1-248 C O1	9.3
940071	AE1-249 C	4.62
940481	AE2-033 C	10.34
940521	AE2-037 C O1	3.06
940541	AE2-040	2.11
940641	AE2-051 C O1	5.69
940651	AE2-052	2.75
940891	AE2-078 C	0.97
940901	AE2-079 C	0.97
940911	AE2-080 C	0.97
941031	AE2-094 C	13.19
941101	AE2-104 C O1	1.33
941541	AE2-151 C	0.41
941601	AE2-157 C O1	6.75
942001	AE2-212 C	2.53
942151	AE2-227 C O1	2.53
942161	AE2-228 C O1	2.53
942211	AE2-233 C	4.31
942341	AE2-247 C	0.73
942371	AE2-250 C O1	6.22
942471	AE2-260 C O1	8.16
942551	AE2-270	15.71
942711	AE2-287 C O1	5.38
942931	AE2-313 C	11.81
943171	AE2-346 C	0.67
AA2-074	AA2-074	1.68
CARR	CARR	0.32

Bus #	Bus	MW Impact
CBM-S1	CBM-S1	3.53
CBM-S2	CBM-S2	4.67
CBM-W1	CBM-W1	2.7
CBM-W2	CBM-W2	22.14
CIN	CIN	1.28
CPL	CPL	2.47
IPL	IPL	0.79
LGEE	LGEE	0.37
MEC	MEC	3.11
MECS	MECS	0.79
RENSSELAER	RENSSELAER	0.26
WEC	WEC	0.34

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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
1901179	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	single	449.32	136.73	138.01	DC	6.61

Bus #	Bus	MW Impact
314507	3THOMPSN	0.12
315074	1HOPCGN1	25.49
315075	1HOPCGN2	25.16
315076	1HOPPOLC	3.56
315077	1HOPHCF1	5.57
315078	1HOPHCF2	5.57
315079	1HOPHCF3	5.57
315080	1HOPHCF4	8.45
315098	1CHESPKA	0.16
315099	1CHESPKB	0.4
315110	1ELIZAR3	1.17
315116	1SURRY 1	23.82
315117	1GRAVELC	0.83
315119	1GRAVEL3	2.42
315120	1GRAVEL4	2.45
315121	1GRAVEL5	2.42
315122	1GRAVEL6	2.45
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
924811	AB2-134 C O1	3.21
925061	AB2-161 C O1	1.97
925331	AB2-190 C	43.79
926661	AC1-147 C	0.14
927221	AC1-216 C O1	20.1
932041	AC2-012 C	5.1
932581	AC2-078 C O1	2.81
932591	AC2-079 C O1	2.97
934011	AD1-025 C	34.56
934571	AD1-082 C	4.5
935111	AD1-144 C	0.11
935161	AD1-151 C O1	35.19
936041	AD2-007	3.67
936051	AD2-008 C	6.02
936661	AD2-085 C	1.8
937541	AD2-215 C	0.95
938631	AE1-085 C O1	7.38
939191	AE1-149 C O1	7.61
939311	AE1-162 C	2.13
940061	AE1-248 C O1	9.35

Bus #	Bus	MW Impact
940251	AE2-007	84.27
940651	AE2-052	2.55
940891	AE2-078 C	2.74
940901	AE2-079 C	2.74
940911	AE2-080 C	2.74
941591	AE2-156	8.87
941601	AE2-157 C O1	6.61
942341	AE2-247 C	0.78
942551	AE2-270	58.69
CARR	CARR	0.22
CBM-S1	CBM-S1	1.43
CBM-S2	CBM-S2	2.36
CBM-W1	CBM-W1	0.58
CBM-W2	CBM-W2	8.49
CIN	CIN	0.31
CPL	CPL	1.31
IPL	IPL	0.18
LGEE	LGEE	0.09
MEC	MEC	0.98
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.08

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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
1900257	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	3	DVP_P4-3: YTH5	breaker	307.0	128.13	139.19	DC	33.94

Bus #	Bus	MW Impact
314539	3UNCAMP	6.19
314541	3WATKINS	1.54
314589	3MURPHYS	0.07
314617	3TUNIS	0.56
315115	1S HAMPT1	2.43
900672	V4-068 E	0.32
907092	X1-038 E	15.46
920041	AA2-088 C OP	1.22
920042	AA2-088 E OP	16.36
923801	AB2-015 C O1	20.4
923802	AB2-015 E O1	16.73
925061	AB2-161 C O1	7.71
925062	AB2-161 E O1	12.59
932581	AC2-078 C O1	4.64
932582	AC2-078 E O1	7.57
932591	AC2-079 C O1	17.16
932592	AC2-079 E O1	27.99
934571	AD1-082 C	17.58
934572	AD1-082 E	10.03
936661	AD2-085 C	10.15
936662	AD2-085 E	16.56
936711	AD2-090 C O1	14.37
936712	AD2-090 E O1	9.58
938631	AE1-085 C O1	13.97
938632	AE1-085 E O1	9.32
938771	AE1-103 C O1	9.28
938772	AE1-103 E O1	12.81
939191	AE1-149 C O1	9.74
939192	AE1-149 E O1	6.49
940061	AE1-248 C O1	36.54
940062	AE1-248 E O1	24.36
940651	AE2-052	3.26
941101	AE2-104 C O1	13.09
941102	AE2-104 E O1	20.8
941601	AE2-157 C O1	20.37
941602	AE2-157 E O1	13.58
942341	AE2-247 C	4.4
942342	AE2-247 E	6.08
CARR	CARR	0.02
CBM-S1	CBM-S1	0.35
CBM-S2	CBM-S2	0.41

Bus #	Bus	MW Impact
CBM-W1	CBM-W1	0.36
CBM-W2	CBM-W2	2.29
CIN	CIN	0.16
CPL	CPL	0.22
G-007	G-007	0.06
IPL	IPL	0.1
LGEE	LGEE	0.05
MEC	MEC	0.36
MECS	MECS	0.15
O-066	O-066	0.36
RENSSELAER	RENSSELAER	0.01
WEC	WEC	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
1901749	940430	AE2-027 TAP	DVP	314298	3HARROWG	DVP	1	DVP_P7-1: LN 208-259	tower	169.0	120.37	121.7	DC	5.0

Bus #	Bus	MW Impact
314314	3LOCKS	0.33
925051	AB2-160 C O1	8.5
925052	AB2-160 E O1	13.87
925821	AC1-061	0.01
932581	AC2-078 C O1	1.46
932582	AC2-078 E O1	2.37
935212	AD1-156 E	0.42
938631	AE1-085 C O1	3.75
938632	AE1-085 E O1	2.5
939191	AE1-149 C O1	4.08
939192	AE1-149 E O1	2.72
940071	AE1-249 C	11.22
940072	AE1-249 E	8.36
940431	AE2-027 C O1	36.07
940432	AE2-027 E O1	24.05
940651	AE2-052	1.37
941601	AE2-157 C O1	3.0
941602	AE2-157 E O1	2.0
942001	AE2-212 C	0.84
942002	AE2-212 E	0.56
942151	AE2-227 C O1	0.84
942152	AE2-227 E O1	0.56
942161	AE2-228 C O1	0.84
942162	AE2-228 E O1	0.56
942371	AE2-250 C O1	15.1
942372	AE2-250 E O1	7.97
CARR	CARR	0.06
CBM-S1	CBM-S1	0.9
CBM-S2	CBM-S2	1.13
CBM-W1	CBM-W1	0.79
CBM-W2	CBM-W2	5.75
CIN	CIN	0.36
CPL	CPL	0.6
G-007	G-007	0.19
IPL	IPL	0.23
LGEE	LGEE	0.11
MEC	MEC	0.85
MECS	MECS	0.29
O-066	O-066	1.24
RENSSELAER	RENSSELAER	0.05

