



**Generation Interconnection
Impact Study Report
for
Queue Project AE2-313
CARSON-RAWLINGS 500 KV
188.4 MW Capacity / 314 MW Energy**

February 2020

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1 Introduction

This System Impact Study (SIS) has been prepared in accordance with the PJM Open Access Transmission Tariff, 205, as well as the Feasibility Study Agreement between RWE Solar Development, LLC, the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Virginia Electric and Power Company (VEPCO).

2 Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. 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 System Impact Study is performed.

The System Impact 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.

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.

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Dinwiddie County, Virginia. The installed facilities will have a total capability of 314 MW with 188.4 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is September 31, 2021. This study does not imply a Transmission Owner (TO) commitment to this in-service date.

Queue Number	AE2-313
Project Name	CARSON-RAWLINGS 500 KV
Interconnection Customer	RWE Solar Development, LLC
State	Virginia
County	Dinwiddie
Transmission Owner	Dominion
MFO	314
MWE	314
MWC	188.4
Fuel	Solar
Basecase Study Year	2022

3.1 Point of Interconnection

AE2-313 “Carson – Rawlings 500 kV” will interconnect with the Dominion’s transmission system through a new three breaker 500 kV switching station tapping the Rawlings to Carson 500 kV line. The new AE2-313 500 kV switchyard which will be adjacent to the transmission right-of-way. This is the Point of Interconnection (POI) chosen by the IC with the ITO’s transmission system. The IC is responsible for securing right-of-way, permits and constructing the proposed attachment line from the solar facility site to the proposed new switching station. Attachment 1 shows a one-line diagram of the proposed interconnection facilities. The IC may not install any facilities on Dominion’s right-of-way without first obtaining the necessary approval from Dominion Energy.

3.2 Cost Summary

The AE2-313 project will be responsible for the following costs:

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

In addition, the AE2-313 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$221,577,222

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

4 Transmission Owner Scope of Work

Dominion assessed the impact of the proposed Queue Project AE2-313 was evaluated as a 188.4 MW Capacity (314.0 MW Energy) injection at the AE2-313 500 kV substation in the Dominion Transmission System, for compliance with NERC Reliability Criteria on Dominion Transmission System. The system was assessed using the summer 2022 AE2 case provided to Dominion by PJM. When performing a generation analysis, Dominion's main analysis will be load flow study results under single contingency (both normal and stressed system conditions). Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at: <http://www.dominionenergy.com>.

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

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of the AE2-313 generation project to the Dominion Transmission System is detailed in the following sections. The associated one-line with the generation project attachment facilities and primary direct and non-direct connection are shown in Attachment 1.

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

5 Attachment Facilities

Generation Substation: Install metering and associated protection equipment. Estimated Cost is \$750,000.

Transmission: Construct approximately one span of 500 kV Attachment line between the generation substation and a new AE2-313 Switching Station. The estimated cost for this work is \$2,000,000.

The estimated total cost of the Attachment Facilities is \$2,750,000.

It is estimated to take 18-24 months to complete this work. These preliminary cost estimates are based on typical engineering costs. A more detailed engineering cost estimates are normally done when the IC provides an exact site plan location for the generation substation during the Facility Study phase. The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

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

6 Direct Connection Cost Estimate

Substation: build a new three breaker 500 kV Switching Station and re-arrange the existing section of line between Carson and Rawlings Substations to allow for the proposed interconnection. It is estimated to take 24-36 months to complete this work.

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

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

7 Non-Direct Connection Cost Estimate

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

None.

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

8 Schedule

The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the “System Reinforcements” section of the report.

9 Transmission Owner Analysis

9.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2022 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system and no additional deficiencies were identified.

9.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-027 project to the system does not result in any newly overdutied circuit breakers on the Dominion transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers

9.3 Stability Analysis

PJM will complete a dynamic stability analysis as part of the Facilities 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 Facilities Study report.

10 Interconnection Customer Requirements

10.1 System Protection

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

10.2 Compliance Issues and Interconnection Customer Requirements

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

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

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

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

10.3 Power Factor Requirements

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

11 Revenue Metering and SCADA Requirements

11.1 PJM Requirements

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

11.1.1 Meteorological Data Reporting Requirement

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

11.2 Dominion Requirements

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

12 Network Impacts

The Queue Project AE2-313 was evaluated as a 314.0 MW (Capacity 188.4 MW) injection tapping the Carsons to Rawlings 500 kV line in the Dominion area. Project AE2-313 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-313 was studied with a commercial probability of 100%. Potential network impacts were as follows:

Summer Peak Load Flow

12.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
8120923	314299	6HARROW G	230.0	DVP	314263	6TYLER1	230.0	DVP	1	DVP_P1-2: LN 563	single	441.8	97.58	100.06	AC	11.3
8120920	314331	6POE	230.0	DVP	314299	6HARROW G	230.0	DVP	1	DVP_P1-2: LN 563	single	441.8	97.54	100.02	AC	11.3
39879798	938490	AE1-068 TAP	500.0	DVP	941030	AE2-094 TAP	500.0	DVP	1	DVP_P1-2: LN 511_AE2-031A	single	4070.2	98.67	101.38	AC	106.46
39879726	940470	AE2-031 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 585-A_AE2-094B	single	4070.2	99.33	102.45	AC	125.46
39879751	941030	AE2-094 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 511_AE2-031B	single	4070.2	99.57	102.22	AC	106.46
39879763	942930	AE2-313 TAP	500.0	DVP	940470	AE2-031 TAP	500.0	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	single	4070.2	99.62	102.79	AC	125.46

12.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
39879108	314282	6CARSON	230.0	DVP	314331	6POE	230.0	DVP	1	DVP_P4-2: 562T563	breaker	830.0	99.63	102.55	AC	28.82
39879114	939410	AE1-173 TAP	500.0	DVP	314928	8SUFFOLK	500.0	DVP	1	DVP_P4-2: 562T563	breaker	3144.0	98.23	100.92	AC	102.54

12.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
18286292	313867	6BREMODIST	230.0	DVP	314765	6MTEAGLE	230.0	DVP	1	DVP_P1-2: LN 576	single	661.76	111.64	113.72	AC	13.8
16758871	314225	6CHARCTY	230.0	DVP	314227	6LAKESIDE	230.0	DVP	1	DVP_P4-2: 563T576	breaker	1204.0	102.9	104.31	AC	20.14
7735868	314282	6CARSON	230.0	DVP	314285	6CHRL249	230.0	DVP	1	DVP_P4-2: 562T563	breaker	684.0	154.86	159.65	AC	32.71
8120670	314282	6CARSON	230.0	DVP	314285	6CHRL249	230.0	DVP	1	DVP_P1-2: LN 563	single	559.3	122.86	125.32	AC	14.93

ID	FROM BUS#	FROM BUS	kV	FROM BUS ARE A	TO BUS#	TO BUS	kV	TO BUS ARE A	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE C T LOADI NG %	POST PROJE C T LOADI NG %	AC D C	MW IMPA CT
7735895	314285	6CHRL249	230.0	DVP	314316	6LOCKS	230.0	DVP	1	DVP_P4-2: 562T563	break er	684.0	151.97	156.75	AC	32.71
8120751	314285	6CHRL249	230.0	DVP	314316	6LOCKS	230.0	DVP	1	DVP_P1-2: LN 563	single	559.3	119.53	121.98	AC	14.93
7735477	314287	6CHESTF B	230.0	DVP	314276	6BASIN	230.0	DVP	1	DVP_P4-2: 563T563	break er	549.0	179.34	182.89	AC	22.88
8120033	314287	6CHESTF B	230.0	DVP	314276	6BASIN	230.0	DVP	1	DVP_P1-2: LN 563	single	449.32	168.52	170.78	AC	11.84
12469705	314287	6CHESTF B	230.0	DVP	314225	6CHARCTY	230.0	DVP	1	DVP_P4-2: 562T576	break er	1204.0	105.81	107.22	AC	20.14
7735676	314299	6HARROW G	230.0	DVP	314263	6TYLER1	230.0	DVP	1	DVP_P4-2: 562T563	break er	541.0	129.95	133.58	AC	24.1
39879032	314301	6HARR205	230.0	DVP	314346	6TYLER	230.0	DVP	1	DVP_P4-2: 562T563	break er	541.0	113.32	117.31	AC	25.72
16758932	314316	6LOCKS	230.0	DVP	314301	6HARR205	230.0	DVP	1	DVP_P4-2: 562T563	break er	541.0	121.36	125.35	AC	25.72
7735674	314331	6POE	230.0	DVP	314299	6HARROW G	230.0	DVP	1	DVP_P4-2: 562T563	break er	541.0	129.88	133.52	AC	24.1
8120965	314686	6CLOVER	230.0	DVP	934610	AD1-087 TAP	230.0	DVP	1	DVP_P1-2: LN 570	single	814.98	103.43	106.29	AC	23.91
8120966	314686	6CLOVER	230.0	DVP	934610	AD1-087 TAP	230.0	DVP	1	DVP_P1-2: LN 6002_FSA	single	814.98	103.43	106.29	AC	23.91
8120967	314686	6CLOVER	230.0	DVP	934610	AD1-087 TAP	230.0	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	103.43	106.29	AC	23.91
8120528	314697	6SEEDGE HILL	230.0	DVP	927250	AC1-221 TAP	230.0	DVP	1	DVP_P1-2: LN 6002_FSA	single	674.92	108.07	110.84	AC	19.3
8120529	314697	6SEEDGE HILL	230.0	DVP	927250	AC1-221 TAP	230.0	DVP	1	DVP_P1-2: LN 570	single	674.92	108.06	110.83	AC	19.3
8120530	314697	6SEEDGE HILL	230.0	DVP	927250	AC1-221 TAP	230.0	DVP	1	DVP_P1-2: LN 570_FSA	single	674.92	108.06	110.83	AC	19.3
18286350	314765	6MTEAGLE	230.0	DVP	314749	6CHARLV	230.0	DVP	1	DVP_P1-2: LN 576	single	661.76	108.51	110.59	AC	13.8
7735687	314902	8CARSON	500.0	DVP	314914	8MDLTHA N	500.0	DVP	1	DVP_P4-2: 557T574	break er	3938.0	134.3	135.62	AC	117.34
7735688	314902	8CARSON	500.0	DVP	314914	8MDLTHA N	500.0	DVP	1	DVP_P4-2: H2T557	break er	3938.0	127.07	128.39	AC	114.99
7735934	314902	8CARSON	500.0	DVP	314282	6CARSON	230.0	DVP	1	DVP_P4-2: 562T563	break er	1039.7	137.21	144.01	AC	69.76
8120558	314902	8CARSON	500.0	DVP	314914	8MDLTHA N	500.0	DVP	1	DVP_P1-2: LN 557	single	3218.56	131.11	133.3	AC	67.87
39879418	314902	8CARSON	500.0	DVP	314914	8MDLTHA N	500.0	DVP	1	314903(8CHCKAH M)-314908()_1	single	3218.56	116.81	118.93	AC	65.46
7735503	314903	8CHCKAH M	500.0	DVP	314908	8ELMONT	500.0	DVP	1	DVP_P4-2: 563T576	break er	3144.0	156.16	157.37	AC	85.52
7735504	314903	8CHCKAH M	500.0	DVP	314908	8ELMONT	500.0	DVP	1	DVP_P4-2: 56372	break er	3144.0	155.19	156.6	AC	88.35
8120082	314903	8CHCKAH M	500.0	DVP	314908	8ELMONT	500.0	DVP	1	DVP_P1-2: LN 563	single	2442.12	166.13	167.87	AC	48.58
8120085	314903	8CHCKAH M	500.0	DVP	314908	8ELMONT	500.0	DVP	1	DVP_P1-2: LN 576	single	2442.12	162.93	164.58	AC	46.48
8120090	314903	8CHCKAH M	500.0	DVP	314908	8ELMONT	500.0	DVP	1	Base Case	single	2442.12	128.57	129.61	AC	31.62
8120387	314905	8CHANCE	500.0	DVP	314900	8BRISTER	500.0	DVP	1	DVP_P1-2: LN 594	single	2442.12	147.42	148.68	AC	35.36
8120388	314905	8CHANCE	500.0	DVP	314900	8BRISTER	500.0	DVP	1	DVP_P1-2: LN 573	single	2442.12	142.82	144.06	AC	34.68
8119921	314908	8ELMONT	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P1-2: LN 576	single	2442.12	192.6	194.54	AC	54.88
8119922	314908	8ELMONT	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P1-2: LN 563	single	2442.12	173.87	175.52	AC	46.49
8120539	314911	8LADYSMI TH	500.0	DVP	314905	8CHANCE	500.0	DVP	1	DVP_P1-2: LN 573	single	2738.22	134.89	136.03	AC	35.86
8120540	314911	8LADYSMI TH	500.0	DVP	314905	8CHANCE	500.0	DVP	1	DVP_P1-2: LN 594	single	2738.22	131.57	132.66	AC	34.4
8120735	314911	8LADYSMI TH	500.0	DVP	314922	8POSSUM	500.0	DVP	1	DVP_P1-2: LN 573	single	2442.12	125.48	126.54	AC	29.68

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADI NG %	POST PROJE CT LOADI NG %	AC D C	MW IMPA CT
16758892	314911	8LADYSMI TH	500.0	DVP	314922	8POSSUM	500.0	DVP	1	DVP_P4-2: H1T573	break er	3637.0	101.1	101.31	AC	49.77
39879104	314911	8LADYSMI TH	500.0	DVP	314922	8POSSUM	500.0	DVP	1	DVP_P4-2: 573T594	break er	3637.0	101.11	101.32	AC	49.77
39879106	314911	8LADYSMI TH	500.0	DVP	314922	8POSSUM	500.0	DVP	1	DVP_P4-2: 57302	break er	3637.0	101.02	101.21	AC	49.67
7735633	314914	8MDLTHA N	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	DVP_P4-2: 557T574	break er	3637.0	140.87	141.49	AC	107.2
8120062	314914	8MDLTHA N	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	DVP_P1-2: LN 574	single	2442.12	170.11	172.65	AC	60.53
8120064	314914	8MDLTHA N	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	DVP_P1-2: LN 557	single	2442.12	162.78	165.19	AC	59.11
8120071	314914	8MDLTHA N	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	Base Case	single	2442.12	108.86	110.95	AC	50.24
7735815	314918	8NO ANNA	500.0	DVP	314934	8SPOTSYL	500.0	DVP	1	DVP_P4-2: 568T575	break er	3938.0	116.33	117.53	AC	70.26
7735961	314918	8NO ANNA	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P4-2: SPOTS H1T594	break er	3938.0	110.27	111.94	AC	62.52
7735962	314918	8NO ANNA	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P4-2: 57302	break er	3938.0	105.18	106.79	AC	63.15
7735963	314918	8NO ANNA	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P4-2: XT573	break er	3938.0	105.17	106.78	AC	63.15
8120686	314918	8NO ANNA	500.0	DVP	314934	8SPOTSYL	500.0	DVP	1	DVP_P1-2: LN 581	single	3218.56	126.93	128.25	AC	41.56
8120952	314918	8NO ANNA	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P1-2: LN 573	single	3218.56	108.5	109.8	AC	37.44
8120953	314918	8NO ANNA	500.0	DVP	314911	8LADYSMI TH	500.0	DVP	1	DVP_P1-2: LN 594	single	3218.56	103.57	104.82	AC	35.88
39879566	314918	8NO ANNA	500.0	DVP	314934	8SPOTSYL	500.0	DVP	1	314905()-314911()_1	single	3218.56	126.95	128.27	AC	41.59
7735839	314924	8SURREY	500.0	DVP	314903	8CHCKAH M	500.0	DVP	1	DVP_P4-2: 56372	break er	3144.0	119.56	121.97	AC	88.81
7735840	314924	8SURREY	500.0	DVP	314903	8CHCKAH M	500.0	DVP	1	DVP_P4-2: 563T576	break er	3144.0	116.2	118.26	AC	77.86
8120702	314924	8SURREY	500.0	DVP	314903	8CHCKAH M	500.0	DVP	1	DVP_P1-2: LN 563	single	2442.12	102.1	104.06	AC	45.71
7735834	314934	8SPOTSYL	500.0	DVP	314916	8MORRSV L	500.0	DVP	1	DVP_P4-2: 568T575	break er	3938.0	119.27	120.69	AC	69.4
7735835	314934	8SPOTSYL	500.0	DVP	314916	8MORRSV L	500.0	DVP	1	DVP_P4-2: 57502	break er	3938.0	114.17	115.39	AC	66.65
8120661	314934	8SPOTSYL	500.0	DVP	314916	8MORRSV L	500.0	DVP	1	DVP_P1-2: LN 552	single	3218.56	127.84	129.15	AC	41.11
8249811	314934	8SPOTSYL	500.0	DVP	314916	8MORRSV L	500.0	DVP	1	DVP_P7-1: LN 198-581	tower	3938.0	114.66	114.94	AC	68.33
39879554	314934	8SPOTSYL	500.0	DVP	314916	8MORRSV L	500.0	DVP	1	314900(8BRISTER)-314905()_1	single	3218.56	127.95	129.26	AC	41.13
8120493	927250	AC1-221 TAP	230.0	DVP	304070	6PERSON2 30 T	230.0	CPL E	1	DVP_P1-2: LN 6002_FSA	single	718.0	109.53	112.11	AC	19.3
8120494	927250	AC1-221 TAP	230.0	DVP	304070	6PERSON2 30 T	230.0	CPL E	1	DVP_P1-2: LN 570	single	718.0	109.52	112.1	AC	19.3
8120495	927250	AC1-221 TAP	230.0	DVP	304070	6PERSON2 30 T	230.0	CPL E	1	DVP_P1-2: LN 570_FSA	single	718.0	109.52	112.1	AC	19.3
8120896	934610	AD1-087 TAP	230.0	DVP	314697	6SEDGE HILL	230.0	DVP	1	DVP_P1-2: LN 570	single	814.98	108.62	111.5	AC	23.91
8120897	934610	AD1-087 TAP	230.0	DVP	314697	6SEDGE HILL	230.0	DVP	1	DVP_P1-2: LN 6002_FSA	single	814.98	108.63	111.5	AC	23.91
8120898	934610	AD1-087 TAP	230.0	DVP	314697	6SEDGE HILL	230.0	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	108.62	111.5	AC	23.91
39879725	940470	AE2-031 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	single	4070.2	102.46	105.6	AC	125.46
39879750	941030	AE2-094 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 511_AE2-031A	single	4070.2	102.08	104.74	AC	106.46

12.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
8120974	314225	6CHARCTY	230.0	DVP	314227	6LAKESIDE	230.0	DVP	1	DVP_P1-2: LN 563	operation	984.18	122.83	124.53	AC	19.55
8120669	314282	6CARSON	230.0	DVP	314285	6CHRL249	230.0	DVP	1	DVP_P1-2: LN 563	operation	559.3	147.57	151.26	AC	24.88
8120750	314285	6CHRL249	230.0	DVP	314316	6LOCKS	230.0	DVP	1	DVP_P1-2: LN 563	operation	559.3	144.45	148.12	AC	24.88
8120030	314287	6CHESTFB	230.0	DVP	314276	6BASIN	230.0	DVP	1	DVP_P1-2: LN 563	operation	449.32	211.98	215.74	AC	19.74
8120925	314287	6CHESTFB	230.0	DVP	314225	6CHARCTY	230.0	DVP	1	DVP_P1-2: LN 563	operation	984.18	126.38	128.08	AC	19.55
8120921	314299	6HARROWG	230.0	DVP	314263	6TYLER1	230.0	DVP	1	DVP_P1-2: LN 563	operation	441.8	129.54	132.88	AC	18.83
13926672	314301	6HARR205	230.0	DVP	314346	6TYLER	230.0	DVP	1	DVP_P1-2: LN 563	operation	441.8	97.49	101.03	AC	19.77
8121167	314316	6LOCKS	230.0	DVP	314301	6HARR205	230.0	DVP	1	DVP_P1-2: LN 563	operation	441.8	118.81	122.44	AC	19.77
8120918	314331	6POE	230.0	DVP	314299	6HARROWG	230.0	DVP	1	DVP_P1-2: LN 563	operation	441.8	129.4	132.75	AC	18.83
8120555	314902	8CARSON	500.0	DVP	314914	8MDLTHAN	500.0	DVP	1	DVP_P1-2: LN 557	operation	3218.56	152.88	154.55	AC	113.12
8120561	314902	8CARSON	500.0	DVP	314914	8MDLTHAN	500.0	DVP	1	Base Case	operation	3218.56	114.49	116.91	AC	96.09
8120909	314902	8CARSON	500.0	DVP	314282	6CARSON	230.0	DVP	1	DVP_P1-2: LN 563	operation	903.9	112.32	118.14	AC	52.49
8120079	314903	8CHCKAHM	500.0	DVP	314908	8ELMONT	500.0	DVP	1	DVP_P1-2: LN 563	operation	2442.12	193.05	194.63	AC	80.97
8120731	314911	8LADYSMITH	500.0	DVP	314922	8POSSUM	500.0	DVP	1	DVP_P1-2: LN 573	operation	2442.12	150.12	150.42	AC	49.47
8120060	314914	8MDLTHAN	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	DVP_P1-2: LN 574	operation	2442.12	189.81	190.89	AC	100.89
8120067	314914	8MDLTHAN	500.0	DVP	314918	8NO ANNA	500.0	DVP	1	Base Case	operation	2442.12	138.02	139.85	AC	83.73
8120691	314918	8NO ANNA	500.0	DVP	314934	8SPOTSYL	500.0	DVP	1	Base Case	operation	3218.56	104.65	105.0	AC	53.72
8120950	314918	8NO ANNA	500.0	DVP	314911	8LADYSMITH	500.0	DVP	1	DVP_P1-2: LN 573	operation	3218.56	128.13	130.13	AC	62.41
39879561	314918	8NO ANNA	500.0	DVP	314934	8SPOTSYL	500.0	DVP	1	314905()-314911())_1	operation	3218.56	138.88	139.38	AC	69.31
8121038	314923	8SEPTA	500.0	DVP	314924	8SURREY	500.0	DVP	1	DVP_P1-2: LN 563	operation	2442.12	112.42	115.55	AC	77.87
8120698	314924	8SURREY	500.0	DVP	314903	8CHCKAHM	500.0	DVP	1	DVP_P1-2: LN 563	operation	2442.12	146.58	149.17	AC	76.18
16888174	314924	8SURREY	500.0	DVP	314903	8CHCKAHM	500.0	DVP	1	Base Case	operation	2442.12	102.49	104.12	AC	47.42
8120660	314934	8SPOTSYL	500.0	DVP	314916	8MORRSVL	500.0	DVP	1	DVP_P1-2: LN 575	operation	3218.56	137.82	139.68	AC	66.24

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
8120667	314934	8SPOTSYL	500.0	DVP	314916	8MORRSVL	500.0	DVP	1	Base Case	operation	3218.56	107.58	107.78	AC	53.14
8120899	934610	AD1-087 TAP	230.0	DVP	314697	6SEEDGE HILL	230.0	DVP	1	DVP_P1-2: LN 6002_FSA	operation	814.98	102.16	106.87	AC	39.85
8120900	934610	AD1-087 TAP	230.0	DVP	314697	6SEEDGE HILL	230.0	DVP	1	DVP_P1-2: LN 570	operation	814.98	102.16	106.86	AC	39.85
39879795	938490	AE1-068 TAP	500.0	DVP	941030	AE2-094 TAP	500.0	DVP	1	DVP_P1-2: LN 511_AE2-031A	operation	4070.2	106.71	111.18	AC	177.44
39879723	940470	AE2-031 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	operation	4070.2	112.67	117.83	AC	209.1
39879747	941030	AE2-094 TAP	500.0	DVP	314902	8CARSON	500.0	DVP	1	DVP_P1-2: LN 511_AE2-031A	operation	4070.2	111.15	115.56	AC	177.44
39879761	942930	AE2-313 TAP	500.0	DVP	940470	AE2-031 TAP	500.0	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	operation	4070.2	108.46	113.66	AC	209.1

13 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																												
8120898,8 120897,81 20896	33	AD1-087 TAP 230.0 kV - 6SEDGE HILL 230.0 kV Ckt 1	<u>DVP</u> n6514 PJM Network Upgrade n6514. Line #2068 Halifax (Sedge Hill)–AD1-087 TAP 230 kV: wreck and rebuild the line of 12 miles to increase its line rating to 1047 MVA (normal), 1047 MVA (emergency), and 1204 MVA (load dump). A SCC and a Va CPCN is required. Project Type : FAC Cost : \$32,400,000 New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$32,400,000)</th></tr><tr><td>AE2-051</td><td>2.48</td><td>2.99%</td><td>\$967,281</td></tr><tr><td>AE2-094</td><td>23.72</td><td>28.55%</td><td>\$9,251,571</td></tr><tr><td>AE2-122</td><td>11.13</td><td>13.40%</td><td>\$4,341,062</td></tr><tr><td>AE2-123</td><td>11.44</td><td>13.77%</td><td>\$4,461,972</td></tr><tr><td>AE2-124</td><td>10.39</td><td>12.51%</td><td>\$4,052,438</td></tr><tr><td>AE2-313</td><td>23.91</td><td>28.78%</td><td>\$9,325,677</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$32,400,000)	AE2-051	2.48	2.99%	\$967,281	AE2-094	23.72	28.55%	\$9,251,571	AE2-122	11.13	13.40%	\$4,341,062	AE2-123	11.44	13.77%	\$4,461,972	AE2-124	10.39	12.51%	\$4,052,438	AE2-313	23.91	28.78%	\$9,325,677	\$32,400,000	\$9,325,677	n6514
Queue	MW contribution	Percentage of Cost	Cost(\$32,400,000)																															
AE2-051	2.48	2.99%	\$967,281																															
AE2-094	23.72	28.55%	\$9,251,571																															
AE2-122	11.13	13.40%	\$4,341,062																															
AE2-123	11.44	13.77%	\$4,461,972																															
AE2-124	10.39	12.51%	\$4,052,438																															
AE2-313	23.91	28.78%	\$9,325,677																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																												
7735504,8 120090,81 20085,812 0082,7735 503	22	8CHCKAHM 500.0 kV - 8ELMONT 500.0 kV Ckt 1	<u>DVP</u> n6207: PJM Network Upgrade n6207. Rebuild 27.72 miles of 500 kV Line 557 from Chickahominy to Elmont with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$85,932,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4453 MVA Rate B: 4453 MVA Rate C: 5121 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$85,932,000)</th></tr><tr><td>AE1-103</td><td>11.22</td><td>0.64%</td><td>\$546,067</td></tr><tr><td>AE1-173</td><td>244.70</td><td>13.86%</td><td>\$11,909,314</td></tr><tr><td>AE1-248</td><td>40.38</td><td>2.29%</td><td>\$1,965,256</td></tr><tr><td>AE2-007</td><td>316.41</td><td>17.92%</td><td>\$15,399,370</td></tr><tr><td>AE2-031</td><td>79.11</td><td>4.48%</td><td>\$3,850,208</td></tr><tr><td>AE2-051</td><td>44.93</td><td>2.54%</td><td>\$2,186,700</td></tr><tr><td>AE2-094</td><td>82.66</td><td>4.68%</td><td>\$4,022,983</td></tr><tr><td>AE2-122</td><td>261.14</td><td>14.79%</td><td>\$12,709,433</td></tr><tr><td>AE2-123</td><td>261.14</td><td>14.79%</td><td>\$12,709,433</td></tr><tr><td>AE2-124</td><td>261.15</td><td>14.79%</td><td>\$12,709,919</td></tr><tr><td>AE2-147</td><td>46.14</td><td>2.61%</td><td>\$2,245,589</td></tr><tr><td>AE2-156</td><td>31.15</td><td>1.76%</td><td>\$1,516,041</td></tr><tr><td>AE2-270</td><td>36.93</td><td>2.09%</td><td>\$1,797,348</td></tr><tr><td>AE2-313</td><td>48.58</td><td>2.75%</td><td>\$2,364,342</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$85,932,000)	AE1-103	11.22	0.64%	\$546,067	AE1-173	244.70	13.86%	\$11,909,314	AE1-248	40.38	2.29%	\$1,965,256	AE2-007	316.41	17.92%	\$15,399,370	AE2-031	79.11	4.48%	\$3,850,208	AE2-051	44.93	2.54%	\$2,186,700	AE2-094	82.66	4.68%	\$4,022,983	AE2-122	261.14	14.79%	\$12,709,433	AE2-123	261.14	14.79%	\$12,709,433	AE2-124	261.15	14.79%	\$12,709,919	AE2-147	46.14	2.61%	\$2,245,589	AE2-156	31.15	1.76%	\$1,516,041	AE2-270	36.93	2.09%	\$1,797,348	AE2-313	48.58	2.75%	\$2,364,342	\$85,932,000	\$2,364,342	n6207
Queue	MW contribution	Percentage of Cost	Cost(\$85,932,000)																																																															
AE1-103	11.22	0.64%	\$546,067																																																															
AE1-173	244.70	13.86%	\$11,909,314																																																															
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AE2-313	48.58	2.75%	\$2,364,342																																																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																																				
8120670,7 735868	11	6CARSON 230.0 kV - 6CHRL249 230.0 kV Ckt 1	<u>DVP</u> n6112: PJM Network Upgrade n6112. Line #249 Carson - Chaparral: Wreck and rebuild the line of 7.5 miles from Carson to Chaparral. Project Type : FAC Cost : \$22,500,000 Time Estimate : 44-48 Months New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$22,500,000)</th></tr><tr><td>AD1-088</td><td>0.62</td><td>0.17%</td><td>\$37,980</td></tr><tr><td>AD2-033</td><td>8.56</td><td>2.33%</td><td>\$524,367</td></tr><tr><td>AD2-063</td><td>10.63</td><td>2.89%</td><td>\$651,171</td></tr><tr><td>AD2-169</td><td>11.33</td><td>3.08%</td><td>\$694,051</td></tr><tr><td>AE1-026</td><td>10.01</td><td>2.73%</td><td>\$613,191</td></tr><tr><td>AE1-068</td><td>51.71</td><td>14.08%</td><td>\$3,167,642</td></tr><tr><td>AE1-069</td><td>41.37</td><td>11.26%</td><td>\$2,534,236</td></tr><tr><td>AE1-148</td><td>6.95</td><td>1.89%</td><td>\$425,742</td></tr><tr><td>AE1-168</td><td>8.71</td><td>2.37%</td><td>\$533,556</td></tr><tr><td>AE1-173</td><td>52.97</td><td>14.42%</td><td>\$3,244,827</td></tr><tr><td>AE2-031</td><td>30.26</td><td>8.24%</td><td>\$1,853,662</td></tr><tr><td>AE2-033</td><td>30.19</td><td>8.22%</td><td>\$1,849,374</td></tr><tr><td>AE2-051</td><td>6.79</td><td>1.85%</td><td>\$415,941</td></tr><tr><td>AE2-094</td><td>31.64</td><td>8.61%</td><td>\$1,938,198</td></tr><tr><td>AE2-260</td><td>32.85</td><td>8.94%</td><td>\$2,012,320</td></tr><tr><td>AE2-313</td><td>32.71</td><td>8.91%</td><td>\$2,003,744</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$22,500,000)	AD1-088	0.62	0.17%	\$37,980	AD2-033	8.56	2.33%	\$524,367	AD2-063	10.63	2.89%	\$651,171	AD2-169	11.33	3.08%	\$694,051	AE1-026	10.01	2.73%	\$613,191	AE1-068	51.71	14.08%	\$3,167,642	AE1-069	41.37	11.26%	\$2,534,236	AE1-148	6.95	1.89%	\$425,742	AE1-168	8.71	2.37%	\$533,556	AE1-173	52.97	14.42%	\$3,244,827	AE2-031	30.26	8.24%	\$1,853,662	AE2-033	30.19	8.22%	\$1,849,374	AE2-051	6.79	1.85%	\$415,941	AE2-094	31.64	8.61%	\$1,938,198	AE2-260	32.85	8.94%	\$2,012,320	AE2-313	32.71	8.91%	\$2,003,744	\$22,500,000	\$2,003,744	n6112
Queue	MW contribution	Percentage of Cost	Cost(\$22,500,000)																																																																							
AD1-088	0.62	0.17%	\$37,980																																																																							
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ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number
8120071,8 120062,81 20064,773 5633	27	8MDLTHAN 500.0 kV - 8NO ANNA 500.0 kV Ckt 1	<u>DVP</u> n6055: PJM Network Upgrade n6055: Replace wave trap at North Anna Substation for Midlothian – North Anna 500 kV line #576. This will increase emergency rating by 31% to 3424 MVA. The network project had a required in-service date of 10/01/2019. Project Type : FAC Cost : \$250,000 Time Estimate : 30-36 Months New Ratings: Rate A: 3424 MVA Rate B: 3424 MVA Rate C: 3938 MVA Queue Project AE2-313 presently does not receive cost allocation for this upgrade. Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, Queue Project AE2-313 could receive cost allocation. Note 2: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study.	See Next Page	See Next Page	n6055, n5069

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																																																												
8120071,8 120062,81 20064,773 5633	27	8MDLTHAN 500.0 kV - 8NO ANNA 500.0 kV Ckt 1	<u>DVP (cont'd)</u> n5069: PJM Network Upgrade n5069: Rebuild 41.13 miles of 500 kV Line 576 from Midlothian to North Anna with 3-1351.5 125C ACSR. The network project has a required in-service date of 12/01/2021. Project Type : FAC Cost : \$127,503,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4816 MVA Rate B: 4816 MVA Rate C: 5539 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$127,503,000)</th></tr><tr><td>AC2-141</td><td>77.46</td><td>3.01%</td><td>\$3,839,549</td></tr><tr><td>AD1-025</td><td>41.93</td><td>1.63%</td><td>\$2,078,392</td></tr><tr><td>AD1-076</td><td>137.77</td><td>5.36%</td><td>\$6,829,003</td></tr><tr><td>AD1-151</td><td>41.9</td><td>1.63%</td><td>\$2,076,905</td></tr><tr><td>AE1-026</td><td>54.18</td><td>2.11%</td><td>\$2,685,602</td></tr><tr><td>AE1-068</td><td>169.18</td><td>6.58%</td><td>\$8,385,939</td></tr><tr><td>AE1-069</td><td>135.34</td><td>5.26%</td><td>\$6,708,553</td></tr><tr><td>AE1-072</td><td>47.387</td><td>1.84%</td><td>\$2,348,886</td></tr><tr><td>AE1-173</td><td>274.68</td><td>10.68%</td><td>\$13,615,378</td></tr><tr><td>AE1-248</td><td>44.9</td><td>1.75%</td><td>\$2,225,610</td></tr><tr><td>AE2-007</td><td>308.19</td><td>11.98%</td><td>\$15,276,407</td></tr><tr><td>AE2-031</td><td>99.14</td><td>3.85%</td><td>\$4,914,186</td></tr><tr><td>AE2-033</td><td>44.23</td><td>1.72%</td><td>\$2,192,399</td></tr><tr><td>AE2-051</td><td>52.79</td><td>2.05%</td><td>\$2,616,702</td></tr><tr><td>AE2-094</td><td>103.32</td><td>4.02%</td><td>\$5,121,381</td></tr><tr><td>AE2-122</td><td>254.67</td><td>9.90%</td><td>\$12,623,520</td></tr><tr><td>AE2-123</td><td>254.67</td><td>9.90%</td><td>\$12,623,520</td></tr><tr><td>AE2-124</td><td>254.69</td><td>9.90%</td><td>\$12,624,511</td></tr><tr><td>AE2-147</td><td>46.24</td><td>1.80%</td><td>\$2,292,031</td></tr><tr><td>AE2-156</td><td>28.76</td><td>1.12%</td><td>\$1,425,580</td></tr><tr><td>AE2-270</td><td>40.32</td><td>1.57%</td><td>\$1,998,588</td></tr><tr><td>AE2-313</td><td>60.53</td><td>2.35%</td><td>\$3,000,360</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$127,503,000)	AC2-141	77.46	3.01%	\$3,839,549	AD1-025	41.93	1.63%	\$2,078,392	AD1-076	137.77	5.36%	\$6,829,003	AD1-151	41.9	1.63%	\$2,076,905	AE1-026	54.18	2.11%	\$2,685,602	AE1-068	169.18	6.58%	\$8,385,939	AE1-069	135.34	5.26%	\$6,708,553	AE1-072	47.387	1.84%	\$2,348,886	AE1-173	274.68	10.68%	\$13,615,378	AE1-248	44.9	1.75%	\$2,225,610	AE2-007	308.19	11.98%	\$15,276,407	AE2-031	99.14	3.85%	\$4,914,186	AE2-033	44.23	1.72%	\$2,192,399	AE2-051	52.79	2.05%	\$2,616,702	AE2-094	103.32	4.02%	\$5,121,381	AE2-122	254.67	9.90%	\$12,623,520	AE2-123	254.67	9.90%	\$12,623,520	AE2-124	254.69	9.90%	\$12,624,511	AE2-147	46.24	1.80%	\$2,292,031	AE2-156	28.76	1.12%	\$1,425,580	AE2-270	40.32	1.57%	\$1,998,588	AE2-313	60.53	2.35%	\$3,000,360	\$127,753,000	\$3,000,360	n6055, n5069
Queue	MW contribution	Percentage of Cost	Cost(\$127,503,000)																																																																																															
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AE2-124	254.69	9.90%	\$12,624,511																																																																																															
AE2-147	46.24	1.80%	\$2,292,031																																																																																															
AE2-156	28.76	1.12%	\$1,425,580																																																																																															
AE2-270	40.32	1.57%	\$1,998,588																																																																																															
AE2-313	60.53	2.35%	\$3,000,360																																																																																															
8120965,8 120967,81 20966	17	6CLOVER 230.0 kV - AD1-087 TAP 230.0 kV Ckt 1	<u>DVP</u> No violation. Dominion Side Ratings: [Rate A: 1046, Rate B: 1046, Rate C: 1203]	\$0	\$0	N/A																																																																																												