Bus #	Bus	MW Impact
WEC	WEC	0.1

Affected Systems

12 Affected Systems

12.1 LG&E

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

12.2 MISO

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

12.3 TVA

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

12.4 Duke Energy Progress

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

12.5 NYISO

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

12.6 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P1-2: LN 567	CONTINGENCY 'DVP_P1-2: LN 567' OPEN BRANCH FROM BUS 314903 TO BUS 314924 CKT 1 /* 8CHCKAHM 500.00 - 8SURRY 500.00 END
DVP_P1-2: LN 563	CONTINGENCY 'DVP_P1-2: LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P1-2: LN 15-B-B	CONTINGENCY 'DVP_P1-2: LN 15-B-B' OPEN BRANCH FROM BUS 313878 TO BUS 314347 CKT 1 /* 3BELL AVE 1 115.00 - 3WAKEFLD 115.00 OPEN BRANCH FROM BUS 314347 TO BUS 941600 CKT 1 /* 3WAKEFLD 115.00 - AE2-157 TAP 115.00 OPEN BUS 314347 /* ISLAND: 3WAKEFLD 115.00 END
DVP_P4-2: 562T563	CONTINGENCY 'DVP_P4-2: 562T563' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 941030 CKT 1 /* 8CARSON 500.00 - AE2-094 TAP 500.00 /* CONTINGENCY LINE ADDED FOR AE2 BUILD OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P4-2: 2002T2003	CONTINGENCY 'DVP_P4-2: 2002T2003' /* POE 230 KV OPEN BRANCH FROM BUS 314282 TO BUS 314331 CKT 1 /* 6CARSON 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 1 /* 3POE 115.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314287 CKT 1 /* 6TYLER1 230.00 - 6CHESTF B 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314299 CKT 1 /* 6TYLER1 230.00 - 6HARROWG 230.00 OPEN BRANCH FROM BUS 314299 TO BUS 314331 CKT 1 /* 6HARROWG 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 2 /* 3POE 115.00 - 6POE 230.00 OPEN BUS 314263 /* ISLAND: 6TYLER1 230.00 OPEN BUS 314299 /* ISLAND: 6HARROWG 230.00 END
DVP_P1-3: 6SUFFOLK-TX#5	CONTINGENCY 'DVP_P1-3: 6SUFFOLK-TX#5' OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 44	CONTINGENCY 'DVP_P1-2: LN 44' OPEN BRANCH FROM BUS 313803 TO BUS 314531 CKT 1 /* 3OAKRI44 115.00 - 3MYRTLE 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314536 CKT 1 /* 3OAKRI44 115.00 - 3SUFFOLK 115.00 OPEN BRANCH FROM BUS 313878 TO BUS 314542 CKT 1 /* 3BELL AVE 1 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314531 TO BUS 314542 CKT 1 /* 3MYRTLE 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314536 TO BUS 314823 CKT 1 /* 3SUFFOLK 115.00 - 3SUFFO_1 115.00 OPEN BUS 313803 /* ISLAND: 3OAKRI44 115.00 OPEN BUS 314531 /* ISLAND: 3MYRTLE 115.00 OPEN BUS 314542 /* ISLAND: 3WINDSOR 115.00 OPEN BUS 314823 /* ISLAND: 3SUFFO_1 115.00 END
DVP_P4-2: 23T44	CONTINGENCY 'DVP_P4-2: 23T44' /* SUFFOLK 115 KV OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 /* CONTINGENCY LINE ADDED FOR AE1 BUILD OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314531 CKT 1 /* 3OAKRI44 115.00 - 3MYRTLE 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314536 CKT 1 /* 3OAKRI44 115.00 - 3SUFFOLK 115.00 OPEN BRANCH FROM BUS 313878 TO BUS 314542 CKT 1 /* 3BELL AVE 1 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314531 TO BUS 314542 CKT 1 /* 3MYRTLE 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314536 TO BUS 314823 CKT 1 /* 3SUFFOLK 115.00 - 3SUFFO_1 115.00 OPEN BUS 313803 /* ISLAND: 3OAKRI44 115.00 OPEN BUS 314531 /* ISLAND: 3MYRTLE 115.00 OPEN BUS 314542 /* ISLAND: 3WINDSOR 115.00 OPEN BUS 314823 /* ISLAND: 3SUFFO_1 115.00 END
DVP_P1-2: LN 211	CONTINGENCY 'DVP_P1-2: LN 211' OPEN BRANCH FROM BUS 314287 TO BUS 314303 CKT 1 /* 6CHESTF B 230.00 - 6HOPEWLL 230.00 END

Contingency Name	Contingency Definition
DVP_P7-1: LN 23-44-B	CONTINGENCY 'DVP_P7-1: LN 23-44-B' OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314531 CKT 1 /* 3OAKRI44 115.00 - 3MYRTLE 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314536 CKT 1 /* 3OAKRI44 115.00 - 3SUFFOLK 115.00 OPEN BRANCH FROM BUS 313878 TO BUS 314542 CKT 1 /* 3BELL AVE 1 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314531 TO BUS 314542 CKT 1 /* 3MYRTLE 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314536 TO BUS 314823 CKT 1 /* 3SUFFOLK 115.00 - 3SUFFO_1 115.00 OPEN BUS 313803 /* ISLAND: 3OAKRI44 115.00 OPEN BUS 314531 /* ISLAND: 3MYRTLE 115.00 OPEN BUS 314542 /* ISLAND: 3WINDSOR 115.00 OPEN BUS 314823 /* ISLAND: 3SUFFO_1 115.00 END
DVP_P1-2: LN 557	CONTINGENCY 'DVP_P1-2: LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 259	CONTINGENCY 'DVP_P1-2: LN 259' OPEN BRANCH FROM BUS 314276 TO BUS 314287 CKT 1 /* 6BASIN 230.00 - 6CHESTF B 230.00 END
DVP_P1-2: LN 217	CONTINGENCY 'DVP_P1-2: LN 217' OPEN BRANCH FROM BUS 314225 TO BUS 314227 CKT 1 /* 6CHARCTY 230.00 - 6LAKESIDE 230.00 OPEN BRANCH FROM BUS 314225 TO BUS 314287 CKT 1 /* 6CHARCTY 230.00 - 6CHESTF B 230.00 OPEN BUS 314225 /* ISLAND: 6CHARCTY 230.00 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_P4-3: SUFFOLK H542	CONTINGENCY 'DVP_P4-3: SUFFOLK H542' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 3 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 2 /* 6SUFFOLK 230.00 - 8SUFFOLK 500.00 END

Contingency Name	Contingency Definition
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_P7-1: LN 15-106-A-A	CONTINGENCY 'DVP_P7-1: LN 15-106-A-A' OPEN BRANCH FROM BUS 939190 TO BUS 314329 CKT 1 /* AE1-149 TAP 115.00 - 3POE 115.00 OPEN BRANCH FROM BUS 938630 TO BUS 314273 CKT 1 /* AE1-085 TAP 115.00 - 3BAKRS P 115.00 OPEN BRANCH FROM BUS 314262 TO BUS 314280 CKT 1 /* 3NEWBO_1 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314273 TO BUS 314280 CKT 1 /* 3BAKRS P 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314280 TO BUS 314329 CKT 1 /* 3NEWBOHE 115.00 - 3POE 115.00 OPEN BUS 314262 /* ISLAND: 3NEWBO_1 115.00 OPEN BUS 314273 /* ISLAND: 3BAKRS P 115.00 OPEN BUS 314280 /* ISLAND: 3NEWBOHE 115.00 END
Base Case	
DVP_P7-1: LN 208-259	CONTINGENCY 'DVP_P7-1: LN 208-259' OPEN BRANCH FROM BUS 314286 TO BUS 314309 CKT 1 /* 6CHESTF A 230.00 - 6IRON208 230.00 OPEN BRANCH FROM BUS 314309 TO BUS 314338 CKT 1 /* 6IRON208 230.00 - 6SOUWEST 230.00 OPEN BUS 314309 /* ISLAND: 6IRON208 230.00 OPEN BRANCH FROM BUS 314276 TO BUS 314287 CKT 1 /* 6BASIN 230.00 - 6CHESTF B 230.00 END
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END
DVP_P7-1: LN 2002-2003	CONTINGENCY 'DVP_P7-1: LN 2002-2003' OPEN BRANCH FROM BUS 314282 TO BUS 314331 CKT 1 /* 6CARSON 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 1 /* 3POE 115.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314287 CKT 1 /* 6TYLER1 230.00 - 6CHESTF B 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314299 CKT 1 /* 6TYLER1 230.00 - 6HARROWG 230.00 OPEN BRANCH FROM BUS 314299 TO BUS 314331 CKT 1 /* 6HARROWG 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 2 /* 3POE 115.00 - 6POE 230.00 OPEN BUS 314263 /* ISLAND: 6TYLER1 230.00 OPEN BUS 314299 /* ISLAND: 6HARROWG 230.00 END
DVP_P4-5: L1TL5	CONTINGENCY 'DVP_P4-5: L1TL5' /* SUFFOLK 115 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 3 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 15-A-A	CONTINGENCY 'DVP_P1-2: LN 15-A-A' OPEN BRANCH FROM BUS 939190 TO BUS 314329 CKT 1 /* AE1-149 TAP 115.00 - 3POE 115.00 END
DVP_P1-2: LN 23-B	CONTINGENCY 'DVP_P1-2: LN 23-B' OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 END
DVP_P4-2: 24972-4	CONTINGENCY 'DVP_P4-2: 24972-4' /* CARSON 230 KV OPEN BRANCH FROM BUS 314282 TO BUS 314285 CKT 1 /* 6CARSON 230.00 - 6CHRL249 230.00 OPEN BRANCH FROM BUS 314285 TO BUS 314316 CKT 1 /* 6CHRL249 230.00 - 6LOCKS 230.00 OPEN BRANCH FROM BUS 314314 TO BUS 314316 CKT 2 /* 3LOCKS 115.00 - 6LOCKS 230.00 OPEN BUS 314285 /* ISLAND: 6CHRL249 230.00 OPEN BRANCH FROM BUS 314282 TO BUS 314902 CKT 1 /* 6CARSON 230.00 - 8CARSON 500.00 OPEN BUS 314455 /* 6CARSO_1 230.00 KV END
DVP_P4-3: YTH5	CONTINGENCY 'DVP_P4-3: YTH5' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 1 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 1 /* 6SUFFOLK 230.00 - 8SUFFOLK 500.00 REMOVE SWSHUNT FROM BUS 314537 END

Short Circuit

12.7 Short Circuit

The following Breakers are overduty:

None

13 Network Impacts- Secondary Point of Interconnection

The Queue Project AE2-157 was evaluated as a 100.0 MW (Capacity 60.0 MW) injection tapping the Bell Ave to Bakers Pond 115 kV line in the Dominion area. Project AE2-157 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-157 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

13.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
13750547	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	Base Case	single	110.92	83.31	110.37	DC	30.02
13750569	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	Base Case	single	110.92	73.39	100.46	DC	30.02
7942459	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	single	441.8	93.14	95.13	DC	8.81
7942456	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	single	441.8	93.16	95.15	DC	8.81
1900901	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	Base Case	single	110.92	99.22	126.25	DC	29.98
1900666	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	Base Case	single	110.92	99.11	126.14	DC	29.98
1900709	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	Base Case	single	110.92	97.55	124.62	DC	30.02

13.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
7643540	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	93.51	96.24	DC	14.76
1900539	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P4-2: 2002T2003	breaker	301.0	86.6	100.38	DC	41.5
1900540	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P4-2: 23T44	breaker	301.0	89.73	102.67	DC	38.94
1901832	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 2002-2003	tower	301.0	86.6	100.38	DC	41.5
1901833	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 23-44-B	tower	301.0	89.73	102.67	DC	38.94
7643538	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	93.53	96.26	DC	14.76
1901830	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P7-1: LN 15-106-A-A	tower	297.2	88.06	98.76	DC	31.79
12376958	941600	AE2-157 TAP	DVP	313879	3BELL AVE 2	DVP	1	DVP_P4-2: H8T544	breaker	136.0	93.21	129.73	DC	49.68
12376959	941600	AE2-157 TAP	DVP	313879	3BELL AVE 2	DVP	1	DVP_P4-2: H7T544	breaker	136.0	93.2	129.73	DC	49.68

13.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1900804	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	Base Case	single	110.92	109.49	136.52	DC	29.98

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
13750572	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	DVP_P1-2: LN 106-B	single	110.92	192.12	246.21	DC	60.0
13750576	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	DVP_P1-2: LN 106-C	single	110.92	137.13	191.22	DC	60.0
1900072	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	171.93	172.76	DC	19.09
13750538	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	DVP_P1-2: LN 23-B	single	110.92	196.9	250.99	DC	60.0
13750539	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	DVP_P1-2: LN 23-A	single	110.92	177.97	232.06	DC	60.0
13750560	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 23-B	single	110.92	186.89	240.98	DC	60.0
13750561	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 23-A	single	110.92	168.05	222.14	DC	60.0
1900111	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P4-2: H8T217	breaker	549.0	150.59	152.82	DC	12.24
1900692	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 563	single	449.32	149.44	150.88	DC	6.46
1900694	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 217	single	449.32	151.16	152.8	DC	7.35
1900701	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	Base Case	single	449.32	109.03	110.2	DC	5.26
1900443	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	124.9	128.64	DC	20.25
1901179	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	single	449.32	136.86	138.1	DC	6.41
1901182	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 259	single	449.32	136.0	137.58	DC	7.2
1901188	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	Base Case	single	449.32	108.03	109.33	DC	5.9
14010646	314314	3LOCKS	DVP	314298	3HARROWG	DVP	1	DVP_P7-1: LN 205-2003-A	tower	169.0	100.64	102.41	DC	6.63
1900442	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	124.92	128.66	DC	20.25
13750583	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	DVP_P1-2: LN 106-B	single	110.92	181.93	236.03	DC	60.0
13750587	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	DVP_P1-2: LN 106-C	single	110.92	126.85	180.94	DC	60.0
13750552	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 106-B	single	110.92	189.33	243.42	DC	60.0
13750554	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 106-C	single	110.92	134.24	188.33	DC	60.0
1900211	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-3: SUFFOLK H542	breaker	297.2	122.92	135.73	DC	38.08
1900212	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-5: LITL5	breaker	297.2	122.56	135.5	DC	38.44

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
1900257	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	3	DVP_P4-3: YTH5	breaker	307.0	117.1	129.31	DC	37.49
1900632	932590	AC2-079 TAP	DVP	314532	3OAKRI23	DVP	1	Base Case	single	110.92	120.84	147.87	DC	29.98
13750518	932590	AC2-079 TAP	DVP	314532	3OAKRI23	DVP	1	DVP_P1-2: LN 106-B	single	110.92	211.05	265.15	DC	60.0
13750520	932590	AC2-079 TAP	DVP	314532	3OAKRI23	DVP	1	DVP_P1-2: LN 106-C	single	110.92	155.97	210.06	DC	60.0
13750526	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	DVP_P1-2: LN 23-B	single	110.92	211.05	265.15	DC	60.0
13750527	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	DVP_P1-2: LN 23-A	single	110.92	192.12	246.21	DC	60.0
13750594	941600	AE2-157 TAP	DVP	938630	AE1-085 TAP	DVP	1	DVP_P1-2: LN 23-B	single	110.92	155.97	210.06	DC	60.0
13750595	941600	AE2-157 TAP	DVP	938630	AE1-085 TAP	DVP	1	DVP_P1-2: LN 23-A	single	110.92	137.13	191.22	DC	60.0

13.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1900800	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	Base Case	operation	110.92	175.45	220.5	DC	49.97
13750570	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	DVP_P1-2: LN 106-B	operation	110.92	333.21	423.37	DC	100.0
1901361	314214	6CHCKAHM	DVP	314903	8CHCKAHM	DVP	1	DVP_P1-2: LN 567	operation	828.8	113.08	113.71	DC	11.49
1901290	314218	6ELMONT	DVP	314908	8ELMONT	DVP	2	DVP_P1-2: LN 557	operation	879.84	124.38	125.02	DC	12.21
1901356	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 557	operation	920.92	120.45	121.05	DC	12.27
1901445	314225	6CHARCTY	DVP	314227	6LAKESIDE	DVP	1	DVP_P1-2: LN 557	operation	984.18	113.01	114.13	DC	10.84
7942699	314227	6LAKESIDE	DVP	314218	6ELMONT	DVP	1	DVP_P1-2: LN 557	operation	740.72	93.64	94.23	DC	9.64

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
1900840	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	Base Case	operation	110.92	170.19	215.3	DC	50.03
13750536	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	DVP_P1-2: LN 23-B	operation	110.92	385.5	475.66	DC	100.0
1900951	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	Base Case	operation	110.92	160.28	205.38	DC	50.03
13750558	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 23-B	operation	110.92	375.5	465.65	DC	100.0
1900691	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 217	operation	449.32	183.81	186.54	DC	12.25
1900699	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	Base Case	operation	449.32	122.22	123.11	DC	8.77
1901404	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P1-2: LN 557	operation	984.18	116.71	117.83	DC	10.84
1901461	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P1-2: LN 563	operation	441.8	112.95	116.27	DC	14.68
1901178	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	operation	449.32	140.69	141.76	DC	10.68
1901189	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	Base Case	operation	449.32	104.54	105.54	DC	9.84
1901398	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P1-2: LN 23-B	operation	224.66	109.93	125.98	DC	36.07
1901459	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P1-2: LN 563	operation	441.8	112.97	116.3	DC	14.68
1900897	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	Base Case	operation	110.92	165.17	210.22	DC	49.97
13750581	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	DVP_P1-2: LN 106-B	operation	110.92	323.03	413.18	DC	100.0
7941517	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	Base Case	operation	110.92	197.82	242.87	DC	49.97
13750548	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 106-B	operation	110.92	377.93	468.09	DC	100.0
1900755	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	operation	2442.12	182.42	182.86	DC	24.73
1900633	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	operation	2442.12	214.81	215.4	DC	31.89
1900710	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	operation	2442.12	186.43	186.59	DC	27.85
7941439	932590	AC2-079 TAP	DVP	314532	3OAKRI23	DVP	1	Base Case	operation	110.92	219.55	264.6	DC	49.97
13750514	932590	AC2-079 TAP	DVP	314532	3OAKRI23	DVP	1	DVP_P1-2: LN 106-B	operation	110.92	399.66	489.81	DC	100.0
1900705	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	Base Case	operation	110.92	184.44	229.54	DC	50.03
13750524	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	DVP_P1-2: LN 23-B	operation	110.92	399.66	489.81	DC	100.0
13750592	941600	AE2-157 TAP	DVP	938630	AE1-085 TAP	DVP	1	DVP_P1-2: LN 23-B	operation	110.92	307.79	397.94	DC	100.0
13750599	941600	AE2-157 TAP	DVP	938630	AE1-085 TAP	DVP	1	Base Case	operation	110.92	127.39	172.5	DC	50.03

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
13751086	941600	AE2-157 TAP	DVP	313879	3BELL AVE 2	DVP	1	DVP_P1-2: LN 544-A	operation	110.92	112.96	157.88	DC	49.83
13751091	941600	AE2-157 TAP	DVP	313879	3BELL AVE 2	DVP	1	Base Case	operation	110.92	104.27	149.32	DC	49.97

13.5 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
13750538	314273	3BAKRS P	DVP	314280	3NEWBOHE	DVP	1	DVP_P1-2: LN 23-B	single	110.92	196.9	250.99	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
13750560	314280	3NEWBOHE	DVP	314329	3POE	DVP	1	DVP_P1-2: LN 23-B	single	110.92	186.89	240.98	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
1900443	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	124.9	128.64	DC	20.25