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																				
39879750, 39879751	5	AE2-094 TAP 500.0 kV - 8CARSON 500.0 kV Ckt 1	DVP n6580: PJM Network Upgrade n6580: Rebuild 16.45 miles of 500 kV Line 585 from AE2-094 Tap to Carson with 3-1351.5 125C ACSR. Project Type : FAC Cost : \$50,995,000 Time Estimate : 30-36 Months New Ratings: Rate A: 4816 MVA Rate B: 4816 MVA Rate C: 5539 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$50,995,000)</th></tr><tr><td>AE2-094</td><td>6.02</td><td>5.35%</td><td>\$2,729,284</td></tr><tr><td>AE2-313</td><td>106.46</td><td>94.65%</td><td>\$48,265,716</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$50,995,000)	AE2-094	6.02	5.35%	\$2,729,284	AE2-313	106.46	94.65%	\$48,265,716	\$50,995,000	\$48,265,716	n6580								
Queue	MW contribution	Percentage of Cost	Cost(\$50,995,000)																							
AE2-094	6.02	5.35%	\$2,729,284																							
AE2-313	106.46	94.65%	\$48,265,716																							
12469705	14	6CHESTF B 230.0 kV - 6CHARCTY 230.0 kV Ckt 1	DVP n6501: PJM Network Upgrade n6501: Rebuild 10.95 miles of 230 kV Line 2017 from Chesterfield to Charles City with 2-795 ACSR and replace wave trap at Chesterfield. Project Type : FAC Cost : \$16,625,000 Time Estimate : 30-36 Months New Ratings: Rate A: 1225 MVA Rate B: 1225 MVA Rate C: 1409 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$16,625,000)</th></tr><tr><td>AE2-156</td><td>2.42</td><td>4.22%</td><td>\$702,260</td></tr><tr><td>AE2-260</td><td>19.48</td><td>34.00%</td><td>\$5,652,906</td></tr><tr><td>AE2-270</td><td>15.25</td><td>26.62%</td><td>\$4,425,401</td></tr><tr><td>AE2-313</td><td>20.14</td><td>35.15%</td><td>\$5,844,432</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$16,625,000)	AE2-156	2.42	4.22%	\$702,260	AE2-260	19.48	34.00%	\$5,652,906	AE2-270	15.25	26.62%	\$4,425,401	AE2-313	20.14	35.15%	\$5,844,432	\$16,625,000	\$5,844,432	n6501
Queue	MW contribution	Percentage of Cost	Cost(\$16,625,000)																							
AE2-156	2.42	4.22%	\$702,260																							
AE2-260	19.48	34.00%	\$5,652,906																							
AE2-270	15.25	26.62%	\$4,425,401																							
AE2-313	20.14	35.15%	\$5,844,432																							

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16758871	10	6CHARCTY 230.0 kV - 6LAKESIDE 230.0 kV Ckt 1	DVP n6403: PJM Network Upgrade n6403: Rebuild 10.36 miles of 230 kV Line 217 from Charles City to Lakeside with 2-795 ACSR. Project Type : FAC Cost : \$15,860,000 Time Estimate : 30-36 Months New Ratings: Rate A: 1225 MVA Rate B: 1225 MVA Rate C: 1409 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$15,860,000)</th></tr><tr><td>AE2-250</td><td>0.48</td><td>0.87%</td><td>\$137,539</td></tr><tr><td>AE2-260</td><td>19.48</td><td>35.19%</td><td>\$5,581,803</td></tr><tr><td>AE2-270</td><td>15.25</td><td>27.55%</td><td>\$4,369,738</td></tr><tr><td>AE2-313</td><td>20.14</td><td>36.39%</td><td>\$5,770,920</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$15,860,000)	AE2-250	0.48	0.87%	\$137,539	AE2-260	19.48	35.19%	\$5,581,803	AE2-270	15.25	27.55%	\$4,369,738	AE2-313	20.14	36.39%	\$5,770,920	\$15,860,000	\$5,770,920	n6403																																								
Queue	MW contribution	Percentage of Cost	Cost(\$15,860,000)																																																															
AE2-250	0.48	0.87%	\$137,539																																																															
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7735687,3 9879418,8 120558,77 35688	20	8CARSON 500.0 kV - 8MDLTAN 500.0 kV Ckt 1	DVP n6172: PJM Network Upgrade n6172. Rebuild 37.41 miles of 500 kV Line 563 from Carson to Midlothian with 3-1351.5 125C ACSR. Project Type : FAC Cost : \$115,971,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4816 MVA Rate B: 4816 MVA Rate C: 5539 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$115,971,000)</th></tr><tr><td>AE1-068</td><td>78.16</td><td>3.89%</td><td>\$4,505,519</td></tr><tr><td>AE1-069</td><td>148.28</td><td>7.37%</td><td>\$8,547,574</td></tr><tr><td>AE1-072</td><td>45.84</td><td>2.28%</td><td>\$2,642,439</td></tr><tr><td>AE1-173</td><td>292.3</td><td>14.53%</td><td>\$16,849,581</td></tr><tr><td>AE2-007</td><td>297.76</td><td>14.80%</td><td>\$17,164,321</td></tr><tr><td>AE2-031</td><td>108.56</td><td>5.40%</td><td>\$6,257,922</td></tr><tr><td>AE2-051</td><td>57.57</td><td>2.86%</td><td>\$3,318,612</td></tr><tr><td>AE2-094</td><td>113.6</td><td>5.65%</td><td>\$6,548,451</td></tr><tr><td>AE2-122</td><td>246.83</td><td>12.27%</td><td>\$14,228,471</td></tr><tr><td>AE2-123</td><td>246.83</td><td>12.27%</td><td>\$14,228,471</td></tr><tr><td>AE2-124</td><td>246.99</td><td>12.28%</td><td>\$14,237,694</td></tr><tr><td>AE2-147</td><td>44.67</td><td>2.22%</td><td>\$2,574,994</td></tr><tr><td>AE2-260</td><td>18.76</td><td>0.93%</td><td>\$1,081,417</td></tr><tr><td>AE2-313</td><td>65.67</td><td>3.26%</td><td>\$3,785,535</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$115,971,000)	AE1-068	78.16	3.89%	\$4,505,519	AE1-069	148.28	7.37%	\$8,547,574	AE1-072	45.84	2.28%	\$2,642,439	AE1-173	292.3	14.53%	\$16,849,581	AE2-007	297.76	14.80%	\$17,164,321	AE2-031	108.56	5.40%	\$6,257,922	AE2-051	57.57	2.86%	\$3,318,612	AE2-094	113.6	5.65%	\$6,548,451	AE2-122	246.83	12.27%	\$14,228,471	AE2-123	246.83	12.27%	\$14,228,471	AE2-124	246.99	12.28%	\$14,237,694	AE2-147	44.67	2.22%	\$2,574,994	AE2-260	18.76	0.93%	\$1,081,417	AE2-313	65.67	3.26%	\$3,785,535	\$115,971,000	\$3,785,535	n6172
Queue	MW contribution	Percentage of Cost	Cost(\$115,971,000)																																																															
AE1-068	78.16	3.89%	\$4,505,519																																																															
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AE2-313	65.67	3.26%	\$3,785,535																																																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																								
7735934	21	8CARSON 500.0 kV - 6CARSON 230.0 kV Ckt 1	<u>DVP</u> n6209: PJM Network Upgrade n6209: Add additional 500/230 kV transformer. Project Type : CON Cost : \$22,000,000 Time Estimate : 16-18 Months New Ratings: Rate A: 1133 MVA Rate B: 1203 MVA Rate C: 1365 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$22,000,000)</th></tr><tr><td>AE1-069</td><td>76.05</td><td>18.49%</td><td>\$4,067,438</td></tr><tr><td>AE1-173</td><td>133.12</td><td>32.36%</td><td>\$7,119,755</td></tr><tr><td>AE2-031</td><td>64.59</td><td>15.70%</td><td>\$3,454,515</td></tr><tr><td>AE2-094</td><td>67.82</td><td>16.49%</td><td>\$3,627,267</td></tr><tr><td>AE2-313</td><td>69.76</td><td>16.96%</td><td>\$3,731,025</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$22,000,000)	AE1-069	76.05	18.49%	\$4,067,438	AE1-173	133.12	32.36%	\$7,119,755	AE2-031	64.59	15.70%	\$3,454,515	AE2-094	67.82	16.49%	\$3,627,267	AE2-313	69.76	16.96%	\$3,731,025	\$22,000,000	\$3,731,025	n6209
Queue	MW contribution	Percentage of Cost	Cost(\$22,000,000)																											
AE1-069	76.05	18.49%	\$4,067,438																											
AE1-173	133.12	32.36%	\$7,119,755																											
AE2-031	64.59	15.70%	\$3,454,515																											
AE2-094	67.82	16.49%	\$3,627,267																											
AE2-313	69.76	16.96%	\$3,731,025																											
8120539,8120540	25	8LADYSMITH 500.0 kV - 8CHANCE 500.0 kV Ckt 1	<u>DVP</u> b3021: PJM baseline upgrade b3021: Rebuild 500kV Line #581 Ladysmith to Chancellor - 15.2 miles long. The baseline project has an projected in-service date of 12/31/2023. Note 1: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study.	\$0	\$0	b3021																								
8120495,8120494,8120493	32	AC1-221 TAP 230.0 kV - 6PERSON230 T 230.0 kV Ckt 1	<u>DVP</u> The line rating at DVP portion of this tie line is 904MVA (normal), 904MVA (Emergency) and 1105 MVA (Load Dump). Therefore, the line limiting element is not overloaded on the DVP portion of this line. <u>CPL</u> An affected systems study will need to be completed with Duke/Progress to determine upgrades required on the Duke/Progress system.	\$0	\$0	N/A																								
8120387,8120388	23	8CHANCE 500.0 kV - 8BRISTER 500.0 kV Ckt 1	<u>DVP</u> b3019: PJM baseline upgrade b3019: Rebuild 500kV Line #552 Bristers to Chancellor 21.6 miles long. The baseline project has a projected in-service date of 12/31/2023. Note 1: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study.	\$0	\$0	b3019																								

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																
39879566, 7735815,8 120686	28	8NO ANNA 500.0 kV - 8SPOTSYL 500.0 kV Ckt 1	DVP n6132: PJM Network Upgrade n6132: Rebuild 14.02 miles of 500 kV Line 573 from North Anna to Spotsylvania with 3-1351.5 ACSR 113C. Project Type : FAC Cost : \$43,462,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4453 MVA Rate B: 4453 MVA Rate C: 5121 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$43,462,000)</th></tr><tr><td>AE1-075</td><td>2.36</td><td>0.36%</td><td>\$157,750</td></tr><tr><td>AE1-173</td><td>108.39</td><td>16.67%</td><td>\$7,245,115</td></tr><tr><td>AE1-206</td><td>63.74</td><td>9.80%</td><td>\$4,260,574</td></tr><tr><td>AE2-007</td><td>213.18</td><td>32.79%</td><td>\$14,249,595</td></tr><tr><td>AE2-031</td><td>38.46</td><td>5.92%</td><td>\$2,570,783</td></tr><tr><td>AE2-094</td><td>46.07</td><td>7.09%</td><td>\$3,079,458</td></tr><tr><td>AE2-122</td><td>34.93</td><td>5.37%</td><td>\$2,334,827</td></tr><tr><td>AE2-123</td><td>35.9</td><td>5.52%</td><td>\$2,399,664</td></tr><tr><td>AE2-124</td><td>32.64</td><td>5.02%</td><td>\$2,181,756</td></tr><tr><td>AE2-270</td><td>32.95</td><td>5.07%</td><td>\$2,202,478</td></tr><tr><td>AE2-313</td><td>41.59</td><td>6.40%</td><td>\$2,780,001</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$43,462,000)	AE1-075	2.36	0.36%	\$157,750	AE1-173	108.39	16.67%	\$7,245,115	AE1-206	63.74	9.80%	\$4,260,574	AE2-007	213.18	32.79%	\$14,249,595	AE2-031	38.46	5.92%	\$2,570,783	AE2-094	46.07	7.09%	\$3,079,458	AE2-122	34.93	5.37%	\$2,334,827	AE2-123	35.9	5.52%	\$2,399,664	AE2-124	32.64	5.02%	\$2,181,756	AE2-270	32.95	5.07%	\$2,202,478	AE2-313	41.59	6.40%	\$2,780,001	\$43,462,000	\$2,780,001	n6132
Queue	MW contribution	Percentage of Cost	Cost(\$43,462,000)																																																			
AE1-075	2.36	0.36%	\$157,750																																																			
AE1-173	108.39	16.67%	\$7,245,115																																																			
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ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																												
8120923,7 735676	1	6HARROWG 230.0 kV - 6TYLER1 230.0 kV Ckt 1	DVP n6178: PJM Network Upgrade n6178. 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 New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$11,250,000)</th></tr><tr><td>AE1-173</td><td>23.05</td><td>11.90%</td><td>\$1,338,629</td></tr><tr><td>AE1-248</td><td>20.3</td><td>10.48%</td><td>\$1,178,923</td></tr><tr><td>AE2-031</td><td>22.29</td><td>11.51%</td><td>\$1,294,492</td></tr><tr><td>AE2-033</td><td>21.38</td><td>11.04%</td><td>\$1,241,644</td></tr><tr><td>AE2-040</td><td>7.41</td><td>3.83%</td><td>\$430,336</td></tr><tr><td>AE2-052</td><td>6.17</td><td>3.19%</td><td>\$358,323</td></tr><tr><td>AE2-094</td><td>23.32</td><td>12.04%</td><td>\$1,354,309</td></tr><tr><td>AE2-157</td><td>22.07</td><td>11.39%</td><td>\$1,281,425</td></tr><tr><td>AE2-260</td><td>23.63</td><td>12.20%</td><td>\$1,372,312</td></tr><tr><td>AE2-313</td><td>24.1</td><td>12.44%</td><td>\$1,399,608</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$11,250,000)	AE1-173	23.05	11.90%	\$1,338,629	AE1-248	20.3	10.48%	\$1,178,923	AE2-031	22.29	11.51%	\$1,294,492	AE2-033	21.38	11.04%	\$1,241,644	AE2-040	7.41	3.83%	\$430,336	AE2-052	6.17	3.19%	\$358,323	AE2-094	23.32	12.04%	\$1,354,309	AE2-157	22.07	11.39%	\$1,281,425	AE2-260	23.63	12.20%	\$1,372,312	AE2-313	24.1	12.44%	\$1,399,608	\$11,250,000	\$1,399,608	n6178
Queue	MW contribution	Percentage of Cost	Cost(\$11,250,000)																																															
AE1-173	23.05	11.90%	\$1,338,629																																															
AE1-248	20.3	10.48%	\$1,178,923																																															
AE2-031	22.29	11.51%	\$1,294,492																																															
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AE2-157	22.07	11.39%	\$1,281,425																																															
AE2-260	23.63	12.20%	\$1,372,312																																															
AE2-313	24.1	12.44%	\$1,399,608																																															
8120920,7 735674	2	6POE 230.0 kV - 6HARROWG 230.0 kV Ckt 1	DVP n6179: PJM Network Upgrade n6179. 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 New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$30,750,000)</th></tr><tr><td>AE1-173</td><td>22.40</td><td>12.00%</td><td>\$3,689,365</td></tr><tr><td>AE1-248</td><td>20.3</td><td>10.87%</td><td>\$3,343,487</td></tr><tr><td>AE2-031</td><td>22.29</td><td>11.94%</td><td>\$3,671,247</td></tr><tr><td>AE2-033</td><td>21.38</td><td>11.45%</td><td>\$3,521,367</td></tr><tr><td>AE2-040</td><td>7.41</td><td>3.97%</td><td>\$1,220,455</td></tr><tr><td>AE2-052</td><td>6.17</td><td>3.30%</td><td>\$1,016,025</td></tr><tr><td>AE2-094</td><td>23.32</td><td>12.49%</td><td>\$3,840,892</td></tr><tr><td>AE2-157</td><td>15.7</td><td>8.41%</td><td>\$2,585,850</td></tr><tr><td>AE2-260</td><td>23.63</td><td>12.66%</td><td>\$3,891,951</td></tr><tr><td>AE2-313</td><td>24.1</td><td>12.91%</td><td>\$3,969,361</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$30,750,000)	AE1-173	22.40	12.00%	\$3,689,365	AE1-248	20.3	10.87%	\$3,343,487	AE2-031	22.29	11.94%	\$3,671,247	AE2-033	21.38	11.45%	\$3,521,367	AE2-040	7.41	3.97%	\$1,220,455	AE2-052	6.17	3.30%	\$1,016,025	AE2-094	23.32	12.49%	\$3,840,892	AE2-157	15.7	8.41%	\$2,585,850	AE2-260	23.63	12.66%	\$3,891,951	AE2-313	24.1	12.91%	\$3,969,361	\$30,750,000	\$3,969,361	n6179
Queue	MW contribution	Percentage of Cost	Cost(\$30,750,000)																																															
AE1-173	22.40	12.00%	\$3,689,365																																															
AE1-248	20.3	10.87%	\$3,343,487																																															
AE2-031	22.29	11.94%	\$3,671,247																																															
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AE2-157	15.7	8.41%	\$2,585,850																																															
AE2-260	23.63	12.66%	\$3,891,951																																															
AE2-313	24.1	12.91%	\$3,969,361																																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																
18286292	9	6BREMODIST 230.0 kV - 6MTEAGLE 230.0 kV Ckt 1	<u>DVP</u> n6185: PJM Network Upgrade n6185. Rebuild 18.94 miles of 230 kV Line 2028 from Brema Dist to Mt Eagle with 2-636 ACSR. Project Type : FAC Cost : \$47,350,000 Time Estimate : 36-40 Months New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$47,350,000)</th></tr><tr><td>AE1-056</td><td>10.47</td><td>9.02%</td><td>\$4,269,552</td></tr><tr><td>AE1-168</td><td>20.88</td><td>17.98%</td><td>\$8,514,148</td></tr><tr><td>AE2-031</td><td>12.73</td><td>10.96%</td><td>\$5,190,858</td></tr><tr><td>AE2-092</td><td>24.33</td><td>20.95%</td><td>\$9,920,940</td></tr><tr><td>AE2-094</td><td>14.65</td><td>12.62%</td><td>\$5,973,768</td></tr><tr><td>AE2-259</td><td>19.26</td><td>16.59%</td><td>\$7,853,568</td></tr><tr><td>AE2-313</td><td>13.8</td><td>11.88%</td><td>\$5,627,167</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$47,350,000)	AE1-056	10.47	9.02%	\$4,269,552	AE1-168	20.88	17.98%	\$8,514,148	AE2-031	12.73	10.96%	\$5,190,858	AE2-092	24.33	20.95%	\$9,920,940	AE2-094	14.65	12.62%	\$5,973,768	AE2-259	19.26	16.59%	\$7,853,568	AE2-313	13.8	11.88%	\$5,627,167	\$47,350,000	\$5,627,167	n6185
Queue	MW contribution	Percentage of Cost	Cost(\$47,350,000)																																			
AE1-056	10.47	9.02%	\$4,269,552																																			
AE1-168	20.88	17.98%	\$8,514,148																																			
AE2-031	12.73	10.96%	\$5,190,858																																			
AE2-092	24.33	20.95%	\$9,920,940																																			
AE2-094	14.65	12.62%	\$5,973,768																																			
AE2-259	19.26	16.59%	\$7,853,568																																			
AE2-313	13.8	11.88%	\$5,627,167																																			
18286350	19	6MTEAGLE 230.0 kV - 6CHARLVL 230.0 kV Ckt 1	<u>DVP</u> n6379: PJM Network Upgrade n6379: Rebuild 6.47 miles of 230 kV Line 2028 from Mt Eagle to Charlottesville with 2-636 ACSR. Project Type : FAC Cost : \$16,175,000 Time Estimate : 30-36 Months New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$16,175,000)</th></tr><tr><td>AE1-056</td><td>10.47</td><td>9.75%</td><td>\$1,577,397</td></tr><tr><td>AE1-168</td><td>20.87</td><td>19.44%</td><td>\$3,144,308</td></tr><tr><td>AE2-031</td><td>3.98</td><td>3.71%</td><td>\$599,633</td></tr><tr><td>AE2-092</td><td>24.33</td><td>22.66%</td><td>\$3,665,597</td></tr><tr><td>AE2-094</td><td>14.65</td><td>13.65%</td><td>\$2,207,193</td></tr><tr><td>AE2-259</td><td>19.26</td><td>17.94%</td><td>\$2,901,743</td></tr><tr><td>AE2-313</td><td>13.80</td><td>12.85%</td><td>\$2,079,130</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$16,175,000)	AE1-056	10.47	9.75%	\$1,577,397	AE1-168	20.87	19.44%	\$3,144,308	AE2-031	3.98	3.71%	\$599,633	AE2-092	24.33	22.66%	\$3,665,597	AE2-094	14.65	13.65%	\$2,207,193	AE2-259	19.26	17.94%	\$2,901,743	AE2-313	13.80	12.85%	\$2,079,130	\$16,175,000	\$2,079,130	n6379
Queue	MW contribution	Percentage of Cost	Cost(\$16,175,000)																																			
AE1-056	10.47	9.75%	\$1,577,397																																			
AE1-168	20.87	19.44%	\$3,144,308																																			
AE2-031	3.98	3.71%	\$599,633																																			
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AE2-094	14.65	13.65%	\$2,207,193																																			
AE2-259	19.26	17.94%	\$2,901,743																																			
AE2-313	13.80	12.85%	\$2,079,130																																			

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																												
16758932	16	6LOCKS 230.0 kV - 6HARR205 230.0 kV Ckt 1	DVP n6129: PJM Network Upgrade n6129: Uprate 5.4 miles of 230 kV Line 205 from Locks to Harrowgate with 1033.5 ACSR. Upgrade Relays at Locks. Project Type : FAC Cost : \$2,280,000 Time Estimate : 30-36 Months New Ratings: Rate A: 1046 MVA Rate B: 1046 MVA Rate C: 1203 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$2,280,000)</th></tr><tr><td>AE2-031</td><td>15.98</td><td>11.64%</td><td>\$265,383</td></tr><tr><td>AE2-033</td><td>23.45</td><td>17.08%</td><td>\$389,438</td></tr><tr><td>AE2-094</td><td>24.89</td><td>18.13%</td><td>\$413,353</td></tr><tr><td>AE2-250</td><td>21.62</td><td>15.75%</td><td>\$359,047</td></tr><tr><td>AE2-260</td><td>25.63</td><td>18.67%</td><td>\$425,642</td></tr><tr><td>AE2-313</td><td>25.72</td><td>18.73%</td><td>\$427,137</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$2,280,000)	AE2-031	15.98	11.64%	\$265,383	AE2-033	23.45	17.08%	\$389,438	AE2-094	24.89	18.13%	\$413,353	AE2-250	21.62	15.75%	\$359,047	AE2-260	25.63	18.67%	\$425,642	AE2-313	25.72	18.73%	\$427,137	\$2,280,000	\$427,137	n6129
Queue	MW contribution	Percentage of Cost	Cost(\$2,280,000)																															
AE2-031	15.98	11.64%	\$265,383																															
AE2-033	23.45	17.08%	\$389,438																															
AE2-094	24.89	18.13%	\$413,353																															
AE2-250	21.62	15.75%	\$359,047																															
AE2-260	25.63	18.67%	\$425,642																															
AE2-313	25.72	18.73%	\$427,137																															
39879108	7	6CARSON 230.0 kV - 6POE 230.0 kV Ckt 1	DVP n6581: PJM Network Upgrade n6581: Rebuild 12.68 miles of 230 kV Line 2002 from Carson to Poe with 2-636 ACSR. Project Type : FAC Cost : \$31,700,000 Time Estimate : 30-36 Months New Ratings: Rate A: 1046 MVA Rate B: 1046 MVA Rate C: 1203 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$31,700,000)</th></tr><tr><td>AE2-313</td><td>25.17</td><td>100.00%</td><td>\$31,700,000</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$31,700,000)	AE2-313	25.17	100.00%	\$31,700,000	\$31,700,000	\$31,700,000	n6581																				
Queue	MW contribution	Percentage of Cost	Cost(\$31,700,000)																															
AE2-313	25.17	100.00%	\$31,700,000																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																								
8120702,7 735839,77 35840	30	8SURRY 500.0 kV - 8CHCKAHM 500.0 kV Ckt 1	DVP n6324: PJM Network Upgrade n6324: Replace wavetraps at Chickahominy and Surry substation. Project Type : FAC Cost : \$4,000,000 Time Estimate : 16-18 Months New Ratings: Rate A: 3424 MVA Rate B: 3424 MVA Rate C: 3938 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$4,000,000)</th></tr><tr><td>AE2-122</td><td>245.56</td><td>27%</td><td>\$1,086,248</td></tr><tr><td>AE2-123</td><td>245.56</td><td>27%</td><td>\$1,086,248</td></tr><tr><td>AE2-124</td><td>245.77</td><td>27%</td><td>\$1,087,177</td></tr><tr><td>AE2-147</td><td>42.33</td><td>5%</td><td>\$187,249</td></tr><tr><td>AE2-260</td><td>36.22</td><td>4%</td><td>\$160,221</td></tr><tr><td>AE2-313</td><td>88.81</td><td>10%</td><td>\$392,856</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$4,000,000)	AE2-122	245.56	27%	\$1,086,248	AE2-123	245.56	27%	\$1,086,248	AE2-124	245.77	27%	\$1,087,177	AE2-147	42.33	5%	\$187,249	AE2-260	36.22	4%	\$160,221	AE2-313	88.81	10%	\$392,856	\$4,000,000	\$392,856	n6324																												
Queue	MW contribution	Percentage of Cost	Cost(\$4,000,000)																																																											
AE2-122	245.56	27%	\$1,086,248																																																											
AE2-123	245.56	27%	\$1,086,248																																																											
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AE2-313	88.81	10%	\$392,856																																																											
7735834,7 735835,82 49811,398 79554,812 0661	31	8SPOTSYL 500.0 kV - 8MORRSVL 500.0 kV Ckt 1	DVP n6160: PJM Network Upgrade n6160: Rebuild 18.75 miles of 500 kV Line 594 from Spotsylvania to Morrisville with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$58,125,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4453 MVA Rate B: 4453 MVA Rate C: 5121 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$58,125,000)</th></tr><tr><td>AE1-069</td><td>11.49</td><td>1.56%</td><td>\$904,393</td></tr><tr><td>AE1-173</td><td>178.09</td><td>24.12%</td><td>\$14,017,541</td></tr><tr><td>AE1-206</td><td>62.76</td><td>8.50%</td><td>\$4,939,922</td></tr><tr><td>AE2-007</td><td>210.87</td><td>28.56%</td><td>\$16,597,855</td></tr><tr><td>AE2-031</td><td>38.03</td><td>5.15%</td><td>\$2,993,391</td></tr><tr><td>AE2-034</td><td>9.99</td><td>1.35%</td><td>\$786,326</td></tr><tr><td>AE2-094</td><td>45.55</td><td>6.17%</td><td>\$3,585,300</td></tr><tr><td>AE2-122</td><td>34.55</td><td>4.68%</td><td>\$2,719,476</td></tr><tr><td>AE2-123</td><td>35.51</td><td>4.81%</td><td>\$2,795,039</td></tr><tr><td>AE2-124</td><td>32.28</td><td>4.37%</td><td>\$2,540,801</td></tr><tr><td>AE2-250</td><td>5.61</td><td>0.76%</td><td>\$441,570</td></tr><tr><td>AE2-270</td><td>32.60</td><td>4.41%</td><td>\$2,565,989</td></tr><tr><td>AE2-313</td><td>41.13</td><td>5.57%</td><td>\$3,237,396</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$58,125,000)	AE1-069	11.49	1.56%	\$904,393	AE1-173	178.09	24.12%	\$14,017,541	AE1-206	62.76	8.50%	\$4,939,922	AE2-007	210.87	28.56%	\$16,597,855	AE2-031	38.03	5.15%	\$2,993,391	AE2-034	9.99	1.35%	\$786,326	AE2-094	45.55	6.17%	\$3,585,300	AE2-122	34.55	4.68%	\$2,719,476	AE2-123	35.51	4.81%	\$2,795,039	AE2-124	32.28	4.37%	\$2,540,801	AE2-250	5.61	0.76%	\$441,570	AE2-270	32.60	4.41%	\$2,565,989	AE2-313	41.13	5.57%	\$3,237,396	\$58,125,000	\$3,237,396	n6160
Queue	MW contribution	Percentage of Cost	Cost(\$58,125,000)																																																											
AE1-069	11.49	1.56%	\$904,393																																																											
AE1-173	178.09	24.12%	\$14,017,541																																																											
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ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																												
8120952,8 120953,77 35962,773 5963,7735 961	29	8NO ANNA 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	<u>DVP</u> n6574: PJM Network Upgrade n6574: Rebuild 14.53 miles of 500 kV Line 575 from North Anna to Ladysmith with 3-1351.5 113C ACSR. Project Type : FAC Cost : \$45,043,000 Time Estimate : 48-60 Months New Ratings: Rate A: 4453 MVA Rate B: 4453 MVA Rate C: 5121 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$45,043,000)</th></tr><tr><td>AE2-031</td><td>34.63</td><td>7.16%</td><td>\$3,224,340</td></tr><tr><td>AE2-094</td><td>41.5</td><td>8.58%</td><td>\$3,863,994</td></tr><tr><td>AE2-122</td><td>115.02</td><td>23.78%</td><td>\$10,709,316</td></tr><tr><td>AE2-123</td><td>115.02</td><td>23.78%</td><td>\$10,709,316</td></tr><tr><td>AE2-124</td><td>115.08</td><td>23.79%</td><td>\$10,714,903</td></tr><tr><td>AE2-313</td><td>62.52</td><td>12.92%</td><td>\$5,821,131</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$45,043,000)	AE2-031	34.63	7.16%	\$3,224,340	AE2-094	41.5	8.58%	\$3,863,994	AE2-122	115.02	23.78%	\$10,709,316	AE2-123	115.02	23.78%	\$10,709,316	AE2-124	115.08	23.79%	\$10,714,903	AE2-313	62.52	12.92%	\$5,821,131	\$45,043,000	\$5,821,131	n6574
Queue	MW contribution	Percentage of Cost	Cost(\$45,043,000)																															
AE2-031	34.63	7.16%	\$3,224,340																															
AE2-094	41.5	8.58%	\$3,863,994																															
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AE2-124	115.08	23.79%	\$10,714,903																															
AE2-313	62.52	12.92%	\$5,821,131																															
39879032	15	6HARR205 230.0 kV - 6TYLER 230.0 kV Ckt 1	<u>DVP</u> n6328: PJM Network Upgrade n6328: Reconnector 0.64 miles of 230 kV Line 205 from Harrowgate to Tyler with 1033.5 ACSR. Uprate 4.09 miles of 230 kV Line 205 from Harrowgate to Tyler. Project Type : FAC Cost : \$2,148,000 Time Estimate : 30-36 Months New Ratings: Rate A: 705 MVA Rate B: 705 MVA Rate C: 811 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$2,148,000)</th></tr><tr><td>AE2-094</td><td>13.93</td><td>13.98%</td><td>\$300,380</td></tr><tr><td>AE2-212</td><td>12.71</td><td>12.76%</td><td>\$274,129</td></tr><tr><td>AE2-250</td><td>21.62</td><td>21.70%</td><td>\$466,204</td></tr><tr><td>AE2-260</td><td>25.63</td><td>25.73%</td><td>\$552,673</td></tr><tr><td>AE2-313</td><td>25.72</td><td>25.82%</td><td>\$554,614</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$2,148,000)	AE2-094	13.93	13.98%	\$300,380	AE2-212	12.71	12.76%	\$274,129	AE2-250	21.62	21.70%	\$466,204	AE2-260	25.63	25.73%	\$552,673	AE2-313	25.72	25.82%	\$554,614	\$2,148,000	\$554,614	n6328				
Queue	MW contribution	Percentage of Cost	Cost(\$2,148,000)																															
AE2-094	13.93	13.98%	\$300,380																															
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AE2-313	25.72	25.82%	\$554,614																															

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number
16758892, 8120735,3 9879106,3 9879104	26	8LADYSMITH 500.0 kV - 8POSSUM 500.0 kV Ckt 1	DVP n6063: PJM Network Upgrade n6063: Replace wave trap at both Ladysmith and Possum Point Substations for the Ladysmith – Possum Pt 500kV line #568. This will increase line rating by 12% to 2913 MVA. Estimated to take 14-16 months to engineer and construct. The network project had a projected in-service date of 10/01/2019. Project Type : FAC Cost : \$300,000 Time Estimate : 14-16 Months New Ratings: Rate A: 2598 MVA Rate B: 2857 MVA Rate C: 3637 MVA Queue Project AE2-313 presently does not receive cost allocation for this upgrade. Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, Queue Project AE2-313 could receive cost allocation. Note 2: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study. n6157: PJM Network Upgrade n6157: Relay Change Outs (CT) at Ladysmith and Possum Pt 500 kV substations. Project Type : FAC Cost : \$120,000 Time Estimate : 6-12 Months New Ratings: Rate A: 3424 MVA Rate B: 3424 MVA Rate C: 3937 MVA Queue Project AE2-313 presently does not receive cost allocation for this upgrade. Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, Queue Project AE2-313 could receive cost allocation. Note 2: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study.	\$420,000	\$0	n6063, n6157

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																																
7735895,8 120751	12	6CHRL249 230.0 kV - 6LOCKS 230.0 kV Ckt 1	<u>DVP</u> n6116: PJM Network Upgrade n6116. Line #249 Chaparra - Locksl: wreck and rebuild the line of 3 miles from Carson to Chaparral. A Va CPCN is required. Project Type : FAC Cost : \$9,000,000 Time Estimate : 48-60 Months New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows:	\$9,000,000	\$454,436	n6116																																																																
			<table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$9,000,000)</th></tr><tr><td>AD2-033</td><td>5.79</td><td>1.96%</td><td>\$176,083</td></tr><tr><td>AD2-063</td><td>10.63</td><td>3.60%</td><td>\$323,554</td></tr><tr><td>AD2-169</td><td>11.33</td><td>3.83%</td><td>\$344,860</td></tr><tr><td>AE1-026</td><td>14.76</td><td>4.99%</td><td>\$449,262</td></tr><tr><td>AE1-068</td><td>51.71</td><td>17.49%</td><td>\$1,573,938</td></tr><tr><td>AE1-069</td><td>41.37</td><td>13.99%</td><td>\$1,259,212</td></tr><tr><td>AE1-148</td><td>6.95</td><td>2.35%</td><td>\$211,543</td></tr><tr><td>AE1-168</td><td>8.71</td><td>2.95%</td><td>\$265,113</td></tr><tr><td>AE1-173</td><td>62.31</td><td>21.07%</td><td>\$1,896,579</td></tr><tr><td>AE2-031</td><td>13.81</td><td>4.67%</td><td>\$420,346</td></tr><tr><td>AE2-033</td><td>17.12</td><td>5.79%</td><td>\$521,095</td></tr><tr><td>AE2-051</td><td>6.79</td><td>2.30%</td><td>\$206,673</td></tr><tr><td>AE2-094</td><td>16.61</td><td>5.62%</td><td>\$505,572</td></tr><tr><td>AE2-260</td><td>12.87</td><td>4.35%</td><td>\$391,734</td></tr><tr><td>AE2-313</td><td>14.93</td><td>5.05%</td><td>\$454,436</td></tr></table>				Queue	MW contribution	Percentage of Cost	Cost(\$9,000,000)	AD2-033	5.79	1.96%	\$176,083	AD2-063	10.63	3.60%	\$323,554	AD2-169	11.33	3.83%	\$344,860	AE1-026	14.76	4.99%	\$449,262	AE1-068	51.71	17.49%	\$1,573,938	AE1-069	41.37	13.99%	\$1,259,212	AE1-148	6.95	2.35%	\$211,543	AE1-168	8.71	2.95%	\$265,113	AE1-173	62.31	21.07%	\$1,896,579	AE2-031	13.81	4.67%	\$420,346	AE2-033	17.12	5.79%	\$521,095	AE2-051	6.79	2.30%	\$206,673	AE2-094	16.61	5.62%	\$505,572	AE2-260	12.87	4.35%	\$391,734	AE2-313	14.93	5.05%	\$454,436
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7735477,8 120033	13	6CHESTF B 230.0 kV - 6BASIN 230.0 kV Ckt 1	DVP n6130: PJM Network Upgrade n6130. 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 New Ratings: Rate A: 1047 MVA Rate B: 1047 MVA Rate C: 1204 MVA The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$31,000,000)</th></tr><tr><td>AE1-069</td><td>9.09</td><td>5.47%</td><td>\$1,694,875</td></tr><tr><td>AE1-085</td><td>9.61</td><td>5.78%</td><td>\$1,791,832</td></tr><tr><td>AE1-149</td><td>13.77</td><td>8.28%</td><td>\$2,567,485</td></tr><tr><td>AE1-173</td><td>53.3</td><td>32.06%</td><td>\$9,938,049</td></tr><tr><td>AE1-248</td><td>15.36</td><td>9.24%</td><td>\$2,863,948</td></tr><tr><td>AE1-249</td><td>8.14</td><td>4.90%</td><td>\$1,517,743</td></tr><tr><td>AE2-027</td><td>12.15</td><td>7.31%</td><td>\$2,265,428</td></tr><tr><td>AE2-031</td><td>21.17</td><td>12.73%</td><td>\$3,947,251</td></tr><tr><td>AE2-033</td><td>17.96</td><td>10.80%</td><td>\$3,348,731</td></tr><tr><td>AE2-051</td><td>5.71</td><td>3.43%</td><td>\$1,064,658</td></tr><tr><td>AE2-094</td><td>22.19</td><td>13.35%</td><td>\$4,137,435</td></tr><tr><td>AE2-157</td><td>11.22</td><td>6.75%</td><td>\$2,092,025</td></tr><tr><td>AE2-250</td><td>9.6</td><td>5.77%</td><td>\$1,789,968</td></tr><tr><td>AE2-260</td><td>20.47</td><td>12.31%</td><td>\$3,816,733</td></tr><tr><td>AE2-270</td><td>14.89</td><td>8.96%</td><td>\$2,776,314</td></tr><tr><td>AE2-313</td><td>22.88</td><td>13.76%</td><td>\$4,266,089</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$31,000,000)	AE1-069	9.09	5.47%	\$1,694,875	AE1-085	9.61	5.78%	\$1,791,832	AE1-149	13.77	8.28%	\$2,567,485	AE1-173	53.3	32.06%	\$9,938,049	AE1-248	15.36	9.24%	\$2,863,948	AE1-249	8.14	4.90%	\$1,517,743	AE2-027	12.15	7.31%	\$2,265,428	AE2-031	21.17	12.73%	\$3,947,251	AE2-033	17.96	10.80%	\$3,348,731	AE2-051	5.71	3.43%	\$1,064,658	AE2-094	22.19	13.35%	\$4,137,435	AE2-157	11.22	6.75%	\$2,092,025	AE2-250	9.6	5.77%	\$1,789,968	AE2-260	20.47	12.31%	\$3,816,733	AE2-270	14.89	8.96%	\$2,776,314	AE2-313	22.88	13.76%	\$4,266,089	\$31,000,000	\$4,266,089	n6130
Queue	MW contribution	Percentage of Cost	Cost(\$31,000,000)																																																																							
AE1-069	9.09	5.47%	\$1,694,875																																																																							
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AE2-313	22.88	13.76%	\$4,266,089																																																																							
8120530,8 120529,81 20528	18	6SEDGE HILL 230.0 kV - AC1- 221 TAP 230.0 kV Ckt 1	DVP No upgrade needed on Dominion system. Need coordination with Duke. CPL An affected systems study will need to be completed with Duke/Progress to determine upgrades required on the Duke/Progress system.	\$0	\$0	N/A																																																																				
39879114	8	AE1-173 TAP 500.0 kV - 8SUFFOLK 500.0 kV Ckt 1	DVP No violation. Dominion Side Ratings: [Rate A: 3464, Rate B: 3464, Rate C: 4156]	\$0	\$0	N/A																																																																				

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-313	Upgrade Number																																																				
8119921,8119922	24	8ELMONT 500.0 kV - 8LADYSMITH 500.0 kV Ckt 1	DVP b3020 PJM baseline upgrade b3020: Rebuild 500kV Line #574 Ladysmith to Elmont - 26.2 miles long. The baseline project has a projected in-service date of 12/31/2022. Project Type : FAC New Ratings: Rate A: 4330 MVA Rate B: 4330 MVA Rate C: 4979 MVA	\$400,000,000	\$74,776,545	b3020, n6539																																																				
39879763	6	AE2-313 TAP 500.0 kV - AE2-031 TAP 500.0 kV Ckt 1	Note 1: Although Queue Project AE2-313 may not have cost responsibility for this upgrade, Queue Project AE2-313 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-313 comes into service prior to completion of the upgrade, Queue Project AE2-313 will need an interim study. n6539: PJM Network Upgrade n6539. Build new 500 kV Line from Rawlings to Morrisville Substation 110 miles. Project Type : CON Cost : \$400,000,000 Time Estimate : 60-72 Months																																																							
39879725, 39879726	4	AE2-031 TAP 500.0 kV - 8CARSON 500.0 kV Ckt 1	The cost allocation table is as follows: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$400,000,000)</th></tr><tr><td>AE2-007</td><td>111.51</td><td>7.19%</td><td>\$28,743,950</td></tr><tr><td>AE2-031</td><td>50.74</td><td>3.27%</td><td>\$13,079,258</td></tr><tr><td>AE2-033</td><td>44.27</td><td>2.85%</td><td>\$11,411,485</td></tr><tr><td>AE2-051</td><td>46.09</td><td>2.97%</td><td>\$11,880,627</td></tr><tr><td>AE2-094</td><td>103.22</td><td>6.65%</td><td>\$26,607,036</td></tr><tr><td>AE2-122</td><td>258.98</td><td>16.69%</td><td>\$66,757,316</td></tr><tr><td>AE2-123</td><td>258.98</td><td>16.69%</td><td>\$66,757,316</td></tr><tr><td>AE2-124</td><td>258.90</td><td>16.68%</td><td>\$66,736,694</td></tr><tr><td>AE2-147</td><td>46.83</td><td>3.02%</td><td>\$12,071,377</td></tr><tr><td>AE2-156</td><td>32.48</td><td>2.09%</td><td>\$8,372,375</td></tr><tr><td>AE2-270</td><td>49.68</td><td>3.20%</td><td>\$12,806,022</td></tr><tr><td>AE2-313</td><td>290.09</td><td>18.69%</td><td>\$74,776,545</td></tr></table>				Queue	MW contribution	Percentage of Cost	Cost(\$400,000,000)	AE2-007	111.51	7.19%	\$28,743,950	AE2-031	50.74	3.27%	\$13,079,258	AE2-033	44.27	2.85%	\$11,411,485	AE2-051	46.09	2.97%	\$11,880,627	AE2-094	103.22	6.65%	\$26,607,036	AE2-122	258.98	16.69%	\$66,757,316	AE2-123	258.98	16.69%	\$66,757,316	AE2-124	258.90	16.68%	\$66,736,694	AE2-147	46.83	3.02%	\$12,071,377	AE2-156	32.48	2.09%	\$8,372,375	AE2-270	49.68	3.20%	\$12,806,022	AE2-313	290.09	18.69%	\$74,776,545
Queue	MW contribution	Percentage of Cost	Cost(\$400,000,000)																																																							
AE2-007	111.51	7.19%	\$28,743,950																																																							
AE2-031	50.74	3.27%	\$13,079,258																																																							
AE2-033	44.27	2.85%	\$11,411,485																																																							
AE2-051	46.09	2.97%	\$11,880,627																																																							
AE2-094	103.22	6.65%	\$26,607,036																																																							
AE2-122	258.98	16.69%	\$66,757,316																																																							
AE2-123	258.98	16.69%	\$66,757,316																																																							
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AE2-313	290.09	18.69%	\$74,776,545																																																							
39879798	3	AE1-068 TAP 500.0 kV - AE2-094 TAP 500.0 kV Ckt 1																																																								
			TOTAL COST	\$1,222,739,000	\$221,577,222																																																					

14 Flow Gate Details

The following indices 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.

14.1 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
7735676	314299	6HARROWG	DVP	314263	6TYLER1	DVP	1	DVP_P4-2: 562T563	breaker	541.0	129.95	133.58	AC	24.1

Bus #	Bus	MW Impact
314539	3UNCAMP	0.6985
314541	3WATKINS	0.2052
314554	3BTLEBRO	0.2619
314557	3BETHEL	0.2536
314572	3EMPORIA	0.2046
314574	6EVERETS	1.2021
314578	3HORNRTN	1.2548
314582	3KELFORD	1.1064
314603	3SCOT NK	1.0807
314617	3TUNIS	0.2614
314620	6CASHIE	0.2196
314623	3WITAKRS	0.4490
315131	1EDGECSA (Deactivation : 04/22/19)	3.0625
315132	1EDGECSB (Deactivation : 04/22/19)	3.0625
315150	1BUGGS 1 (Deactivation : 04/09/18)	3.2639
315151	1BUGGS 2 (Deactivation : 04/09/18)	3.2639
900672	V4-068 E	0.0947
907092	X1-038 E	1.7463
916302	Z1-086 E	3.2721
917332	Z2-043 E	0.3146
917342	Z2-044 E	0.1924
917512	Z2-088 E OP1	1.1744
918492	AA1-063AE OP	1.4072
918512	AA1-065 E OP	1.2636
918532	AA1-067 E	0.2121
918562	AA1-072 E	0.0524
919692	AA2-053 E	1.3718
919702	AA2-057 E	1.1998
920042	AA2-088 E OP	3.3617
920592	AA2-165 E	0.1582
920672	AA2-174 E	0.1585
923801	AB2-015 C O1	2.5355
923802	AB2-015 E O1	2.0792
923851	AB2-025 C	0.2703
923852	AB2-025 E	0.9169
923911	AB2-031 C O1	1.0100
923912	AB2-031 E O1	0.4974
923991	AB2-040 C O1	3.3163
923992	AB2-040 E O1	2.7133
924021	AB2-043 C O1	0.8945
924022	AB2-043 E O1	0.7998

Bus #	Bus	MW Impact
924151	AB2-059 C O1	3.4631
924152	AB2-059 E O1	1.7840
924161	AB2-060 C O1	2.5520
924162	AB2-060 E O1	1.2009
924301	AB2-077 C O1	0.5679
924302	AB2-077 E O1	0.3786
924311	AB2-078 C O1	0.5679
924312	AB2-078 E O1	0.3786
924321	AB2-079 C O1	0.5679
924322	AB2-079 E O1	0.3786
924501	AB2-099 C	0.1803
924502	AB2-099 E	0.0773
924511	AB2-100 C	7.6682
924512	AB2-100 E	3.7769
925061	AB2-161 C O1	2.5760
925062	AB2-161 E O1	4.2030
925121	AB2-169 C	1.7165
925122	AB2-169 E	1.5405
925171	AB2-174 C O1	3.2698
925172	AB2-174 E O1	2.9584
925591	AC1-034 C	2.2431
925592	AC1-034 E	1.6922
925781	AC1-054 C O1	2.3731
925782	AC1-054 E O1	1.0932
926071	AC1-086 C	8.9216
926072	AC1-086 E	4.0605
926201	AC1-098 C	2.0694
926202	AC1-098 E	1.2328
926211	AC1-099 C	0.6935
926212	AC1-099 E	0.4073
926271	AC1-105 C O1	1.4917
926272	AC1-105 E O1	0.7426
927021	AC1-189 C	2.5818
927022	AC1-189 E	1.2861
927141	AC1-208 C	3.1517
927142	AC1-208 E	1.3995
930401	AB1-081 C O1	2.9383
930402	AB1-081 E O1	1.2593
930861	AB1-132 C O1	6.0583
930862	AB1-132 E O1	2.5964
931231	AB1-173 C	1.0175
931232	AB1-173 E	0.4748
931241	AB1-173AC	1.0175
931242	AB1-173AE	0.4748
932581	AC2-078 C O1	4.5792
932582	AC2-078 E O1	7.4712
932591	AC2-079 C O1	2.6151
932592	AC2-079 E O1	4.2667
932631	AC2-084 C	2.9500
932632	AC2-084 E	1.4530
934201	AD1-047 C	3.6177
934202	AD1-047 E	2.4118

Bus #	Bus	MW Impact
934331	AD1-057 C O1	3.7542
934332	AD1-057 E O1	2.0026
934571	AD1-082 C	5.8706
934572	AD1-082 E	3.3488
934611	AD1-087 C O1	2.3089
934612	AD1-087 E O1	1.0852
935171	AD1-152 C O1	2.2946
935172	AD1-152 E O1	1.5297
935211	AD1-156 C	4.7059
935212	AD1-156 E	3.1373
936361	AD2-046 C O1	2.7086
936362	AD2-046 E O1	1.2456
936401	AD2-051 C O1	2.6662
936402	AD2-051 E O1	1.1448
936481	AD2-063 C O1	4.0193
936482	AD2-063 E O1	2.6795
936661	AD2-085 C	1.6081
936662	AD2-085 E	2.6237
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.2824
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.5216
936711	AD2-090 C O1	2.1973
936712	AD2-090 E O1	1.4649
937481	AD2-202 C O1	0.6119
937482	AD2-202 E O1	0.3442
937571	AD2-169 C	4.3605
937572	AD2-169 E	2.9070
938171	AE1-026 C1 O	7.2848
938172	AE1-026 C2 O	1.1197
938173	AE1-026 E O1	2.1341
938221	AE1-035 C	0.6414
938222	AE1-035 E	0.3159
938491	AE1-068 C O1	20.8788
938492	AE1-068 E O1	11.5317
938501	AE1-069 C O1	16.4969
938502	AE1-069 E O1	9.4315
938631	AE1-085 C O1	9.6400
938632	AE1-085 E O1	4.8200
938661	AE1-088	1.0356
938771	AE1-103 C O1	1.0353
938772	AE1-103 E O1	1.4297
939181	AE1-148 C O1	2.6622
939182	AE1-148 E O1	1.7748
939191	AE1-149 C O1	12.8436
939192	AE1-149 E O1	8.5624
939411	AE1-173 C	24.6269
939412	AE1-173 E	16.4179
940061	AE1-248 C O1	12.2022
940062	AE1-248 E O1	8.1348
940471	AE2-031 C	11.3691
940472	AE2-031 E	7.5794
940481	AE2-033 C	12.7724
940482	AE2-033 E	8.6106

Bus #	Bus	MW Impact
940521	AE2-037 C	2.3029
940522	AE2-037 E	1.1132
940541	AE2-040 O1	2.6088
940571	AE2-044 C	1.4692
940572	AE2-044 E	0.6296
940651	AE2-052	4.2812
940661	AE2-053 O1	0.9860
941031	AE2-094 C	13.6880
941032	AE2-094 E	6.1306
941101	AE2-104 C O1	0.8763
941102	AE2-104 E O1	1.3922
941531	AE2-150	0.1928
941541	AE2-151 C	0.3307
941542	AE2-151 E	0.1781
941601	AE2-157 C	9.4212
941602	AE2-157 E	6.2808
942341	AE2-247 C	0.6970
942342	AE2-247 E	0.9625
942451	AE2-258	0.6673
942471	AE2-260 C O1	9.7710
942472	AE2-260 E O1	13.8590
942931	AE2-313 C	12.2907
942932	AE2-313 E	8.1938
943171	AE2-346 C	0.4328
943172	AE2-346 E	0.1855
LGEE	LGEE	0.6512
CIN	CIN	2.2491
CPL	CPL	2.9093
IPL	IPL	1.4096
G-007	G-007	0.7885
CBM-W2	CBM-W2	32.4461
CBM-W1	CBM-W1	4.9620
MECS	MECS	2.0755
WEC	WEC	0.6012
O-066	O-066	5.0071
CBM-S2	CBM-S2	5.6678
CARR	CARR	0.2301
CBM-S1	CBM-S1	4.9846
AA2-074	AA2-074	1.9791
MEC	MEC	5.0081
RENSSELAER	RENSSELAER	0.1824

14.2 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
7735674	314331	6POE	DVP	314299	6HARROWG	DVP	1	DVP_P4-2: 562T563	breaker	541.0	129.88	133.52	AC	24.1

Bus #	Bus	MW Impact
314539	3UNCAMP	0.6985
314541	3WATKINS	0.2052
314554	3BTLEBRO	0.2619
314557	3BETHEL	0.2536
314572	3EMPORIA	0.2046
314574	6EVERETS	1.2021
314578	3HORNRTN	1.2548
314582	3KELFORD	1.1064
314603	3SCOT NK	1.0807
314617	3TUNIS	0.2614
314620	6CASHIE	0.2196
314623	3WITAKRS	0.4490
315131	1EDGECSA (Deactivation : 04/22/19)	3.0625
315132	1EDGECSB (Deactivation : 04/22/19)	3.0625
315150	1BUGGS 1 (Deactivation : 04/09/18)	3.2639
315151	1BUGGS 2 (Deactivation : 04/09/18)	3.2639
900672	V4-068 E	0.0947
907092	X1-038 E	1.7463
916302	Z1-086 E	3.2721
917332	Z2-043 E	0.3146
917342	Z2-044 E	0.1924
917512	Z2-088 E OP1	1.1744
918492	AA1-063AE OP	1.4072
918512	AA1-065 E OP	1.2636
918532	AA1-067 E	0.2121
918562	AA1-072 E	0.0524
919692	AA2-053 E	1.3718
919702	AA2-057 E	1.1998
920042	AA2-088 E OP	3.3617
920592	AA2-165 E	0.1582
920672	AA2-174 E	0.1585
923801	AB2-015 C O1	2.5355
923802	AB2-015 E O1	2.0792
923851	AB2-025 C	0.2703
923852	AB2-025 E	0.9169
923911	AB2-031 C O1	1.0100
923912	AB2-031 E O1	0.4974
923991	AB2-040 C O1	3.3163
923992	AB2-040 E O1	2.7133
924021	AB2-043 C O1	0.8945
924022	AB2-043 E O1	0.7998

Bus #	Bus	MW Impact
924151	AB2-059 C O1	3.4631
924152	AB2-059 E O1	1.7840
924161	AB2-060 C O1	2.5520
924162	AB2-060 E O1	1.2009
924301	AB2-077 C O1	0.5679
924302	AB2-077 E O1	0.3786
924311	AB2-078 C O1	0.5679
924312	AB2-078 E O1	0.3786
924321	AB2-079 C O1	0.5679
924322	AB2-079 E O1	0.3786
924501	AB2-099 C	0.1803
924502	AB2-099 E	0.0773
924511	AB2-100 C	7.6682
924512	AB2-100 E	3.7769
925061	AB2-161 C O1	2.5760
925062	AB2-161 E O1	4.2030
925121	AB2-169 C	1.7165
925122	AB2-169 E	1.5405
925171	AB2-174 C O1	3.2698
925172	AB2-174 E O1	2.9584
925591	AC1-034 C	2.2431
925592	AC1-034 E	1.6922
925781	AC1-054 C O1	2.3731
925782	AC1-054 E O1	1.0932
926071	AC1-086 C	8.9216
926072	AC1-086 E	4.0605
926201	AC1-098 C	2.0694
926202	AC1-098 E	1.2328
926211	AC1-099 C	0.6935
926212	AC1-099 E	0.4073
926271	AC1-105 C O1	1.4917
926272	AC1-105 E O1	0.7426
927021	AC1-189 C	2.5818
927022	AC1-189 E	1.2861
927141	AC1-208 C	3.1517
927142	AC1-208 E	1.3995
930401	AB1-081 C O1	2.9383
930402	AB1-081 E O1	1.2593
930861	AB1-132 C O1	6.0583
930862	AB1-132 E O1	2.5964
931231	AB1-173 C	1.0175
931232	AB1-173 E	0.4748
931241	AB1-173AC	1.0175
931242	AB1-173AE	0.4748
932581	AC2-078 C O1	4.5792
932582	AC2-078 E O1	7.4712
932591	AC2-079 C O1	2.6151
932592	AC2-079 E O1	4.2667
932631	AC2-084 C	2.9500
932632	AC2-084 E	1.4530
934201	AD1-047 C	3.6177
934202	AD1-047 E	2.4118

Bus #	Bus	MW Impact
934331	AD1-057 C O1	3.7542
934332	AD1-057 E O1	2.0026
934571	AD1-082 C	5.8706
934572	AD1-082 E	3.3488
934611	AD1-087 C O1	2.3089
934612	AD1-087 E O1	1.0852
935171	AD1-152 C O1	2.2946
935172	AD1-152 E O1	1.5297
935211	AD1-156 C	4.7059
935212	AD1-156 E	3.1373
936361	AD2-046 C O1	2.7086
936362	AD2-046 E O1	1.2456
936401	AD2-051 C O1	2.6662
936402	AD2-051 E O1	1.1448
936481	AD2-063 C O1	4.0193
936482	AD2-063 E O1	2.6795
936661	AD2-085 C	1.6081
936662	AD2-085 E	2.6237
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.2824
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.5216
936711	AD2-090 C O1	2.1973
936712	AD2-090 E O1	1.4649
937481	AD2-202 C O1	0.6119
937482	AD2-202 E O1	0.3442
937571	AD2-169 C	4.3605
937572	AD2-169 E	2.9070
938171	AE1-026 C1 O	7.2848
938172	AE1-026 C2 O	1.1197
938173	AE1-026 E O1	2.1341
938221	AE1-035 C	0.6414
938222	AE1-035 E	0.3159
938491	AE1-068 C O1	20.8788
938492	AE1-068 E O1	11.5317
938501	AE1-069 C O1	16.4969
938502	AE1-069 E O1	9.4315
938631	AE1-085 C O1	9.6400
938632	AE1-085 E O1	4.8200
938661	AE1-088	1.0356
938771	AE1-103 C O1	1.0353
938772	AE1-103 E O1	1.4297
939181	AE1-148 C O1	2.6622
939182	AE1-148 E O1	1.7748
939191	AE1-149 C O1	12.8436
939192	AE1-149 E O1	8.5624
939411	AE1-173 C	24.6269
939412	AE1-173 E	16.4179
940061	AE1-248 C O1	12.2022
940062	AE1-248 E O1	8.1348
940471	AE2-031 C	11.3691
940472	AE2-031 E	7.5794
940481	AE2-033 C	12.7724
940482	AE2-033 E	8.6106

Bus #	Bus	MW Impact
940521	AE2-037 C	2.3029
940522	AE2-037 E	1.1132
940541	AE2-040 O1	2.6088
940571	AE2-044 C	1.4692
940572	AE2-044 E	0.6296
940651	AE2-052	4.2812
940661	AE2-053 O1	0.9860
941031	AE2-094 C	13.6880
941032	AE2-094 E	6.1306
941101	AE2-104 C O1	0.8763
941102	AE2-104 E O1	1.3922
941531	AE2-150	0.1928
941541	AE2-151 C	0.3307
941542	AE2-151 E	0.1781
941601	AE2-157 C	9.4212
941602	AE2-157 E	6.2808
942341	AE2-247 C	0.6970
942342	AE2-247 E	0.9625
942451	AE2-258	0.6673
942471	AE2-260 C O1	9.7710
942472	AE2-260 E O1	13.8590
942931	AE2-313 C	12.2907
942932	AE2-313 E	8.1938
943171	AE2-346 C	0.4328
943172	AE2-346 E	0.1855
LGEE	LGEE	0.6512
CIN	CIN	2.2491
CPLE	CPLE	2.9093
IPL	IPL	1.4096
G-007	G-007	0.7885
CBM-W2	CBM-W2	32.4461
CBM-W1	CBM-W1	4.9620
MECS	MECS	2.0755
WEC	WEC	0.6012
O-066	O-066	5.0071
CBM-S2	CBM-S2	5.6678
CARR	CARR	0.2301
CBM-S1	CBM-S1	4.9846
AA2-074	AA2-074	1.9791
MEC	MEC	5.0081
RENSSELAER	RENSSELAER	0.1824

14.3 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
39879798	938490	AE1-068 TAP	DVP	941030	AE2-094 TAP	DVP	1	DVP_P1-2: LN 511_AE2-031A	single	4070.2	98.67	101.38	AC	106.46

Bus #	Bus	MW Impact
247284	05LEESVG	0.7458
314429	3JTRSVLE	0.2874
315102	1BRUNSWICKG1	21.2640
315103	1BRUNSWICKG2	21.2640
315104	1BRUNSWICKG3	21.2640
315105	1BRUNSWICKS1	44.1758
315150	1BUGGS 1 (Deativation : 04/09/18)	12.1971
315151	1BUGGS 2 (Deativation : 04/09/18)	12.1971
315153	1CLOVER1	24.2329
315154	1CLOVER2	23.9156
315156	1HALLBR1	1.0193
315158	1KERR 1	0.2449
315159	1KERR 2	0.9985
315160	1KERR 3	0.9834
315161	1KERR 4	0.9834
315162	1KERR 5	0.9834
315163	1KERR 6	0.9834
315164	1KERR 7	0.9834
315266	1PLYWOOD A	1.4953
916301	Z1-086 C	133.5711
924021	AB2-043 C O1	2.9405
924151	AB2-059 C O1	7.1306
924161	AB2-060 C O1	8.4663
924301	AB2-077 C O1	1.8961
924311	AB2-078 C O1	1.8961
924321	AB2-079 C O1	1.8961
925591	AC1-034 C	4.6187
925611	AC1-036 C	0.8850
925661	AC1-042 C	1.9029
925781	AC1-054 C O1	4.9350
925831	AC1-062	0.0390
925991	AC1-075 C	7.7768
926021	AC1-080 C	2.5990
926051	AC1-083 C O1	5.0092
926271	AC1-105 C O1	8.3780
926461	AC1-117 C	0.9374
926641	AC1-145 C	2.2654
926661	AC1-147 C	-1.8085
927251	AC1-221 C	3.8129
927261	AC1-222 C	5.8432

Bus #	Bus	MW Impact
930401	AB1-081 C O1	6.0502
932761	AC2-100 C	8.7750
933731	AC2-196 C	-1.4127
933941	AD1-017 C	1.0018
934311	AD1-055 C	4.0570
934341	AD1-058 C	9.5585
934611	AD1-087 C O1	17.7068
934621	AD1-088 C	23.1855
934991	AD1-131 C	3.1339
935111	AD1-144 C	-1.2800
935171	AD1-152 C O1	17.5968
935211	AD1-156 C	-1.5677
935221	AD1-157 C	1.3942
935231	AD1-160 C	1.0224
936161	AD2-022 C O1	12.8934
936171	AD2-023 C O1	7.5212
936261	AD2-033 C	12.1196
936331	AD2-043 C (Withdrawn : 12/20/2019)	7.5975
936361	AD2-046 C O1	7.9054
936481	AD2-063 C O1	13.9914
937481	AD2-202 C O1	4.6925
938371	AE1-056 C	6.0105
938491	AE1-068 C O1	205.8928
938501	AE1-069 C O1	162.6815
938741	AE1-100 C O1	5.3653
938931	AE1-121 O1	61.8481
939181	AE1-148 C O1	7.8262
939371	AE1-168 C (Withdrawn : 01/08/2020)	13.9617
939941	AE1-230 C1	0.8585
940081	AE1-250 C	13.5594
940241	AE2-006	0.4503
940471	AE2-031 C	98.3274
940571	AE2-044 C	3.0251
940601	AE2-047 C O1	4.4236
940661	AE2-053 O1	2.8986
941431	AE2-140 C O1	16.2155
941671	AE2-166 C	6.6604
941791	AE2-182 C	3.7642
941801	AE2-185 C	4.2923
941821	AE2-187 C	4.2923
942321	AE2-245	0.8523
942451	AE2-258	2.1937
942461	AE2-259 C O1	9.2796
942671	AE2-283 C	4.7215
942751	AE2-291 C	11.0521
942761	AE2-292 C O1	13.7610
942931	AE2-313 C	106.4648
LGEE	LGEE	3.4357
CIN	CIN	11.8556
CPL	CPL	14.4286
IPL	IPL	7.4261
CBM-W2	CBM-W2	171.2144

Bus #	Bus	MW Impact
CBM-W1	CBM-W1	26.1071
MECS	MECS	10.8710
AB2-013	AB2-013	0.0000
WEC	WEC	3.1654
CBM-S2	CBM-S2	29.3150
CARR	CARR	1.2576
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	26.3267
AA2-074	AA2-074	9.8154
MEC	MEC	26.4079
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	0.9961
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

14.4 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
39879725	940470	AE2-031 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	single	4070.2	102.46	105.6	AC	125.46

Bus #	Bus	MW Impact
246846	05SMG4	2.7595
247284	05LEESVG	0.7946
314429	3JTRSVLE	0.3192
315102	1BRUNSWICKG1	21.2550
315103	1BRUNSWICKG2	21.2550
315104	1BRUNSWICKG3	21.2550
315105	1BRUNSWICKS1	44.1571
315150	1BUGGS 1 (Deactivation : 04/09/18)	13.2722
315151	1BUGGS 2 (Deactivation : 04/09/18)	13.2722
315153	1CLOVER1	26.9551
315154	1CLOVER2	26.6021
315156	1HALLBR1	1.0963
315158	1KERR 1	0.2641
315159	1KERR 2	1.0767
315160	1KERR 3	1.0605
315161	1KERR 4	1.0605
315162	1KERR 5	1.0605
315163	1KERR 6	1.0605
315164	1KERR 7	1.0605
315266	1PLYWOOD A	1.6319
916301	Z1-086 C	127.8376
924021	AB2-043 C O1	3.2160
924161	AB2-060 C O1	9.2638
924301	AB2-077 C O1	2.0724
924311	AB2-078 C O1	2.0724
924321	AB2-079 C O1	2.0724
925611	AC1-036 C	0.9758
925661	AC1-042 C	2.0414
925781	AC1-054 C O1	5.3262
925831	AC1-062	0.0433
925991	AC1-075 C	8.4547
926021	AC1-080 C	2.8256
926051	AC1-083 C O1	5.2660
926271	AC1-105 C O1	9.1513
926461	AC1-117 C	0.9788
926641	AC1-145 C	2.4303
926661	AC1-147 C	-1.8785
927251	AC1-221 C	4.0420
927261	AC1-222 C	6.3763
932761	AC2-100 C	9.3022

Bus #	Bus	MW Impact
933731	AC2-196 C	-1.4676
933941	AD1-017 C	1.0532
934311	AD1-055 C	4.4272
934341	AD1-058 C	10.1327
934611	AD1-087 C O1	19.5485
934621	AD1-088 C	25.8499
934991	AD1-131 C	3.3222
935111	AD1-144 C	-1.3294
935171	AD1-152 C O1	19.4270
935211	AD1-156 C	-1.6257
935221	AD1-157 C	1.5514
935231	AD1-160 C	1.1377
936161	AD2-022 C O1	13.4424
936171	AD2-023 C O1	7.8414
936261	AD2-033 C	13.3411
936331	AD2-043 C (Withdrawn : 12/20/2019)	8.2896
936361	AD2-046 C O1	8.5444
936481	AD2-063 C O1	15.3495
937481	AD2-202 C O1	5.1805
938371	AE1-056 C	6.6883
938491	AE1-068 C O1	190.7444
938501	AE1-069 C O1	150.7124
938741	AE1-100 C O1	5.6008
938931	AE1-121 O1	64.5626
939181	AE1-148 C O1	8.4650
939371	AE1-168 C (Withdrawn : 01/08/2020)	15.4620
939941	AE1-230 C1	0.9210
940081	AE1-250 C	14.2083
940241	AE2-006	0.4965
940471	AE2-031 C	116.3207
940601	AE2-047 C O1	4.6170
940661	AE2-053 O1	3.1352
941031	AE2-094 C	122.6935
941431	AE2-140 C O1	16.9250
941671	AE2-166 C	6.9547
941791	AE2-182 C	4.1968
941801	AE2-185 C	4.6048
941821	AE2-187 C	4.6048
942321	AE2-245	0.8899
942451	AE2-258	2.3993
942461	AE2-259 C O1	10.3932
942671	AE2-283 C	5.0652
942751	AE2-291 C	11.9879
942761	AE2-292 C O1	14.9261
942931	AE2-313 C	125.4593
LGEE	LGEE	3.5727
CIN	CIN	12.3260
CPL	CPL	14.8368
IPL	IPL	7.7222
CBM-W2	CBM-W2	177.0622
CBM-W1	CBM-W1	27.1435
MECS	MECS	11.3680

Bus #	Bus	MW Impact
AB2-013	AB2-013	0.0000
WEC	WEC	3.2898
CBM-S2	CBM-S2	30.1481
CARR	CARR	1.2844
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	27.2058
AA2-074	AA2-074	10.0930
MEC	MEC	27.3827
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	1.0176
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

14.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
39879750	941030	AE2-094 TAP	DVP	314902	8CARSON	DVP	1	DVP_P1-2: LN 511_AE2-031A	single	4070.2	102.08	104.74	AC	106.46

Bus #	Bus	MW Impact
247284	05LEESVG	0.7458
314429	3JTRSVLE	0.2874
315102	1BRUNSWICKG1	21.2640
315103	1BRUNSWICKG2	21.2640
315104	1BRUNSWICKG3	21.2640
315105	1BRUNSWICKS1	44.1758
315150	1BUGGS 1 (Deactivation : 04/09/18)	12.1971
315151	1BUGGS 2 (Deactivation : 04/09/18)	12.1971
315153	1CLOVER1	24.2329
315154	1CLOVER2	23.9156
315156	1HALLBR1	1.0193
315158	1KERR 1	0.2449
315159	1KERR 2	0.9985
315160	1KERR 3	0.9834
315161	1KERR 4	0.9834
315162	1KERR 5	0.9834
315163	1KERR 6	0.9834
315164	1KERR 7	0.9834
315266	1PLYWOOD A	1.4953
916301	Z1-086 C	133.5711
924021	AB2-043 C O1	2.9405
924151	AB2-059 C O1	7.1306
924161	AB2-060 C O1	8.4663
924301	AB2-077 C O1	1.8961
924311	AB2-078 C O1	1.8961
924321	AB2-079 C O1	1.8961
925591	AC1-034 C	4.6187
925611	AC1-036 C	0.8850
925661	AC1-042 C	1.9029
925781	AC1-054 C O1	4.9350
925831	AC1-062	0.0390
925991	AC1-075 C	7.7768
926021	AC1-080 C	2.5990
926051	AC1-083 C O1	5.0092
926271	AC1-105 C O1	8.3780
926461	AC1-117 C	0.9374
926641	AC1-145 C	2.2654
926661	AC1-147 C	-1.8085
927251	AC1-221 C	3.8129
927261	AC1-222 C	5.8432

Bus #	Bus	MW Impact
930401	AB1-081 C O1	6.0502
932761	AC2-100 C	8.7750
933731	AC2-196 C	-1.4127
933941	AD1-017 C	1.0018
934311	AD1-055 C	4.0570
934341	AD1-058 C	9.5585
934611	AD1-087 C O1	17.7068
934621	AD1-088 C	23.1855
934991	AD1-131 C	3.1339
935111	AD1-144 C	-1.2800
935171	AD1-152 C O1	17.5968
935211	AD1-156 C	-1.5677
935221	AD1-157 C	1.3942
935231	AD1-160 C	1.0224
936161	AD2-022 C O1	12.8934
936171	AD2-023 C O1	7.5212
936261	AD2-033 C	12.1196
936331	AD2-043 C (Withdrawn : 12/20/2019)	7.5975
936361	AD2-046 C O1	7.9054
936481	AD2-063 C O1	13.9914
937481	AD2-202 C O1	4.6925
938371	AE1-056 C	6.0105
938491	AE1-068 C O1	205.8928
938501	AE1-069 C O1	162.6815
938741	AE1-100 C O1	5.3653
938931	AE1-121 O1	61.8481
939181	AE1-148 C O1	7.8262
939371	AE1-168 C (Withdrawn : 01/08/2020)	13.9617
939941	AE1-230 C1	0.8585
940081	AE1-250 C	13.5594
940241	AE2-006	0.4503
940471	AE2-031 C	98.3274
940571	AE2-044 C	3.0251
940601	AE2-047 C O1	4.4236
940661	AE2-053 O1	2.8986
941031	AE2-094 C	140.3925
941431	AE2-140 C O1	16.2155
941671	AE2-166 C	6.6604
941791	AE2-182 C	3.7642
941801	AE2-185 C	4.2923
941821	AE2-187 C	4.2923
942321	AE2-245	0.8523
942451	AE2-258	2.1937
942461	AE2-259 C O1	9.2796
942671	AE2-283 C	4.7215
942751	AE2-291 C	11.0521
942761	AE2-292 C O1	13.7610
942931	AE2-313 C	106.4648
LGEE	LGEE	3.4357
CIN	CIN	11.8556
CPL	CPL	14.4286
IPL	IPL	7.4261

Bus #	Bus	MW Impact
CBM-W2	CBM-W2	171.2144
CBM-W1	CBM-W1	26.1071
MECS	MECS	10.8710
AB2-013	AB2-013	0.0000
WEC	WEC	3.1654
CBM-S2	CBM-S2	29.3150
CARR	CARR	1.2576
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	26.3267
AA2-074	AA2-074	9.8154
MEC	MEC	26.4079
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	0.9961
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

14.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
39879763	942930	AE2-313 TAP	DVP	940470	AE2-031 TAP	DVP	1	DVP_P1-2: LN 585-A_AE2-094A	single	4070.2	99.62	102.79	AC	125.46

Bus #	Bus	MW Impact
246846	05SMG4	2.7595
247284	05LEESVG	0.7946
314429	3JTRSVLE	0.3192
315102	1BRUNSWICKG1	21.2550
315103	1BRUNSWICKG2	21.2550
315104	1BRUNSWICKG3	21.2550
315105	1BRUNSWICKS1	44.1571
315150	1BUGGS 1 (Deactivation : 04/09/18)	13.2722
315151	1BUGGS 2 (Deactivation : 04/09/18)	13.2722
315153	1CLOVER1	26.9551
315154	1CLOVER2	26.6021
315156	1HALLBR1	1.0963
315158	1KERR 1	0.2641
315159	1KERR 2	1.0767
315160	1KERR 3	1.0605
315161	1KERR 4	1.0605
315162	1KERR 5	1.0605
315163	1KERR 6	1.0605
315164	1KERR 7	1.0605
315266	1PLYWOOD A	1.6319
916301	Z1-086 C	127.8376
924021	AB2-043 C O1	3.2160
924161	AB2-060 C O1	9.2638
924301	AB2-077 C O1	2.0724
924311	AB2-078 C O1	2.0724
924321	AB2-079 C O1	2.0724
925611	AC1-036 C	0.9758
925661	AC1-042 C	2.0414
925781	AC1-054 C O1	5.3262
925831	AC1-062	0.0433
925991	AC1-075 C	8.4547
926021	AC1-080 C	2.8256
926051	AC1-083 C O1	5.2660
926271	AC1-105 C O1	9.1513
926461	AC1-117 C	0.9788
926641	AC1-145 C	2.4303
926661	AC1-147 C	-1.8785
927251	AC1-221 C	4.0420
927261	AC1-222 C	6.3763
932761	AC2-100 C	9.3022

Bus #	Bus	MW Impact
933731	AC2-196 C	-1.4676
933941	AD1-017 C	1.0532
934311	AD1-055 C	4.4272
934341	AD1-058 C	10.1327
934611	AD1-087 C O1	19.5485
934621	AD1-088 C	25.8499
934991	AD1-131 C	3.3222
935111	AD1-144 C	-1.3294
935171	AD1-152 C O1	19.4270
935211	AD1-156 C	-1.6257
935221	AD1-157 C	1.5514
935231	AD1-160 C	1.1377
936161	AD2-022 C O1	13.4424
936171	AD2-023 C O1	7.8414
936261	AD2-033 C	13.3411
936331	AD2-043 C (Withdrawn : 12/20/2019)	8.2896
936361	AD2-046 C O1	8.5444
936481	AD2-063 C O1	15.3495
937481	AD2-202 C O1	5.1805
938371	AE1-056 C	6.6883
938491	AE1-068 C O1	190.7444
938501	AE1-069 C O1	150.7124
938741	AE1-100 C O1	5.6008
938931	AE1-121 O1	64.5626
939181	AE1-148 C O1	8.4650
939371	AE1-168 C (Withdrawn : 01/08/2020)	15.4620
939941	AE1-230 C1	0.9210
940081	AE1-250 C	14.2083
940241	AE2-006	0.4965
940601	AE2-047 C O1	4.6170
940661	AE2-053 O1	3.1352
941031	AE2-094 C	122.6935
941431	AE2-140 C O1	16.9250
941671	AE2-166 C	6.9547
941791	AE2-182 C	4.1968
941801	AE2-185 C	4.6048
941821	AE2-187 C	4.6048
942321	AE2-245	0.8899
942451	AE2-258	2.3993
942461	AE2-259 C O1	10.3932
942671	AE2-283 C	5.0652
942751	AE2-291 C	11.9879
942761	AE2-292 C O1	14.9261
942931	AE2-313 C	125.4593
LGEE	LGEE	3.5727
CIN	CIN	12.3260
CPLE	CPLE	14.8368
IPL	IPL	7.7222
CBM-W2	CBM-W2	177.0622
CBM-W1	CBM-W1	27.1435
MECS	MECS	11.3680
AB2-013	AB2-013	0.0000

Bus #	Bus	MW Impact
WEC	WEC	3.2898
CBM-S2	CBM-S2	30.1481
CARR	CARR	1.2844
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	27.2058
AA2-074	AA2-074	10.0930
MEC	MEC	27.3827
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	1.0176
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

14.7 Index 7

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
39879108	314282	6CARSON	DVP	314331	6POE	DVP	1	DVP_P4-2: 562T563	breaker	830.0	99.63	102.55	AC	28.82

Bus #	Bus	MW Impact
314554	3BTLEBRO	0.2910
314557	3BETHEL	0.2753
314572	3EMPORIA	0.2898
314574	6EVERETS	1.2296
314578	3HORNRTN	1.3665
314582	3KELFORD	1.0971
314603	3SCOT NK	1.1145
314623	3WITAKRS	0.4943
314704	3LAWRENC	0.1660
315073	1STONECA	-2.5241
315131	1EDGECSA (Deactivation : 04/22/19)	3.4254
315132	1EDGECSB (Deactivation : 04/22/19)	3.4254
315150	1BUGGS 1 (Deactivation : 04/09/18)	3.7917
315151	1BUGGS 2 (Deactivation : 04/09/18)	3.7917
916302	Z1-086 E	3.9084
917332	Z2-043 E	0.3120
917342	Z2-044 E	0.2118
917512	Z2-088 E OP1	1.2395
918492	AA1-063AE OP	1.4666
918532	AA1-067 E	0.2170
918562	AA1-072 E	0.0520
919692	AA2-053 E	1.4610
919702	AA2-057 E	1.3086
920592	AA2-165 E	0.1725
920672	AA2-174 E	0.1688
923851	AB2-025 C	0.3506
923852	AB2-025 E	1.1895
923911	AB2-031 C O1	1.3897
923912	AB2-031 E O1	0.6845
923991	AB2-040 C O1	4.5632
923992	AB2-040 E O1	3.7336
924021	AB2-043 C O1	1.0489
924022	AB2-043 E O1	0.9379
924151	AB2-059 C O1	3.8541
924152	AB2-059 E O1	1.9854
924161	AB2-060 C O1	2.9931
924162	AB2-060 E O1	1.4085
924301	AB2-077 C O1	0.6652
924302	AB2-077 E O1	0.4435
924311	AB2-078 C O1	0.6652
924312	AB2-078 E O1	0.4435