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

Bus #	Bus	MW Impact
923911	AB2-031 C O1	2.72
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91

Bus #	Bus	MW Impact
934232	AD1-050 E	1.59
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O2	4.29
940522	AE2-037 E O2	2.07
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940641	AE2-051 C O2	44.63
940642	AE2-051 E O2	29.75
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O2	12.15
941602	AE2-157 E O2	8.1
941951	AE2-207	1.8
942341	AE2-247 C	1.08

Bus #	Bus	MW Impact
942342	AE2-247 E	1.49
942371	AE2-250 C O2	13.07
942372	AE2-250 E O2	6.9
942451	AE2-258	1.17
942471	AE2-260 C O2	25.56
942472	AE2-260 E O2	36.26
942711	AE2-287 C O2	14.02
942712	AE2-287 E O2	9.35
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

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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
1900442	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 24972-4	breaker	541.0	124.92	128.66	DC	20.25

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

Bus #	Bus	MW Impact
923911	AB2-031 C O1	2.72
923912	AB2-031 E O1	1.34
923991	AB2-040 C O1	1.09
923992	AB2-040 E O1	7.31
924022	AB2-043 E O1	2.58
924152	AB2-059 E O1	3.39
924162	AB2-060 E O1	2.1
924302	AB2-077 E O1	0.66
924312	AB2-078 E O1	0.66
924322	AB2-079 E O1	0.66
924401	AB2-089 C	1.32
924402	AB2-089 E	0.68
924491	AB2-098 C	0.3
924492	AB2-098 E	0.13
924501	AB2-099 C	0.37
924502	AB2-099 E	0.16
924511	AB2-100 C	19.94
924512	AB2-100 E	9.82
925061	AB2-161 C O1	3.56
925062	AB2-161 E O1	5.8
925171	AB2-174 C O1	8.98
925172	AB2-174 E O1	8.12
925591	AC1-034 C	4.26
925592	AC1-034 E	3.22
925781	AC1-054 C O1	4.71
925782	AC1-054 E O1	2.17
926071	AC1-086 C	23.46
926072	AC1-086 E	10.68
926201	AC1-098 C	4.34
926202	AC1-098 E	2.58
926211	AC1-099 C	1.45
926212	AC1-099 E	0.85
927021	AC1-189 C	4.75
927022	AC1-189 E	2.37
927141	AC1-208 C	6.77
927142	AC1-208 E	3.01
930402	AB1-081 E O1	2.39
930861	AB1-132 C O1	1.94
930862	AB1-132 E O1	6.83
931231	AB1-173 C	0.33
931232	AB1-173 E	1.28
931241	AB1-173AC	0.33
931242	AB1-173AE	1.28
932581	AC2-078 C O1	6.56
932582	AC2-078 E O1	10.7
932591	AC2-079 C O1	4.04
932592	AC2-079 E O1	6.59
932631	AC2-084 C	6.18
932632	AC2-084 E	3.05
934201	AD1-047 C	9.75
934202	AD1-047 E	6.5
934231	AD1-050 C	2.91

Bus #	Bus	MW Impact
934232	AD1-050 E	1.59
934331	AD1-057 C O1	8.58
934332	AD1-057 E O1	4.58
934571	AD1-082 C	8.1
934572	AD1-082 E	4.62
935211	AD1-156 C	0.84
935212	AD1-156 E	4.58
936361	AD2-046 C O1	4.87
936362	AD2-046 E O1	2.24
936401	AD2-051 C O1	5.39
936402	AD2-051 E O1	2.31
936661	AD2-085 C	2.49
936662	AD2-085 E	4.07
936701	AD2-089 C	4.3
936702	AD2-089 E	2.87
936711	AD2-090 C O1	4.17
936712	AD2-090 E O1	2.78
937571	AD2-169 C	11.48
937572	AD2-169 E	7.65
938171	AE1-026 C1 O	13.16
938172	AE1-026 C2 O	1.9
938173	AE1-026 E O1	3.98
938221	AE1-035 C	1.24
938222	AE1-035 E	0.61
938631	AE1-085 C O1	16.84
938632	AE1-085 E O1	11.23
938771	AE1-103 C O1	1.82
938772	AE1-103 E O1	2.52
939071	AE1-135 C O1	37.34
939072	AE1-135 E O1	24.89
939181	AE1-148 C O1	4.78
939182	AE1-148 E O1	3.19
939191	AE1-149 C O1	18.48
939192	AE1-149 E O1	12.32
940061	AE1-248 C O1	16.84
940062	AE1-248 E O1	11.23
940481	AE2-033 C	35.93
940482	AE2-033 E	24.22
940521	AE2-037 C O2	4.29
940522	AE2-037 E O2	2.07
940571	AE2-044 C	2.79
940572	AE2-044 E	1.2
940641	AE2-051 C O2	44.63
940642	AE2-051 E O2	29.75
940651	AE2-052	6.19
940661	AE2-053	1.78
941541	AE2-151 C	0.67
941542	AE2-151 E	0.36
941601	AE2-157 C O2	12.15
941602	AE2-157 E O2	8.1
941951	AE2-207	1.8
942341	AE2-247 C	1.08

Bus #	Bus	MW Impact
942342	AE2-247 E	1.49
942371	AE2-250 C O2	13.07
942372	AE2-250 E O2	6.9
942451	AE2-258	1.17
942471	AE2-260 C O2	25.56
942472	AE2-260 E O2	36.26
942711	AE2-287 C O2	14.02
942712	AE2-287 E O2	9.35
943171	AE2-346 C	1.1
943172	AE2-346 E	0.47
AA2-074	AA2-074	1.64
CARR	CARR	0.16
CBM-S1	CBM-S1	3.81
CBM-S2	CBM-S2	4.44
CBM-W1	CBM-W1	3.84
CBM-W2	CBM-W2	24.85
CIN	CIN	1.73
CPL	CPL	2.41
G-007	G-007	0.55
IPL	IPL	1.09
LGEE	LGEE	0.5
MEC	MEC	3.85
MECS	MECS	1.63
O-066	O-066	3.48
RENSSELAER	RENSSELAER	0.13
WEC	WEC	0.46

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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
13750583	314528	3IVOR106	DVP	932590	AC2-079 TAP	DVP	1	DVP_P1-2: LN 106-B	single	110.92	181.93	236.03	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
13750552	314532	3OAKRI23	DVP	314536	3SUFFOLK	DVP	1	DVP_P1-2: LN 106-B	single	110.92	189.33	243.42	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
13750526	938630	AE1-085 TAP	DVP	314273	3BAKRS P	DVP	1	DVP_P1-2: LN 23-B	single	110.92	211.05	265.15	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
1901833	314329	3POE	DVP	314291	3PRGEORG	DVP	1	DVP_P7-1: LN 23-44-B	tower	301.0	89.73	102.67	DC	38.94

Bus #	Bus	MW Impact
925061	AB2-161 C O1	7.4
925062	AB2-161 E O1	12.07
932581	AC2-078 C O1	8.88
932582	AC2-078 E O1	14.49
932591	AC2-079 C O1	12.58
932592	AC2-079 E O1	20.52
934571	AD1-082 C	16.86
934572	AD1-082 E	9.62
935211	AD1-156 C	0.15
935212	AD1-156 E	0.83
938631	AE1-085 C O1	23.83
938632	AE1-085 E O1	15.89
939191	AE1-149 C O1	23.36
939192	AE1-149 E O1	15.58
940061	AE1-248 C O1	35.05
940062	AE1-248 E O1	23.37
940542	AE2-040 BAT	0.85
940651	AE2-052	7.83
941601	AE2-157 C O2	23.37
941602	AE2-157 E O2	15.58
CARR	CARR	0.01
CBM-S1	CBM-S1	0.57
CBM-S2	CBM-S2	0.61
CBM-W1	CBM-W1	0.63
CBM-W2	CBM-W2	3.8
CIN	CIN	0.28
CPLE	CPLE	0.31
G-007	G-007	0.05
IPL	IPL	0.18
LGEE	LGEE	0.08
MEC	MEC	0.61
MECS	MECS	0.29
O-066	O-066	0.3
RENSSELAER	RENSSELAER	0.01
WEC	WEC	0.08

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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
1900212	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	1	DVP_P4-5: L1TL5	breaker	297.2	122.56	135.5	DC	38.44

Bus #	Bus	MW Impact
314539	3UNCAMP	6.35
314541	3WATKINS	1.58
314589	3MURPHYS	0.07
314617	3TUNIS	0.59
315115	1S HAMPT1	2.5
900672	V4-068 E	0.33
907092	X1-038 E	15.88
920041	AA2-088 C OP	1.26
920042	AA2-088 E OP	16.86
923801	AB2-015 C O1	20.96
923802	AB2-015 E O1	17.19
924501	AB2-099 C	0.27
924502	AB2-099 E	0.11
925061	AB2-161 C O1	7.91
925062	AB2-161 E O1	12.9
932581	AC2-078 C O1	4.76
932582	AC2-078 E O1	7.76
932591	AC2-079 C O1	17.59
932592	AC2-079 E O1	28.7
934571	AD1-082 C	18.03
934572	AD1-082 E	10.28
936661	AD2-085 C	10.41
936662	AD2-085 E	16.98
936711	AD2-090 C O1	14.78
936712	AD2-090 E O1	9.85
938631	AE1-085 C O1	14.33
938632	AE1-085 E O1	9.56
938771	AE1-103 C O1	9.53
938772	AE1-103 E O1	13.16
939191	AE1-149 C O1	9.99
939192	AE1-149 E O1	6.66
940061	AE1-248 C O1	37.47
940062	AE1-248 E O1	24.98
940651	AE2-052	3.35
941601	AE2-157 C O2	23.07
941602	AE2-157 E O2	15.38
942341	AE2-247 C	4.51
942342	AE2-247 E	6.23
943171	AE2-346 C	0.8
943172	AE2-346 E	0.34
CARR	CARR	0.02

Bus #	Bus	MW Impact
CBM-S1	CBM-S1	0.4
CBM-S2	CBM-S2	0.47
CBM-W1	CBM-W1	0.4
CBM-W2	CBM-W2	2.59
CIN	CIN	0.18
CPL	CPL	0.26
G-007	G-007	0.07
IPL	IPL	0.11
LGEE	LGEE	0.05
MEC	MEC	0.4
MECS	MECS	0.17
O-066	O-066	0.42
RENSSELAER	RENSSELAER	0.02
WEC	WEC	0.05

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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
12376959	941600	AE2-157 TAP	DVP	313879	3BELL AVE 2	DVP	1	DVP_P4-2: H7T544	breaker	136.0	93.2	129.73	DC	49.68

Bus #	Bus	MW Impact
938631	AE1-085 C O1	16.54
938632	AE1-085 E O1	11.02
939191	AE1-149 C O1	3.01
939192	AE1-149 E O1	2.01
940063	AE1-248 EBAT	68.27
940651	AE2-052	1.01
941601	AE2-157 C O2	29.81
941602	AE2-157 E O2	19.87
BLUEG	BLUEG	0.14
CALDERWOOD	CALDERWOOD	0.04
CANNELTON	CANNELTON	0.01
CATAWBA	CATAWBA	0.04
CBM-N	CBM-N	0.02
CHEOAH	CHEOAH	0.04
CHILHOWEE	CHILHOWEE	0.01
COFFEEN	COFFEEN	0.02
COTTONWOOD	COTTONWOOD	0.12
DUCKCREEK	DUCKCREEK	0.03
EDWARDS	EDWARDS	0.01
ELMERSMITH	ELMERSMITH	0.02
FARMERCITY	FARMERCITY	0.01
G-007A	G-007A	0.08
GIBSON	GIBSON	0.01
HAMLET	HAMLET	0.09
NEWTON	NEWTON	0.04
NYISO	NYISO	0.1
PRAIRIE	PRAIRIE	0.1
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.01
TATANKA	TATANKA	0.02
TILTON	TILTON	0.02
TRIMBLE	TRIMBLE	0.01
TVA	TVA	0.1
UNIONPOWER	UNIONPOWER	0.05
VFT	VFT	0.23

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
13750572	313879	3BELL AVE 2	DVP	314528	3IVOR106	DVP	1	DVP_P1-2: LN 106-B	single	110.92	192.12	246.21	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
1900072	314218	6ELMONT	DVP	314908	8ELMONT	DVP	1	DVP_P4-2: H2T557	breaker	1050.6	171.93	172.76	DC	19.09

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

Bus #	Bus	MW Impact
919211	AA1-145	12.27
923801	AB2-015 C O1	7.63
923802	AB2-015 E O1	6.25
923832	AB2-022 E	1.12
923842	AB2-024 E	1.47
923852	AB2-025 E	1.07
924061	AB2-050	0.72
924241	AB2-068 O1	175.77
924511	AB2-100 C	10.3
924512	AB2-100 E	5.07
924812	AB2-134 E O1	14.7
925051	AB2-160 C O1	7.07
925052	AB2-160 E O1	11.54
925061	AB2-161 C O1	3.58
925062	AB2-161 E O1	5.84
925331	AB2-190 C	24.53
925332	AB2-190 E	10.51
925522	AC1-027 E	1.06
925861	AC1-065 C	4.33
925862	AC1-065 E	7.06
926291	AC1-107 O1	265.31
926411	AC1-112 C	0.42
926412	AC1-112 E	1.92
926472	AC1-118 E	1.06
926551	AC1-134	1.8
926662	AC1-147 E	1.23
926751	AC1-161 C O1	26.82
926752	AC1-161 E O1	11.45
926781	AC1-164 C	57.92
926782	AC1-164 E	26.02
927041	AC1-191 C O1	17.43
927042	AC1-191 E O1	8.68
927221	AC1-216 C O1	11.81
927222	AC1-216 E O1	9.29
930121	AB1-027 C	0.54
930122	AB1-027 E	1.89
932041	AC2-012 C	9.5
932042	AC2-012 E	15.5
932501	AC2-070 C	0.35
932502	AC2-070 E	1.2
932532	AC2-073 E	1.54
932581	AC2-078 C O1	4.69
932582	AC2-078 E O1	7.65
932591	AC2-079 C O1	5.74
932592	AC2-079 E O1	9.36
932831	AC2-110 C	1.73
932832	AC2-110 E	2.83
933061	AC2-130	3.44
933261	AC2-137 C	0.38
933262	AC2-137 E	2.03
933272	AC2-138 E	1.07
933291	AC2-141 C	26.82

Bus #	Bus	MW Impact
933292	AC2-141 E	11.45
933732	AC2-196 E	1.09
934011	AD1-025 C	20.31
934012	AD1-025 E	12.03
934061	AD1-033 C	6.88
934062	AD1-033 E	4.59
934141	AD1-041 C	6.72
934142	AD1-041 E	4.48
934211	AD1-048 C	0.46
934212	AD1-048 E	1.91
934392	AD1-063 E	1.38
934571	AD1-082 C	8.15
934572	AD1-082 E	4.65
934781	AD1-105 C	11.44
934782	AD1-105 E	7.95
935112	AD1-144 E	0.91
935161	AD1-151 C O1	19.71
935162	AD1-151 E O1	13.14
935212	AD1-156 E	1.68
936041	AD2-007	2.16
936051	AD2-008 C	3.54
936052	AD2-008 E	7.7
936151	AD2-021	0.36
936241	AD2-030 C	2.87
936242	AD2-030 E	1.47
936301	AD2-039 C	1.73
936302	AD2-039 E	2.83
936341	AD2-044 C	0.27
936342	AD2-044 E	0.3
936391	AD2-049 C	1.86
936392	AD2-049 E	1.86
936581	AD2-073 C	2.22
936582	AD2-073 E	1.1
936591	AD2-074 C	6.32
936592	AD2-074 E	10.32
936661	AD2-085 C	3.45
936662	AD2-085 E	5.64
936711	AD2-090 C O1	6.26
936712	AD2-090 E O1	4.17
937221	AD2-160 C O1	5.33
937222	AD2-160 E O1	2.8
937251	AD2-164	5.08
937541	AD2-215 C	1.67
937542	AD2-215 E	0.89
938031	AE1-004 C	1.73
938032	AE1-004 E	2.83
938181	AE1-027 C	2.14
938182	AE1-027 E	1.13
938191	AE1-028 C	1.24
938192	AE1-028 E	0.72
938531	AE1-072 C O1	15.94
938532	AE1-072 E O1	8.31

Bus #	Bus	MW Impact
938551	AE1-074 C	3.1
938552	AE1-074 E	1.56
938631	AE1-085 C O1	12.45
938632	AE1-085 E O1	8.3
938771	AE1-103 C O1	3.24
938772	AE1-103 E O1	4.47
939071	AE1-135 C O1	18.69
939072	AE1-135 E O1	12.46
939191	AE1-149 C O1	12.54
939192	AE1-149 E O1	8.36
939241	AE1-155 C	17.01
939242	AE1-155 E	11.34
939281	AE1-159 C O1	12.01
939282	AE1-159 E O1	7.1
939311	AE1-162 C	2.22
939312	AE1-162 E	1.48
939421	AE1-174 C	0.23
939422	AE1-174 E	0.34
939431	AE1-175 C	2.86
939432	AE1-175 E	1.42
939611	AE1-191 C	13.43
939612	AE1-191 E	8.96
939751	AE1-206 C O1	56.7
939752	AE1-206 E O1	37.8
940061	AE1-248 C O1	16.95
940062	AE1-248 E O1	11.3
940071	AE1-249 C	9.33
940072	AE1-249 E	6.96
940231	AE2-005 C	1.73
940232	AE2-005 E	2.83
940251	AE2-007	160.86
940431	AE2-027 C O2	16.68
940432	AE2-027 E O2	11.12
940481	AE2-033 C	15.17
940482	AE2-033 E	10.23
940541	AE2-040	4.13
940551	AE2-041	9.23
940641	AE2-051 C O2	16.67
940642	AE2-051 E O2	11.11
940651	AE2-052	4.2
940891	AE2-078 C	2.59
940892	AE2-078 E	1.33
940901	AE2-079 C	2.59
940902	AE2-079 E	1.33
940911	AE2-080 C	2.59
940912	AE2-080 E	1.33
941101	AE2-104 C O2	3.22
941102	AE2-104 E O2	5.12
941141	AE2-108 C	2.12
941142	AE2-108 E	2.92
941151	AE2-109 C	0.74
941152	AE2-109 E	1.02