Bus #	Bus	MW Impact
924321	AB2-079 C O1	0.6652
924322	AB2-079 E O1	0.4435
924511	AB2-100 C	9.5462
924512	AB2-100 E	4.7018
925171	AB2-174 C O1	4.5528
925172	AB2-174 E O1	4.1192
925591	AC1-034 C	2.4964
925592	AC1-034 E	1.8832
925611	AC1-036 C	0.2716
925612	AC1-036 E	0.2454
925781	AC1-054 C O1	2.6791
925782	AC1-054 E O1	1.2342
926071	AC1-086 C	10.3557
926072	AC1-086 E	4.7132
926201	AC1-098 C	2.1825
926202	AC1-098 E	1.3002
926211	AC1-099 C	0.7314
926212	AC1-099 E	0.4295
926271	AC1-105 C O1	1.7548
926272	AC1-105 E O1	0.8735
927021	AC1-189 C	2.6984
927022	AC1-189 E	1.3442
927141	AC1-208 C	3.4004
927142	AC1-208 E	1.5099
927261	AC1-222 C	1.0943
927262	AC1-222 E	1.0418
930401	AB1-081 C O1	3.2701
930402	AB1-081 E O1	1.4015
930861	AB1-132 C O1	7.0322
930862	AB1-132 E O1	3.0138
931231	AB1-173 C	1.4001
931232	AB1-173 E	0.6534
931241	AB1-173AC	1.4001
931242	AB1-173AE	0.6534
932631	AC2-084 C	3.1113
932632	AC2-084 E	1.5324
934201	AD1-047 C	4.9781
934202	AD1-047 E	3.3187
934311	AD1-055 C	0.7598
934312	AD1-055 E	0.1959
934331	AD1-057 C O1	4.2809
934332	AD1-057 E O1	2.2836
934611	AD1-087 C O1	2.7384
934612	AD1-087 E O1	1.2870
934621	AD1-088 C	3.4460
934622	AD1-088 E	1.6176
935171	AD1-152 C O1	2.7214
935172	AD1-152 E O1	1.8142
935211	AD1-156 C	-4.7373
936261	AD2-033 C	3.8328
936262	AD2-033 E	2.5552
936331	AD2-043 C (Withdrawn : 12/20/2019)	1.4226

Bus #	Bus	MW Impact
936332	AD2-043 E (Withdrawn : 12/20/2019)	1.6835
936361	AD2-046 C O1	3.1129
936362	AD2-046 E O1	1.4315
936401	AD2-051 C O1	2.5357
936402	AD2-051 E O1	1.0888
936481	AD2-063 C O1	4.7231
936482	AD2-063 E O1	3.1487
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.4778
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.6519
937481	AD2-202 C O1	0.7257
937482	AD2-202 E O1	0.4082
937571	AD2-169 C	5.0286
937572	AD2-169 E	3.3524
938491	AE1-068 C O1	24.9473
938492	AE1-068 E O1	13.7787
938501	AE1-069 C O1	19.7115
938502	AE1-069 E O1	11.2693
939181	AE1-148 C O1	3.0634
939182	AE1-148 E O1	2.0422
939411	AE1-173 C	26.5975
939412	AE1-173 E	17.7317
940063	AE1-248 EBAT	20.8050
940241	AE2-006	0.1382
940471	AE2-031 C	13.5950
940472	AE2-031 E	9.0633
940481	AE2-033 C	16.4988
940482	AE2-033 E	11.1228
940541	AE2-040 O1	3.3844
940571	AE2-044 C	1.6351
940572	AE2-044 E	0.7007
940652	AE2-052 BAT	5.1982
940661	AE2-053 O1	1.1346
941031	AE2-094 C	16.3668
941032	AE2-094 E	7.3303
941541	AE2-151 C	0.3145
941542	AE2-151 E	0.1694
941791	AE2-182 C	0.5595
941792	AE2-182 E	0.2604
942451	AE2-258	0.7825
942471	AE2-260 C O1	12.2379
942472	AE2-260 E O1	17.3581
942931	AE2-313 C	14.6960
942932	AE2-313 E	9.7974
LGEE	LGEE	0.7685
CIN	CIN	2.6534
CPLE	CPLE	3.3472
IPL	IPL	1.6632
G-007	G-007	0.8820
CBM-W2	CBM-W2	37.9638
CBM-W1	CBM-W1	5.8595
MECS	MECS	2.4780
WEC	WEC	0.7096

Bus #	Bus	MW Impact
O-066	O-066	5.5994
CBM-S2	CBM-S2	6.5534
CARR	CARR	0.2558
CBM-S1	CBM-S1	5.8218
AA2-074	AA2-074	2.2770
MEC	MEC	5.8859
RENSSELAER	RENSSELAER	0.2028

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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
39879114	939410	AE1-173 TAP	DVP	314928	8SUFFOLK	DVP	1	DVP_P4-2: 562T563	breaker	3144.0	98.23	100.92	AC	102.54

Bus #	Bus	MW Impact
314189	6PAPERMILL	-3.7558
314539	3UNCAMP	-1.5798
314541	3WATKINS	-0.3847
315102	1BRUNSWICKG1	11.1826
315103	1BRUNSWICKG2	11.1826
315104	1BRUNSWICKG3	11.1826
315105	1BRUNSWICKS1	23.2316
315150	1BUGGS 1 (Deactivation : 04/09/18)	6.5354
315151	1BUGGS 2 (Deactivation : 04/09/18)	7.6887
315153	1CLOVER1	13.6784
315154	1CLOVER2	13.4993
315266	1PLYWOOD A	0.8721
907092	X1-038 E	-3.9496
916041	Z1-036 C	-6.0684
916301	Z1-086 C	68.5924
916302	Z1-086 E	16.2053
923801	AB2-015 C O1	-5.1565
923831	AB2-022 C	-2.4804
923851	AB2-025 C	0.2215
923852	AB2-025 E	0.7515
925991	AC1-075 C	4.4397
925992	AC1-075 E	2.5155
926021	AC1-080 C	1.4838
926022	AC1-080 E	0.8346
926271	AC1-105 C O1	4.9168
926272	AC1-105 E O1	2.4476
926661	AC1-147 C	-2.7010
927251	AC1-221 C	2.0900
927252	AC1-221 E	2.0900
927261	AC1-222 C	3.3491
927262	AC1-222 E	3.1882
932761	AC2-100 C	4.8098
932762	AC2-100 E	2.3477
933731	AC2-196 C	-2.1589
934311	AD1-055 C	2.3254
934312	AD1-055 E	0.5996
934341	AD1-058 C	5.2393
934342	AD1-058 E	1.3313
934611	AD1-087 C O1	9.9793
934612	AD1-087 E O1	4.6900
934621	AD1-088 C	13.3004

Bus #	Bus	MW Impact
934622	AD1-088 E	6.2435
934991	AD1-131 C	1.7178
934992	AD1-131 E	1.1452
935111	AD1-144 C	-1.8757
935171	AD1-152 C O1	9.9173
935172	AD1-152 E O1	6.6115
936161	AD2-022 C O1	6.9732
936162	AD2-022 E O1	4.1839
936171	AD2-023 C O1	4.0677
936172	AD2-023 E O1	2.2082
936331	AD2-043 C (Withdrawn : 12/20/2019)	4.3539
936332	AD2-043 E (Withdrawn : 12/20/2019)	5.1521
937481	AD2-202 C O1	2.6446
937482	AD2-202 E O1	1.4876
938491	AE1-068 C O1	103.8934
938492	AE1-068 E O1	57.3816
938501	AE1-069 C O1	82.0890
938502	AE1-069 E O1	46.9310
939411	AE1-173 C	238.5360
939412	AE1-173 E	159.0240
939423	AE1-174 EBAT	0.7998
940063	AE1-248 EBAT	16.4175
940471	AE2-031 C	56.9502
940472	AE2-031 E	37.9668
940481	AE2-033 C	10.3044
940482	AE2-033 E	6.9468
940541	AE2-040 O1	2.1381
940552	AE2-041 BAT	4.8768
941031	AE2-094 C	68.6972
941032	AE2-094 E	30.7678
941592	AE2-156 BAT	25.3070
941791	AE2-182 C	2.1593
941792	AE2-182 E	1.0052
942553	AE2-270 B E	19.3740
942931	AE2-313 C	61.5239
942932	AE2-313 E	41.0159
LGEE	LGEE	1.9198
CIN	CIN	6.6322
CPLE	CPLE	7.6073
IPL	IPL	4.1611
G-007	G-007	1.9950
CBM-W2	CBM-W2	93.5654
CBM-W1	CBM-W1	14.6834
MECS	MECS	6.3280
WEC	WEC	1.7729
O-066	O-066	12.6524
CBM-S2	CBM-S2	15.5718
CARR	CARR	0.5718
CBM-S1	CBM-S1	14.3097
AA2-074	AA2-074	5.1750
MEC	MEC	14.6177
Z1-043	Z1-043	0.0000

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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
18286292	313867	6BREMODIST	DVP	314765	6MTEAGLE	DVP	1	DVP_P1-2: LN 576	single	661.76	111.64	113.72	AC	13.8

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.3829
314704	3LAWRENC	0.1427
315102	1BRUNSWICKG1	2.5597
315103	1BRUNSWICKG2	2.5597
315104	1BRUNSWICKG3	2.5597
315105	1BRUNSWICKS1	5.3177
315126	1ROARAP2	0.4630
315150	1BUGGS 1 (Deativation : 04/09/18)	7.2526
315151	1BUGGS 2 (Deativation : 04/09/18)	7.2526
315153	1CLOVER1	6.2497
315154	1CLOVER2	6.1679
315158	1KERR 1	0.1679
315159	1KERR 2	0.6845
315160	1KERR 3	0.6742
315161	1KERR 4	0.6742
315162	1KERR 5	0.6742
315163	1KERR 6	0.6742
315164	1KERR 7	0.6742
315170	1BREMO 3 (Deativation : 04/16/18)	21.8850
315171	1BREMO 4 (Deativation : 04/16/18)	48.0854
315191	1BEARGRDN G1	8.6596
315192	1BEARGRDN G2	8.6596
315193	1BEARGRDN S1	17.8163
315266	1PLYWOOD A	0.5551
916301	Z1-086 C	15.3526
920291	AA2-127	1.7984
923861	AB2-026 C	0.4266
923911	AB2-031 C O1	0.9790
923991	AB2-040 C O1	3.2146
924021	AB2-043 C O1	2.3589
924031	AB2-045 C	0.6269
924161	AB2-060 C O1	6.9284
924301	AB2-077 C O1	1.4706
924311	AB2-078 C O1	1.4706
924321	AB2-079 C O1	1.4706
925171	AB2-174 C O1	3.0929
925611	AC1-036 C	0.9565
925781	AC1-054 C O1	4.0357
925831	AC1-062	0.0520
926271	AC1-105 C O1	3.2508
926451	AC1-116 C	-1.1974

Bus #	Bus	MW Impact
927261	AC1-222 C	1.9021
931231	AB1-173 C	0.9863
931241	AB1-173AC	0.9863
932511	AC2-071 C	4.6638
933501	AC2-165 C	15.1694
934201	AD1-047 C	3.5069
934311	AD1-055 C	1.3207
934611	AD1-087 C O1	4.6643
934621	AD1-088 C	12.1565
935171	AD1-152 C O1	4.6354
935221	AD1-157 C	1.9589
935231	AD1-160 C	1.4366
936261	AD2-033 C	12.4480
936331	AD2-043 C (Withdrawn : 12/20/2019)	2.4729
936361	AD2-046 C O1	5.5688
936481	AD2-063 C O1	12.7224
937481	AD2-202 C O1	1.2361
937571	AD2-169 C	4.3452
938371	AE1-056 C	8.4452
938491	AE1-068 C O1	22.8594
938501	AE1-069 C O1	18.0619
938551	AE1-074 C	1.1313
938561	AE1-075 C	2.8244
938821	AE1-108 C O1	23.1749
939181	AE1-148 C O1	5.5609
939371	AE1-168 C (Withdrawn : 01/08/2020)	17.2620
940241	AE2-006	0.4866
940471	AE2-031 C	12.7264
940661	AE2-053 O1	2.0596
941011	AE2-092 C	16.6875
941031	AE2-094 C	14.6470
941791	AE2-182 C	1.9736
942451	AE2-258	1.7598
942461	AE2-259 C O1	15.1536
942931	AE2-313 C	13.7965
LGEE	LGEE	0.2121
CIN	CIN	0.7301
CPLE	CPLE	3.0819
IPL	IPL	0.4253
CBM-W2	CBM-W2	20.0430
CBM-W1	CBM-W1	1.3896
WEC	WEC	0.1915
CBM-S2	CBM-S2	5.6432
CARR	CARR	0.3532
CBM-S1	CBM-S1	3.3778
AA2-074	AA2-074	2.0966
MEC	MEC	2.3192
RENSSELAER	RENSSELAER	0.2795

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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
16758871	314225	6CHARCTY	DVP	314227	6LAKESIDE	DVP	1	DVP_P4-2: 563T576	breaker	1204.0	102.9	104.31	AC	20.14

Bus #	Bus	MW Impact
314314	3LOCKS	0.1686
314539	3UNCAMP	0.8190
314541	3WATKINS	0.2339
314557	3BETHEL	0.2474
314566	3CRESWEL	0.7383
314572	3EMPORIA	0.1759
314574	6EVERETS	1.2615
314578	3HORNRTN	1.1798
314582	3KELFORD	1.1622
314594	6PLYMOTH	0.2647
314603	3SCOT NK	1.0919
314617	3TUNIS	0.2831
314620	6CASHIE	0.2686
314623	3WITAKRS	0.4253
314648	6SUNBURY	0.2617
314651	6WINFALL	0.5208
315053	1BELMED1 (Deactivation : 04/16/18)	5.8633
315054	1BELMED2 (Deactivation : 04/16/18)	5.8633
315055	1BELMED3 (Deactivation : 04/16/18)	4.8664
315065	1CHESTF6	21.0680
315073	1STONECA	4.9313
315074	1HOPCGN1 (Deactivation : 06/25/19)	5.9458
315075	1HOPCGN2 (Deactivation : 06/25/19)	5.8688
315076	1HOPPOLC	0.9031
315077	1HOPHCF1	1.4116
315078	1HOPHCF2	1.4116
315079	1HOPHCF3	1.4116
315080	1HOPHCF4	2.1429
315083	1SPRUNCA (Deactivation : 01/12/19)	3.0581
315084	1SPRUNCB (Deactivation : 01/12/19)	3.0581
315131	1EDGECSMA (Deactivation : 04/22/19)	2.8698
315132	1EDGECSMB (Deactivation : 04/22/19)	2.8698
900672	V4-068 E	0.1018
901082	W1-029 E	13.6105
907092	X1-038 E	2.0474
913392	Y1-086 E	0.6399
916041	Z1-036 C	2.0394
916042	Z1-036 E	13.6639
916192	Z1-068 E	0.5406
916302	Z1-086 E	2.7376
917122	Z2-027 E	0.3106

Bus #	Bus	MW Impact
917332	Z2-043 E	0.3305
917342	Z2-044 E	0.1823
917512	Z2-088 E OP1	1.1873
918492	AA1-063AE OP	1.3947
918512	AA1-065 E OP	1.4454
918532	AA1-067 E	0.2226
918562	AA1-072 E	0.0551
919152	AA1-139 E	1.8418
919692	AA2-053 E	1.3248
919702	AA2-057 E	1.1446
920042	AA2-088 E OP	3.6231
920592	AA2-165 E	0.1509
920672	AA2-174 E	0.1531
920692	AA2-178 E	1.2656
923801	AB2-015 C O1	2.9244
923802	AB2-015 E O1	2.3980
923831	AB2-022 C	0.6708
923832	AB2-022 E	0.3612
923851	AB2-025 C	0.2125
923852	AB2-025 E	0.7211
923911	AB2-031 C O1	0.8921
923912	AB2-031 E O1	0.4394
923991	AB2-040 C O1	2.9292
923992	AB2-040 E O1	2.3966
924151	AB2-059 C O1	1.5952
924152	AB2-059 E O1	0.8218
924501	AB2-099 C	0.1961
924502	AB2-099 E	0.0841
924511	AB2-100 C	5.4165
924512	AB2-100 E	2.6678
924811	AB2-134 C O1	0.9576
924812	AB2-134 E O1	6.8684
925051	AB2-160 C O1	3.9490
925052	AB2-160 E O1	6.4430
925061	AB2-161 C O1	1.9502
925062	AB2-161 E O1	3.1818
925121	AB2-169 C	2.0009
925122	AB2-169 E	1.7957
925171	AB2-174 C O1	2.8571
925172	AB2-174 E O1	2.5850
925331	AB2-190 C	11.6883
925332	AB2-190 E	5.0093
925522	AC1-027 E	0.3300
925591	AC1-034 C	2.1061
925592	AC1-034 E	1.5888
925821	AC1-061	0.0034
926071	AC1-086 C	8.0709
926072	AC1-086 E	3.6733
926201	AC1-098 C	2.0416
926202	AC1-098 E	1.2163
926211	AC1-099 C	0.6842
926212	AC1-099 E	0.4018

Bus #	Bus	MW Impact
926661	AC1-147 C	0.6565
926662	AC1-147 E	0.3856
927021	AC1-189 C	2.6417
927022	AC1-189 E	1.3159
927141	AC1-208 C	3.0260
927142	AC1-208 E	1.3437
927221	AC1-216 C O1	5.5189
927222	AC1-216 E O1	4.3406
930401	AB1-081 C O1	2.7589
930402	AB1-081 E O1	1.1824
930861	AB1-132 C O1	5.4807
930862	AB1-132 E O1	2.3489
931231	AB1-173 C	0.8987
931232	AB1-173 E	0.4194
931241	AB1-173AC	0.8987
931242	AB1-173AE	0.4194
932041	AC2-012 C	2.9700
932042	AC2-012 E	4.8458
932581	AC2-078 C O1	2.9433
932582	AC2-078 E O1	4.8021
932591	AC2-079 C O1	2.3694
932592	AC2-079 E O1	3.8658
932631	AC2-084 C	2.9104
932632	AC2-084 E	1.4335
933731	AC2-196 C	0.5089
933732	AC2-196 E	0.3389
933991	AD1-023 C	4.1529
933992	AD1-023 E	2.2609
934011	AD1-025 C	9.4869
934012	AD1-025 E	5.6196
934061	AD1-033 C	2.1406
934062	AD1-033 E	1.4270
934201	AD1-047 C	3.1955
934202	AD1-047 E	2.1303
934331	AD1-057 C O1	3.4546
934332	AD1-057 E O1	1.8428
934521	AD1-076 C	16.9936
934522	AD1-076 E	8.6531
934571	AD1-082 C	4.4443
934572	AD1-082 E	2.5352
935111	AD1-144 C	0.5212
935112	AD1-144 E	0.2848
935161	AD1-151 C O1	9.3924
935162	AD1-151 E O1	6.2616
935211	AD1-156 C	1.9507
935212	AD1-156 E	1.3005
936041	AD2-007	1.0071
936051	AD2-008 C	1.6516
936052	AD2-008 E	3.5953
936401	AD2-051 C O1	2.9111
936402	AD2-051 E O1	1.2500
936661	AD2-085 C	1.4374

Bus #	Bus	MW Impact
936662	AD2-085 E	2.3453
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.2265
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.4844
936711	AD2-090 C O1	2.4554
936712	AD2-090 E O1	1.6370
936761	AD2-097 C	0.5800
936762	AD2-097 E	2.8999
937221	AD2-160 C O1	1.6756
937222	AD2-160 E O1	0.8787
937541	AD2-215 C	0.5265
937542	AD2-215 E	0.2794
937571	AD2-169 C	3.8995
937572	AD2-169 E	2.5996
938171	AE1-026 C1 O	8.9107
938172	AE1-026 C2 O	1.3696
938173	AE1-026 E O1	2.6104
938181	AE1-027 C	0.6675
938182	AE1-027 E	0.3516
938191	AE1-028 C	0.3873
938192	AE1-028 E	0.2242
938221	AE1-035 C	0.7336
938222	AE1-035 E	0.3613
938491	AE1-068 C O1	17.4538
938492	AE1-068 E O1	9.6400
938501	AE1-069 C O1	13.7907
938502	AE1-069 E O1	7.8843
938531	AE1-072 C O1	5.0529
938532	AE1-072 E O1	2.6341
938631	AE1-085 C O1	6.2915
938632	AE1-085 E O1	3.1457
938661	AE1-088	1.2072
938771	AE1-103 C O1	1.2286
938772	AE1-103 E O1	1.6967
939191	AE1-149 C O1	8.0664
939192	AE1-149 E O1	5.3776
939311	AE1-162 C	0.7447
939312	AE1-162 E	0.4965
939411	AE1-173 C	25.7407
939412	AE1-173 E	17.1605
940061	AE1-248 C O1	9.2376
940062	AE1-248 E O1	6.1584
940071	AE1-249 C (Withdrawn : 01/10/2020)	5.2090
940072	AE1-249 E (Withdrawn : 01/10/2020)	3.8840
940251	AE2-007 O1	50.1207
940431	AE2-027 C O1	5.7467
940432	AE2-027 E O1	3.8311
940471	AE2-031 C	9.5011
940472	AE2-031 E	6.3341
940481	AE2-033 C	10.1024
940482	AE2-033 E	6.8106
940491	AE2-034 C	2.2148
940492	AE2-034 E	0.9492

Bus #	Bus	MW Impact
940521	AE2-037 C	2.6098
940522	AE2-037 E	1.2616
940541	AE2-040 O1	2.0515
940571	AE2-044 C	1.3794
940572	AE2-044 E	0.5912
940641	AE2-051 C O1	4.9228
940642	AE2-051 E O1	3.2819
940651	AE2-052	2.6888
940891	AE2-078 C	0.8492
940892	AE2-078 E	0.4375
940901	AE2-079 C	0.8492
940902	AE2-079 E	0.4375
940911	AE2-080 C	0.8492
940912	AE2-080 E	0.4375
941031	AE2-094 C	11.4231
941032	AE2-094 E	5.1162
941101	AE2-104 C O1	1.1539
941102	AE2-104 E O1	1.8334
941281	AE2-122 C O1	8.1741
941282	AE2-122 E O1	32.9846
941291	AE2-123 C O1	8.4005
941292	AE2-123 E O1	32.7583
941301	AE2-124 C O1	7.6290
941302	AE2-124 E O1	33.4753
941501	AE2-147 C	4.6933
941502	AE2-147 E	3.1289
941531	AE2-150	0.1258
941541	AE2-151 C	0.3611
941542	AE2-151 E	0.1944
941591	AE2-156 O1	5.1977
941601	AE2-157 C	6.6798
941602	AE2-157 E	4.4532
942001	AE2-212 C	2.3851
942002	AE2-212 E	1.5901
942131	AE2-225 C	0.6316
942132	AE2-225 E	0.4211
942161	AE2-228 C	2.7043
942162	AE2-228 E	1.8029
942171	AE2-229 C	0.4737
942172	AE2-229 E	0.3158
942341	AE2-247 C	0.6230
942342	AE2-247 E	0.8604
942371	AE2-250 C O1	7.0146
942372	AE2-250 E O1	3.7021
942401	AE2-253 C	1.7624
942402	AE2-253 E	0.7918
942471	AE2-260 C O1	6.8474
942472	AE2-260 E O1	9.7123
942551	AE2-270 S C	9.1521
942552	AE2-270 B C	6.1014
942851	AE2-304 C	0.1878
942852	AE2-304 E	0.0730

Bus #	Bus	MW Impact
942931	AE2-313 C	10.2730
942932	AE2-313 E	6.8487
943171	AE2-346 C	0.4707
943172	AE2-346 E	0.2017
LGEE	LGEE	0.4046
CIN	CIN	1.3891
CPLE	CPLE	2.5567
IPL	IPL	0.8584
G-007	G-007	1.0868
CBM-W2	CBM-W2	23.5328
CBM-W1	CBM-W1	2.9413
MECS	MECS	0.9065
WEC	WEC	0.3677
O-066	O-066	6.9184
CBM-S2	CBM-S2	4.8478
CARR	CARR	0.3359
CBM-S1	CBM-S1	3.7352
AA2-074	AA2-074	1.7392
MEC	MEC	3.3403
RENSSELAER	RENSSELAER	0.2658

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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
7735868	314282	6CARSON	DVP	314285	6CHRL249	DVP	1	DVP_P4-2: 562T563	breaker	684.0	154.86	159.65	AC	32.71

Bus #	Bus	MW Impact
314554	3BTLEBRO	0.3433
314557	3BETHEL	0.3288
314572	3EMPORIA	0.3280
314574	6EVERETS	1.5164
314578	3HORNRTN	1.6296
314582	3KELFORD	1.3767
314603	3SCOT NK	1.3687
314617	3TUNIS	0.3071
314620	6CASHIE	0.2612
314623	3WITAKRS	0.5861
314704	3LAWRENC	0.1876
315073	1STONECA	-2.3484
315102	1BRUNSWICKG1	3.6256
315103	1BRUNSWICKG2	3.6256
315104	1BRUNSWICKG3	3.6256
315105	1BRUNSWICKS1	7.5321
315131	1EDGECEMA (Deactivation : 04/22/19)	4.0263
315132	1EDGECEMB (Deactivation : 04/22/19)	4.0263
315136	1ROSEMG1	1.1459
315137	1ROSEMS1	0.7108
315138	1ROSEMG2	0.5367
315139	1GASTONA	1.6549
315141	1GASTONB	1.6549
315150	1BUGGS 1 (Deactivation : 04/09/18)	4.3706
315151	1BUGGS 2 (Deactivation : 04/09/18)	4.3706
900672	V4-068 E	0.1076
916301	Z1-086 C	22.1050
916302	Z1-086 E	5.2224
917332	Z2-043 E	0.3915
917342	Z2-044 E	0.2512
917512	Z2-088 E OP1	1.5027
918492	AA1-063AE OP	1.7909
918512	AA1-065 E OP	1.5351
918532	AA1-067 E	0.2676
918562	AA1-072 E	0.0652
919692	AA2-053 E	1.7633
919702	AA2-057 E	1.5590
920042	AA2-088 E OP	3.6316
920592	AA2-165 E	0.2055
920672	AA2-174 E	0.2038
923851	AB2-025 C	0.3825

Bus #	Bus	MW Impact
923852	AB2-025 E	1.2976
923911	AB2-031 C O1	1.5967
923912	AB2-031 E O1	0.7865
923991	AB2-040 C O1	5.2430
923992	AB2-040 E O1	4.2898
924021	AB2-043 C O1	1.2036
924022	AB2-043 E O1	1.0762
924151	AB2-059 C O1	4.5424
924152	AB2-059 E O1	2.3400
924161	AB2-060 C O1	3.4338
924162	AB2-060 E O1	1.6159
924301	AB2-077 C O1	0.7637
924302	AB2-077 E O1	0.5091
924311	AB2-078 C O1	0.7637
924312	AB2-078 E O1	0.5091
924321	AB2-079 C O1	0.7637
924322	AB2-079 E O1	0.5091
924501	AB2-099 C	0.2164
924502	AB2-099 E	0.0927
924511	AB2-100 C	10.6275
924512	AB2-100 E	5.2345
925121	AB2-169 C	2.0878
925122	AB2-169 E	1.8737
925171	AB2-174 C O1	5.1992
925172	AB2-174 E O1	4.7040
925591	AC1-034 C	2.9422
925592	AC1-034 E	2.2196
925611	AC1-036 C	0.3108
925612	AC1-036 E	0.2808
925781	AC1-054 C O1	3.1349
925782	AC1-054 E O1	1.4442
926071	AC1-086 C	14.0523
926072	AC1-086 E	6.3957
926201	AC1-098 C	2.6479
926202	AC1-098 E	1.5775
926211	AC1-099 C	0.8873
926212	AC1-099 E	0.5211
926271	AC1-105 C O1	2.0092
926272	AC1-105 E O1	1.0002
927021	AC1-189 C	3.2885
927022	AC1-189 E	1.6381
927141	AC1-208 C	4.0747
927142	AC1-208 E	1.8093
927251	AC1-221 C	0.7896
927252	AC1-221 E	0.7896
927261	AC1-222 C	1.2522
927262	AC1-222 E	1.1920
930401	AB1-081 C O1	3.8542
930402	AB1-081 E O1	1.6518
930861	AB1-132 C O1	9.5424
930862	AB1-132 E O1	4.0896
931231	AB1-173 C	1.6087

Bus #	Bus	MW Impact
931232	AB1-173 E	0.7507
931241	AB1-173AC	1.6087
931242	AB1-173AE	0.7507
932631	AC2-084 C	3.7746
932632	AC2-084 E	1.8592
932761	AC2-100 C	1.8173
932762	AC2-100 E	0.8870
934201	AD1-047 C	5.7197
934202	AD1-047 E	3.8131
934311	AD1-055 C	0.8694
934312	AD1-055 E	0.2242
934331	AD1-057 C O1	4.9823
934332	AD1-057 E O1	2.6578
934341	AD1-058 C	1.9795
934342	AD1-058 E	0.5030
934611	AD1-087 C O1	3.1218
934612	AD1-087 E O1	1.4672
934621	AD1-088 C	3.9112
934622	AD1-088 E	1.8360
934991	AD1-131 C	0.6490
934992	AD1-131 E	0.4327
935171	AD1-152 C O1	3.1024
935172	AD1-152 E O1	2.0683
935211	AD1-156 C	0.8049
935212	AD1-156 E	0.5366
936261	AD2-033 C	4.3884
936262	AD2-033 E	2.9256
936331	AD2-043 C (Withdrawn : 12/20/2019)	1.6282
936332	AD2-043 E (Withdrawn : 12/20/2019)	1.9267
936361	AD2-046 C O1	3.6086
936362	AD2-046 E O1	1.6594
936401	AD2-051 C O1	3.2572
936402	AD2-051 E O1	1.3986
936481	AD2-063 C O1	5.4139
936482	AD2-063 E O1	3.6093
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.9590
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.9727
936711	AD2-090 C O1	2.1938
936712	AD2-090 E O1	1.4625
937481	AD2-202 C O1	0.8273
937482	AD2-202 E O1	0.4654
937571	AD2-169 C	6.8472
937572	AD2-169 E	4.5648
938171	AE1-026 C1 O	8.6654
938172	AE1-026 C2 O	1.3319
938173	AE1-026 E O1	2.5385
938221	AE1-035 C	0.7792
938222	AE1-035 E	0.3838
938491	AE1-068 C O1	33.3277
938492	AE1-068 E O1	18.4073
938501	AE1-069 C O1	26.3331
938502	AE1-069 E O1	15.0549

Bus #	Bus	MW Impact
938661	AE1-088	1.2596
939181	AE1-148 C O1	3.5490
939182	AE1-148 E O1	2.3660
939411	AE1-173 C	31.8036
939412	AE1-173 E	21.2024
940241	AE2-006	0.1581
940471	AE2-031 C	18.1552
940472	AE2-031 E	12.1034
940481	AE2-033 C	18.0358
940482	AE2-033 E	12.1590
940521	AE2-037 C	2.8101
940522	AE2-037 E	1.3584
940541	AE2-040 O1	3.6919
940571	AE2-044 C	1.9271
940572	AE2-044 E	0.8259
940661	AE2-053 O1	1.3144
941031	AE2-094 C	21.8555
941032	AE2-094 E	9.7885
941541	AE2-151 C	0.4040
941542	AE2-151 E	0.2176
941791	AE2-182 C	0.6350
941792	AE2-182 E	0.2956
942451	AE2-258	0.8979
942471	AE2-260 C O1	13.5826
942472	AE2-260 E O1	19.2654
942931	AE2-313 C	19.6256
942932	AE2-313 E	13.0838
943171	AE2-346 C	0.5193
943172	AE2-346 E	0.2226
LGEE	LGEE	0.8746
CIN	CIN	3.0209
CPL	CPL	3.8751
IPL	IPL	1.8916
G-007	G-007	1.0458
CBM-W2	CBM-W2	43.4579
CBM-W1	CBM-W1	6.6585
MECS	MECS	2.7930
WEC	WEC	0.8066
O-066	O-066	6.6358
CBM-S2	CBM-S2	7.5653
CARR	CARR	0.3047
CBM-S1	CBM-S1	6.6751
AA2-074	AA2-074	2.6361
MEC	MEC	6.7175
RENSSELAER	RENSSELAER	0.2414

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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
7735895	314285	6CHRL249	DVP	314316	6LOCKS	DVP	1	DVP_P4-2: 562T563	breaker	684.0	151.97	156.75	AC	32.71

Bus #	Bus	MW Impact
314554	3BTLEBRO	0.3433
314557	3BETHEL	0.3288
314572	3EMPORIA	0.3280
314574	6EVERETS	1.5164
314578	3HORNRTN	1.6296
314582	3KELFORD	1.3767
314603	3SCOT NK	1.3687
314617	3TUNIS	0.3071
314620	6CASHIE	0.2612
314623	3WITAKRS	0.5861
314704	3LAWRENC	0.1876
315073	1STONECA	-2.3484
315102	1BRUNSWICKG1	3.6256
315103	1BRUNSWICKG2	3.6256
315104	1BRUNSWICKG3	3.6256
315105	1BRUNSWICKS1	7.5321
315131	1EDGECEMA (Deactivation : 04/22/19)	4.0263
315132	1EDGECEMB (Deactivation : 04/22/19)	4.0263
315136	1ROSEMG1	1.1459
315137	1ROSEMS1	0.7108
315138	1ROSEMG2	0.5367
315139	1GASTONA	1.6549
315141	1GASTONB	1.6549
315150	1BUGGS 1 (Deactivation : 04/09/18)	4.3706
315151	1BUGGS 2 (Deactivation : 04/09/18)	4.3706
900672	V4-068 E	0.1076
916301	Z1-086 C	22.1050
916302	Z1-086 E	5.2224
917332	Z2-043 E	0.3915
917342	Z2-044 E	0.2512
917512	Z2-088 E OP1	1.5027
918492	AA1-063AE OP	1.7909
918512	AA1-065 E OP	1.5351
918532	AA1-067 E	0.2676
918562	AA1-072 E	0.0652
919692	AA2-053 E	1.7633
919702	AA2-057 E	1.5590
920042	AA2-088 E OP	3.6316
920592	AA2-165 E	0.2055
920672	AA2-174 E	0.2038
923851	AB2-025 C	0.3825

Bus #	Bus	MW Impact
923852	AB2-025 E	1.2976
923911	AB2-031 C O1	1.5967
923912	AB2-031 E O1	0.7865
923991	AB2-040 C O1	5.2430
923992	AB2-040 E O1	4.2898
924021	AB2-043 C O1	1.2036
924022	AB2-043 E O1	1.0762
924151	AB2-059 C O1	4.5424
924152	AB2-059 E O1	2.3400
924161	AB2-060 C O1	3.4338
924162	AB2-060 E O1	1.6159
924301	AB2-077 C O1	0.7637
924302	AB2-077 E O1	0.5091
924311	AB2-078 C O1	0.7637
924312	AB2-078 E O1	0.5091
924321	AB2-079 C O1	0.7637
924322	AB2-079 E O1	0.5091
924501	AB2-099 C	0.2164
924502	AB2-099 E	0.0927
924511	AB2-100 C	10.6275
924512	AB2-100 E	5.2345
925121	AB2-169 C	2.0878
925122	AB2-169 E	1.8737
925171	AB2-174 C O1	5.1992
925172	AB2-174 E O1	4.7040
925591	AC1-034 C	2.9422
925592	AC1-034 E	2.2196
925611	AC1-036 C	0.3108
925612	AC1-036 E	0.2808
925781	AC1-054 C O1	3.1349
925782	AC1-054 E O1	1.4442
926071	AC1-086 C	14.0523
926072	AC1-086 E	6.3957
926201	AC1-098 C	2.6479
926202	AC1-098 E	1.5775
926211	AC1-099 C	0.8873
926212	AC1-099 E	0.5211
926271	AC1-105 C O1	2.0092
926272	AC1-105 E O1	1.0002
927021	AC1-189 C	3.2885
927022	AC1-189 E	1.6381
927141	AC1-208 C	4.0747
927142	AC1-208 E	1.8093
927251	AC1-221 C	0.7896
927252	AC1-221 E	0.7896
927261	AC1-222 C	1.2522
927262	AC1-222 E	1.1920
930401	AB1-081 C O1	3.8542
930402	AB1-081 E O1	1.6518
930861	AB1-132 C O1	9.5424
930862	AB1-132 E O1	4.0896
931231	AB1-173 C	1.6087

Bus #	Bus	MW Impact
931232	AB1-173 E	0.7507
931241	AB1-173AC	1.6087
931242	AB1-173AE	0.7507
932631	AC2-084 C	3.7746
932632	AC2-084 E	1.8592
932761	AC2-100 C	1.8173
932762	AC2-100 E	0.8870
934201	AD1-047 C	5.7197
934202	AD1-047 E	3.8131
934311	AD1-055 C	0.8694
934312	AD1-055 E	0.2242
934331	AD1-057 C O1	4.9823
934332	AD1-057 E O1	2.6578
934341	AD1-058 C	1.9795
934342	AD1-058 E	0.5030
934611	AD1-087 C O1	3.1218
934612	AD1-087 E O1	1.4672
934621	AD1-088 C	3.9112
934622	AD1-088 E	1.8360
934991	AD1-131 C	0.6490
934992	AD1-131 E	0.4327
935171	AD1-152 C O1	3.1024
935172	AD1-152 E O1	2.0683
935211	AD1-156 C	0.8049
935212	AD1-156 E	0.5366
936261	AD2-033 C	4.3884
936262	AD2-033 E	2.9256
936331	AD2-043 C (Withdrawn : 12/20/2019)	1.6282
936332	AD2-043 E (Withdrawn : 12/20/2019)	1.9267
936361	AD2-046 C O1	3.6086
936362	AD2-046 E O1	1.6594
936401	AD2-051 C O1	3.2572
936402	AD2-051 E O1	1.3986
936481	AD2-063 C O1	5.4139
936482	AD2-063 E O1	3.6093
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.9590
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.9727
936711	AD2-090 C O1	2.1938
936712	AD2-090 E O1	1.4625
937481	AD2-202 C O1	0.8273
937482	AD2-202 E O1	0.4654
937571	AD2-169 C	6.8472
937572	AD2-169 E	4.5648
938171	AE1-026 C1 O	8.6654
938172	AE1-026 C2 O	1.3319
938173	AE1-026 E O1	2.5385
938221	AE1-035 C	0.7792
938222	AE1-035 E	0.3838
938491	AE1-068 C O1	33.3277
938492	AE1-068 E O1	18.4073
938501	AE1-069 C O1	26.3331
938502	AE1-069 E O1	15.0549

Bus #	Bus	MW Impact
938661	AE1-088	1.2596
939181	AE1-148 C O1	3.5490
939182	AE1-148 E O1	2.3660
939411	AE1-173 C	31.8036
939412	AE1-173 E	21.2024
940241	AE2-006	0.1581
940471	AE2-031 C	18.1552
940472	AE2-031 E	12.1034
940481	AE2-033 C	18.0358
940482	AE2-033 E	12.1590
940521	AE2-037 C	2.8101
940522	AE2-037 E	1.3584
940541	AE2-040 O1	3.6919
940571	AE2-044 C	1.9271
940572	AE2-044 E	0.8259
940661	AE2-053 O1	1.3144
941031	AE2-094 C	21.8555
941032	AE2-094 E	9.7885
941541	AE2-151 C	0.4040
941542	AE2-151 E	0.2176
941791	AE2-182 C	0.6350
941792	AE2-182 E	0.2956
942451	AE2-258	0.8979
942471	AE2-260 C O1	13.5826
942472	AE2-260 E O1	19.2654
942931	AE2-313 C	19.6256
942932	AE2-313 E	13.0838
943171	AE2-346 C	0.5193
943172	AE2-346 E	0.2226
LGEE	LGEE	0.8746
CIN	CIN	3.0209
CPL	CPL	3.8751
IPL	IPL	1.8916
G-007	G-007	1.0458
CBM-W2	CBM-W2	43.4579
CBM-W1	CBM-W1	6.6585
MECS	MECS	2.7930
WEC	WEC	0.8066
O-066	O-066	6.6358
CBM-S2	CBM-S2	7.5653
CARR	CARR	0.3047
CBM-S1	CBM-S1	6.6751
AA2-074	AA2-074	2.6361
MEC	MEC	6.7175
RENSSELAER	RENSSELAER	0.2414

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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
7735477	314287	6CHESTF B	DVP	314276	6BASIN	DVP	1	DVP_P4-2: 562T563	breaker	549.0	179.34	182.89	AC	22.88

Bus #	Bus	MW Impact
314314	3LOCKS	0.1510
314539	3UNCAMP	0.7929
314541	3WATKINS	0.2279
314572	3EMPORIA	0.1818
314578	3HORNRTN	1.1997
314582	3KELFORD	1.1634
314603	3SCOT NK	1.1018
314617	3TUNIS	0.2807
315065	1CHESTF6	22.7940
315073	1STONECA	4.9548
315074	1HOPCGN1 (Deactivation : 06/25/19)	5.9741
315075	1HOPCGN2 (Deactivation : 06/25/19)	5.8967
315076	1HOPPOLC	0.9074
315077	1HOPHCF1	1.4183
315078	1HOPHCF2	1.4183
315079	1HOPHCF3	1.4183
315080	1HOPHCF4	2.1531
900672	V4-068 E	0.1008
907092	X1-038 E	1.9822
916302	Z1-086 E	3.1078
917332	Z2-043 E	0.3308
918492	AA1-063AE OP	1.4054
918512	AA1-065 E OP	1.4272
918562	AA1-072 E	0.0551
919692	AA2-053 E	1.3403
919702	AA2-057 E	1.1723
920042	AA2-088 E OP	3.5746
920592	AA2-165 E	0.1545
920672	AA2-174 E	0.1549
923801	AB2-015 C O1	2.8415
923802	AB2-015 E O1	2.3301
923851	AB2-025 C	0.2260
923852	AB2-025 E	0.7668
923911	AB2-031 C O1	0.9171
923912	AB2-031 E O1	0.4517
923991	AB2-040 C O1	3.0114
923992	AB2-040 E O1	2.4639
924501	AB2-099 C	0.1947
924502	AB2-099 E	0.0834
924511	AB2-100 C	5.6808
924512	AB2-100 E	2.7980

Bus #	Bus	MW Impact
924812	AB2-134 E O1	5.6898
925051	AB2-160 C O1	3.5370
925052	AB2-160 E O1	5.7710
925061	AB2-161 C O1	1.9484
925062	AB2-161 E O1	3.1790
925171	AB2-174 C O1	2.9438
925172	AB2-174 E O1	2.6635
925331	AB2-190 C	11.4486
925332	AB2-190 E	4.9066
925821	AC1-061	0.0031
926071	AC1-086 C	8.3201
926072	AC1-086 E	3.7868
926201	AC1-098 C	2.0700
926202	AC1-098 E	1.2332
926211	AC1-099 C	0.6937
926212	AC1-099 E	0.4074
927141	AC1-208 C	3.0830
927142	AC1-208 E	1.3690
927221	AC1-216 C O1	4.5718
927222	AC1-216 E O1	3.5957
930861	AB1-132 C O1	5.6499
930862	AB1-132 E O1	2.4214
931231	AB1-173 C	0.9240
931232	AB1-173 E	0.4312
931241	AB1-173AC	0.9240
931242	AB1-173AE	0.4312
932581	AC2-078 C O1	3.0069
932582	AC2-078 E O1	4.9059
932591	AC2-079 C O1	2.3178
932592	AC2-079 E O1	3.7816
932631	AC2-084 C	2.9509
932632	AC2-084 E	1.4534
934011	AD1-025 C	7.8589
934012	AD1-025 E	4.6553
934201	AD1-047 C	3.2852
934202	AD1-047 E	2.1901
934331	AD1-057 C O1	3.5661
934332	AD1-057 E O1	1.9023
934571	AD1-082 C	4.4404
934572	AD1-082 E	2.5330
935161	AD1-151 C O1	9.1998
935162	AD1-151 E O1	6.1332
935211	AD1-156 C	2.0826
935212	AD1-156 E	1.3884
936041	AD2-007	0.8343
936051	AD2-008 C	1.3682
936052	AD2-008 E	2.9784
936401	AD2-051 C O1	2.8920
936402	AD2-051 E O1	1.2418
936661	AD2-085 C	1.4081
936662	AD2-085 E	2.2974
936711	AD2-090 C O1	2.4026

Bus #	Bus	MW Impact
936712	AD2-090 E O1	1.6017
937571	AD2-169 C	3.9994
937572	AD2-169 E	2.6663
938221	AE1-035 C	0.7244
938222	AE1-035 E	0.3568
938491	AE1-068 C O1	19.8439
938492	AE1-068 E O1	10.9601
938501	AE1-069 C O1	15.6792
938502	AE1-069 E O1	8.9640
938631	AE1-085 C O1	6.4135
938632	AE1-085 E O1	3.2068
938771	AE1-103 C O1	1.1863
938772	AE1-103 E O1	1.6382
939191	AE1-149 C O1	8.2698
939192	AE1-149 E O1	5.5132
939311	AE1-162 C	0.6890
939312	AE1-162 E	0.4593
939411	AE1-173 C	27.2299
939412	AE1-173 E	18.1533
940061	AE1-248 C O1	9.2295
940062	AE1-248 E O1	6.1530
940071	AE1-249 C (Withdrawn : 01/10/2020)	4.6656
940072	AE1-249 E (Withdrawn : 01/10/2020)	3.4789
940471	AE2-031 C	10.7952
940472	AE2-031 E	7.1968
940481	AE2-033 C	10.7272
940482	AE2-033 E	7.2318
940521	AE2-037 C	2.5827
940522	AE2-037 E	1.2485
940541	AE2-040 O1	2.1817
940651	AE2-052	2.7566
940891	AE2-078 C	0.7843
940892	AE2-078 E	0.4040
940901	AE2-079 C	0.7843
940902	AE2-079 E	0.4040
940911	AE2-080 C	0.7843
940912	AE2-080 E	0.4040
941031	AE2-094 C	13.0258
941032	AE2-094 E	5.8340
941101	AE2-104 C O1	1.0904
941102	AE2-104 E O1	1.7325
941531	AE2-150	0.1283
941541	AE2-151 C	0.3587
941542	AE2-151 E	0.1932
941601	AE2-157 C	6.7308
941602	AE2-157 E	4.4872
942001	AE2-212 C	2.5435
942002	AE2-212 E	1.6957
942161	AE2-228 C	2.9164
942162	AE2-228 E	1.9442
942341	AE2-247 C	0.6103
942342	AE2-247 E	0.8428

Bus #	Bus	MW Impact
942371	AE2-250 C O1	6.2829
942372	AE2-250 E O1	3.3160
942471	AE2-260 C O1	8.4627
942472	AE2-260 E O1	12.0033
942551	AE2-270 S C	7.5919
942552	AE2-270 B C	5.0612
942931	AE2-313 C	11.6678
942932	AE2-313 E	7.7785
943171	AE2-346 C	0.4673
943172	AE2-346 E	0.2003
LGEE	LGEE	0.4397
CIN	CIN	1.5116
CPLE	CPLE	2.7241
IPL	IPL	0.9356
G-007	G-007	1.0972
CBM-W2	CBM-W2	25.3721
CBM-W1	CBM-W1	3.2192
MECS	MECS	1.0220
WEC	WEC	0.4010
O-066	O-066	6.9857
CBM-S2	CBM-S2	5.1840
CARR	CARR	0.3385
CBM-S1	CBM-S1	4.0186
AA2-074	AA2-074	1.8531
MEC	MEC	3.6221
RENSSELAER	RENSSELAER	0.2681

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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
12469705	314287	6CHESTF B	DVP	314225	6CHARCTY	DVP	1	DVP_P4-2: 563T576	breaker	1204.0	105.81	107.22	AC	20.14

Bus #	Bus	MW Impact
314314	3LOCKS	0.1686
314539	3UNCAMP	0.8190
314541	3WATKINS	0.2339
314557	3BETHEL	0.2474
314566	3CRESWEL	0.7383
314572	3EMPORIA	0.1759
314574	6EVERETS	1.2615
314578	3HORNRTN	1.1798
314582	3KELFORD	1.1622
314594	6PLYMOTH	0.2647
314603	3SCOT NK	1.0919
314617	3TUNIS	0.2831
314620	6CASHIE	0.2686
314623	3WITAKRS	0.4253
314648	6SUNBURY	0.2617
314651	6WINFALL	0.5208
315053	1BELMED1 (Deactivation : 04/16/18)	5.8633
315054	1BELMED2 (Deactivation : 04/16/18)	5.8633
315055	1BELMED3 (Deactivation : 04/16/18)	4.8664
315065	1CHESTF6	21.0680
315073	1STONECA	4.9313
315074	1HOPCGN1 (Deactivation : 06/25/19)	5.9458
315075	1HOPCGN2 (Deactivation : 06/25/19)	5.8688
315076	1HOPPOLC	0.9031
315077	1HOPHCF1	1.4116
315078	1HOPHCF2	1.4116
315079	1HOPHCF3	1.4116
315080	1HOPHCF4	2.1429
315083	1SPRUNCA (Deactivation : 01/12/19)	3.0581
315084	1SPRUNCB (Deactivation : 01/12/19)	3.0581
315131	1EDGECSMA (Deactivation : 04/22/19)	2.8698
315132	1EDGECSMB (Deactivation : 04/22/19)	2.8698
900672	V4-068 E	0.1018
901082	W1-029 E	13.6105
907092	X1-038 E	2.0474
913392	Y1-086 E	0.6399
916041	Z1-036 C	2.0394
916042	Z1-036 E	13.6639
916192	Z1-068 E	0.5406
916302	Z1-086 E	2.7376
917122	Z2-027 E	0.3106

Bus #	Bus	MW Impact
917332	Z2-043 E	0.3305
917342	Z2-044 E	0.1823
917512	Z2-088 E OP1	1.1873
918492	AA1-063AE OP	1.3947
918512	AA1-065 E OP	1.4454
918532	AA1-067 E	0.2226
918562	AA1-072 E	0.0551
919152	AA1-139 E	1.8418
919692	AA2-053 E	1.3248
919702	AA2-057 E	1.1446
920042	AA2-088 E OP	3.6231
920592	AA2-165 E	0.1509
920672	AA2-174 E	0.1531
920692	AA2-178 E	1.2656
923801	AB2-015 C O1	2.9244
923802	AB2-015 E O1	2.3980
923831	AB2-022 C	0.6708
923832	AB2-022 E	0.3612
923851	AB2-025 C	0.2125
923852	AB2-025 E	0.7211
923911	AB2-031 C O1	0.8921
923912	AB2-031 E O1	0.4394
923991	AB2-040 C O1	2.9292
923992	AB2-040 E O1	2.3966
924151	AB2-059 C O1	1.5952
924152	AB2-059 E O1	0.8218
924501	AB2-099 C	0.1961
924502	AB2-099 E	0.0841
924511	AB2-100 C	5.4165
924512	AB2-100 E	2.6678
924811	AB2-134 C O1	0.9576
924812	AB2-134 E O1	6.8684
925051	AB2-160 C O1	3.9490
925052	AB2-160 E O1	6.4430
925061	AB2-161 C O1	1.9502
925062	AB2-161 E O1	3.1818
925121	AB2-169 C	2.0009
925122	AB2-169 E	1.7957
925171	AB2-174 C O1	2.8571
925172	AB2-174 E O1	2.5850
925331	AB2-190 C	11.6883
925332	AB2-190 E	5.0093
925522	AC1-027 E	0.3300
925591	AC1-034 C	2.1061
925592	AC1-034 E	1.5888
925821	AC1-061	0.0034
926071	AC1-086 C	8.0709
926072	AC1-086 E	3.6733
926201	AC1-098 C	2.0416
926202	AC1-098 E	1.2163
926211	AC1-099 C	0.6842
926212	AC1-099 E	0.4018

Bus #	Bus	MW Impact
926661	AC1-147 C	0.6565
926662	AC1-147 E	0.3856
927021	AC1-189 C	2.6417
927022	AC1-189 E	1.3159
927141	AC1-208 C	3.0260
927142	AC1-208 E	1.3437
927221	AC1-216 C O1	5.5189
927222	AC1-216 E O1	4.3406
930401	AB1-081 C O1	2.7589
930402	AB1-081 E O1	1.1824
930861	AB1-132 C O1	5.4807
930862	AB1-132 E O1	2.3489
931231	AB1-173 C	0.8987
931232	AB1-173 E	0.4194
931241	AB1-173AC	0.8987
931242	AB1-173AE	0.4194
932041	AC2-012 C	2.9700
932042	AC2-012 E	4.8458
932581	AC2-078 C O1	2.9433
932582	AC2-078 E O1	4.8021
932591	AC2-079 C O1	2.3694
932592	AC2-079 E O1	3.8658
932631	AC2-084 C	2.9104
932632	AC2-084 E	1.4335
933731	AC2-196 C	0.5089
933732	AC2-196 E	0.3389
933991	AD1-023 C	4.1529
933992	AD1-023 E	2.2609
934011	AD1-025 C	9.4869
934012	AD1-025 E	5.6196
934061	AD1-033 C	2.1406
934062	AD1-033 E	1.4270
934201	AD1-047 C	3.1955
934202	AD1-047 E	2.1303
934331	AD1-057 C O1	3.4546
934332	AD1-057 E O1	1.8428
934521	AD1-076 C	16.9936
934522	AD1-076 E	8.6531
934571	AD1-082 C	4.4443
934572	AD1-082 E	2.5352
935111	AD1-144 C	0.5212
935112	AD1-144 E	0.2848
935161	AD1-151 C O1	9.3924
935162	AD1-151 E O1	6.2616
935211	AD1-156 C	1.9507
935212	AD1-156 E	1.3005
936041	AD2-007	1.0071
936051	AD2-008 C	1.6516
936052	AD2-008 E	3.5953
936401	AD2-051 C O1	2.9111
936402	AD2-051 E O1	1.2500
936661	AD2-085 C	1.4374

Bus #	Bus	MW Impact
936662	AD2-085 E	2.3453
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.2265
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.4844
936711	AD2-090 C O1	2.4554
936712	AD2-090 E O1	1.6370
936761	AD2-097 C	0.5800
936762	AD2-097 E	2.8999
937221	AD2-160 C O1	1.6756
937222	AD2-160 E O1	0.8787
937541	AD2-215 C	0.5265
937542	AD2-215 E	0.2794
937571	AD2-169 C	3.8995
937572	AD2-169 E	2.5996
938171	AE1-026 C1 O	8.9107
938172	AE1-026 C2 O	1.3696
938173	AE1-026 E O1	2.6104
938181	AE1-027 C	0.6675
938182	AE1-027 E	0.3516
938191	AE1-028 C	0.3873
938192	AE1-028 E	0.2242
938221	AE1-035 C	0.7336
938222	AE1-035 E	0.3613
938491	AE1-068 C O1	17.4538
938492	AE1-068 E O1	9.6400
938501	AE1-069 C O1	13.7907
938502	AE1-069 E O1	7.8843
938531	AE1-072 C O1	5.0529
938532	AE1-072 E O1	2.6341
938631	AE1-085 C O1	6.2915
938632	AE1-085 E O1	3.1457
938661	AE1-088	1.2072
938771	AE1-103 C O1	1.2286
938772	AE1-103 E O1	1.6967
939191	AE1-149 C O1	8.0664
939192	AE1-149 E O1	5.3776
939311	AE1-162 C	0.7447
939312	AE1-162 E	0.4965
939411	AE1-173 C	25.7407
939412	AE1-173 E	17.1605
940061	AE1-248 C O1	9.2376
940062	AE1-248 E O1	6.1584
940071	AE1-249 C (Withdrawn : 01/10/2020)	5.2090
940072	AE1-249 E (Withdrawn : 01/10/2020)	3.8840
940251	AE2-007 O1	50.1207
940431	AE2-027 C O1	5.7467
940432	AE2-027 E O1	3.8311
940471	AE2-031 C	9.5011
940472	AE2-031 E	6.3341
940481	AE2-033 C	10.1024
940482	AE2-033 E	6.8106
940491	AE2-034 C	2.2148
940492	AE2-034 E	0.9492

Bus #	Bus	MW Impact
940521	AE2-037 C	2.6098
940522	AE2-037 E	1.2616
940541	AE2-040 O1	2.0515
940571	AE2-044 C	1.3794
940572	AE2-044 E	0.5912
940641	AE2-051 C O1	4.9228
940642	AE2-051 E O1	3.2819
940651	AE2-052	2.6888
940891	AE2-078 C	0.8492
940892	AE2-078 E	0.4375
940901	AE2-079 C	0.8492
940902	AE2-079 E	0.4375
940911	AE2-080 C	0.8492
940912	AE2-080 E	0.4375
941031	AE2-094 C	11.4231
941032	AE2-094 E	5.1162
941101	AE2-104 C O1	1.1539
941102	AE2-104 E O1	1.8334
941281	AE2-122 C O1	8.1741
941282	AE2-122 E O1	32.9846
941291	AE2-123 C O1	8.4005
941292	AE2-123 E O1	32.7583
941301	AE2-124 C O1	7.6290
941302	AE2-124 E O1	33.4753
941501	AE2-147 C	4.6933
941502	AE2-147 E	3.1289
941531	AE2-150	0.1258
941541	AE2-151 C	0.3611
941542	AE2-151 E	0.1944
941591	AE2-156 O1	5.1977
941601	AE2-157 C	6.6798
941602	AE2-157 E	4.4532
942001	AE2-212 C	2.3851
942002	AE2-212 E	1.5901
942131	AE2-225 C	0.6316
942132	AE2-225 E	0.4211
942161	AE2-228 C	2.7043
942162	AE2-228 E	1.8029
942171	AE2-229 C	0.4737
942172	AE2-229 E	0.3158
942341	AE2-247 C	0.6230
942342	AE2-247 E	0.8604
942371	AE2-250 C O1	7.0146
942372	AE2-250 E O1	3.7021
942401	AE2-253 C	1.7624
942402	AE2-253 E	0.7918
942471	AE2-260 C O1	6.8474
942472	AE2-260 E O1	9.7123
942551	AE2-270 S C	9.1521
942552	AE2-270 B C	6.1014
942851	AE2-304 C	0.1878
942852	AE2-304 E	0.0730

Bus #	Bus	MW Impact
942931	AE2-313 C	10.2730
942932	AE2-313 E	6.8487
943171	AE2-346 C	0.4707
943172	AE2-346 E	0.2017
LGEE	LGEE	0.4046
CIN	CIN	1.3891
CPLE	CPLE	2.5567
IPL	IPL	0.8584
G-007	G-007	1.0868
CBM-W2	CBM-W2	23.5328
CBM-W1	CBM-W1	2.9413
MECS	MECS	0.9065
WEC	WEC	0.3677
O-066	O-066	6.9184
CBM-S2	CBM-S2	4.8478
CARR	CARR	0.3359
CBM-S1	CBM-S1	3.7352
AA2-074	AA2-074	1.7392
MEC	MEC	3.3403
RENSSELAER	RENSSELAER	0.2658

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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
39879032	314301	6HARR205	DVP	314346	6TYLER	DVP	1	DVP_P4-2: 562T563	breaker	541.0	113.32	117.31	AC	25.72

Bus #	Bus	MW Impact
314314	3LOCKS	0.3401
314554	3BTLEBRO	0.2723
314557	3BETHEL	0.2616
314572	3EMPORIA	0.2573
314578	3HORNRTN	1.2951
314582	3KELFORD	1.1075
314603	3SCOT NK	1.0957
314617	3TUNIS	0.2511
314623	3WITAKRS	0.4653
315073	1STONECA	-2.0116
315131	1EDGECEMA (Deactivation : 04/22/19)	3.1912
315132	1EDGECEMB (Deactivation : 04/22/19)	3.1912
315150	1BUGGS 1 (Deactivation : 04/09/18)	3.4457
315151	1BUGGS 2 (Deactivation : 04/09/18)	3.4457
900672	V4-068 E	0.0888
916302	Z1-086 E	3.4910
917332	Z2-043 E	0.3149
917342	Z2-044 E	0.1994
917512	Z2-088 E OP1	1.1999
918492	AA1-063AE OP	1.4313
918562	AA1-072 E	0.0525
919692	AA2-053 E	1.4053
919702	AA2-057 E	1.2392
920592	AA2-165 E	0.1634
920672	AA2-174 E	0.1624
923851	AB2-025 C	0.2970
923852	AB2-025 E	1.0076
923911	AB2-031 C O1	1.0685
923912	AB2-031 E O1	0.5263
923991	AB2-040 C O1	3.5085
923992	AB2-040 E O1	2.8706
924021	AB2-043 C O1	0.9474
924022	AB2-043 E O1	0.8471
924151	AB2-059 C O1	3.6022
924152	AB2-059 E O1	1.8557
924161	AB2-060 C O1	2.7027
924162	AB2-060 E O1	1.2719
924301	AB2-077 C O1	0.6012
924302	AB2-077 E O1	0.4008
924311	AB2-078 C O1	0.6012
924312	AB2-078 E O1	0.4008

Bus #	Bus	MW Impact
924321	AB2-079 C O1	0.6012
924322	AB2-079 E O1	0.4008
924501	AB2-099 C	0.1759
924502	AB2-099 E	0.0754
924511	AB2-100 C	8.2980
924512	AB2-100 E	4.0871
925051	AB2-160 C O1	7.9672
925052	AB2-160 E O1	12.9992
925171	AB2-174 C O1	3.4740
925172	AB2-174 E O1	3.1431
925591	AC1-034 C	2.3332
925592	AC1-034 E	1.7602
925781	AC1-054 C O1	2.4802
925782	AC1-054 E O1	1.1426
925821	AC1-061	0.0069
926071	AC1-086 C	9.4147
926072	AC1-086 E	4.2849
926201	AC1-098 C	2.1135
926202	AC1-098 E	1.2591
926211	AC1-099 C	0.7083
926212	AC1-099 E	0.4160
927141	AC1-208 C	3.2431
927142	AC1-208 E	1.4401
930401	AB1-081 C O1	3.0564
930402	AB1-081 E O1	1.3099
930861	AB1-132 C O1	6.3932
930862	AB1-132 E O1	2.7399
931231	AB1-173 C	1.0765
931232	AB1-173 E	0.5024
931241	AB1-173AC	1.0765
931242	AB1-173AE	0.5024
932581	AC2-078 C O1	1.1304
932582	AC2-078 E O1	1.8444
932631	AC2-084 C	3.0129
932632	AC2-084 E	1.4840
934201	AD1-047 C	3.8274
934202	AD1-047 E	2.5516
934331	AD1-057 C O1	3.9376
934332	AD1-057 E O1	2.1005
934611	AD1-087 C O1	2.4567
934612	AD1-087 E O1	1.1546
935171	AD1-152 C O1	2.4415
935172	AD1-152 E O1	1.6276
935211	AD1-156 C	0.6059
935212	AD1-156 E	0.4039
936361	AD2-046 C O1	2.8484
936362	AD2-046 E O1	1.3098
936401	AD2-051 C O1	2.6341
936402	AD2-051 E O1	1.1311
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.3543
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.5695
937481	AD2-202 C O1	0.6511

Bus #	Bus	MW Impact
937482	AD2-202 E O1	0.3662
937571	AD2-169 C	4.5900
937572	AD2-169 E	3.0600
938491	AE1-068 C O1	22.2779
938492	AE1-068 E O1	12.3044
938501	AE1-069 C O1	17.6024
938502	AE1-069 E O1	10.0634
939181	AE1-148 C O1	2.8008
939182	AE1-148 E O1	1.8672
939191	AE1-149 C O1	3.0932
939192	AE1-149 E O1	2.0621
939411	AE1-173 C	25.4021
939412	AE1-173 E	16.9347
940071	AE1-249 C (Withdrawn : 01/10/2020)	10.5094
940072	AE1-249 E (Withdrawn : 01/10/2020)	7.8362
940431	AE2-027 C O1	11.8534
940432	AE2-027 E O1	7.9022
940471	AE2-031 C	12.1352
940472	AE2-031 E	8.0901
940481	AE2-033 C	14.0122
940482	AE2-033 E	9.4464
940541	AE2-040 O1	2.8667
940571	AE2-044 C	1.5282
940572	AE2-044 E	0.6549
940651	AE2-052	1.0310
940661	AE2-053 O1	1.0373
941031	AE2-094 C	14.6092
941032	AE2-094 E	6.5431
941541	AE2-151 C	0.3267
941542	AE2-151 E	0.1759
942001	AE2-212 C	7.6276
942002	AE2-212 E	5.0850
942371	AE2-250 C O1	14.1523
942372	AE2-250 E O1	7.4693
942451	AE2-258	0.7068
942471	AE2-260 C O1	10.5972
942472	AE2-260 E O1	15.0308
942931	AE2-313 C	13.1171
942932	AE2-313 E	8.7447
943171	AE2-346 C	0.4220
943172	AE2-346 E	0.1809
LGEE	LGEE	0.6954
CIN	CIN	2.4010
CPLE	CPLE	3.0634
IPL	IPL	1.5057
G-007	G-007	0.8137
CBM-W2	CBM-W2	34.4740
CBM-W1	CBM-W1	5.3036
MECS	MECS	2.2330
WEC	WEC	0.6417
O-066	O-066	5.1619
CBM-S2	CBM-S2	5.9811

Bus #	Bus	MW Impact
CARR	CARR	0.2367
CBM-S1	CBM-S1	5.2905
AA2-074	AA2-074	2.0840
MEC	MEC	5.3361
RENSSELAER	RENSSELAER	0.1874

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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
16758932	314316	6LOCKS	DVP	314301	6HARR205	DVP	1	DVP_P4-2: 562T563	breaker	541.0	121.36	125.35	AC	25.72

Bus #	Bus	MW Impact
314314	3LOCKS	0.3401
314554	3BTLEBRO	0.2723
314557	3BETHEL	0.2616
314572	3EMPORIA	0.2573
314574	6EVERETS	1.2160
314578	3HORNRTN	1.2951
314582	3KELFORD	1.1075
314603	3SCOT NK	1.0957
314617	3TUNIS	0.2511
314623	3WITAKRS	0.4653
315073	1STONECA	-2.0116
315131	1EDGECEMA (Deactivation : 04/22/19)	3.1912
315132	1EDGECEMB (Deactivation : 04/22/19)	3.1912
315150	1BUGGS 1 (Deactivation : 04/09/18)	3.4457
315151	1BUGGS 2 (Deactivation : 04/09/18)	3.4457
900672	V4-068 E	0.0888
916302	Z1-086 E	3.4910
917332	Z2-043 E	0.3149
917342	Z2-044 E	0.1994
917512	Z2-088 E OP1	1.1999
918492	AA1-063AE OP	1.4313
918512	AA1-065 E OP	1.2438
918532	AA1-067 E	0.2146
918562	AA1-072 E	0.0525
919692	AA2-053 E	1.4053
919702	AA2-057 E	1.2392
920042	AA2-088 E OP	3.0424
920592	AA2-165 E	0.1634
920672	AA2-174 E	0.1624
923851	AB2-025 C	0.2970
923852	AB2-025 E	1.0076
923911	AB2-031 C O1	1.0685
923912	AB2-031 E O1	0.5263
923991	AB2-040 C O1	3.5085
923992	AB2-040 E O1	2.8706
924021	AB2-043 C O1	0.9474
924022	AB2-043 E O1	0.8471
924151	AB2-059 C O1	3.6022
924152	AB2-059 E O1	1.8557
924161	AB2-060 C O1	2.7027
924162	AB2-060 E O1	1.2719

Bus #	Bus	MW Impact
924301	AB2-077 C O1	0.6012
924302	AB2-077 E O1	0.4008
924311	AB2-078 C O1	0.6012
924312	AB2-078 E O1	0.4008
924321	AB2-079 C O1	0.6012
924322	AB2-079 E O1	0.4008
924501	AB2-099 C	0.1759
924502	AB2-099 E	0.0754
924511	AB2-100 C	8.2980
924512	AB2-100 E	4.0871
925051	AB2-160 C O1	7.9672
925052	AB2-160 E O1	12.9992
925171	AB2-174 C O1	3.4740
925172	AB2-174 E O1	3.1431
925591	AC1-034 C	2.3332
925592	AC1-034 E	1.7602
925781	AC1-054 C O1	2.4802
925782	AC1-054 E O1	1.1426
925821	AC1-061	0.0069
926071	AC1-086 C	9.4147
926072	AC1-086 E	4.2849
926201	AC1-098 C	2.1135
926202	AC1-098 E	1.2591
926211	AC1-099 C	0.7083
926212	AC1-099 E	0.4160
926271	AC1-105 C O1	1.5823
926272	AC1-105 E O1	0.7877
927021	AC1-189 C	2.6294
927022	AC1-189 E	1.3098
927141	AC1-208 C	3.2431
927142	AC1-208 E	1.4401
930401	AB1-081 C O1	3.0564
930402	AB1-081 E O1	1.3099
930861	AB1-132 C O1	6.3932
930862	AB1-132 E O1	2.7399
931231	AB1-173 C	1.0765
931232	AB1-173 E	0.5024
931241	AB1-173AC	1.0765
931242	AB1-173AE	0.5024
932581	AC2-078 C O1	1.1304
932582	AC2-078 E O1	1.8444
932631	AC2-084 C	3.0129
932632	AC2-084 E	1.4840
934201	AD1-047 C	3.8274
934202	AD1-047 E	2.5516
934331	AD1-057 C O1	3.9376
934332	AD1-057 E O1	2.1005
934611	AD1-087 C O1	2.4567
934612	AD1-087 E O1	1.1546
935171	AD1-152 C O1	2.4415
935172	AD1-152 E O1	1.6276
935211	AD1-156 C	0.6059

Bus #	Bus	MW Impact
935212	AD1-156 E	0.4039
936361	AD2-046 C O1	2.8484
936362	AD2-046 E O1	1.3098
936401	AD2-051 C O1	2.6341
936402	AD2-051 E O1	1.1311
936481	AD2-063 C O1	4.2595
936482	AD2-063 E O1	2.8397
936701	AD2-089 C (Withdrawn : 12/09/2019)	2.3543
936702	AD2-089 E (Withdrawn : 12/09/2019)	1.5695
937481	AD2-202 C O1	0.6511
937482	AD2-202 E O1	0.3662
937571	AD2-169 C	4.5900
937572	AD2-169 E	3.0600
938221	AE1-035 C	0.6313
938222	AE1-035 E	0.3110
938491	AE1-068 C O1	22.2779
938492	AE1-068 E O1	12.3044
938501	AE1-069 C O1	17.6024
938502	AE1-069 E O1	10.0634
938631	AE1-085 C O1	2.4191
938632	AE1-085 E O1	1.2095
939181	AE1-148 C O1	2.8008
939182	AE1-148 E O1	1.8672
939191	AE1-149 C O1	3.0932
939192	AE1-149 E O1	2.0621
939411	AE1-173 C	25.4021
939412	AE1-173 E	16.9347
940071	AE1-249 C (Withdrawn : 01/10/2020)	10.5094
940072	AE1-249 E (Withdrawn : 01/10/2020)	7.8362
940431	AE2-027 C O1	11.8534
940432	AE2-027 E O1	7.9022
940471	AE2-031 C	12.1352
940472	AE2-031 E	8.0901
940481	AE2-033 C	14.0122
940482	AE2-033 E	9.4464
940521	AE2-037 C	2.2742
940522	AE2-037 E	1.0994
940541	AE2-040 O1	2.8667
940571	AE2-044 C	1.5282
940572	AE2-044 E	0.6549
940651	AE2-052	1.0310
940661	AE2-053 O1	1.0373
941031	AE2-094 C	14.6092
941032	AE2-094 E	6.5431
941531	AE2-150	0.0484
941541	AE2-151 C	0.3267
941542	AE2-151 E	0.1759
942371	AE2-250 C O1	14.1523
942372	AE2-250 E O1	7.4693
942451	AE2-258	0.7068
942471	AE2-260 C O1	10.5972
942472	AE2-260 E O1	15.0308

Bus #	Bus	MW Impact
942931	AE2-313 C	13.1171
942932	AE2-313 E	8.7447
943171	AE2-346 C	0.4220
943172	AE2-346 E	0.1809
LGEE	LGEE	0.6954
CIN	CIN	2.4010
CPLE	CPLE	3.0634
IPL	IPL	1.5057
G-007	G-007	0.8137
CBM-W2	CBM-W2	34.4740
CBM-W1	CBM-W1	5.3036
MECS	MECS	2.2330
WEC	WEC	0.6417
O-066	O-066	5.1619
CBM-S2	CBM-S2	5.9811
CARR	CARR	0.2367
CBM-S1	CBM-S1	5.2905
AA2-074	AA2-074	2.0840
MEC	MEC	5.3361
RENSSELAER	RENSSELAER	0.1874

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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
8120967	314686	6CLOVER	DVP	934610	AD1-087 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	103.43	106.29	AC	23.91

Bus #	Bus	MW Impact
314421	6WINCHST	0.0452
314507	3THOMPSN	0.1062
315090	1YORKTN1 (Deactivation : 09/09/18)	10.8518
315091	1YORKTN2 (Deactivation : 09/09/18)	11.2613
315092	1YORKTN3	7.1369
315098	1CHESPKA	0.1403
315099	1CHESPKB (Deactivation : 05/31/19)	0.3493
315102	1BRUNSWICKG1	4.5332
315103	1BRUNSWICKG2	4.5332
315104	1BRUNSWICKG3	4.5332
315105	1BRUNSWICKS1	9.4178
315108	1ELIZAR1	1.0349
315109	1ELIZAR2	1.0169
315110	1ELIZAR3	1.0481
315116	1SURRY 1	7.4775
315153	1CLOVER1	17.7409
315154	1CLOVER2	17.5086
315233	1SURRY 2	8.2854
315260	1GOSPORTA	0.1118
315261	1GOSPORTB	0.1428
315262	1GOSPORTC	0.1212
916191	Z1-068 C	0.0139
916301	Z1-086 C	26.4785
924021	AB2-043 C O1	-2.0661
924031	AB2-045 C	0.1655
924161	AB2-060 C O1	-5.7800
924301	AB2-077 C O1	-1.3743
924311	AB2-078 C O1	-1.3743
924321	AB2-079 C O1	-1.3743
925521	AC1-027 C	0.1040
926661	AC1-147 C	0.8959
926751	AC1-161 C O1	13.3500
932041	AC2-012 C	4.0527
932511	AC2-071 C	1.2309
933291	AC2-141 C	13.3500
933731	AC2-196 C	0.6953
934061	AD1-033 C	2.9236
934621	AD1-088 C	17.0058
937251	AD2-164	1.8081
938181	AE1-027 C	0.8949
938191	AE1-028 C	0.5192

Bus #	Bus	MW Impact
938491	AE1-068 C O1	38.5940
938501	AE1-069 C O1	30.4942
939311	AE1-162 C	0.8238
939411	AE1-173 C	43.8288
940251	AE2-007 O1	69.0770
940471	AE2-031 C	21.9571
940641	AE2-051 C O1	8.8614
940891	AE2-078 C	0.8852
940901	AE2-079 C	0.8852
940911	AE2-080 C	0.8852
941031	AE2-094 C	23.7223
941281	AE2-122 C O1	11.1341
941291	AE2-123 C O1	11.4424
941301	AE2-124 C O1	10.3905
941591	AE2-156 O1	7.1310
941791	AE2-182 C	2.7609
942931	AE2-313 C	23.9098
DUCKCREEK	DUCKCREEK	4.3918
AC1-131	AC1-131	9.9007
NEWTON	NEWTON	5.5687
G-007A	G-007A	3.1000
CHILHOWEE	CHILHOWEE	1.1990
O-066A /*REV_CFTWR	O-066A /*REV_CFTWR	0.0000
ROSETON /* 35% REVERSE 4566427	ROSETON /* 35% REVERSE 4566427	0.0000
AE1-033	AE1-033	0.0000
VFT	VFT	8.2431
BAYOU /* 35% REVERSE 4392716	BAYOU /* 35% REVERSE 4392716	0.0000
BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	0.0000
TVA	TVA	10.3862
PRAIRIE	PRAIRIE	11.5744
AE1-080A	AE1-080A	0.0000
COFFEEN	COFFEEN	2.1388
EDWARDS	EDWARDS	1.9630
CHEOAH	CHEOAH	3.4494
TILTON	TILTON	2.3278
SANTEETLA	SANTEETLA	1.0236
SMITHLAND	SMITHLAND	1.0253
CBM-N	CBM-N	0.6977
COTTONWOOD	COTTONWOOD	12.3060
TATANKA /* 35% REVERSE 4600034 4680722	TATANKA /* 35% REVERSE 4600034 4680722	0.0000
HAMLET	HAMLET	6.6717
BLUEG	BLUEG	18.5671
UNIONPOWER	UNIONPOWER	5.1084
CELEVELAND /* 35% REVERSE 4479079 4642907	CELEVELAND /* 35% REVERSE 4479079 4642907	0.0000
CANNELTON	CANNELTON	1.2527
GIBSON	GIBSON	0.7952
CALDERWOOD	CALDERWOOD	3.7002
FARMERCITY	FARMERCITY	1.5333