Bus #	Bus	MW Impact
941281	AE2-122 C O2	26.18
941282	AE2-122 E O2	105.65
941291	AE2-123 C O2	26.91
941292	AE2-123 E O2	104.93
941301	AE2-124 C O2	24.5
941302	AE2-124 E O2	107.48
941501	AE2-147 C	14.21
941502	AE2-147 E	9.47
941581	AE2-155 C	1.1
941582	AE2-155 E	0.47
941591	AE2-156	16.8
941601	AE2-157 C O2	11.46
941602	AE2-157 E O2	7.64
942001	AE2-212 C	2.82
942002	AE2-212 E	1.88
942131	AE2-225 C	1.96
942132	AE2-225 E	1.31
942151	AE2-227 C O2	3.27
942152	AE2-227 E O2	2.18
942161	AE2-228 C O2	2.97
942162	AE2-228 E O2	1.98
942171	AE2-229 C	1.96
942172	AE2-229 E	1.31
942191	AE2-231 C O2	5.33
942192	AE2-231 E O2	3.55
942341	AE2-247 C	1.5
942342	AE2-247 E	2.07
942401	AE2-253 C	5.61
942402	AE2-253 E	2.52
942471	AE2-260 C O2	12.85
942472	AE2-260 E O2	18.23
942531	AE2-268 C	2.21
942532	AE2-268 E	1.24
942551	AE2-270	32.87
942851	AE2-304 C	0.56
942852	AE2-304 E	0.22
AA2-074	AA2-074	3.26
CARR	CARR	0.78
CBM-S1	CBM-S1	4.14
CBM-S2	CBM-S2	8.5
CBM-W2	CBM-W2	22.9
CIN	CIN	0.19
CPL	CPL	4.79
G-007	G-007	2.36
IPL	IPL	0.05
LGEE	LGEE	0.06
MEC	MEC	1.89
O-066	O-066	15.05
RENSSELAER	RENSSELAER	0.61
WEC	WEC	0.04

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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
1900694	314287	6CHESTFB	DVP	314276	6BASIN	DVP	1	DVP_P1-2: LN 217	single	449.32	151.16	152.8	DC	7.35

Bus #	Bus	MW Impact
314314	3LOCKS	0.18
314704	3LAWRENC	0.11
315065	1CHESTF6	27.23
315074	1HOPCGN1	7.61
315075	1HOPCGN2	7.51
315076	1HOPPOLC	1.06
315077	1HOPHCF1	1.66
315078	1HOPHCF2	1.66
315079	1HOPHCF3	1.66
315080	1HOPHCF4	2.52
315116	1SURRY 1	8.81
315117	1GRAVELC	0.31
315119	1GRAVEL3	0.89
315120	1GRAVEL4	0.91
315121	1GRAVEL5	0.89
315122	1GRAVEL6	0.91
315136	1ROSEMG1	0.72
315137	1ROSEMS1	0.45
315138	1ROSEMG2	0.34
315139	1GASTONA	1.04
315141	1GASTONB	1.04
923801	AB2-015 C O1	3.23
923851	AB2-025 C	0.23
923911	AB2-031 C O1	1.07
923991	AB2-040 C O1	0.43
924511	AB2-100 C	6.95
924811	AB2-134 C O1	1.04
925051	AB2-160 C O1	4.46
925061	AB2-161 C O1	2.21
925171	AB2-174 C O1	3.45
925331	AB2-190 C	14.0
925821	AC1-061	0.0
926071	AC1-086 C	9.61
927221	AC1-216 C O1	6.52
930861	AB1-132 C O1	0.8
931231	AB1-173 C	0.13
931241	AB1-173AC	0.13
932581	AC2-078 C O1	3.58
932591	AC2-079 C O1	2.94
934011	AD1-025 C	11.21

Bus #	Bus	MW Impact
934201	AD1-047 C	3.83
934571	AD1-082 C	5.03
935161	AD1-151 C O1	11.25
935211	AD1-156 C	0.31
936041	AD2-007	1.19
936051	AD2-008 C	1.95
936661	AD2-085 C	1.79
936711	AD2-090 C O1	2.72
937571	AD2-169 C	4.63
938631	AE1-085 C O1	9.31
938771	AE1-103 C O1	1.36
939071	AE1-135 C O1	12.84
939191	AE1-149 C O1	9.92
939311	AE1-162 C	0.87
940061	AE1-248 C O1	10.46
940071	AE1-249 C	5.88
940431	AE2-027 C O2	18.57
940481	AE2-033 C	11.56
940541	AE2-040	2.6
940641	AE2-051 C O2	13.74
940651	AE2-052	3.32
940891	AE2-078 C	1.04
940901	AE2-079 C	1.04
940911	AE2-080 C	1.04
941601	AE2-157 C O2	7.35
942001	AE2-212 C	3.22
942161	AE2-228 C O2	3.77
942341	AE2-247 C	0.78
942371	AE2-250 C O2	4.78
942471	AE2-260 C O2	8.81
942551	AE2-270	18.76
942711	AE2-287 C O2	5.42
CARR	CARR	0.27
CBM-S1	CBM-S1	2.46
CBM-S2	CBM-S2	3.57
CBM-W1	CBM-W1	1.56
CBM-W2	CBM-W2	15.11
CIN	CIN	0.76
CPL	CPL	1.94
IPL	IPL	0.46
LGEE	LGEE	0.22
MEC	MEC	1.99
MECS	MECS	0.29
RENSSELAER	RENSSELAER	0.21
WEC	WEC	0.2

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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
1901179	314303	6HOPEWLL	DVP	314286	6CHESTF A	DVP	1	DVP_P1-2: LN 211	single	449.32	136.86	138.1	DC	6.41

Bus #	Bus	MW Impact
314507	3THOMPSN	0.12
315074	1HOPCGN1	25.49
315075	1HOPCGN2	25.16
315076	1HOPPOLC	3.56
315077	1HOPHCF1	5.57
315078	1HOPHCF2	5.57
315079	1HOPHCF3	5.57
315080	1HOPHCF4	8.45
315098	1CHESPKA	0.16
315099	1CHESPKB	0.4
315110	1ELIZAR3	1.17
315116	1SURRY 1	23.82
315117	1GRAVELC	0.83
315119	1GRAVEL3	2.42
315120	1GRAVEL4	2.45
315121	1GRAVEL5	2.42
315122	1GRAVEL6	2.45
315260	1GOSPORTA	0.13
315261	1GOSPORTB	0.17
315262	1GOSPORTC	0.14
924811	AB2-134 C O1	3.21
925061	AB2-161 C O1	1.97
925331	AB2-190 C	43.79
926661	AC1-147 C	0.14
927221	AC1-216 C O1	20.1
932041	AC2-012 C	5.1
932581	AC2-078 C O1	2.81
932591	AC2-079 C O1	2.97
934011	AD1-025 C	34.56
934571	AD1-082 C	4.5
935111	AD1-144 C	0.11
935161	AD1-151 C O1	35.19
936041	AD2-007	3.67
936051	AD2-008 C	6.02
936661	AD2-085 C	1.8
937541	AD2-215 C	0.95
938631	AE1-085 C O1	7.38
939191	AE1-149 C O1	7.61
939311	AE1-162 C	2.13
940061	AE1-248 C O1	9.35

Bus #	Bus	MW Impact
940251	AE2-007	84.27
940651	AE2-052	2.55
940891	AE2-078 C	2.74
940901	AE2-079 C	2.74
940911	AE2-080 C	2.74
941591	AE2-156	9.48
941601	AE2-157 C O2	6.41
942341	AE2-247 C	0.78
942551	AE2-270	58.69
CARR	CARR	0.22
CBM-S1	CBM-S1	1.43
CBM-S2	CBM-S2	2.36
CBM-W1	CBM-W1	0.58
CBM-W2	CBM-W2	8.49
CIN	CIN	0.31
CPL	CPL	1.31
IPL	IPL	0.18
LGEE	LGEE	0.09
MEC	MEC	0.98
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.08

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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
14010646	314314	3LOCKS	DVP	314298	3HARROWG	DVP	1	DVP_P7-1: LN 205-2003-A	tower	169.0	100.64	102.41	DC	6.63