Bus #	Bus	MW Impact
TRIMBLE	TRIMBLE	2.0407
CATAWBA	CATAWBA	3.5529
NYISO	NYISO	3.0168

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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
8120530	314697	6SEEDGE HILL	DVP	927250	AC1-221 TAP	DVP	1	DVP_P1-2: LN 570_FSA	single	674.92	108.06	110.83	AC	19.3

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.2344
314507	3THOMPSN	0.0905
314704	3LAWRENC	0.1026
315098	1CHESPKA	0.1196
315099	1CHESPKB (Deactivation : 05/31/19)	0.2977
315102	1BRUNSWICKG1	3.6600
315103	1BRUNSWICKG2	3.6600
315104	1BRUNSWICKG3	3.6600
315105	1BRUNSWICKS1	7.6037
315108	1ELIZAR1	0.8813
315109	1ELIZAR2	0.8660
315110	1ELIZAR3	0.8926
315150	1BUGGS 1 (Deactivation : 04/09/18)	9.8635
315151	1BUGGS 2 (Deactivation : 04/09/18)	9.8635
315153	1CLOVER1	13.5899
315154	1CLOVER2	13.4119
315191	1BEARGRDN G1	1.4651
315192	1BEARGRDN G2	1.4651
315193	1BEARGRDN S1	3.0143
315233	1SURRY 2	7.0309
315260	1GOSPORTA	0.0953
315261	1GOSPORTB	0.1217
315262	1GOSPORTC	0.1033
315266	1PLYWOOD A	1.6461
916191	Z1-068 C	0.0119
916301	Z1-086 C	21.4358
920291	AA2-127	0.3043
923861	AB2-026 C	0.1162
924021	AB2-043 C O1	2.3944
924031	AB2-045 C	0.1812
924161	AB2-060 C O1	6.8957
924301	AB2-077 C O1	1.5427
924311	AB2-078 C O1	1.5427
924321	AB2-079 C O1	1.5427
925521	AC1-027 C	0.0887
925611	AC1-036 C	0.7212
925831	AC1-062	0.0318
925991	AC1-075 C	7.2881
926021	AC1-080 C	2.4357
926271	AC1-105 C O1	9.3430
926661	AC1-147 C	0.7634

Bus #	Bus	MW Impact
926751	AC1-161 C O1	11.2509
927261	AC1-222 C	6.5554
932041	AC2-012 C	3.4536
932511	AC2-071 C	1.3480
933291	AC2-141 C	11.2509
933501	AC2-165 C	3.7004
934311	AD1-055 C	4.5515
934611	AD1-087 C O1	15.3019
934621	AD1-088 C	13.9685
935171	AD1-152 C O1	15.2069
935221	AD1-157 C	1.1370
935231	AD1-160 C	0.8338
936261	AD2-033 C	9.8764
936331	AD2-043 C (Withdrawn : 12/20/2019)	8.4819
936361	AD2-046 C O1	3.8250
936481	AD2-063 C O1	11.3967
937481	AD2-202 C O1	4.0552
938371	AE1-056 C	4.9016
938491	AE1-068 C O1	31.3081
938501	AE1-069 C O1	24.7374
938561	AE1-075 C	0.7691
939181	AE1-148 C O1	3.9496
939371	AE1-168 C (Withdrawn : 01/08/2020)	11.3823
939411	AE1-173 C	36.4560
940241	AE2-006	0.3669
940251	AE2-007 O1	58.8301
940471	AE2-031 C	17.7306
940641	AE2-051 C O1	7.3242
940661	AE2-053 O1	1.4628
941031	AE2-094 C	19.3276
941591	AE2-156 O1	6.0740
941791	AE2-182 C	2.2678
942451	AE2-258	1.7863
942461	AE2-259 C O1	7.5720
942751	AE2-291 C	9.1133
942761	AE2-292 C O1	11.3469
942931	AE2-313 C	19.2978
DUCKCREEK	DUCKCREEK	4.2513
AC1-131	AC1-131	11.1187
NEWTON	NEWTON	5.4153
G-007A	G-007A	2.7955
CHILHOWEE	CHILHOWEE	1.2383
O-066A /*REV_CFTWR	O-066A /*REV_CFTWR	0.0000
ROSETON /* 35% REVERSE 4566427	ROSETON /* 35% REVERSE 4566427	0.0000
AE1-033	AE1-033	0.0000
VFT	VFT	7.4368
BAYOU /* 35% REVERSE 4392716	BAYOU /* 35% REVERSE 4392716	0.0000
BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	0.0000
TVA	TVA	10.5963
PRAIRIE	PRAIRIE	11.4479

Bus #	Bus	MW Impact
AE1-080A	AE1-080A	0.0000
COFFEEN	COFFEEN	2.0844
EDWARDS	EDWARDS	1.8953
CHEOAH	CHEOAH	3.5761
TILTON	TILTON	2.2346
SANTEETLA	SANTEETLA	1.0628
SMITHLAND	SMITHLAND	1.0259
CBM-N	CBM-N	0.6285
COTTONWOOD	COTTONWOOD	12.6021
TATANKA /* 35% REVERSE 4600034 4680722	TATANKA /* 35% REVERSE 4600034 4680722	0.0000
HAMLET	HAMLET	7.3692
BLUEG	BLUEG	17.6803
UNIONPOWER	UNIONPOWER	5.3121
CELEVELAND /* 35% REVERSE 4479079 4642907	CELEVELAND /* 35% REVERSE 4479079 4642907	0.0000
CANNELTON	CANNELTON	1.2168
GIBSON	GIBSON	0.7656
CALDERWOOD	CALDERWOOD	3.8264
FARMERCITY	FARMERCITY	1.5152
TRIMBLE	TRIMBLE	1.9394
CATAWBA	CATAWBA	3.8630
NYISO	NYISO	2.7167

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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
18286350	314765	6MTEAGLE	DVP	314749	6CHARLVL	DVP	1	DVP_P1-2: LN 576	single	661.76	108.51	110.59	AC	13.8

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.3829
314704	3LAWRENC	0.1427
315102	1BRUNSWICKG1	2.5597
315103	1BRUNSWICKG2	2.5597
315104	1BRUNSWICKG3	2.5597
315105	1BRUNSWICKS1	5.3177
315126	1ROARAP2	0.4630
315150	1BUGGS 1 (Deactivation : 04/09/18)	7.2526
315151	1BUGGS 2 (Deactivation : 04/09/18)	7.2526
315153	1CLOVER1	6.2497
315154	1CLOVER2	6.1679
315158	1KERR 1	0.1679
315159	1KERR 2	0.6845
315160	1KERR 3	0.6742
315161	1KERR 4	0.6742
315162	1KERR 5	0.6742
315163	1KERR 6	0.6742
315164	1KERR 7	0.6742
315170	1BREMO 3 (Deactivation : 04/16/18)	21.8850
315171	1BREMO 4 (Deactivation : 04/16/18)	48.0854
315191	1BEARGRDN G1	8.6596
315192	1BEARGRDN G2	8.6596
315193	1BEARGRDN S1	17.8163
315266	1PLYWOOD A	0.5551
916301	Z1-086 C	15.3526
920291	AA2-127	1.7984
923861	AB2-026 C	0.4266
923911	AB2-031 C O1	0.9790
923991	AB2-040 C O1	3.2146
924021	AB2-043 C O1	2.3589
924031	AB2-045 C	0.6269
924161	AB2-060 C O1	6.9284
924301	AB2-077 C O1	1.4706
924311	AB2-078 C O1	1.4706
924321	AB2-079 C O1	1.4706
925171	AB2-174 C O1	3.0929
925611	AC1-036 C	0.9565
925781	AC1-054 C O1	4.0357
925831	AC1-062	0.0520
926271	AC1-105 C O1	3.2508
926451	AC1-116 C	3.2913

Bus #	Bus	MW Impact
927261	AC1-222 C	1.9021
931231	AB1-173 C	0.9863
931241	AB1-173AC	0.9863
932511	AC2-071 C	4.6638
933501	AC2-165 C	15.1694
934201	AD1-047 C	3.5069
934311	AD1-055 C	1.3207
934611	AD1-087 C O1	4.6643
934621	AD1-088 C	12.1565
935171	AD1-152 C O1	4.6354
935221	AD1-157 C	1.9589
935231	AD1-160 C	1.4366
936261	AD2-033 C	12.4480
936331	AD2-043 C (Withdrawn : 12/20/2019)	2.4729
936361	AD2-046 C O1	5.5688
936481	AD2-063 C O1	12.7224
937481	AD2-202 C O1	1.2361
937571	AD2-169 C	4.3452
938371	AE1-056 C	8.4452
938491	AE1-068 C O1	22.8594
938501	AE1-069 C O1	18.0619
938551	AE1-074 C	1.1313
938561	AE1-075 C	2.8244
938821	AE1-108 C O1	23.1749
939181	AE1-148 C O1	5.5609
939371	AE1-168 C (Withdrawn : 01/08/2020)	17.2620
940241	AE2-006	0.4866
940471	AE2-031 C	12.7264
940661	AE2-053 O1	2.0596
941011	AE2-092 C	16.6875
941031	AE2-094 C	14.6470
941791	AE2-182 C	1.9736
942451	AE2-258	1.7598
942461	AE2-259 C O1	15.1536
942931	AE2-313 C	13.7965
LGEE	LGEE	0.2121
CIN	CIN	0.7301
CPLE	CPLE	3.0819
IPL	IPL	0.4253
CBM-W2	CBM-W2	20.0430
CBM-W1	CBM-W1	1.3896
WEC	WEC	0.1915
CBM-S2	CBM-S2	5.6432
CARR	CARR	0.3532
CBM-S1	CBM-S1	3.3778
AA2-074	AA2-074	2.0966
MEC	MEC	2.3192
RENSSELAER	RENSSELAER	0.2795

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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
7735687	314902	8CARSON	DVP	314914	8MDLTHAN	DVP	1	DVP_P4-2: 557T574	breaker	3938.0	134.3	135.62	AC	117.34

Bus #	Bus	MW Impact
314539	3UNCAMP	3.3189
314541	3WATKINS	0.9362
314566	3CRESWEL	3.3608
314594	6PLYMOTH	1.1791
314620	6CASHIE	1.1606
314648	6SUNBURY	1.2734
314651	6WINFALL	2.5257
315102	1BRUNSWICKG1	12.9681
315103	1BRUNSWICKG2	12.9681
315104	1BRUNSWICKG3	12.9681
315105	1BRUNSWICKS1	26.9410
315108	1ELIZAR1	4.4611
315109	1ELIZAR2	4.3836
315110	1ELIZAR3	4.5182
315233	1SURRY 2	35.2139
901082	W1-029 E	66.0625
907092	X1-038 E	8.2973
913392	Y1-086 E	3.1874
916041	Z1-036 C	9.6944
916042	Z1-036 E	64.9524
916191	Z1-068 C	0.0613
916192	Z1-068 E	3.2379
916301	Z1-086 C	79.1570
916302	Z1-086 E	18.7012
917122	Z2-027 E	1.5328
919151	AA1-139 C	3.4173
919152	AA1-139 E	11.0588
920692	AA2-178 E	5.7614
923801	AB2-015 C O1	11.7653
923802	AB2-015 E O1	9.6475
923831	AB2-022 C	3.3416
923832	AB2-022 E	1.7993
924241	AB2-068 O1	333.9742
925521	AC1-027 C	0.4570
925522	AC1-027 E	1.9719
926291	AC1-107 O1	504.1120
926661	AC1-147 C	3.2832
926662	AC1-147 E	1.9282
926751	AC1-161 C O1	55.6069
926752	AC1-161 E O1	23.7371
932041	AC2-012 C	14.8523

Bus #	Bus	MW Impact
932042	AC2-012 E	24.2328
932591	AC2-079 C O1	7.5109
932592	AC2-079 E O1	12.2546
933291	AC2-141 C	55.6069
933292	AC2-141 E	23.7371
933731	AC2-196 C	3.1021
933732	AC2-196 E	2.0660
933991	AD1-023 C	18.1181
933992	AD1-023 E	9.8635
934061	AD1-033 C	13.0179
934062	AD1-033 E	8.6786
934521	AD1-076 C	75.3780
934522	AD1-076 E	38.3824
935111	AD1-144 C	2.3954
935112	AD1-144 E	1.3088
936711	AD2-090 C O1	9.7397
936712	AD2-090 E O1	6.4931
937221	AD2-160 C O1	10.1044
937222	AD2-160 E O1	5.2986
937541	AD2-215 C	2.4201
937542	AD2-215 E	1.2841
938171	AE1-026 C1 O	38.5084
938172	AE1-026 C2 O	5.9190
938173	AE1-026 E O1	11.2809
938181	AE1-027 C	4.0537
938182	AE1-027 E	2.1351
938191	AE1-028 C	2.3517
938192	AE1-028 E	1.3615
938491	AE1-068 C O1	119.4540
938492	AE1-068 E O1	65.9760
938501	AE1-069 C O1	94.3839
938502	AE1-069 E O1	53.9601
938531	AE1-072 C O1	25.6693
938532	AE1-072 E O1	13.3814
938771	AE1-103 C O1	5.0048
938772	AE1-103 E O1	6.9114
939411	AE1-173 C	175.5840
939412	AE1-173 E	117.0560
940251	AE2-007 O1	297.7692
940471	AE2-031 C	65.1404
940472	AE2-031 E	43.4269
940491	AE2-034 C	10.0824
940492	AE2-034 E	4.3210
940641	AE2-051 C O1	34.5456
940642	AE2-051 E O1	23.0304
941031	AE2-094 C	78.4625
941032	AE2-094 E	35.1415
941101	AE2-104 C O1	4.8977
941102	AE2-104 E O1	7.7817
941281	AE2-122 C O1	49.0206
941282	AE2-122 E O1	197.8102
941291	AE2-123 C O1	50.3780

Bus #	Bus	MW Impact
941292	AE2-123 E O1	196.4528
941301	AE2-124 C O1	45.8419
941302	AE2-124 E O1	201.1489
941501	AE2-147 C	22.7802
941502	AE2-147 E	15.1868
941591	AE2-156 O1	30.7070
942131	AE2-225 C	3.0850
942132	AE2-225 E	2.0567
942171	AE2-229 C	2.3137
942172	AE2-229 E	1.5425
942341	AE2-247 C	1.6030
942342	AE2-247 E	2.2137
942401	AE2-253 C	10.6281
942402	AE2-253 E	4.7749
942851	AE2-304 C	0.9033
942852	AE2-304 E	0.3513
942931	AE2-313 C	70.4070
942932	AE2-313 E	46.9380
LGEE	LGEE	2.6813
CIN	CIN	9.1875
CPL	CPL	13.0216
IPL	IPL	5.7299
G-007	G-007	5.6752
CBM-W2	CBM-W2	139.5700
CBM-W1	CBM-W1	19.7381
MECS	MECS	7.3255
WEC	WEC	2.4312
O-066	O-066	36.0863
CBM-S2	CBM-S2	25.4659
CARR	CARR	1.7188
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	21.7736
AA2-074	AA2-074	8.8583
MEC	MEC	20.8963
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	1.3610
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

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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
7735934	314902	8CARSON	DVP	314282	6CARSON	DVP	1	DVP_P4-2: 562T563	breaker	1039.7	137.21	144.01	AC	69.76

Bus #	Bus	MW Impact
315073	1STONECA	-3.5669
315102	1BRUNSWICKG1	7.5763
315103	1BRUNSWICKG2	7.5763
315104	1BRUNSWICKG3	7.5763
315105	1BRUNSWICKS1	15.7398
315153	1CLOVER1	8.8306
315154	1CLOVER2	8.7149
916301	Z1-086 C	46.5673
916302	Z1-086 E	11.0017
923911	AB2-031 C O1	-1.3019
924511	AB2-100 C	-11.9584
925171	AB2-174 C O1	-4.4611
931231	AB1-173 C	-1.3116
931241	AB1-173AC	-1.3116
934611	AD1-087 C O1	6.2626
934612	AD1-087 E O1	2.9433
934621	AD1-088 C	8.2446
934622	AD1-088 E	3.8702
935171	AD1-152 C O1	6.2237
935172	AD1-152 E O1	4.1491
935211	AD1-156 C	-2.9950
937481	AD2-202 C O1	1.6596
937482	AD2-202 E O1	0.9336
938491	AE1-068 C O1	70.6398
938492	AE1-068 E O1	39.0152
938501	AE1-069 C O1	55.8144
938502	AE1-069 E O1	31.9096
939411	AE1-173 C	79.6032
939412	AE1-173 E	53.0688
940471	AE2-031 C	38.7568
940472	AE2-031 E	25.8378
940542	AE2-040 BAT	5.8666
940652	AE2-052 BAT	3.9018
941031	AE2-094 C	46.8376
941032	AE2-094 E	20.9774
941791	AE2-182 C	1.3385
941792	AE2-182 E	0.6231
942931	AE2-313 C	41.8587
942932	AE2-313 E	27.9058
LGEE	LGEE	1.0691
CIN	CIN	3.6897

Bus #	Bus	MW Impact
CPL	CPL	4.4492
IPL	IPL	2.3105
G-007	G-007	1.3566
CBM-W2	CBM-W2	53.5266
CBM-W1	CBM-W1	8.1234
MECS	MECS	3.3670
WEC	WEC	0.9855
O-066	O-066	8.6144
CBM-S2	CBM-S2	9.1561
CARR	CARR	0.3976
CBM-S1	CBM-S1	8.2368
AA2-074	AA2-074	3.0267
MEC	MEC	8.2375
RENSSELAER	RENSSELAER	0.3152

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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
8120082	314903	8CHCKAHM	DVP	314908	8ELMONT	DVP	1	DVP_P1-2: LN 563	single	2442.12	166.13	167.87	AC	48.58

Bus #	Bus	MW Impact
314421	6WINCHST	0.2102
314507	3THOMPSN	0.4647
314638	6ELIZ CT	0.3017
314639	6TANGLEW	0.5503
314643	3O INLET	0.6063
315074	1HOPCGN1 (Deativation : 06/25/19)	8.1343
315075	1HOPCGN2 (Deativation : 06/25/19)	8.0289
315090	1YORKTN1 (Deativation : 09/09/18)	51.1185
315091	1YORKTN2 (Deativation : 09/09/18)	53.0475
315092	1YORKTN3	33.6879
315098	1CHESPKA	0.6138
315099	1CHESPKB (Deativation : 05/31/19)	1.5284
315108	1ELIZAR1	4.5205
315109	1ELIZAR2	4.4420
315110	1ELIZAR3	4.5784
315116	1SURRY 1	31.0810
315120	1GRAVEL4	3.1979
315122	1GRAVEL6	3.1942
315131	1EDGECSMA (Deativation : 04/22/19)	9.4193
315132	1EDGECSMB (Deativation : 04/22/19)	9.4193
315233	1SURRY 2	40.9636
315260	1GOSPORTA	0.4899
315261	1GOSPORTB	0.6258
315262	1GOSPORTC	0.5311
901081	W1-029 C	1.5124
916041	Z1-036 C	11.0577
916191	Z1-068 C	0.0618
919151	AA1-139 C	3.4171
923801	AB2-015 C O1	11.0929
923831	AB2-022 C	3.8962
923841	AB2-024 C	0.5132
923911	AB2-031 C O1	2.3775
923991	AB2-040 C O1	7.8069
924151	AB2-059 C O1	10.7185
924241	AB2-068 O1	607.9418
924501	AB2-099 C	0.7051
924511	AB2-100 C	12.1827
925061	AB2-161 C O1	4.0874
925121	AB2-169 C	7.8048
925171	AB2-174 C O1	7.4285
925331	AB2-190 C	23.0651

Bus #	Bus	MW Impact
925521	AC1-027 C	0.4616
925591	AC1-034 C	6.9426
925861	AC1-065 C	4.3082
926071	AC1-086 C	22.5010
926201	AC1-098 C	6.7758
926211	AC1-099 C	2.2706
926291	AC1-107 O1	917.6480
926661	AC1-147 C	3.9195
926751	AC1-161 C O1	57.1628
926781	AC1-164 C	64.2307
927021	AC1-189 C	9.4320
927141	AC1-208 C	9.7401
927221	AC1-216 C O1	11.5365
930401	AB1-081 C O1	9.0945
930861	AB1-132 C O1	15.2796
931231	AB1-173 C	2.3953
931241	AB1-173AC	2.3953
932041	AC2-012 C	17.7310
932581	AC2-078 C O1	4.3380
932591	AC2-079 C O1	7.4447
932631	AC2-084 C	9.6592
932831	AC2-110 C	1.7233
933261	AC2-137 C	2.2666
933291	AC2-141 C	57.1628
933731	AC2-196 C	3.1189
933991	AD1-023 C	16.7015
934011	AD1-025 C	19.8309
934061	AD1-033 C	13.0956
934141	AD1-041 C	6.8246
934201	AD1-047 C	8.5166
934331	AD1-057 C O1	10.4747
934521	AD1-076 C	69.9561
934571	AD1-082 C	9.3150
935111	AD1-144 C	2.9158
935161	AD1-151 C O1	18.5344
935211	AD1-156 C	2.0076
936041	AD2-007	2.1052
936051	AD2-008 C	3.4525
936151	AD2-021	0.2585
936301	AD2-039 C	1.7233
936401	AD2-051 C O1	10.5092
936591	AD2-074 C	5.9956
936661	AD2-085 C	4.4494
936701	AD2-089 C (Withdrawn : 12/09/2019)	7.6079
936711	AD2-090 C O1	9.0489
937221	AD2-160 C O1	10.1198
937251	AD2-164	8.4700
937541	AD2-215 C	2.9459
937571	AD2-169 C	10.6820
938031	AE1-004 C	1.7233
938171	AE1-026 C1 O	35.3553
938172	AE1-026 C2 O	5.4344

Bus #	Bus	MW Impact
938181	AE1-027 C	4.0699
938191	AE1-028 C	2.3612
938221	AE1-035 C	2.7595
938491	AE1-068 C O1	70.0698
938501	AE1-069 C O1	55.3641
938531	AE1-072 C O1	30.1470
938631	AE1-085 C O1	9.6662
938661	AE1-088	4.7088
938771	AE1-103 C O1	4.7779
939191	AE1-149 C O1	11.1134
939241	AE1-155 C	13.5389
939311	AE1-162 C	3.4891
939411	AE1-173 C	140.1264
939421	AE1-174 C	0.6342
939431	AE1-175 C	4.2174
939611	AE1-191 C	13.6491
940061	AE1-248 C O1	19.3614
940231	AE2-005 C	1.7233
940251	AE2-007 O1	301.7848
940471	AE2-031 C	38.2026
940481	AE2-033 C	16.3661
940491	AE2-034 C	9.5180
940521	AE2-037 C	9.7845
940541	AE2-040 O1	3.2502
940551	AE2-041	9.3922
940571	AE2-044 C	4.5472
940641	AE2-051 C O1	25.6329
940651	AE2-052	3.7045
940891	AE2-078 C	3.7466
940901	AE2-079 C	3.7466
940911	AE2-080 C	3.7466
941031	AE2-094 C	45.9797
941101	AE2-104 C O1	5.7209
941281	AE2-122 C O1	49.4703
941291	AE2-123 C O1	50.8402
941301	AE2-124 C O1	46.2370
941501	AE2-147 C	26.3538
941531	AE2-150	0.1933
941541	AE2-151 C	1.3036
941591	AE2-156 O1	31.1490
941601	AE2-157 C	12.4175
942131	AE2-225 C	3.6305
942171	AE2-229 C	2.7229
942341	AE2-247 C	1.9285
942401	AE2-253 C	10.6443
942471	AE2-260 C O1	15.0368
942551	AE2-270 S C	18.8366
942552	AE2-270 B C	12.5577
942851	AE2-304 C	1.0374
942931	AE2-313 C	41.2937
943171	AE2-346 C	1.6923
LGEE	LGEE	1.2068

Bus #	Bus	MW Impact
CIN	CIN	4.1479
CPLE	CPLE	9.2789
IPL	IPL	2.5373
CBM-W2	CBM-W2	77.6489
CBM-W1	CBM-W1	8.6560
MECS	MECS	2.0860
WEC	WEC	1.0979
CBM-S2	CBM-S2	17.4299
CARR	CARR	1.2050
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	12.5065
AA2-074	AA2-074	6.3121
MEC	MEC	10.5244
RENSSELAER	RENSSELAER	0.9540
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

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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
8120387	314905	8CHANCE	DVP	314900	8BRISTER	DVP	1	DVP_P1-2: LN 594	single	2442.12	147.42	148.68	AC	35.36

Bus #	Bus	MW Impact
314229	6MT RD221	0.1120
314236	6NRTHEST	0.1710
314250	6ROCKVILLE	0.3054
314309	6IRON208	0.4078
315037	1LDYSMT1	4.1475
315038	1LDYSMT2	4.1447
315039	1LDYSMT3	4.3863
315040	1LDYSMT4	4.3945
315041	1LDYSMT5	4.4082
315043	1FOUR RIVERA	3.2893
315044	1FOUR RIVERB	2.5481
315045	1FOUR RIVERC	3.2893
315046	1FOUR RIVERD	2.5481
315047	1FOUR RIVERE	2.5481
315048	1FOUR RIVERF	3.2865
315053	1BELMED1 (Deativation : 04/16/18)	19.5366
315054	1BELMED2 (Deativation : 04/16/18)	19.5366
315055	1BELMED3 (Deativation : 04/16/18)	16.2152
315058	1CHESTF3 (Deativation : 12/13/18)	17.4275
315059	1CHESTF4 (Deativation : 12/13/18)	28.2501
315067	1DARBY 1	2.3557
315068	1DARBY 2	2.3584
315069	1DARBY 3	2.3667
315070	1DARBY 4	2.3694
315074	1HOPCGN1 (Deativation : 06/25/19)	7.9930
315075	1HOPCGN2 (Deativation : 06/25/19)	7.8894
315083	1SPRUNCA (Deativation : 01/12/19)	11.9648
315084	1SPRUNCB (Deativation : 01/12/19)	11.9648
315090	1YORKTN1 (Deativation : 09/09/18)	27.1300
315091	1YORKTN2 (Deativation : 09/09/18)	28.1538
315225	1N ANNA1	33.7444
315226	1N ANNA2	33.8191
916041	Z1-036 C	6.1802
919211	AA1-145	9.5099
923801	AB2-015 C O1	7.7461
923831	AB2-022 C	2.1239
924061	AB2-050	0.5594
924241	AB2-068 O1	226.8400
924501	AB2-099 C	0.5091
924511	AB2-100 C	10.0750
925051	AB2-160 C O1	5.1913

Bus #	Bus	MW Impact
925061	AB2-161 C O1	3.1636
925331	AB2-190 C	19.1638
925861	AC1-065 C	3.2043
926001	AC1-076 C	4.9323
926291	AC1-107 O1	342.4000
926411	AC1-112 C	0.3025
926551	AC1-134	1.3985
926661	AC1-147 C	2.1118
926731	AC1-158 C	93.3559
926751	AC1-161 C O1	28.5225
926781	AC1-164 C	45.6173
927041	AC1-191 C O1	9.1724
927221	AC1-216 C O1	9.3640
930121	AB1-027 C	0.3885
932041	AC2-012 C	9.5534
932501	AC2-070 C	1.9276
932581	AC2-078 C O1	3.8351
932591	AC2-079 C O1	5.3444
932831	AC2-110 C	1.2817
933011	AC2-125	3.0882
933021	AC2-126	3.1089
933261	AC2-137 C	2.3614
933271	AC2-138 C	0.7088
933291	AC2-141 C	28.5225
933731	AC2-196 C	1.6689
933991	AD1-023 C	11.5704
934011	AD1-025 C	16.0965
934061	AD1-033 C	7.0111
934141	AD1-041 C	5.0355
934521	AD1-076 C	48.0694
934571	AD1-082 C	7.2097
934781	AD1-105 C	6.6291
935111	AD1-144 C	1.6138
935161	AD1-151 C O1	15.3994
935211	AD1-156 C	2.0029
936041	AD2-007	1.7088
936051	AD2-008 C	2.8024
936151	AD2-021	0.2693
936301	AD2-039 C	1.2817
936341	AD2-044 C	0.2215
936401	AD2-051 C O1	7.5852
936591	AD2-074 C	5.0525
936661	AD2-085 C	3.2078
936711	AD2-090 C O1	6.4049
936761	AD2-097 C	1.9288
937221	AD2-160 C O1	5.4422
937251	AD2-164	4.5413
937541	AD2-215 C	1.6304
938031	AE1-004 C	1.2817
938171	AE1-026 C1 O	24.6128
938172	AE1-026 C2 O	3.7832
938181	AE1-027 C	2.1817

Bus #	Bus	MW Impact
938191	AE1-028 C	1.2657
938221	AE1-035 C	1.9586
938491	AE1-068 C O1	50.9404
938501	AE1-069 C O1	40.2494
938531	AE1-072 C O1	16.2809
938551	AE1-074 C	2.7518
938561	AE1-075 C	1.8145
938631	AE1-085 C O1	8.3997
938771	AE1-103 C O1	3.2981
939191	AE1-149 C O1	10.1128
939241	AE1-155 C	11.6612
939261	AE1-157 C O1	16.2135
939271	AE1-158 C O1	16.5470
939311	AE1-162 C	2.0264
939411	AE1-173 C	79.9966
939421	AE1-174 C	0.3452
939431	AE1-175 C	2.2957
939611	AE1-191 C	10.0710
939751	AE1-206 C O1	36.1733
940061	AE1-248 C O1	14.9856
940071	AE1-249 C (Withdrawn : 01/10/2020)	6.8477
940231	AE2-005 C	1.2817
940251	AE2-007 O1	162.1973
940431	AE2-027 C O1	12.3942
940471	AE2-031 C	27.7875
940481	AE2-033 C	14.1118
940491	AE2-034 C	6.4289
940521	AE2-037 C	6.9715
940541	AE2-040 O1	2.8190
940551	AE2-041	6.7755
940641	AE2-051 C O1	14.9909
940651	AE2-052	3.3709
940891	AE2-078 C	2.2406
940901	AE2-079 C	2.2406
940911	AE2-080 C	2.2406
941031	AE2-094 C	33.2691
941101	AE2-104 C O1	3.2375
941141	AE2-108 C	1.2257
941151	AE2-109 C	0.4290
941281	AE2-122 C O1	26.5619
941291	AE2-123 C O1	27.2974
941301	AE2-124 C O1	24.8171
941381	AE2-134	3.3987
941501	AE2-147 C	14.5365
941531	AE2-150	0.1680
941541	AE2-151 C	0.9409
941581	AE2-155 C	0.7333
941591	AE2-156 O1	16.7637
941601	AE2-157 C	10.0241
942001	AE2-212 C	2.0513
942131	AE2-225 C	1.9836
942151	AE2-227 C	2.4800

Bus #	Bus	MW Impact
942161	AE2-228 C	2.0677
942171	AE2-229 C	1.4877
942191	AE2-231 C O1	6.2718
942341	AE2-247 C	1.3904
942371	AE2-250 C O1	9.2213
942401	AE2-253 C	5.7242
942471	AE2-260 C O1	12.5181
942551	AE2-270 S C	15.3842
942552	AE2-270 B C	10.2561
942851	AE2-304 C	0.5758
942931	AE2-313 C	30.0519
943171	AE2-346 C	1.2219
LGEE	LGEE	1.4056
CIN	CIN	4.6795
CPL	CPL	7.6006
IPL	IPL	2.8917
CBM-W2	CBM-W2	78.1441
CBM-W1	CBM-W1	9.2466
MECS	MECS	2.1770
WEC	WEC	1.1963
CBM-S2	CBM-S2	15.0191
CARR	CARR	1.6714
ROWAN REVERSE 4479078	ROWAN 4479078	0.0000
CBM-S1	CBM-S1	12.6256
AA2-074	AA2-074	5.1705
MEC	MEC	11.0141
RENSSELAER	RENSSELAER	1.3229
AE1-042	AE1-042	0.0000
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
8119921	314908	8ELMONT	DVP	314911	8LADYSMITH	DVP	1	DVP_P1-2: LN 576	single	2442.12	192.6	194.54	AC	54.88

Bus #	Bus	MW Impact
314229	6MT RD221	0.1853
314236	6NRTHEST	0.2815
314309	6IRON208	0.6703
314421	6WINCHST	0.2219
315053	1BELMED1 (Deactivation : 04/16/18)	26.8209
315054	1BELMED2 (Deactivation : 04/16/18)	26.8209
315055	1BELMED3 (Deactivation : 04/16/18)	22.2611
315058	1CHESTF3 (Deactivation : 12/13/18)	33.5180
315059	1CHESTF4 (Deactivation : 12/13/18)	54.3327
315060	1CHESTF5	15.2372
315061	1CHESTG7	5.9718
315062	1CHESTS7	2.7145
315063	1CHESTG8	5.8587
315064	1CHESTS8	3.0176
315067	1DARBY 1	3.8964
315068	1DARBY 2	3.9010
315069	1DARBY 3	3.9146
315070	1DARBY 4	3.9192
315074	1HOPCGN1 (Deactivation : 06/25/19)	15.4600
315075	1HOPCGN2 (Deactivation : 06/25/19)	15.2597
315076	1HOPPOLC	2.3482
315077	1HOPHCF1	3.6704
315078	1HOPHCF2	3.6704
315079	1HOPHCF3	3.6704
315080	1HOPHCF4	5.5719
315083	1SPRUNCA (Deactivation : 01/12/19)	16.2315
315084	1SPRUNCB (Deactivation : 01/12/19)	16.2315
315090	1YORKTN1 (Deactivation : 09/09/18)	53.3079
315091	1YORKTN2 (Deactivation : 09/09/18)	55.3195
315092	1YORKTN3	35.0472
315233	1SURREY 2	38.0558
916041	Z1-036 C	10.1482
923801	AB2-015 C O1	12.6607
923831	AB2-022 C	3.4924
924241	AB2-068 O1	428.3248
924501	AB2-099 C	0.8308
924511	AB2-100 C	16.1983
925051	AB2-160 C O1	8.4101
925061	AB2-161 C O1	5.1604
925121	AB2-169 C	9.0556
925331	AB2-190 C	31.5674

Bus #	Bus	MW Impact
925861	AC1-065 C	5.1265
926291	AC1-107 O1	646.5280
926411	AC1-112 C	0.5090
926661	AC1-147 C	3.4774
926751	AC1-161 C O1	47.2473
926781	AC1-164 C	77.7194
927041	AC1-191 C O1	14.4862
927221	AC1-216 C O1	15.4287
930121	AB1-027 C	0.6538
932041	AC2-012 C	15.7312
932501	AC2-070 C	3.2440
932581	AC2-078 C O1	6.2272
932591	AC2-079 C O1	8.7425
932831	AC2-110 C	2.0506
933061	AC2-130	0.5955
933261	AC2-137 C	3.9788
933291	AC2-141 C	47.2473
933731	AC2-196 C	2.7471
933991	AD1-023 C	18.9476
934011	AD1-025 C	26.5216
934061	AD1-033 C	11.5407
934141	AD1-041 C	8.0011
934521	AD1-076 C	78.7609
934571	AD1-082 C	11.7603
935111	AD1-144 C	2.6579
935161	AD1-151 C O1	25.3666
935211	AD1-156 C	3.2226
936041	AD2-007	2.8155
936051	AD2-008 C	4.6173
936151	AD2-021	0.4537
936301	AD2-039 C	2.0506
936401	AD2-051 C O1	12.3812
936661	AD2-085 C	5.2465
936711	AD2-090 C O1	10.4576
936761	AD2-097 C	3.0784
937221	AD2-160 C O1	8.9553
937251	AD2-164	7.5674
937541	AD2-215 C	2.6853
938031	AE1-004 C	2.0506
938171	AE1-026 C1 O	40.2894
938172	AE1-026 C2 O	6.1928
938181	AE1-027 C	3.5908
938191	AE1-028 C	2.0832
938221	AE1-035 C	3.2018
938491	AE1-068 C O1	79.1896
938501	AE1-069 C O1	62.5698
938531	AE1-072 C O1	26.7840
938551	AE1-074 C	3.6375
938631	AE1-085 C O1	13.6467
938661	AE1-088	5.4634
938771	AE1-103 C O1	5.3957
939191	AE1-149 C O1	16.4057

Bus #	Bus	MW Impact
939311	AE1-162 C	3.3417
939411	AE1-173 C	127.0104
939421	AE1-174 C	0.6843
939431	AE1-175 C	4.5509
939611	AE1-191 C	16.0023
939751	AE1-206 C O1	40.6355
940061	AE1-248 C O1	24.4440
940071	AE1-249 C (Withdrawn : 01/10/2020)	11.0936
940231	AE2-005 C	2.0506
940251	AE2-007 O1	267.0856
940431	AE2-027 C O1	20.1519
940471	AE2-031 C	43.1306
940481	AE2-033 C	22.5641
940491	AE2-034 C	10.5426
940521	AE2-037 C	11.3987
940541	AE2-040 O1	4.5039
940551	AE2-041	10.9375
940641	AE2-051 C O1	23.5077
940651	AE2-052	5.4686
940891	AE2-078 C	3.7042
940901	AE2-079 C	3.7042
940911	AE2-080 C	3.7042
941031	AE2-094 C	51.6454
941101	AE2-104 C O1	5.3124
941281	AE2-122 C O1	43.7273
941291	AE2-123 C O1	44.9381
941301	AE2-124 C O1	40.8527
941501	AE2-147 C	23.8864
941531	AE2-150	0.2729
941541	AE2-151 C	1.5358
941581	AE2-155 C	1.2341
941591	AE2-156 O1	27.6046
941601	AE2-157 C	16.3261
942001	AE2-212 C	3.3194
942131	AE2-225 C	3.2606
942151	AE2-227 C	4.0764
942161	AE2-228 C	3.3588
942171	AE2-229 C	2.4455
942341	AE2-247 C	2.2740
942371	AE2-250 C O1	14.9391
942401	AE2-253 C	9.4195
942471	AE2-260 C O1	20.1079
942551	AE2-270 S C	25.3467
942552	AE2-270 B C	16.8978
942851	AE2-304 C	0.9458
942931	AE2-313 C	46.6488
943171	AE2-346 C	1.9940
LGEE	LGEE	3.8487
CIN	CIN	13.0609
CPLE	CPLE	12.6843
IPL	IPL	8.2247
CBM-W2	CBM-W2	174.1619

Bus #	Bus	MW Impact
CBM-W1	CBM-W1	27.9773
MECS	MECS	11.6935
AB2-013	AB2-013	0.0000
WEC	WEC	3.4267
CBM-S2	CBM-S2	25.9874
CARR	CARR	2.5806
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	26.6874
AA2-074	AA2-074	8.6288
MEC	MEC	27.7893
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	2.0440
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