Bus #	Bus	MW Impact
314314	3LOCKS	0.45
923852	AB2-025 E	0.4
925051	AB2-160 C O1	11.47
925052	AB2-160 E O1	18.72
925061	AB2-161 C O1	1.17
925062	AB2-161 E O1	1.91
925821	AC1-061	0.01
932581	AC2-078 C O1	2.11
932582	AC2-078 E O1	3.45
934571	AD1-082 C	2.66
934572	AD1-082 E	1.52
935212	AD1-156 E	0.65
938631	AE1-085 C O1	5.44
938632	AE1-085 E O1	3.63
939071	AE1-135 C O1	6.06
939072	AE1-135 E O1	4.04
939191	AE1-149 C O1	5.94
939192	AE1-149 E O1	3.96
940061	AE1-248 C O1	5.54
940062	AE1-248 E O1	3.69
940071	AE1-249 C	15.14
940072	AE1-249 E	11.29
940431	AE2-027 C O2	9.73
940432	AE2-027 E O2	6.49
940481	AE2-033 C	5.59
940482	AE2-033 E	3.77
940541	AE2-040	6.7
940641	AE2-051 C O2	6.76
940642	AE2-051 E O2	4.5
940651	AE2-052	1.99
941601	AE2-157 C O2	3.98
941602	AE2-157 E O2	2.65
942471	AE2-260 C O2	4.15
942472	AE2-260 E O2	5.89
CARR	CARR	0.06
CBM-S1	CBM-S1	1.4
CBM-S2	CBM-S2	1.64
CBM-W1	CBM-W1	1.37
CBM-W2	CBM-W2	9.08
CIN	CIN	0.62

Bus #	Bus	MW Impact
CPLE	CPLE	0.86
G-007	G-007	0.22
IPL	IPL	0.39
LGEE	LGEE	0.18
MEC	MEC	1.39
MECS	MECS	0.56
O-066	O-066	1.39
RENSSELAER	RENSSELAER	0.05
WEC	WEC	0.17

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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
1900257	314536	3SUFFOLK	DVP	314537	6SUFFOLK	DVP	3	DVP_P4-3: YTH5	breaker	307.0	117.1	129.31	DC	37.49

Bus #	Bus	MW Impact
314539	3UNCAMP	6.19
314541	3WATKINS	1.54
314589	3MURPHYS	0.07
314617	3TUNIS	0.56
315115	1S HAMPT1	2.43
900672	V4-068 E	0.32
907092	X1-038 E	15.46
920041	AA2-088 C OP	1.22
920042	AA2-088 E OP	16.36
923801	AB2-015 C O1	20.4
923802	AB2-015 E O1	16.73
925061	AB2-161 C O1	7.71
925062	AB2-161 E O1	12.59
932581	AC2-078 C O1	4.64
932582	AC2-078 E O1	7.57
932591	AC2-079 C O1	17.16
932592	AC2-079 E O1	27.99
934571	AD1-082 C	17.58
934572	AD1-082 E	10.03
936661	AD2-085 C	10.15
936662	AD2-085 E	16.56
936711	AD2-090 C O1	14.37
936712	AD2-090 E O1	9.58
938631	AE1-085 C O1	13.97
938632	AE1-085 E O1	9.32
938771	AE1-103 C O1	9.28
938772	AE1-103 E O1	12.81
939191	AE1-149 C O1	9.74
939192	AE1-149 E O1	6.49
940061	AE1-248 C O1	36.54
940062	AE1-248 E O1	24.36
940651	AE2-052	3.26
941601	AE2-157 C O2	22.49
941602	AE2-157 E O2	15.0
942341	AE2-247 C	4.4
942342	AE2-247 E	6.08
CARR	CARR	0.02
CBM-S1	CBM-S1	0.35
CBM-S2	CBM-S2	0.41
CBM-W1	CBM-W1	0.36
CBM-W2	CBM-W2	2.29

Bus #	Bus	MW Impact
CIN	CIN	0.16
CPLE	CPLE	0.22
G-007	G-007	0.06
IPL	IPL	0.1
LGEE	LGEE	0.05
MEC	MEC	0.36
MECS	MECS	0.15
O-066	O-066	0.36
RENSSELAER	RENSSELAER	0.01
WEC	WEC	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
13750518	932590	AC2-079 TAP	DVP	314532	30AKRI23	DVP	1	DVP_P1-2: LN 106-B	single	110.92	211.05	265.15	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
938631	AE1-085 C O1	61.2
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

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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
13750594	941600	AE2-157 TAP	DVP	938630	AE1-085 TAP	DVP	1	DVP_P1-2: LN 23-B	single	110.92	155.97	210.06	DC	60.0

Bus #	Bus	MW Impact
925061	AB2-161 C O1	19.0
932591	AC2-079 C O1	32.3
934571	AD1-082 C	43.3
940061	AE1-248 C O1	90.0
941601	AE2-157 C O2	60.0

Affected Systems

14 Affected Systems

14.1 LG&E

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

14.2 MISO

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

14.3 TVA

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

14.4 Duke Energy Progress

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

14.5 NYISO

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

15 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P1-2: LN 567	CONTINGENCY 'DVP_P1-2: LN 567' OPEN BRANCH FROM BUS 314903 TO BUS 314924 CKT 1 /* 8CHCKAHM 500.00 - 8SURRY 500.00 END
DVP_P1-2: LN 563	CONTINGENCY 'DVP_P1-2: LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P4-2: 562T563	CONTINGENCY 'DVP_P4-2: 562T563' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 941030 CKT 1 /* 8CARSON 500.00 - AE2-094 TAP 500.00 /* CONTINGENCY LINE ADDED FOR AE2 BUILD OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P7-1: LN 205-2003-A	CONTINGENCY 'DVP_P7-1: LN 205-2003-A' OPEN BRANCH FROM BUS 314287 TO BUS 314346 CKT 1 /* 6CHESTF B 230.00 - 6TYLER 230.00 OPEN BRANCH FROM BUS 314301 TO BUS 940430 CKT 1 /* 6HARR205 230.00 - AE2-027 TAP 230.00 OPEN BRANCH FROM BUS 314301 TO BUS 314346 CKT 1 /* 6HARR205 230.00 - 6TYLER 230.00 OPEN BRANCH FROM BUS 314314 TO BUS 314316 CKT 1 /* 3LOCKS 115.00 - 6LOCKS 230.00 OPEN BUS 314301 /* ISLAND: 6HARR205 230.00 OPEN BUS 314346 /* ISLAND: 6TYLER 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314287 CKT 1 /* 6TYLER1 230.00 - 6CHESTF B 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314299 CKT 1 /* 6TYLER1 230.00 - 6HARROWG 230.00 OPEN BRANCH FROM BUS 314299 TO BUS 314331 CKT 1 /* 6HARROWG 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 2 /* 3POE 115.00 - 6POE 230.00 OPEN BUS 314263 /* ISLAND: 6TYLER1 230.00 OPEN BUS 314299 /* ISLAND: 6HARROWG 230.00 END
DVP_P1-2: LN 544-A	CONTINGENCY 'DVP_P1-2: LN 544-A' OPEN BRANCH FROM BUS 314902 TO BUS 939410 CKT 1 /* 8CARSON 500.00 - AE1-173 TAP 500.00 END
DVP_P4-2: 2002T2003	CONTINGENCY 'DVP_P4-2: 2002T2003' /* POE 230 KV OPEN BRANCH FROM BUS 314282 TO BUS 314331 CKT 1 /* 6CARSON 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 1 /* 3POE 115.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314287 CKT 1 /* 6TYLER1 230.00 - 6CHESTF B 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314299 CKT 1 /* 6TYLER1 230.00 - 6HARROWG 230.00 OPEN BRANCH FROM BUS 314299 TO BUS 314331 CKT 1 /* 6HARROWG 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 2 /* 3POE 115.00 - 6POE 230.00 OPEN BUS 314263 /* ISLAND: 6TYLER1 230.00 OPEN BUS 314299 /* ISLAND: 6HARROWG 230.00 END

Contingency Name	Contingency Definition
DVP_P4-2: H8T544	CONTINGENCY 'DVP_P4-2: H8T544' /* SUFFOLK 500 KV OPEN BRANCH FROM BUS 939410 TO BUS 314928 CKT 1 /* AE1-173 TAP 500.00 - 8SUFFOLK 500.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 2 /* 6SUFFOLK 230.00 - 8SUFFOLK 500.00 END
DVP_P1-2: LN 106-C	CONTINGENCY 'DVP_P1-2: LN 106-C' OPEN BRANCH FROM BUS 941600 TO BUS 938630 CKT 1 /* AE2-157 TAP 115.00 - AE1-085 TAP 115.00 END
DVP_P1-2: LN 106-B	CONTINGENCY 'DVP_P1-2: LN 106-B' OPEN BRANCH FROM BUS 938630 TO BUS 314273 CKT 1 /* AE1-085 TAP 115.00 - 3BAKRS P 115.00 OPEN BRANCH FROM BUS 314262 TO BUS 314280 CKT 1 /* 3NEWBO_1 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314273 TO BUS 314280 CKT 1 /* 3BAKRS P 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314280 TO BUS 314329 CKT 1 /* 3NEWBOHE 115.00 - 3POE 115.00 OPEN BUS 314262 /* ISLAND: 3NEWBO_1 115.00 OPEN BUS 314273 /* ISLAND: 3BAKRS P 115.00 OPEN BUS 314280 /* ISLAND: 3NEWBOHE 115.00 END
DVP_P4-2: 23T44	CONTINGENCY 'DVP_P4-2: 23T44' /* SUFFOLK 115 KV OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 /* CONTINGENCY LINE ADDED FOR AE1 BUILD OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314531 CKT 1 /* 3OAKRI44 115.00 - 3MYRTLE 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314536 CKT 1 /* 3OAKRI44 115.00 - 3SUFFOLK 115.00 OPEN BRANCH FROM BUS 313878 TO BUS 314542 CKT 1 /* 3BELL AVE 1 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314531 TO BUS 314542 CKT 1 /* 3MYRTLE 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314536 TO BUS 314823 CKT 1 /* 3SUFFOLK 115.00 - 3SUFFO_1 115.00 OPEN BUS 313803 /* ISLAND: 3OAKRI44 115.00 OPEN BUS 314531 /* ISLAND: 3MYRTLE 115.00 OPEN BUS 314542 /* ISLAND: 3WINDSOR 115.00 OPEN BUS 314823 /* ISLAND: 3SUFFO_1 115.00 END
DVP_P1-2: LN 211	CONTINGENCY 'DVP_P1-2: LN 211' OPEN BRANCH FROM BUS 314287 TO BUS 314303 CKT 1 /* 6CHESTF B 230.00 - 6HOPEWLL 230.00 END

Contingency Name	Contingency Definition
DVP_P7-1: LN 23-44-B	CONTINGENCY 'DVP_P7-1: LN 23-44-B' OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314531 CKT 1 /* 3OAKRI44 115.00 - 3MYRTLE 115.00 OPEN BRANCH FROM BUS 313803 TO BUS 314536 CKT 1 /* 3OAKRI44 115.00 - 3SUFFOLK 115.00 OPEN BRANCH FROM BUS 313878 TO BUS 314542 CKT 1 /* 3BELL AVE 1 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314531 TO BUS 314542 CKT 1 /* 3MYRTLE 115.00 - 3WINDSOR 115.00 OPEN BRANCH FROM BUS 314536 TO BUS 314823 CKT 1 /* 3SUFFOLK 115.00 - 3SUFFO_1 115.00 OPEN BUS 313803 /* ISLAND: 3OAKRI44 115.00 OPEN BUS 314531 /* ISLAND: 3MYRTLE 115.00 OPEN BUS 314542 /* ISLAND: 3WINDSOR 115.00 OPEN BUS 314823 /* ISLAND: 3SUFFO_1 115.00 END
DVP_P1-2: LN 557	CONTINGENCY 'DVP_P1-2: LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 259	CONTINGENCY 'DVP_P1-2: LN 259' OPEN BRANCH FROM BUS 314276 TO BUS 314287 CKT 1 /* 6BASIN 230.00 - 6CHESTF B 230.00 END
DVP_P1-2: LN 217	CONTINGENCY 'DVP_P1-2: LN 217' OPEN BRANCH FROM BUS 314225 TO BUS 314227 CKT 1 /* 6CHARCTY 230.00 - 6LAKESIDE 230.00 OPEN BRANCH FROM BUS 314225 TO BUS 314287 CKT 1 /* 6CHARCTY 230.00 - 6CHESTF B 230.00 OPEN BUS 314225 /* ISLAND: 6CHARCTY 230.00 END
DVP_P4-2: H7T544	CONTINGENCY 'DVP_P4-2: H7T544' /* SUFFOLK 500 KV OPEN BRANCH FROM BUS 939410 TO BUS 314928 CKT 1 /* AE1-173 TAP 500.00 - 8SUFFOLK 500.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 1 /* 6SUFFOLK 230.00 - 8SUFFOLK 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

Contingency Name	Contingency Definition
DVP_P4-3: SUFFOLK H542	CONTINGENCY 'DVP_P4-3: SUFFOLK H542' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 3 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 2 /* 6SUFFOLK 230.00 - 8SUFFOLK 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_P7-1: LN 15-106-A-A	CONTINGENCY 'DVP_P7-1: LN 15-106-A-A' OPEN BRANCH FROM BUS 939190 TO BUS 314329 CKT 1 /* AE1-149 TAP 115.00 - 3POE 115.00 OPEN BRANCH FROM BUS 938630 TO BUS 314273 CKT 1 /* AE1-085 TAP 115.00 - 3BAKRS P 115.00 OPEN BRANCH FROM BUS 314262 TO BUS 314280 CKT 1 /* 3NEWBO_1 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314273 TO BUS 314280 CKT 1 /* 3BAKRS P 115.00 - 3NEWBOHE 115.00 OPEN BRANCH FROM BUS 314280 TO BUS 314329 CKT 1 /* 3NEWBOHE 115.00 - 3POE 115.00 OPEN BUS 314262 /* ISLAND: 3NEWBO_1 115.00 OPEN BUS 314273 /* ISLAND: 3BAKRS P 115.00 OPEN BUS 314280 /* ISLAND: 3NEWBOHE 115.00 END
Base Case	
DVP_P4-2: H8T217	CONTINGENCY 'DVP_P4-2: H8T217' /* LAKESIDE 230 KV OPEN BRANCH FROM BUS 314225 TO BUS 314227 CKT 1 /* 6CHARCTY 230.00 - 6LAKESIDE 230.00 OPEN BRANCH FROM BUS 314225 TO BUS 314287 CKT 1 /* 6CHARCTY 230.00 - 6CHESTF B 230.00 OPEN BUS 314225 /* ISLAND: 6CHARCTY 230.00 OPEN BRANCH FROM BUS 314226 TO BUS 314227 CKT 1 /* 3LAKESIDE 115.00 - 6LAKESIDE 230.00 END
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END

Contingency Name	Contingency Definition
DVP_P7-1: LN 2002-2003	CONTINGENCY 'DVP_P7-1: LN 2002-2003' OPEN BRANCH FROM BUS 314282 TO BUS 314331 CKT 1 /* 6CARSON 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 1 /* 3POE 115.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314287 CKT 1 /* 6TYLER1 230.00 - 6CHESTF B 230.00 OPEN BRANCH FROM BUS 314263 TO BUS 314299 CKT 1 /* 6TYLER1 230.00 - 6HARROWG 230.00 OPEN BRANCH FROM BUS 314299 TO BUS 314331 CKT 1 /* 6HARROWG 230.00 - 6POE 230.00 OPEN BRANCH FROM BUS 314329 TO BUS 314331 CKT 2 /* 3POE 115.00 - 6POE 230.00 OPEN BUS 314263 /* ISLAND: 6TYLER1 230.00 OPEN BUS 314299 /* ISLAND: 6HARROWG 230.00 END
DVP_P4-5: L1TL5	CONTINGENCY 'DVP_P4-5: L1TL5' /* SUFFOLK 115 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 3 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 END
DVP_P1-2: LN 23-A	CONTINGENCY 'DVP_P1-2: LN 23-A' OPEN BRANCH FROM BUS 313879 TO BUS 314528 CKT 1 /* 3BELL AVE 2 115.00 - 3IVOR106 115.00 OPEN BRANCH FROM BUS 314528 TO BUS 932590 CKT 1 /* 3IVOR106 115.00 - AC2-079 TAP 115.00 OPEN BUS 314528 /* ISLAND: 3IVOR106 115.00 END
DVP_P1-2: LN 23-B	CONTINGENCY 'DVP_P1-2: LN 23-B' OPEN BRANCH FROM BUS 314206 TO BUS 314529 CKT 1 /* 3OAKRIDG 115.00 - 3KINGFORK 115.00 OPEN BRANCH FROM BUS 314206 TO BUS 314532 CKT Z1 /* 3OAKRIDG 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 932590 TO BUS 314532 CKT 1 /* AC2-079 TAP 115.00 - 3OAKRI23 115.00 OPEN BRANCH FROM BUS 314532 TO BUS 314536 CKT 1 /* 3OAKRI23 115.00 - 3SUFFOLK 115.00 OPEN BUS 314206 /* ISLAND: 3OAKRIDG 115.00 OPEN BUS 314261 /* ISLAND: 3OAKRI_1 115.00 OPEN BUS 314529 /* ISLAND: 3KINGFORK 115.00 OPEN BUS 314532 /* ISLAND: 3OAKRI23 115.00 END
DVP_P4-2: 24972-4	CONTINGENCY 'DVP_P4-2: 24972-4' /* CARSON 230 KV OPEN BRANCH FROM BUS 314282 TO BUS 314285 CKT 1 /* 6CARSON 230.00 - 6CHRL249 230.00 OPEN BRANCH FROM BUS 314285 TO BUS 314316 CKT 1 /* 6CHRL249 230.00 - 6LOCKS 230.00 OPEN BRANCH FROM BUS 314314 TO BUS 314316 CKT 2 /* 3LOCKS 115.00 - 6LOCKS 230.00 OPEN BUS 314285 /* ISLAND: 6CHRL249 230.00 OPEN BRANCH FROM BUS 314282 TO BUS 314902 CKT 1 /* 6CARSON 230.00 - 8CARSON 500.00 OPEN BUS 314455 /* 6CARSO_1 230.00 KV END
DVP_P4-3: YTH5	CONTINGENCY 'DVP_P4-3: YTH5' /* SUFFOLK 230 KV OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 1 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314536 TO BUS 314537 CKT 2 /* 3SUFFOLK 115.00 - 6SUFFOLK 230.00 OPEN BRANCH FROM BUS 314537 TO BUS 314928 CKT 1 /* 6SUFFOLK 230.00 - 8SUFFOLK 500.00 REMOVE SWSHUNT FROM BUS 314537 END

Short Circuit

16 Short Circuit

The following Breakers are overduty:

None.

17 Attachment 1: One Line