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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
8120539	314911	8LADYSMITH	DVP	314905	8CHANCE	DVP	1	DVP_P1-2: LN 573	single	2738.22	134.89	136.03	AC	35.86

Bus #	Bus	MW Impact
314229	6MT RD221	0.1140
314236	6NRTHEST	0.1741
314250	6ROCKVILLE	0.3104
314309	6IRON208	0.4149
315037	1LDYSMT1	4.2545
315038	1LDYSMT2	4.2517
315039	1LDYSMT3	4.4995
315040	1LDYSMT4	4.5079
315041	1LDYSMT5	4.5220
315043	1FOUR RIVERA	3.3572
315044	1FOUR RIVERB	2.6007
315045	1FOUR RIVERC	3.3572
315046	1FOUR RIVERD	2.6007
315047	1FOUR RIVERE	2.6007
315048	1FOUR RIVERF	3.3543
315053	1BELMED1 (Deativation : 04/16/18)	19.8662
315054	1BELMED2 (Deativation : 04/16/18)	19.8662
315055	1BELMED3 (Deativation : 04/16/18)	16.4887
315058	1CHESTF3 (Deativation : 12/13/18)	17.7327
315059	1CHESTF4 (Deativation : 12/13/18)	28.7447
315067	1DARBY 1	2.3979
315068	1DARBY 2	2.4007
315069	1DARBY 3	2.4091
315070	1DARBY 4	2.4119
315074	1HOPCGN1 (Deativation : 06/25/19)	8.1300
315075	1HOPCGN2 (Deativation : 06/25/19)	8.0246
315083	1SPRUNCA (Deativation : 01/12/19)	12.1597
315084	1SPRUNCB (Deativation : 01/12/19)	12.1597
315090	1YORKTN1 (Deativation : 09/09/18)	27.5963
315091	1YORKTN2 (Deativation : 09/09/18)	28.6376
315225	1N ANNA1	34.2759
315226	1N ANNA2	34.3518
916041	Z1-036 C	6.2766
919211	AA1-145	9.7062
923801	AB2-015 C O1	7.8625
923831	AB2-022 C	2.1578
923911	AB2-031 C O1	1.9409
923991	AB2-040 C O1	6.3730
924061	AB2-050	0.5710
924241	AB2-068 O1	231.1224
924501	AB2-099 C	0.5164

Bus #	Bus	MW Impact
924511	AB2-100 C	10.2202
925051	AB2-160 C O1	5.2783
925061	AB2-161 C O1	3.2150
925171	AB2-174 C O1	6.1083
925331	AB2-190 C	19.4884
925861	AC1-065 C	3.2634
926291	AC1-107 O1	348.8640
926411	AC1-112 C	0.3081
926551	AC1-134	1.4274
926661	AC1-147 C	2.1463
926751	AC1-161 C O1	28.9900
926781	AC1-164 C	46.4497
927041	AC1-191 C O1	9.3499
927221	AC1-216 C O1	9.5223
930121	AB1-027 C	0.3957
931231	AB1-173 C	1.9553
931241	AB1-173AC	1.9553
932041	AC2-012 C	9.7094
932501	AC2-070 C	1.9635
932581	AC2-078 C O1	3.8979
932591	AC2-079 C O1	5.4306
932831	AC2-110 C	1.3054
933011	AC2-125	3.1679
933021	AC2-126	3.1892
933261	AC2-137 C	2.4043
933271	AC2-138 C	0.7240
933291	AC2-141 C	28.9900
933731	AC2-196 C	1.6960
933991	AD1-023 C	11.7421
934011	AD1-025 C	16.3687
934061	AD1-033 C	7.1246
934141	AD1-041 C	5.1288
934201	AD1-047 C	6.9523
934521	AD1-076 C	48.7863
934571	AD1-082 C	7.3268
934781	AD1-105 C	6.7751
935111	AD1-144 C	1.6401
935161	AD1-151 C O1	15.6603
935211	AD1-156 C	2.0356
936041	AD2-007	1.7377
936051	AD2-008 C	2.8498
936151	AD2-021	0.2742
936301	AD2-039 C	1.3054
936341	AD2-044 C	0.2263
936401	AD2-051 C O1	7.6934
936581	AD2-073 C	1.9345
936591	AD2-074 C	5.1550
936661	AD2-085 C	3.2595
936711	AD2-090 C O1	6.4999
936761	AD2-097 C	1.9602
937221	AD2-160 C O1	5.5300
937251	AD2-164	4.6187

Bus #	Bus	MW Impact
937541	AD2-215 C	1.6570
938031	AE1-004 C	1.3054
938171	AE1-026 C1 O	24.9752
938172	AE1-026 C2 O	3.8389
938181	AE1-027 C	2.2171
938191	AE1-028 C	1.2863
938221	AE1-035 C	1.9870
938491	AE1-068 C O1	51.6714
938501	AE1-069 C O1	40.8270
938531	AE1-072 C O1	16.5424
938551	AE1-074 C	2.7934
938561	AE1-075 C	1.8169
938631	AE1-085 C O1	8.5374
938771	AE1-103 C O1	3.3485
939191	AE1-149 C O1	10.2791
939241	AE1-155 C	11.9008
939261	AE1-157 C O1	16.6072
939271	AE1-158 C O1	16.9487
939311	AE1-162 C	2.0601
939411	AE1-173 C	81.2369
939421	AE1-174 C	0.3513
939431	AE1-175 C	2.3360
939611	AE1-191 C	10.2576
939751	AE1-206 C O1	36.9052
940061	AE1-248 C O1	15.2289
940071	AE1-249 C (Withdrawn : 01/10/2020)	6.9625
940231	AE2-005 C	1.3054
940251	AE2-007 O1	164.8374
940431	AE2-027 C O1	12.6054
940471	AE2-031 C	28.1853
940481	AE2-033 C	14.3251
940491	AE2-034 C	6.5267
940521	AE2-037 C	7.0718
940541	AE2-040 O1	2.8619
940551	AE2-041	6.9006
940641	AE2-051 C O1	15.2197
940651	AE2-052	3.4264
940891	AE2-078 C	2.2782
940901	AE2-079 C	2.2782
940911	AE2-080 C	2.2782
941031	AE2-094 C	33.7534
941101	AE2-104 C O1	3.2894
941141	AE2-108 C	1.2527
941151	AE2-109 C	0.4384
941281	AE2-122 C O1	26.9941
941291	AE2-123 C O1	27.7416
941301	AE2-124 C O1	25.2198
941501	AE2-147 C	14.7668
941531	AE2-150	0.1707
941541	AE2-151 C	0.9543
941581	AE2-155 C	0.7470
941591	AE2-156 O1	17.0374

Bus #	Bus	MW Impact
941601	AE2-157 C	10.1873
942001	AE2-212 C	2.0856
942131	AE2-225 C	2.0155
942151	AE2-227 C	2.5232
942161	AE2-228 C	2.1027
942171	AE2-229 C	1.5116
942191	AE2-231 C O1	6.4188
942341	AE2-247 C	1.4128
942371	AE2-250 C O1	9.3760
942401	AE2-253 C	5.8166
942471	AE2-260 C O1	12.6988
942551	AE2-270 S C	15.6450
942552	AE2-270 B C	10.4300
942851	AE2-304 C	0.5848
942931	AE2-313 C	30.4810
943171	AE2-346 C	1.2394
LGEE	LGEE	1.3916
CIN	CIN	4.6305
CPLE	CPLE	7.6767
IPL	IPL	2.8586
CBM-W2	CBM-W2	78.0734
CBM-W1	CBM-W1	9.1308
MECS	MECS	2.0825
WEC	WEC	1.1837
CBM-S2	CBM-S2	15.1421
CARR	CARR	1.6699
ROWAN REVERSE 4479078	ROWAN 4479078	0.0000
CBM-S1	CBM-S1	12.6288
AA2-074	AA2-074	5.2222
MEC	MEC	10.9494
RENSSELAER	RENSSELAER	1.3218
AE1-042	AE1-042	0.0000
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
8120735	314911	8LADYSMITH	DVP	314922	8POSSUM	DVP	1	DVP_P1-2: LN 573	single	2442.12	125.48	126.54	AC	29.68

Bus #	Bus	MW Impact
314229	6MT RD221	0.0912
314236	6NRTHEST	0.1398
314250	6ROCKVILLE	0.2506
314309	6IRON208	0.3341
315043	1FOUR RIVERA	2.6148
315044	1FOUR RIVERB	2.0256
315045	1FOUR RIVERC	2.6148
315046	1FOUR RIVERD	2.0256
315047	1FOUR RIVERE	2.0256
315048	1FOUR RIVERF	2.6126
315053	1BELMED1 (Deativation : 04/16/18)	16.0356
315054	1BELMED2 (Deativation : 04/16/18)	16.0356
315055	1BELMED3 (Deativation : 04/16/18)	13.3093
315058	1CHESTF3 (Deativation : 12/13/18)	16.7790
315059	1CHESTF4 (Deativation : 12/13/18)	27.1988
315060	1CHESTF5	7.5127
315061	1CHESTG7	2.9444
315062	1CHESTS7	1.3384
315063	1CHESTG8	2.8886
315064	1CHESTS8	1.4878
315065	1CHESTF6	15.0161
315067	1DARBY 1	1.9257
315068	1DARBY 2	1.9280
315069	1DARBY 3	1.9347
315070	1DARBY 4	1.9370
315074	1HOPCGN1 (Deativation : 06/25/19)	6.5735
315075	1HOPCGN2 (Deativation : 06/25/19)	6.4883
315077	1HOPHCF1	1.8360
315078	1HOPHCF2	1.8360
315079	1HOPHCF3	1.8360
315080	1HOPHCF4	2.7872
315083	1SPRUNCA (Deativation : 01/12/19)	9.8351
315084	1SPRUNCB (Deativation : 01/12/19)	9.8351
315090	1YORKTN1 (Deativation : 09/09/18)	22.3511
315091	1YORKTN2 (Deativation : 09/09/18)	23.1945
315225	1N ANNA1	27.5220
315226	1N ANNA2	27.5830
919211	AA1-145	7.5597
923831	AB2-022 C	1.7700
924061	AB2-050	0.4447
924241	AB2-068 O1	186.9098

Bus #	Bus	MW Impact
925051	AB2-160 C O1	4.2783
925061	AB2-161 C O1	2.6249
925331	AB2-190 C	15.7994
925861	AC1-065 C	2.5814
926291	AC1-107 O1	282.1280
926411	AC1-112 C	0.2467
926551	AC1-134	1.1117
926661	AC1-147 C	1.7533
926751	AC1-161 C O1	23.6658
926781	AC1-164 C	37.2843
927041	AC1-191 C O1	7.3223
927221	AC1-216 C O1	7.7230
930121	AB1-027 C	0.3168
932041	AC2-012 C	7.9317
932501	AC2-070 C	1.5722
932581	AC2-078 C O1	3.1743
932591	AC2-079 C O1	4.4408
932831	AC2-110 C	1.0326
933061	AC2-130	0.2936
933261	AC2-137 C	1.9302
933291	AC2-141 C	23.6658
933731	AC2-196 C	1.3868
934011	AD1-025 C	13.2756
934061	AD1-033 C	5.8255
934141	AD1-041 C	4.0486
934571	AD1-082 C	5.9819
935111	AD1-144 C	1.3400
935161	AD1-151 C O1	12.6959
935211	AD1-156 C	1.6574
936041	AD2-007	1.4093
936051	AD2-008 C	2.3113
936151	AD2-021	0.2201
936301	AD2-039 C	1.0326
936661	AD2-085 C	2.6653
936761	AD2-097 C	1.8653
937221	AD2-160 C O1	4.5258
937251	AD2-164	3.7444
937541	AD2-215 C	1.3538
938031	AE1-004 C	1.0326
938181	AE1-027 C	1.8133
938191	AE1-028 C	1.0520
938531	AE1-072 C O1	13.5479
938551	AE1-074 C	2.2678
938631	AE1-085 C O1	6.9547
939191	AE1-149 C O1	8.3666
939311	AE1-162 C	1.6777
939411	AE1-173 C	66.6468
939421	AE1-174 C	0.2836
939431	AE1-175 C	1.8858
939611	AE1-191 C	8.0973
939751	AE1-206 C O1	28.9383
940061	AE1-248 C O1	12.4335

Bus #	Bus	MW Impact
940071	AE1-249 C (Withdrawn : 01/10/2020)	5.6435
940231	AE2-005 C	1.0326
940251	AE2-007 O1	134.6696
940431	AE2-027 C O1	10.1861
940471	AE2-031 C	23.3253
940551	AE2-041	5.4672
940641	AE2-051 C O1	12.5001
940651	AE2-052	2.7888
940891	AE2-078 C	1.8510
940901	AE2-079 C	1.8510
940911	AE2-080 C	1.8510
941031	AE2-094 C	27.9009
941101	AE2-104 C O1	2.6946
941281	AE2-122 C O1	22.0629
941291	AE2-123 C O1	22.6738
941301	AE2-124 C O1	20.6151
941501	AE2-147 C	12.1337
941531	AE2-150	0.1391
941581	AE2-155 C	0.5981
941591	AE2-156 O1	13.9179
941601	AE2-157 C	8.3105
942001	AE2-212 C	1.6916
942131	AE2-225 C	1.6500
942151	AE2-227 C	2.0315
942161	AE2-228 C	1.7020
942171	AE2-229 C	1.2375
942191	AE2-231 C O1	4.0667
942341	AE2-247 C	1.1553
942371	AE2-250 C O1	7.5997
942401	AE2-253 C	4.7603
942551	AE2-270 S C	12.6868
942552	AE2-270 B C	8.4578
942851	AE2-304 C	0.4813
942931	AE2-313 C	25.2301
LGEE	LGEE	2.4178
CIN	CIN	8.2345
CPLE	CPLE	6.9477
IPL	IPL	5.2054
CBM-W2	CBM-W2	104.3651
CBM-W1	CBM-W1	17.8679
MECS	MECS	7.9905
WEC	WEC	2.1706
CBM-S2	CBM-S2	14.4304
CARR	CARR	1.8408
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	15.7683
AA2-074	AA2-074	4.7264
MEC	MEC	17.1541
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	1.4580

Bus #	Bus	MW Impact
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

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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
8120062	314914	8MDLTHAN	DVP	314918	8NO ANNA	DVP	1	DVP_P1-2: LN 574	single	2442.12	170.11	172.65	AC	60.53

Bus #	Bus	MW Impact
314507	3THOMPSN	0.4294
314638	6ELIZ CT	0.2846
314639	6TANGLEW	0.5221
314643	3O INLET	0.5662
315053	1BELMED1 (Deativation : 04/16/18)	21.2998
315054	1BELMED2 (Deativation : 04/16/18)	21.2998
315055	1BELMED3 (Deativation : 04/16/18)	17.6786
315058	1CHESTF3 (Deativation : 12/13/18)	21.3579
315059	1CHESTF4 (Deativation : 12/13/18)	34.6212
315074	1HOPCGN1 (Deativation : 06/25/19)	10.2992
315075	1HOPCGN2 (Deativation : 06/25/19)	10.1657
315083	1SPRUNCA (Deativation : 01/12/19)	16.0376
315084	1SPRUNCB (Deativation : 01/12/19)	16.0376
315090	1YORKTN1 (Deativation : 09/09/18)	36.1229
315091	1YORKTN2 (Deativation : 09/09/18)	37.4860
315098	1CHESPKA	0.5672
315099	1CHESPKB (Deativation : 05/31/19)	1.4123
315102	1BRUNSWICKG1	11.1980
315103	1BRUNSWICKG2	11.1980
315104	1BRUNSWICKG3	11.1980
315105	1BRUNSWICKS1	23.2637
315108	1ELIZAR1	4.1698
315109	1ELIZAR2	4.0973
315110	1ELIZAR3	4.2231
315116	1SURRY 1	30.6985
315120	1GRAVEL4	3.1585
315122	1GRAVEL6	3.1549
315131	1EDGECSMA (Deativation : 04/22/19)	11.4391
315132	1EDGECSMB (Deativation : 04/22/19)	11.4391
315233	1SURRY 2	31.2639
315260	1GOSPORTA	0.4529
315261	1GOSPORTB	0.5785
315262	1GOSPORTC	0.4910
901081	W1-029 C	1.4467
916041	Z1-036 C	10.7656
916191	Z1-068 C	0.0571
916301	Z1-086 C	68.1542
919151	AA1-139 C	3.1798
923801	AB2-015 C O1	11.4984
923831	AB2-022 C	3.6764
923851	AB2-025 C	0.5191

Bus #	Bus	MW Impact
923911	AB2-031 C O1	2.9228
923991	AB2-040 C O1	9.5972
924151	AB2-059 C O1	13.0135
924241	AB2-068 O1	208.7527
924501	AB2-099 C	0.7693
924511	AB2-100 C	15.3099
925051	AB2-160 C O1	6.9714
925061	AB2-161 C O1	5.3122
925121	AB2-169 C	8.3979
925171	AB2-174 C O1	9.1960
925331	AB2-190 C	25.5212
925521	AC1-027 C	0.4265
925591	AC1-034 C	8.4292
925781	AC1-054 C O1	8.8567
925861	AC1-065 C	3.6977
926071	AC1-086 C	26.9245
926201	AC1-098 C	7.8698
926211	AC1-099 C	2.6372
926291	AC1-107 O1	315.0984
926661	AC1-147 C	3.6217
926751	AC1-161 C O1	49.1632
926781	AC1-164 C	44.7973
927021	AC1-189 C	10.8582
927141	AC1-208 C	11.5088
927221	AC1-216 C O1	12.5319
930401	AB1-081 C O1	11.0418
930861	AB1-132 C O1	18.2834
931231	AB1-173 C	2.9446
931241	AB1-173AC	2.9446
932041	AC2-012 C	16.3841
932581	AC2-078 C O1	6.3240
932591	AC2-079 C O1	9.0753
932631	AC2-084 C	11.2187
932831	AC2-110 C	1.4791
933261	AC2-137 C	2.3237
933291	AC2-141 C	49.1632
933501	AC2-165 C	12.3557
933731	AC2-196 C	2.8776
933991	AD1-023 C	17.3830
934011	AD1-025 C	21.5420
934061	AD1-033 C	12.0847
934201	AD1-047 C	10.4697
934331	AD1-057 C O1	12.6355
934521	AD1-076 C	72.0987
934571	AD1-082 C	12.1062
934611	AD1-087 C O1	10.3237
934621	AD1-088 C	15.0495
935111	AD1-144 C	2.7334
935161	AD1-151 C O1	20.5081
935171	AD1-152 C O1	10.2596
935211	AD1-156 C	3.3342
936041	AD2-007	2.2868

Bus #	Bus	MW Impact
936051	AD2-008 C	3.7504
936151	AD2-021	0.2650
936301	AD2-039 C	1.4791
936401	AD2-051 C O1	11.4784
936661	AD2-085 C	5.4436
936701	AD2-089 C (Withdrawn : 12/09/2019)	9.0041
936711	AD2-090 C O1	9.5498
936761	AD2-097 C	3.0416
937221	AD2-160 C O1	9.3936
937251	AD2-164	6.1045
937481	AD2-202 C O1	2.7359
937541	AD2-215 C	2.7615
937571	AD2-169 C	13.0325
938031	AE1-004 C	1.4791
938171	AE1-026 C1 O	37.0122
938172	AE1-026 C2 O	5.6890
938181	AE1-027 C	3.7632
938191	AE1-028 C	2.1833
938221	AE1-035 C	2.9567
938491	AE1-068 C O1	102.6211
938501	AE1-069 C O1	81.0837
938531	AE1-072 C O1	28.1266
938551	AE1-074 C	4.0033
938561	AE1-075 C	2.8021
938631	AE1-085 C O1	13.8825
938661	AE1-088	5.0666
938771	AE1-103 C O1	4.8773
939191	AE1-149 C O1	16.6152
939311	AE1-162 C	3.3539
939411	AE1-173 C	152.6064
939421	AE1-174 C	0.4375
939431	AE1-175 C	2.9097
940061	AE1-248 C O1	25.1631
940071	AE1-249 C (Withdrawn : 01/10/2020)	9.1958
940231	AE2-005 C	1.4791
940251	AE2-007 O1	278.4366
940431	AE2-027 C O1	16.0662
940471	AE2-031 C	55.9828
940481	AE2-033 C	25.1025
940491	AE2-034 C	9.5951
940521	AE2-037 C	10.5485
940541	AE2-040 O1	5.0108
940551	AE2-041	7.8084
940571	AE2-044 C	5.5209
940641	AE2-051 C O1	29.5092
940651	AE2-052	5.5384
940891	AE2-078 C	3.0681
940901	AE2-079 C	3.0681
940911	AE2-080 C	3.0681
941031	AE2-094 C	67.1369
941101	AE2-104 C O1	5.5639
941281	AE2-122 C O1	45.6949

Bus #	Bus	MW Impact
941291	AE2-123 C O1	46.9602
941301	AE2-124 C O1	42.7056
941501	AE2-147 C	25.2090
941531	AE2-150	0.2776
941541	AE2-151 C	1.4238
941591	AE2-156 O1	28.7600
941601	AE2-157 C	16.7316
941791	AE2-182 C	2.4433
942001	AE2-212 C	2.7640
942131	AE2-225 C	3.4175
942151	AE2-227 C	2.5803
942161	AE2-228 C	2.7061
942171	AE2-229 C	2.5631
942341	AE2-247 C	2.3595
942371	AE2-250 C O1	12.3834
942401	AE2-253 C	9.8805
942471	AE2-260 C O1	19.0099
942551	AE2-270 S C	20.5624
942552	AE2-270 B C	13.7083
942851	AE2-304 C	1.0009
942931	AE2-313 C	60.5329
943171	AE2-346 C	1.8464
LGEE	LGEE	3.0957
CIN	CIN	10.5448
CPLE	CPLE	12.4633
IPL	IPL	6.6087
CBM-W2	CBM-W2	150.0160
CBM-W1	CBM-W1	22.5752
MECS	MECS	8.8795
WEC	WEC	2.7750
CBM-S2	CBM-S2	24.9001
CARR	CARR	2.0584
ROWAN /* 35% REVERSE 4479078	ROWAN /* 35% REVERSE 4479078	0.0000
CBM-S1	CBM-S1	23.2194
AA2-074	AA2-074	8.4784
MEC	MEC	23.1693
Z1-043	Z1-043	0.0000
CHOCTAW /* 35% REVERSE 4566958 4511400	CHOCTAW /* 35% REVERSE 4566958 4511400	0.0000
RENSSELAER	RENSSELAER	1.6300
AE1-042	AE1-042	0.0000
DEARBORN /* 35% REVERSE 4540149	DEARBORN /* 35% REVERSE 4540149	0.0000

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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
39879566	314918	8NO ANNA	DVP	314934	8SPOTSYL	DVP	1	314905()-314911()_1	single	3218.56	126.95	128.27	AC	41.59

Bus #	Bus	MW Impact
314236	6NRTHEST	0.1808
314250	6ROCKVILLE	0.3326
314309	6IRON208	0.4364
314314	3LOCKS	0.2857
314507	3THOMPSN	0.3290
315053	1BELMED1 (Deactivation : 04/16/18)	21.1872
315054	1BELMED2 (Deactivation : 04/16/18)	21.1872
315055	1BELMED3 (Deactivation : 04/16/18)	17.5852
315058	1CHESTF3 (Deactivation : 12/13/18)	18.6660
315059	1CHESTF4 (Deactivation : 12/13/18)	30.2576
315065	1CHESTF6	19.8206
315074	1HOPCGN1 (Deactivation : 06/25/19)	10.1832
315075	1HOPCGN2 (Deactivation : 06/25/19)	8.5436
315076	1HOPPOLC	1.5467
315077	1HOPHCF1	2.4176
315078	1HOPHCF2	2.4176
315079	1HOPHCF3	2.4176
315080	1HOPHCF4	3.6701
315083	1SPRUNCA (Deactivation : 01/12/19)	13.1382
315084	1SPRUNCB (Deactivation : 01/12/19)	13.1382
315090	1YORKTN1 (Deactivation : 09/09/18)	29.5600
315091	1YORKTN2 (Deactivation : 09/09/18)	30.6755
315098	1CHESPKA	0.4346
315099	1CHESPKB (Deactivation : 05/31/19)	1.0821
315108	1ELIZAR1	3.1924
315109	1ELIZAR2	3.1369
315110	1ELIZAR3	3.2332
315225	1N ANNA1	49.3946
315226	1N ANNA2	49.5040
315233	1SURRY 2	24.7413
315260	1GOSPORTA	0.3470
315261	1GOSPORTB	0.4432
315262	1GOSPORTC	0.3762
916041	Z1-036 C	6.9280
923801	AB2-015 C O1	8.6917
923831	AB2-022 C	2.3776
923911	AB2-031 C O1	2.1671
923991	AB2-040 C O1	7.1157
924241	AB2-068 O1	196.7874
924501	AB2-099 C	0.5736
924511	AB2-100 C	11.3957
925021	AB2-158 C	10.8418

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.6932
925061	AB2-161 C O1	3.5175
925121	AB2-169 C	6.2309
925171	AB2-174 C O1	6.8208
925331	AB2-190 C	20.9154
925821	AC1-061	0.0058
925861	AC1-065 C	3.3976
926071	AC1-086 C	19.9229
926291	AC1-107 O1	297.0376
926661	AC1-147 C	2.7750
926751	AC1-161 C O1	37.5069
926781	AC1-164 C	40.7547
927041	AC1-191 C O1	9.4543
927221	AC1-216 C O1	10.2322
930861	AB1-132 C O1	13.5289
931231	AB1-173 C	2.1832
931241	AB1-173AC	2.1832
932041	AC2-012 C	12.5537
932501	AC2-070 C	1.6996
932581	AC2-078 C O1	4.2469
932591	AC2-079 C O1	5.9572
932831	AC2-110 C	1.3591
933011	AC2-125	2.4457
933021	AC2-126	2.4622
933261	AC2-137 C	2.1137
933291	AC2-141 C	37.5069
933501	AC2-165 C	9.3857
933731	AC2-196 C	1.8667
933991	AD1-023 C	13.0135
934011	AD1-025 C	17.5890
934061	AD1-033 C	7.8411
934141	AD1-041 C	5.3407
934201	AD1-047 C	7.7626
934521	AD1-076 C	54.0392
934571	AD1-082 C	8.0161
935111	AD1-144 C	1.7963
935161	AD1-151 C O1	16.8070
935211	AD1-156 C	2.6188
936041	AD2-007	1.8672
936051	AD2-008 C	3.0622
936151	AD2-021	0.2410
936301	AD2-039 C	1.3591
936401	AD2-051 C O1	8.5472
936591	AD2-074 C	5.2845
936661	AD2-085 C	3.5751
936711	AD2-090 C O1	7.1950
936761	AD2-097 C	2.4917
937221	AD2-160 C O1	6.0884
937251	AD2-164	4.9609
937541	AD2-215 C	1.8148
937571	AD2-169 C	9.6584
938031	AE1-004 C	1.3591

Bus #	Bus	MW Impact
938171	AE1-026 C1 O	27.6869
938172	AE1-026 C2 O	4.2557
938181	AE1-027 C	2.4405
938191	AE1-028 C	1.4158
938221	AE1-035 C	2.2054
938491	AE1-068 C O1	59.9014
938501	AE1-069 C O1	47.3297
938531	AE1-072 C O1	18.2178
938551	AE1-074 C	3.0966
938561	AE1-075 C	2.0933
938631	AE1-085 C O1	9.3066
938661	AE1-088	3.7592
938771	AE1-103 C O1	3.6974
939191	AE1-149 C O1	11.1899
939231	AE1-154 C	1.7773
939241	AE1-155 C	12.1722
939261	AE1-157 C O1	13.1235
939271	AE1-158 C O1	13.3934
939311	AE1-162 C	2.2422
939411	AE1-173 C	108.7344
939421	AE1-174 C	0.3712
939431	AE1-175 C	2.4687
939611	AE1-191 C	10.6814
939751	AE1-206 C O1	30.9726
940061	AE1-248 C O1	16.6617
940071	AE1-249 C (Withdrawn : 01/10/2020)	8.8288
940231	AE2-005 C	1.3591
940251	AE2-007 O1	213.1816
940431	AE2-027 C O1	15.8364
940471	AE2-031 C	38.4575
940481	AE2-033 C	15.9629
940491	AE2-034 C	7.2196
940521	AE2-037 C	7.8535
940541	AE2-040 O1	3.1886
940551	AE2-041	7.1733
940641	AE2-051 C O1	20.5920
940651	AE2-052	3.7300
940891	AE2-078 C	2.4613
940901	AE2-079 C	2.4613
940911	AE2-080 C	2.4613
941031	AE2-094 C	46.0668
941101	AE2-104 C O1	3.6186
941281	AE2-122 C O1	29.6913
941291	AE2-123 C O1	30.5135
941301	AE2-124 C O1	27.7430
941501	AE2-147 C	16.2800
941531	AE2-150	0.1861
941541	AE2-151 C	1.0602
941581	AE2-155 C	0.6466
941591	AE2-156 O1	22.0300
941601	AE2-157 C	11.1302
942001	AE2-212 C	2.6473

Bus #	Bus	MW Impact
942131	AE2-225 C	2.2183
942151	AE2-227 C	2.6537
942161	AE2-228 C	2.6482
942171	AE2-229 C	1.6637
942191	AE2-231 C O1	5.1393
942341	AE2-247 C	1.5496
942371	AE2-250 C O1	11.8892
942401	AE2-253 C	6.4040
942471	AE2-260 C O1	14.1588
942551	AE2-270 S C	16.8055
942552	AE2-270 B C	11.2037
942851	AE2-304 C	0.6452
942931	AE2-313 C	41.5874
943171	AE2-346 C	1.3765
LGEE	LGEE	1.4133
CIN	CIN	4.6918
CPL	CPL	8.6557
IPL	IPL	2.8823
CBM-W2	CBM-W2	83.3789
CBM-W1	CBM-W1	9.1077
MECS	MECS	1.6555
WEC	WEC	1.1950
CBM-S2	CBM-S2	16.9527
CARR	CARR	1.8206
ROWAN REVERSE 4479078	ROWAN 4479078	0.0000
CBM-S1	CBM-S1	13.6045
AA2-074	AA2-074	5.8883
MEC	MEC	11.3975
RENSSELAER	RENSSELAER	1.4409
AE1-042	AE1-042	0.0000
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
7735961	314918	8NO ANNA	DVP	314911	8LADYSMITH	DVP	1	DVP_P4-2: SPOTS H1T594	breaker	3938.0	110.27	111.94	AC	62.52

Bus #	Bus	MW Impact
314539	3UNCAMP	1.6679
314541	3WATKINS	0.4752
314566	3CRESWEL	1.6561
314572	3EMPORIA	0.3023
314578	3HORNRTN	2.3305
314582	3KELFORD	2.4379
314594	6PLYMOTH	0.5875
314617	3TUNIS	0.5852
314620	6CASHIE	0.5852
314648	6SUNBURY	0.6052
314651	6WINFALL	1.2062
315172	1LOISA A	2.3546
315173	1LOISA B	2.3668
315174	1LOISA C	2.3668
315175	1LOISA D	2.3668
315176	1LOISA E	4.8252
315177	1S ANNAG1	1.5229
315178	1S ANNAS1	0.7826
315179	1S ANNAG2	1.5229
315180	1S ANNAS2	0.7826
315225	1N ANNA1	86.6184
315226	1N ANNA2	86.8102
900672	V4-068 E	0.2080
901082	W1-029 E	31.5116
907092	X1-038 E	4.1698
913392	Y1-086 E	1.5060
916041	Z1-036 C	4.6755
916042	Z1-036 E	31.3257
916192	Z1-068 E	1.2826
916302	Z1-086 E	8.4615
917122	Z2-027 E	0.7270
917332	Z2-043 E	0.6932
918492	AA1-063AE OP	2.8038
918512	AA1-065 E OP	3.0779
918562	AA1-072 E	0.1155
919152	AA1-139 E	4.3987
919692	AA2-053 E	2.6308
920042	AA2-088 E OP	7.3221
920672	AA2-174 E	0.3040
920692	AA2-178 E	2.8391

Bus #	Bus	MW Impact
923801	AB2-015 C O1	5.9470
923802	AB2-015 E O1	4.8766
923831	AB2-022 C	1.5788
923832	AB2-022 E	0.8501
923852	AB2-025 E	0.8043
923862	AB2-026 E	0.9563
923911	AB2-031 C O1	1.6017
923912	AB2-031 E O1	0.7889
923991	AB2-040 C O1	5.2592
923992	AB2-040 E O1	4.3030
924021	AB2-043 C O1	2.1951
924022	AB2-043 E O1	1.9628
924032	AB2-045 E	0.7592
924161	AB2-060 C O1	6.3247
924162	AB2-060 E O1	2.9763
924301	AB2-077 C O1	1.3914
924302	AB2-077 E O1	0.9276
924311	AB2-078 C O1	1.3914
924312	AB2-078 E O1	0.9276
924321	AB2-079 C O1	1.3914
924322	AB2-079 E O1	0.9276
924501	AB2-099 C	0.4086
924502	AB2-099 E	0.1751
924511	AB2-100 C	8.2851
924512	AB2-100 E	4.0807
925021	AB2-158 C	24.9161
925022	AB2-158 E	11.1101
925061	AB2-161 C O1	2.2095
925062	AB2-161 E O1	3.6049
925171	AB2-174 C O1	5.0426
925172	AB2-174 E O1	4.5624
925522	AC1-027 E	0.7813
925611	AC1-036 C	0.6736
925612	AC1-036 E	0.6086
926071	AC1-086 C	14.6036
926072	AC1-086 E	6.6466
926661	AC1-147 C	1.5322
926662	AC1-147 E	0.8998
926731	AC1-158 C	239.5283
926732	AC1-158 E	105.1167
926751	AC1-161 C O1	20.7978
926752	AC1-161 E O1	8.8780
930861	AB1-132 C O1	9.9167
930862	AB1-132 E O1	4.2500
931231	AB1-173 C	1.6136
931232	AB1-173 E	0.7530
931241	AB1-173AC	1.6136
931242	AB1-173AE	0.7530
932041	AC2-012 C	6.9313
932042	AC2-012 E	11.3089
932511	AC2-071 C	1.6028
932512	AC2-071 E	0.8074

Bus #	Bus	MW Impact
932591	AC2-079 C O1	3.8209
932592	AC2-079 E O1	6.2341
933291	AC2-141 C	20.7978
933292	AC2-141 E	8.8780
933501	AC2-165 C	8.4153
933502	AC2-165 E	6.3336
933731	AC2-196 C	1.2265
933732	AC2-196 E	0.8169
933991	AD1-023 C	9.1030
933992	AD1-023 E	4.9557
934061	AD1-033 C	5.1487
934062	AD1-033 E	3.4324
934201	AD1-047 C	5.7373
934202	AD1-047 E	3.8249
934521	AD1-076 C	37.6372
934522	AD1-076 E	19.1648
934571	AD1-082 C	5.0353
934572	AD1-082 E	2.8723
934611	AD1-087 C O1	6.3648
934612	AD1-087 E O1	2.9913
934621	AD1-088 C	9.7269
934622	AD1-088 E	4.5660
935111	AD1-144 C	1.1378
935112	AD1-144 E	0.6217
935171	AD1-152 C O1	6.3252
935172	AD1-152 E O1	4.2168
935211	AD1-156 C	1.3894
935212	AD1-156 E	0.9263
935221	AD1-157 C	1.0848
935222	AD1-157 E	0.7232
935231	AD1-160 C	0.7956
935232	AD1-160 E	1.0969
936261	AD2-033 C	9.1879
936262	AD2-033 E	6.1252
936401	AD2-051 C O1	6.1038
936402	AD2-051 E O1	2.6209
936481	AD2-063 C O1	10.5233
936482	AD2-063 E O1	7.0156
936661	AD2-085 C	2.2902
936662	AD2-085 E	3.7367
936711	AD2-090 C O1	4.9794
936712	AD2-090 E O1	3.3196
937221	AD2-160 C O1	4.0122
937222	AD2-160 E O1	2.1040
937481	AD2-202 C O1	1.6867
937482	AD2-202 E O1	0.9488
937541	AD2-215 C	1.1495
937542	AD2-215 E	0.6100
937571	AD2-169 C	7.1369
937572	AD2-169 E	4.7580
938171	AE1-026 C1 O	19.4164
938172	AE1-026 C2 O	2.9844

Bus #	Bus	MW Impact
938173	AE1-026 E O1	5.6880
938181	AE1-027 C	1.6052
938182	AE1-027 E	0.8455
938191	AE1-028 C	0.9313
938192	AE1-028 E	0.5392
938221	AE1-035 C	1.5623
938222	AE1-035 E	0.7695
938371	AE1-056 C	4.6769
938372	AE1-056 E	2.5554
938491	AE1-068 C O1	63.4827
938492	AE1-068 E O1	35.0623
938501	AE1-069 C O1	50.1594
938502	AE1-069 E O1	28.6766
938531	AE1-072 C O1	12.0334
938532	AE1-072 E O1	6.2730
938551	AE1-074 C	1.8065
938552	AE1-074 E	0.9101
938561	AE1-075 C	1.8664
938562	AE1-075 E	0.9101
938771	AE1-103 C O1	2.5049
938772	AE1-103 E O1	3.4591
939231	AE1-154 C	4.0846
939232	AE1-154 E	2.8592
939371	AE1-168 C (Withdrawn : 01/08/2020)	10.7383
939372	AE1-168 E (Withdrawn : 01/08/2020)	7.1589
939411	AE1-173 C	74.9904
939412	AE1-173 E	49.9936
940061	AE1-248 C O1	10.4660
940062	AE1-248 E O1	6.9773
940241	AE2-006	0.3427
940251	AE2-007 O1	117.9325
940471	AE2-031 C	34.6939
940472	AE2-031 E	23.1292
940481	AE2-033 C	11.4746
940482	AE2-033 E	7.7357
940491	AE2-034 C	4.9684
940492	AE2-034 E	2.1293
940521	AE2-037 C	5.5899
940522	AE2-037 E	2.7022
940541	AE2-040 O1	2.2882
940641	AE2-051 C O1	17.7192
940642	AE2-051 E O1	11.8128
941031	AE2-094 C	41.5768
941032	AE2-094 E	18.6212
941101	AE2-104 C O1	2.3726
941102	AE2-104 E O1	3.7697
941281	AE2-122 C O1	19.4169
941282	AE2-122 E O1	78.3521
941291	AE2-123 C O1	19.9546
941292	AE2-123 E O1	77.8144
941301	AE2-124 C O1	18.1549
941302	AE2-124 E O1	79.6617

Bus #	Bus	MW Impact
941501	AE2-147 C	10.8661
941502	AE2-147 E	7.2440
941541	AE2-151 C	0.7571
941542	AE2-151 E	0.4077
941591	AE2-156 O1	12.1720
941601	AE2-157 C	6.9131
941602	AE2-157 E	4.6087
941791	AE2-182 C	1.5792
941792	AE2-182 E	0.7351
942131	AE2-225 C	1.4583
942132	AE2-225 E	0.9722
942171	AE2-229 C	1.0937
942172	AE2-229 E	0.7291
942341	AE2-247 C	0.9927
942342	AE2-247 E	1.3708
942401	AE2-253 C	4.2202
942402	AE2-253 E	1.8960
942451	AE2-258	1.6376
942461	AE2-259 C O1	7.3318
942462	AE2-259 E O1	4.8878
942471	AE2-260 C O1	10.2842
942472	AE2-260 E O1	14.5868
942851	AE2-304 C	0.4331
942852	AE2-304 E	0.1684
942931	AE2-313 C	37.5123
942932	AE2-313 E	25.0082
943171	AE2-346 C	0.9806
943172	AE2-346 E	0.4203
LGEE	LGEE	1.3347
CIN	CIN	4.5154
CPLE	CPLE	7.1660
IPL	IPL	2.7988
G-007	G-007	4.9959
CBM-W2	CBM-W2	73.2159
CBM-W1	CBM-W1	9.3045
MECS	MECS	2.7545
WEC	WEC	1.1764
O-066	O-066	31.7858
CBM-S2	CBM-S2	14.0450
CARR	CARR	1.5339
ROWAN REVERSE 4479078	ROWAN 4479078	0.0000
CBM-S1	CBM-S1	11.6500
AA2-074	AA2-074	4.8748
MEC	MEC	10.5475
RENSSELAER	RENSSELAER	1.2143
AE1-042	AE1-042	0.0000
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
7735839	314924	8SURREY	DVP	314903	8CHCKAHM	DVP	1	DVP_P4-2: 56372	breaker	3144.0	119.56	121.97	AC	88.81

Bus #	Bus	MW Impact
314539	3UNCAMP	2.8092
314541	3WATKINS	0.7747
314554	3BTLEBRO	0.7144
314557	3BETHEL	0.7508
314566	3CRESWEL	2.9704
314574	6EVERETS	4.1714
314578	3HORNRTN	2.8608
314582	3KELFORD	3.5291
314594	6PLYMOTH	1.0157
314603	3SCOT NK	3.1778
314617	3TUNIS	0.8795
314620	6CASHIE	0.9699
314623	3WITAKRS	1.2140
314648	6SUNBURY	1.2148
314651	6WINFALL	2.3881
315090	1YORKTN1 (Deactivation : 09/09/18)	33.5767
315091	1YORKTN2 (Deactivation : 09/09/18)	34.8437
315108	1ELIZAR1	4.4439
315109	1ELIZAR2	4.3667
315110	1ELIZAR3	4.5007
315131	1EDGECEMA (Deactivation : 04/22/19)	8.2548
315132	1EDGECEMB (Deactivation : 04/22/19)	8.2548
315233	1SURREY 2	44.0311
900672	V4-068 E	0.3122
901082	W1-029 E	62.6105
907092	X1-038 E	7.0231
913392	Y1-086 E	3.0826
916041	Z1-036 C	8.9817
916042	Z1-036 E	60.1771
916191	Z1-068 C	0.0609
916192	Z1-068 E	3.2209
916302	Z1-086 E	12.0158
917122	Z2-027 E	1.4709
917332	Z2-043 E	1.0035
917342	Z2-044 E	0.5203
917512	Z2-088 E OP1	3.7648
918492	AA1-063AE OP	3.7318
918512	AA1-065 E OP	4.8381
918532	AA1-067 E	0.7361
918562	AA1-072 E	0.1673
919152	AA1-139 E	9.2684
919692	AA2-053 E	3.3643

Bus #	Bus	MW Impact
919702	AA2-057 E	3.2155
920042	AA2-088 E OP	11.1113
920592	AA2-165 E	0.4239
920672	AA2-174 E	0.3888
920692	AA2-178 E	5.0920
923801	AB2-015 C O1	9.8294
923802	AB2-015 E O1	8.0601
923831	AB2-022 C	3.2318
923832	AB2-022 E	1.7402
924151	AB2-059 C O1	9.4209
924152	AB2-059 E O1	4.8532
924501	AB2-099 C	0.6146
924502	AB2-099 E	0.2634
925061	AB2-161 C O1	2.8996
925062	AB2-161 E O1	4.7309
925121	AB2-169 C	7.1508
925122	AB2-169 E	6.4174
925521	AC1-027 C	0.4544
925522	AC1-027 E	1.9605
925591	AC1-034 C	6.1022
925592	AC1-034 E	4.6034
925781	AC1-054 C O1	5.8205
925782	AC1-054 E O1	2.6814
926071	AC1-086 C	16.5824
926072	AC1-086 E	7.5472
926201	AC1-098 C	5.7780
926202	AC1-098 E	3.4422
926211	AC1-099 C	1.9363
926212	AC1-099 E	1.1372
926271	AC1-105 C O1	4.5156
926272	AC1-105 E O1	2.2479
926661	AC1-147 C	3.2600
926662	AC1-147 E	1.9146
926751	AC1-161 C O1	61.0448
926752	AC1-161 E O1	26.0584
927021	AC1-189 C	8.4934
927022	AC1-189 E	4.2308
927141	AC1-208 C	8.1866
927142	AC1-208 E	3.6352
927251	AC1-221 C	1.9221
927252	AC1-221 E	1.9221
927261	AC1-222 C	2.9406
927262	AC1-222 E	2.7993
930401	AB1-081 C O1	7.9935
930402	AB1-081 E O1	3.4258
930861	AB1-132 C O1	11.2605
930862	AB1-132 E O1	4.8259
932041	AC2-012 C	14.7477
932042	AC2-012 E	24.0620
932591	AC2-079 C O1	6.1008
932592	AC2-079 E O1	9.9539
932631	AC2-084 C	8.2368

Bus #	Bus	MW Impact
932632	AC2-084 E	4.0569
932761	AC2-100 C	4.4234
932762	AC2-100 E	2.1590
933291	AC2-141 C	61.0448
933292	AC2-141 E	26.0584
933731	AC2-196 C	3.0950
933732	AC2-196 E	2.0613
933991	AD1-023 C	15.2855
933992	AD1-023 E	8.3214
934061	AD1-033 C	12.9822
934062	AD1-033 E	8.6548
934311	AD1-055 C	2.0417
934312	AD1-055 E	0.5265
934331	AD1-057 C O1	8.5009
934332	AD1-057 E O1	4.5348
934341	AD1-058 C	4.8183
934342	AD1-058 E	1.2243
934521	AD1-076 C	64.6159
934522	AD1-076 E	32.9023
934571	AD1-082 C	6.6080
934572	AD1-082 E	3.7694
934611	AD1-087 C O1	8.0123
934612	AD1-087 E O1	3.7656
934621	AD1-088 C	10.3470
934622	AD1-088 E	4.8571
934991	AD1-131 C	1.5798
934992	AD1-131 E	1.0532
935111	AD1-144 C	2.2745
935112	AD1-144 E	1.2428
935171	AD1-152 C O1	7.9625
935172	AD1-152 E O1	5.3084
936401	AD2-051 C O1	9.1877
936402	AD2-051 E O1	3.9451
936661	AD2-085 C	3.6191
936662	AD2-085 E	5.9049
936701	AD2-089 C (Withdrawn : 12/09/2019)	6.7572
936702	AD2-089 E (Withdrawn : 12/09/2019)	4.5048
936711	AD2-090 C O1	7.9233
936712	AD2-090 E O1	5.2822
937221	AD2-160 C O1	9.9971
937222	AD2-160 E O1	5.2424
937251	AD2-164	5.6563
937481	AD2-202 C O1	2.1233
937482	AD2-202 E O1	1.1944
937541	AD2-215 C	2.2980
937542	AD2-215 E	1.2193
937571	AD2-169 C	7.7663
937572	AD2-169 E	5.1775
938171	AE1-026 C1 O	32.1810
938172	AE1-026 C2 O	4.9465
938173	AE1-026 E O1	9.4274
938181	AE1-027 C	4.0323

Bus #	Bus	MW Impact
938182	AE1-027 E	2.1239
938191	AE1-028 C	2.3394
938192	AE1-028 E	1.3544
938221	AE1-035 C	2.4557
938222	AE1-035 E	1.2095
938491	AE1-068 C O1	76.7967
938492	AE1-068 E O1	42.4158
938501	AE1-069 C O1	60.6792
938502	AE1-069 E O1	34.6908
938531	AE1-072 C O1	25.2193
938532	AE1-072 E O1	13.1468
938661	AE1-088	4.3142
938771	AE1-103 C O1	4.2753
938772	AE1-103 E O1	5.9039
939311	AE1-162 C	2.5111
939312	AE1-162 E	1.6741
939411	AE1-173 C	149.7504
939412	AE1-173 E	99.8336
939421	AE1-174 C	0.2798
939422	AE1-174 E	0.4198
939431	AE1-175 C	1.8609
939432	AE1-175 E	0.9235
940061	AE1-248 C O1	13.7348
940062	AE1-248 E O1	9.1565
940251	AE2-007 O1	296.4920
940471	AE2-031 C	41.9060
940472	AE2-031 E	27.9373
940491	AE2-034 C	8.9111
940492	AE2-034 E	3.8190
940521	AE2-037 C	8.7237
940522	AE2-037 E	4.2171
940571	AE2-044 C	3.9967
940572	AE2-044 E	1.7129
940641	AE2-051 C O1	28.0746
940642	AE2-051 E O1	18.7164
940891	AE2-078 C	2.4104
940892	AE2-078 E	1.2417
940901	AE2-079 C	2.4104
940902	AE2-079 E	1.2417
940911	AE2-080 C	2.4104
940912	AE2-080 E	1.2417
941031	AE2-094 C	50.4971
941032	AE2-094 E	22.6165
941101	AE2-104 C O1	4.4816
941102	AE2-104 E O1	7.1206
941281	AE2-122 C O1	48.7680
941282	AE2-122 E O1	196.7907
941291	AE2-123 C O1	50.1184
941292	AE2-123 E O1	195.4403
941301	AE2-124 C O1	45.6147
941302	AE2-124 E O1	200.1520
941501	AE2-147 C	21.5898

Bus #	Bus	MW Impact
941502	AE2-147 E	14.3932
941541	AE2-151 C	1.1397
941542	AE2-151 E	0.6137
941591	AE2-156 O1	30.5330
941601	AE2-157 C	7.9994
941602	AE2-157 E	5.3329
941791	AE2-182 C	1.6798
941792	AE2-182 E	0.7820
942131	AE2-225 C	2.9719
942132	AE2-225 E	1.9812
942171	AE2-229 C	2.2289
942172	AE2-229 E	1.4859
942341	AE2-247 C	1.5687
942342	AE2-247 E	2.1662
942401	AE2-253 C	10.5153
942402	AE2-253 E	4.7242
942851	AE2-304 C	0.8469
942852	AE2-304 E	0.3294
942931	AE2-313 C	45.2908
942932	AE2-313 E	30.1939
943171	AE2-346 C	1.4751
943172	AE2-346 E	0.6322
LGEE	LGEE	1.5363
CIN	CIN	5.2896
CPLE	CPLE	9.3794
IPL	IPL	3.2713
G-007	G-007	3.5616
CBM-W2	CBM-W2	88.3071
CBM-W1	CBM-W1	11.3137
MECS	MECS	3.6820
WEC	WEC	1.4051
O-066	O-066	22.6666
CBM-S2	CBM-S2	17.9564
CARR	CARR	1.0974
CBM-S1	CBM-S1	13.9619
AA2-074	AA2-074	6.3806
MEC	MEC	12.6403
RENSSELAER	RENSSELAER	0.8686
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
39879554	314934	8SPOTSYL	DVP	314916	8MORRSVL	DVP	1	314900(8BRISTER)-314905()_1	single	3218.56	127.95	129.26	AC	41.13

Bus #	Bus	MW Impact
314236	6NRTHEST	0.1790
314250	6ROCKVILLE	0.3293
314309	6IRON208	0.4320
314314	3LOCKS	0.2828
314507	3THOMPSN	0.3254
315053	1BELMED1 (Deactivation : 04/16/18)	20.9732
315054	1BELMED2 (Deactivation : 04/16/18)	20.9732
315055	1BELMED3 (Deactivation : 04/16/18)	17.4075
315058	1CHESTF3 (Deactivation : 12/13/18)	18.4748
315059	1CHESTF4 (Deactivation : 12/13/18)	29.9476
315065	1CHESTF6	19.6159
315074	1HOPCGN1 (Deactivation : 06/25/19)	10.0777
315075	1HOPCGN2 (Deactivation : 06/25/19)	8.4550
315076	1HOPPOLC	1.5306
315077	1HOPHCF1	2.3925
315078	1HOPHCF2	2.3925
315079	1HOPHCF3	2.3925
315080	1HOPHCF4	3.6321
315083	1SPRUNCA (Deactivation : 01/12/19)	13.0065
315084	1SPRUNCB (Deactivation : 01/12/19)	13.0065
315090	1YORKTN1 (Deactivation : 09/09/18)	29.2451
315091	1YORKTN2 (Deactivation : 09/09/18)	30.3487
315098	1CHESPKA	0.4299
315099	1CHESPKB (Deactivation : 05/31/19)	1.0703
315108	1ELIZAR1	3.1576
315109	1ELIZAR2	3.1028
315110	1ELIZAR3	3.1980
315225	1N ANNA1	48.4233
315226	1N ANNA2	48.5305
315233	1SURRY 2	24.4732
315260	1GOSPORTA	0.3432
315261	1GOSPORTB	0.4384
315262	1GOSPORTC	0.3721
916041	Z1-036 C	6.8558
923801	AB2-015 C O1	8.6054
923831	AB2-022 C	2.3522
923911	AB2-031 C O1	2.1486
923991	AB2-040 C O1	7.0551
924241	AB2-068 O1	194.8142
924501	AB2-099 C	0.5682
924511	AB2-100 C	11.2858
925021	AB2-158 C	13.9251

Bus #	Bus	MW Impact
925051	AB2-160 C O1	6.6232
925061	AB2-161 C O1	3.4802
925171	AB2-174 C O1	6.7630
925331	AB2-190 C	20.6955
925821	AC1-061	0.0058
925861	AC1-065 C	3.3616
926001	AC1-076 C	6.5498
926071	AC1-086 C	19.7399
926291	AC1-107 O1	294.0592
926661	AC1-147 C	2.7448
926731	AC1-158 C	193.5922
926751	AC1-161 C O1	37.0948
926781	AC1-164 C	40.3362
927041	AC1-191 C O1	9.3576
927221	AC1-216 C O1	10.1242
930861	AB1-132 C O1	13.4046
931231	AB1-173 C	2.1646
931241	AB1-173AC	2.1646
932041	AC2-012 C	12.4169
932501	AC2-070 C	1.6824
932581	AC2-078 C O1	4.2020
932591	AC2-079 C O1	5.8938
932831	AC2-110 C	1.3446
933011	AC2-125	2.4152
933021	AC2-126	2.4314
933261	AC2-137 C	2.0922
933291	AC2-141 C	37.0948
933501	AC2-165 C	9.4463
933731	AC2-196 C	1.8465
933991	AD1-023 C	12.8847
934011	AD1-025 C	17.4032
934061	AD1-033 C	7.7562
934141	AD1-041 C	5.2841
934201	AD1-047 C	7.6965
934521	AD1-076 C	53.5022
934571	AD1-082 C	7.9311
935111	AD1-144 C	1.7770
935161	AD1-151 C O1	16.6303
935211	AD1-156 C	2.5910
936041	AD2-007	1.8475
936051	AD2-008 C	3.0299
936151	AD2-021	0.2386
936301	AD2-039 C	1.3446
936401	AD2-051 C O1	8.4671
936591	AD2-074 C	5.2256
936661	AD2-085 C	3.5371
936711	AD2-090 C O1	7.1250
936761	AD2-097 C	2.4668
937221	AD2-160 C O1	6.0226
937251	AD2-164	4.9080
937541	AD2-215 C	1.7954
937571	AD2-169 C	9.5768

Bus #	Bus	MW Impact
938031	AE1-004 C	1.3446
938171	AE1-026 C1 O	27.4161
938172	AE1-026 C2 O	4.2141
938181	AE1-027 C	2.4140
938191	AE1-028 C	1.4005
938221	AE1-035 C	2.1841
938491	AE1-068 C O1	59.2361
938501	AE1-069 C O1	46.8041
938531	AE1-072 C O1	18.0217
938551	AE1-074 C	3.0663
938561	AE1-075 C	2.0987
938631	AE1-085 C O1	9.2080
938771	AE1-103 C O1	3.6601
939191	AE1-149 C O1	11.0716
939231	AE1-154 C	2.2828
939261	AE1-157 C O1	12.9674
939271	AE1-158 C O1	13.2341
939311	AE1-162 C	2.2181
939411	AE1-173 C	107.4960
939421	AE1-174 C	0.3673
939431	AE1-175 C	2.4427
939611	AE1-191 C	10.5682
939751	AE1-206 C O1	30.6514
940061	AE1-248 C O1	16.4850
940071	AE1-249 C (Withdrawn : 01/10/2020)	8.7366
940231	AE2-005 C	1.3446
940251	AE2-007 O1	210.8691
940431	AE2-027 C O1	15.6722
940471	AE2-031 C	38.0329
940481	AE2-033 C	15.7987
940491	AE2-034 C	7.1464
940521	AE2-037 C	7.7782
940541	AE2-040 O1	3.1556
940551	AE2-041	7.0978
940641	AE2-051 C O1	20.3535
940651	AE2-052	3.6905
940891	AE2-078 C	2.4351
940901	AE2-079 C	2.4351
940911	AE2-080 C	2.4351
941031	AE2-094 C	45.5467
941101	AE2-104 C O1	3.5801
941281	AE2-122 C O1	29.3699
941291	AE2-123 C O1	30.1831
941301	AE2-124 C O1	27.4413
941381	AE2-134	4.5133
941501	AE2-147 C	16.1078
941531	AE2-150	0.1842
941541	AE2-151 C	1.0503
941581	AE2-155 C	0.6400
941591	AE2-156 O1	21.7910
941601	AE2-157 C	11.0124
942001	AE2-212 C	2.6196

Bus #	Bus	MW Impact
942131	AE2-225 C	2.1944
942151	AE2-227 C	2.6268
942161	AE2-228 C	2.6207
942171	AE2-229 C	1.6458
942191	AE2-231 C O1	5.0801
942341	AE2-247 C	1.5331
942371	AE2-250 C O1	11.7650
942401	AE2-253 C	6.3348
942471	AE2-260 C O1	14.0224
942551	AE2-270 S C	16.6280
942552	AE2-270 B C	11.0854
942851	AE2-304 C	0.6384
942931	AE2-313 C	41.1277
943171	AE2-346 C	1.3636
LGEE	LGEE	1.4225
CIN	CIN	4.7211
CPL	CPL	8.5975
IPL	IPL	2.9011
CBM-W2	CBM-W2	83.4025
CBM-W1	CBM-W1	9.1598
MECS	MECS	1.6975
WEC	WEC	1.2017
CBM-S2	CBM-S2	16.8641
CARR	CARR	1.8265
ROWAN REVERSE 4479078	ROWAN 4479078	0.0000
CBM-S1	CBM-S1	13.6045
AA2-074	AA2-074	5.8486
MEC	MEC	11.4299
RENSSELAER	RENSSELAER	1.4455
AE1-042	AE1-042	0.0000
DEARBORN REVERSE 4540149	DEARBORN REVERSE 4540149	0.0000

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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
8120495	927250	AC1-221 TAP	DVP	304070	6PERSON230 T	CPLE	1	DVP_P1-2: LN 570_FSA	single	718.0	109.52	112.1	AC	19.3

Bus #	Bus	MW Impact
314429	3JTRSVLE	0.2344
314507	3THOMPSN	0.0905
314704	3LAWRENC	0.1026
315098	1CHESPKA	0.1196
315099	1CHESPKB (Deactivation : 05/31/19)	0.2977
315102	1BRUNSWICKG1	3.6600
315103	1BRUNSWICKG2	3.6600
315104	1BRUNSWICKG3	3.6600
315105	1BRUNSWICKS1	7.6037
315108	1ELIZAR1	0.8813
315109	1ELIZAR2	0.8660
315110	1ELIZAR3	0.8926
315150	1BUGGS 1 (Deactivation : 04/09/18)	9.8635
315151	1BUGGS 2 (Deactivation : 04/09/18)	9.8635
315153	1CLOVER1	13.5899
315154	1CLOVER2	13.4119
315191	1BEARGRDN G1	1.4651
315192	1BEARGRDN G2	1.4651
315193	1BEARGRDN S1	3.0143
315233	1SURRY 2	7.0309
315260	1GOSPORTA	0.0953
315261	1GOSPORTB	0.1217
315262	1GOSPORTC	0.1033
315266	1PLYWOOD A	1.6461
916191	Z1-068 C	0.0119
916301	Z1-086 C	21.4358
920291	AA2-127	0.3043
923861	AB2-026 C	0.1162
924021	AB2-043 C O1	2.3944
924031	AB2-045 C	0.1812
924161	AB2-060 C O1	6.8957
924301	AB2-077 C O1	1.5427
924311	AB2-078 C O1	1.5427
924321	AB2-079 C O1	1.5427
925521	AC1-027 C	0.0887
925611	AC1-036 C	0.7212
925831	AC1-062	0.0318
925991	AC1-075 C	7.2881
926021	AC1-080 C	2.4357
926271	AC1-105 C O1	9.3430
926661	AC1-147 C	0.7634

Bus #	Bus	MW Impact
926751	AC1-161 C O1	11.2509
927251	AC1-221 C	9.8750
927261	AC1-222 C	6.5554
932041	AC2-012 C	3.4536
932511	AC2-071 C	1.3480
932761	AC2-100 C	22.7260
933291	AC2-141 C	11.2509
933501	AC2-165 C	3.7004
934311	AD1-055 C	4.5515
934341	AD1-058 C	24.7551
934611	AD1-087 C O1	15.3019
934621	AD1-088 C	13.9685
934991	AD1-131 C	8.1164
935171	AD1-152 C O1	15.2069
935221	AD1-157 C	1.1370
935231	AD1-160 C	0.8338
936261	AD2-033 C	9.8764
936331	AD2-043 C (Withdrawn : 12/20/2019)	8.4819
936361	AD2-046 C O1	3.8250
936481	AD2-063 C O1	11.3967
937481	AD2-202 C O1	4.0552
938371	AE1-056 C	4.9016
938491	AE1-068 C O1	31.3081
938501	AE1-069 C O1	24.7374
938561	AE1-075 C	0.7691
939181	AE1-148 C O1	3.9496
939371	AE1-168 C (Withdrawn : 01/08/2020)	11.3823
939411	AE1-173 C	36.4560
940241	AE2-006	0.3669
940251	AE2-007 O1	58.8301
940471	AE2-031 C	17.7306
940641	AE2-051 C O1	7.3242
940661	AE2-053 O1	1.4628
941031	AE2-094 C	19.3276
941591	AE2-156 O1	6.0740
941791	AE2-182 C	2.2678
942451	AE2-258	1.7863
942461	AE2-259 C O1	7.5720
942751	AE2-291 C	9.1133
942761	AE2-292 C O1	11.3469
942931	AE2-313 C	19.2978
DUCKCREEK	DUCKCREEK	4.2513
AC1-131	AC1-131	11.1187
NEWTON	NEWTON	5.4153
G-007A	G-007A	2.7955
CHILHOWEE	CHILHOWEE	1.2383
O-066A /*REV_CFTWR	O-066A /*REV_CFTWR	0.0000
ROSETON /* 35% REVERSE 4566427	ROSETON /* 35% REVERSE 4566427	0.0000
AE1-033	AE1-033	0.0000
VFT	VFT	7.4368
BAYOU /* 35% REVERSE 4392716	BAYOU /* 35% REVERSE 4392716	0.0000

Bus #	Bus	MW Impact
BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	0.0000
TVA	TVA	10.5963
PRAIRIE	PRAIRIE	11.4479
AE1-080A	AE1-080A	0.0000
COFFEEN	COFFEEN	2.0844
EDWARDS	EDWARDS	1.8953
CHEOAH	CHEOAH	3.5761
TILTON	TILTON	2.2346
SANTEETLA	SANTEETLA	1.0628
SMITHLAND	SMITHLAND	1.0259
CBM-N	CBM-N	0.6285
COTTONWOOD	COTTONWOOD	12.6021
TATANKA /* 35% REVERSE 4600034 4680722	TATANKA /* 35% REVERSE 4600034 4680722	0.0000
HAMLET	HAMLET	7.3692
BLUEG	BLUEG	17.6803
UNIONPOWER	UNIONPOWER	5.3121
CELEVELAND /* 35% REVERSE 4479079 4642907	CELEVELAND /* 35% REVERSE 4479079 4642907	0.0000
CANNELTON	CANNELTON	1.2168
GIBSON	GIBSON	0.7656
CALDERWOOD	CALDERWOOD	3.8264
FARMERCITY	FARMERCITY	1.5152
TRIMBLE	TRIMBLE	1.9394
CATAWBA	CATAWBA	3.8630
NYISO	NYISO	2.7167

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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
8120898	934610	AD1-087 TAP	DVP	314697	6SEEDGE HILL	DVP	1	DVP_P1-2: LN 570_FSA	single	814.98	108.62	111.5	AC	23.91

Bus #	Bus	MW Impact
314421	6WINCHST	0.0452
314507	3THOMPSN	0.1062
315090	1YORKTN1 (Deactivation : 09/09/18)	10.8518
315091	1YORKTN2 (Deactivation : 09/09/18)	11.2613
315092	1YORKTN3	7.1369
315098	1CHESPKA	0.1403
315099	1CHESPKB (Deactivation : 05/31/19)	0.3493
315102	1BRUNSWICKG1	4.5332
315103	1BRUNSWICKG2	4.5332
315104	1BRUNSWICKG3	4.5332
315105	1BRUNSWICKS1	9.4178
315108	1ELIZAR1	1.0349
315109	1ELIZAR2	1.0169
315110	1ELIZAR3	1.0481
315116	1SURRY 1	7.4775
315153	1CLOVER1	17.7409
315154	1CLOVER2	17.5086
315233	1SURRY 2	8.2854
315260	1GOSPORTA	0.1118
315261	1GOSPORTB	0.1428
315262	1GOSPORTC	0.1212
916191	Z1-068 C	0.0139
916301	Z1-086 C	26.4785
924021	AB2-043 C O1	-2.0661
924031	AB2-045 C	0.1655
924161	AB2-060 C O1	-5.7800
924301	AB2-077 C O1	-1.3743
924311	AB2-078 C O1	-1.3743
924321	AB2-079 C O1	-1.3743
925521	AC1-027 C	0.1040
926661	AC1-147 C	0.8959
926751	AC1-161 C O1	13.3500
932041	AC2-012 C	4.0527
932511	AC2-071 C	1.2309
933291	AC2-141 C	13.3500
933731	AC2-196 C	0.6953
934061	AD1-033 C	2.9236
934611	AD1-087 C O1	20.5183
934621	AD1-088 C	17.0058
935171	AD1-152 C O1	20.3909
937251	AD2-164	1.8081

Bus #	Bus	MW Impact
937481	AD2-202 C O1	5.4376
938181	AE1-027 C	0.8949
938191	AE1-028 C	0.5192
938491	AE1-068 C O1	38.5940
938501	AE1-069 C O1	30.4942
939311	AE1-162 C	0.8238
939411	AE1-173 C	43.8288
940251	AE2-007 O1	69.0770
940471	AE2-031 C	21.9571
940641	AE2-051 C O1	8.8614
940891	AE2-078 C	0.8852
940901	AE2-079 C	0.8852
940911	AE2-080 C	0.8852
941031	AE2-094 C	23.7223
941281	AE2-122 C O1	11.1341
941291	AE2-123 C O1	11.4424
941301	AE2-124 C O1	10.3905
941591	AE2-156 O1	7.1310
941791	AE2-182 C	2.7609
942931	AE2-313 C	23.9098
DUCKCREEK	DUCKCREEK	4.3918
AC1-131	AC1-131	9.9007
NEWTON	NEWTON	5.5687
G-007A	G-007A	3.1000
CHILHOWEE	CHILHOWEE	1.1990
O-066A /*REV_CFTWR	O-066A /*REV_CFTWR	0.0000
ROSETON /* 35% REVERSE 4566427	ROSETON /* 35% REVERSE 4566427	0.0000
AE1-033	AE1-033	0.0000
VFT	VFT	8.2431
BAYOU /* 35% REVERSE 4392716	BAYOU /* 35% REVERSE 4392716	0.0000
BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	BIG_CAJUN1 /* 35% REVERSE 4646887 4392735	0.0000
TVA	TVA	10.3862
PRAIRIE	PRAIRIE	11.5744
AE1-080A	AE1-080A	0.0000
COFFEEN	COFFEEN	2.1388
EDWARDS	EDWARDS	1.9630
CHEOAH	CHEOAH	3.4494
TILTON	TILTON	2.3278
SANTEETLA	SANTEETLA	1.0236
SMITHLAND	SMITHLAND	1.0253
CBM-N	CBM-N	0.6977
COTTONWOOD	COTTONWOOD	12.3060
TATANKA /* 35% REVERSE 4600034 4680722	TATANKA /* 35% REVERSE 4600034 4680722	0.0000
HAMLET	HAMLET	6.6717
BLUEG	BLUEG	18.5671
UNIONPOWER	UNIONPOWER	5.1084
CELEVELAND /* 35% REVERSE 4479079 4642907	CELEVELAND /* 35% REVERSE 4479079 4642907	0.0000
CANNELTON	CANNELTON	1.2527

Bus #	Bus	MW Impact
GIBSON	GIBSON	0.7952
CALDERWOOD	CALDERWOOD	3.7002
FARMERCITY	FARMERCITY	1.5333
TRIMBLE	TRIMBLE	2.0407
CATAWBA	CATAWBA	3.5529
NYISO	NYISO	3.0168

Affected Systems

15 Affected Systems

15.1 TVA

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

15.2 Duke Energy Progress

Potential violations on the Sedge Hill – AC1-221 Tap 230 kV and AC1-221 Tap – Person 230 kV lines.

16 Contingency Details

Contingency Name	Contingency Definition
DVP_P1-2: LN 563	CONTINGENCY 'DVP_P1-2: LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
DVP_P4-2: XT573	CONTINGENCY 'DVP_P4-2: XT573' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 2 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
DVP_P7-1: LN 198-581	CONTINGENCY 'DVP_P7-1: LN 198-581' OPEN BRANCH FROM BUS 314135 TO BUS 314367 CKT 1 /* 3CHANCE 115.00 - 3CHANC_1 115.00 OPEN BRANCH FROM BUS 314135 TO BUS 314775 CKT 1 /* 3CHANCE 115.00 - 3NI RVER 115.00 OPEN BRANCH FROM BUS 314755 TO BUS 314779 CKT 1 /* 3SPOTSYL 115.00 - 3TDTAVRN 115.00 OPEN BRANCH FROM BUS 314775 TO BUS 314779 CKT 1 /* 3NI RVER 115.00 - 3TDTAVRN 115.00 OPEN BRANCH FROM BUS 314815 TO BUS 314877 CKT 1 /* 3OAK GRE 115.00 - 3OAK G_1 115.00 OPEN BUS 314367 /* ISLAND: 3CHANC_1 115.00 OPEN BUS 314775 /* ISLAND: 3NI RVER 115.00 OPEN BUS 314779 /* ISLAND: 3TDTAVRN 115.00 OPEN BUS 314877 /* ISLAND: 3OAK G_1 115.00 OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 2 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314905 TO BUS 314911 CKT 1 /* 8CHANCE 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: 57302	CONTINGENCY 'DVP_P4-2: 57302' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
314905()-314911()_1	CONTINGENCY '314905()-314911()_1' OPEN BRANCH FROM BUS 314905 TO BUS 314911 CKT 1 END
DVP_P4-2: 562T563	CONTINGENCY 'DVP_P4-2: 562T563' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 940640 CKT 1 /* 8CARSON 500.00 - 8SEPTA 500.00 OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
314903(8CHCKAHM)-314908()_1	CONTINGENCY '314903(8CHCKAHM)-314908()_1' OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 END

Contingency Name	Contingency Definition
DVP_P4-2: 568T575	CONTINGENCY 'DVP_P4-2: 568T575' /* LADYSMITH 500 KV OPEN BRANCH FROM BUS 314911 TO BUS 314922 CKT 1 /* 8LADYSMITH 500.00 - 8POSSUM 500.00 OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 500.00 - 8NO ANNA 500.00 END
DVP_P4-2: H1T573	CONTINGENCY 'DVP_P4-2: H1T573' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314755 TO BUS 314934 CKT 1 /* 3SPOTSYL 115.00 - 8SPOTSYL 500.00 END
DVP_P4-2: 57502	CONTINGENCY 'DVP_P4-2: 57502' /* NORTH ANNA 500 KV OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 /* 8LADYSMITH 500.00 - 8NO ANNA 500.00 OPEN BRANCH FROM BUS 314232 TO BUS 314918 CKT 1 /* 6NO ANNA 230.00 - 8NO ANNA 500.00 END
DVP_P1-2: LN 570_FSA	CONTINGENCY 'DVP_P1-2: LN 570_FSA' OPEN BRANCH FROM BUS 304183 TO BUS 918500 CKT 1 /* 8WAKE 500 TT500.00 - AA1-064 TAP 500.00 END
DVP_P1-2: LN 594	CONTINGENCY 'DVP_P1-2: LN 594' OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
314900(8BRISTER)-314905()_1	CONTINGENCY '314900(8BRISTER)-314905()_1' OPEN BRANCH FROM BUS 314900 TO BUS 314905 CKT 1 END
DVP_P1-2: LN 585-A_AE2-094A	CONTINGENCY 'DVP_P1-2: LN 585-A_AE2-094A' OPEN BRANCH FROM BUS 314902 TO BUS 941030 CKT 1 /* 8CARSON 500.00 - AE1-068 TAP 500.00 END
DVP_P1-2: LN 585-A_AE2-094B	CONTINGENCY 'DVP_P1-2: LN 585-A_AE2-094B' OPEN BRANCH FROM BUS 941030 TO BUS 938490 CKT 1 /* 8CARSON 500.00 - AE1-068 TAP 500.00 END
DVP_P4-2: 56372	CONTINGENCY 'DVP_P4-2: 56372' /* CARSON 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314282 TO BUS 314902 CKT 1 /* 6CARSON 230.00 - 8CARSON 500.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 6002_FSA	CONTINGENCY 'DVP_P1-2: LN 6002_FSA' OPEN BRANCH FROM BUS 314935 TO BUS 918500 CKT 1 500.00 /* 8HERITAGE 500.00 - AA1-064 TAP END
DVP_P1-2: LN 552	CONTINGENCY 'DVP_P1-2: LN 552' OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 1 500.00 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314900 TO BUS 314905 CKT 1 500.00 /* 8BRISTER 500.00 - 8CHANCE 500.00 END
DVP_P4-2: 573T594	CONTINGENCY 'DVP_P4-2: 573T594' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 500.00 /* 8NO ANNA 500.00 - 8SPOTSYL OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 500.00 /* 8MORRSVL 500.00 - 8SPOTSYL END
DVP_P1-2: LN 557	CONTINGENCY 'DVP_P1-2: LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 500.00 /* 6CHCKAHM 230.00 - 8CHCKAHM OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 500.00 /* 8CHCKAHM 500.00 - 8ELMONT END
DVP_P1-2: LN 570	CONTINGENCY 'DVP_P1-2: LN 570' OPEN BRANCH FROM BUS 304183 TO BUS 918500 CKT 1 500.00 /* 8WAKE 500 TT500.00 - AA1-064 TAP OPEN BRANCH FROM BUS 314935 TO BUS 918500 CKT 1 500.00 /* 8HERITAGE 500.00 - AA1-064 TAP OPEN BUS 918500 /* ISLAND: AA1-064 TAP 500.00 END
DVP_P1-2: LN 573	CONTINGENCY 'DVP_P1-2: LN 573' OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 500.00 /* 8NO ANNA 500.00 - 8SPOTSYL END
DVP_P1-2: LN 575	CONTINGENCY 'DVP_P1-2: LN 575' OPEN BRANCH FROM BUS 314911 TO BUS 314918 CKT 1 500.00 /* 8LADYSMITH 500.00 - 8NO ANNA END
DVP_P1-2: LN 574	CONTINGENCY 'DVP_P1-2: LN 574' OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 500.00 /* 8ELMONT 500.00 - 8LADYSMITH END
DVP_P1-2: LN 576	CONTINGENCY 'DVP_P1-2: LN 576' OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 500.00 /* 8MDLTHAN 500.00 - 8NO ANNA END

Contingency Name	Contingency Definition
DVP_P4-2: 557T574	CONTINGENCY 'DVP_P4-2: 557T574' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LADYSMITH 500.00 END
Base Case	
DVP_P4-2: 563T576	CONTINGENCY 'DVP_P4-2: 563T576' /* MIDLOTHIAN 500 500 KV OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
DVP_P1-2: LN 511_AE2-031A	CONTINGENCY 'DVP_P1-2: LN 511_AE2-031A' OPEN BRANCH FROM BUS 314902 TO BUS 940470 CKT 1 /* 8CARSON 500.00 - 8RAWLINGS 500.00 END
DVP_P4-2: H2T557	CONTINGENCY 'DVP_P4-2: H2T557' /* ELMONT 500 KV OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 OPEN BRANCH FROM BUS 314218 TO BUS 314908 CKT 2 /* 6ELMONT 230.00 - 8ELMONT 500.00 END
DVP_P1-2: LN 511_AE2-031B	CONTINGENCY 'DVP_P1-2: LN 511_AE2-031B' OPEN BRANCH FROM BUS 940470 TO BUS 942930 CKT 1 /* 8CARSON 500.00 - 8RAWLINGS 500.00 END
DVP_P1-2: LN 581	CONTINGENCY 'DVP_P1-2: LN 581' OPEN BRANCH FROM BUS 314135 TO BUS 314905 CKT 2 /* 3CHANCE 115.00 - 8CHANCE 500.00 OPEN BRANCH FROM BUS 314905 TO BUS 314911 CKT 1 /* 8CHANCE 500.00 - 8LADYSMITH 500.00 END
DVP_P4-2: SPOTS H1T594	CONTINGENCY 'DVP_P4-2: SPOTS H1T594' /* SPOTSYLVANIA 500 KV OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 OPEN BRANCH FROM BUS 314755 TO BUS 314934 CKT 1 /* 3SPOTSYL 115.00 - 8SPOTSYL 500.00 END

Short Circuit

17 Short Circuit

The following Breakers are overdutied:

None.

Stability

18 Stability Analysis and Reactive Power Assessment

To be finalized in Facilities Study phase.

19 Attachment 1

System Configuration

