



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-138
AVON-NORTHCLARK 345 KV
189.8 MW Capacity / 260 MW Energy**

July, 2019

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1 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a \$10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

2 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Clark County, Kentucky. The installed facilities will have a total capability of 260 MW with 189.8 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 6/1/2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-138
Project Name	AVON-NORTHCLARK 345 KV
State	None
County	Clark
Transmission Owner	EKPC
MFO	260
MWE	260
MWC	189.8
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

AE2-138 will interconnect with the EKPC transmission system at the Northclark 345kV substation.

2.2 Cost Summary

The AE2-138 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$0
Direct Connection Network Upgrade	\$0
Non Direct Connection Network Upgrades	\$2,000,000
Total Costs	\$2,000,000

In addition, the AE2-138 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$135,815,000

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

3 Transmission Owner Scope of Work

4 Attachment Facilities

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

None

5 Direct Connection Cost Estimate

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.

None

6 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Expand the existing 345kV bus at the North Clark switching station & install new relaying for the AE2-138 interconnection. Estimated Time to Construct: 24 months	\$2,000,000
Total Non-Direct Connection Facility Costs	\$2,000,000

7 Incremental Capacity Transfer Rights (ICTRs)

Will be determined at a later study phase

1 Interconnection Customer Requirements

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 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.
2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.

2 Revenue Metering and SCADA Requirements

2.1 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 Sections 24.1 and 24.2.

2.2 EKPC Requirements

The Interconnection Customer will be required to comply with all EKPC Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "EKPC Facility Connection Requirements" document located at the following link:

<http://www.pjm.com/planning/design-engineering/to-tech-standards/ekpc.aspx>

8 Option 1 - Network Impacts

The Queue Project AE2-138 was evaluated as a 260.0 MW (Capacity 189.8 MW) injection at the Northclark 345kV substation in the EKPC area. Project AE2-138 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-138 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

9 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
7045027	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	AEP_P1-2_#762	single	1372.0	93.02	93.84	DC	24.8
8751685	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P1-2_#764	single	1195.0	90.17	91.56	DC	16.6

10 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
1512239	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#3195_05BEATTY 345_304E	breaker	1203.0	86.59	87.32	DC	19.49
1512240	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#8094_05BIXBY 345_C	breaker	1203.0	87.16	87.88	DC	19.11
1512351	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#3196_05BEATTY 345_302E	breaker	1203.0	77.58	78.34	DC	20.19
7044022	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#10715_05COLE 345_C	breaker	1203.0	68.86	69.58	DC	19.24
1513462	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	185.0	94.26	97.79	DC	14.53
2215415	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	97.68	98.28	DC	18.31
8751891	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRCK34598FOSTERBATH	tower	1374.0	91.96	92.51	DC	16.86
1512401	253038	09KILLN	DAY	242938	05MARQUI	AEP	1	AEP_P4_#2085_05BEATTY 345_304C	breaker	1372.0	95.46	96.58	DC	34.3
1512402	253038	09KILLN	DAY	242938	05MARQUI	AEP	1	AEP_P4_#2866_05BEATTY 345_304W	breaker	1372.0	95.69	96.81	DC	33.99
2215406	253077	09STUART	DAY	926060	AC1-085 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	99.17	99.81	DC	19.53
2214530	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P2_GREENE_345	bus	1195.0	97.02	97.81	DC	21.07
2214864	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P4_#6774_05MARQUI 345_D	breaker	1195.0	98.24	99.1	DC	22.7
2214865	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P4_#2900_05MARQUI 345_D2	breaker	1195.0	94.61	95.47	DC	22.98
2215398	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1195.0	99.26	100.1	DC	22.47
2215399	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P7_34522 34598-A	tower	1195.0	96.82	97.58	DC	20.22
1513447	324267	4KENTON	LGEE	247034	05EMERS	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	185.0	95.93	99.47	DC	14.53
2215414	342559	4BOONECO	EKPC	250054	08LONGBR	DEO&K	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	284.0	95.03	98.61	DC	22.42
8751009	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	.345.DEO&K.FOSTER345 BUS1+RELAYFAIL	breaker	1374.0	97.23	97.83	DC	18.24
8751010	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	.345.DEO&K.C2 1349_FOSTER	breaker	1374.0	96.64	97.23	DC	18.16

11 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/D C	MW IMPACT
1513195	246946	05WLDCA T	AEP	243019	05HILLSB	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCLKSTUARTSPURLOC KDPLEK	tower	185.0	146.13	149.67	DC	14.53
1513349	253038	09KILLEN	DAY	242938	05MARQ UI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-A	tower	1372.0	105.69	106.89	DC	36.4
1513350	253038	09KILLEN	DAY	242938	05MARQ UI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	tower	1372.0	105.69	106.89	DC	36.4
1511560	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P2_GREENE_345	bus	1372.0	110.15	110.82	DC	20.38
1512164	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	AEP_P4_#6774_05MARQUI 345_D	breaker	1372.0	112.17	112.89	DC	22.01
1512985	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P1_34522	single	1372.0	107.03	107.49	DC	13.88
1513315	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1372.0	112.72	113.44	DC	21.79
1513316	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P7_34522 34598-A	tower	1372.0	109.98	110.62	DC	19.54
7044826	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P1_34509-A-A	single	1372.0	107.42	107.88	DC	13.87
2214961	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	AEP_P1-2_#363	single	1451.0	157.75	159.01	DC	18.35
2214963	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	AEP_P1-2_#10136	single	1451.0	152.11	153.38	DC	18.45
2214965	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	Base Case	single	1134.0	147.55	149.2	DC	18.78
2214720	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.138.DEO&K.C2 816_SILVERGROVE	breaker	1421.0	110.8	116.88	DC	86.1
2214721	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.345.DEO&K.C2 1493_RED BANK	breaker	1421.0	110.69	116.77	DC	86.05
2215100	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	single	1421.0	108.48	112.91	DC	62.81
2215103	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	Base Case	single	1240.0	104.03	108.75	DC	58.51
8751878	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.11	109.75	DC	19.53
8751879	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRK34598FOSTERBATH	tower	1374.0	103.25	103.84	DC	17.95
8751825	942090	AE2-221 TAP	DAY	253014	09CLINT O	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.05	109.69	DC	19.53
8751826	942090	AE2-221 TAP	DAY	253014	09CLINT O	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRK34598FOSTERBATH	tower	1374.0	103.18	103.77	DC	17.95

12 Potential Congestion due to Local Energy Deliverability

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

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection

Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1513084	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P1-2_#713	operation	1203.0	79.22	79.92	DC	18.55
7045032	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P1-2_#10137	operation	1203.0	69.4	70.12	DC	19.24
1513128	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	AEP_P1-2_#762	operation	1372.0	95.48	96.6	DC	33.98
8751681	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P1_34509-A-A	operation	1195.0	92.98	93.72	DC	19.68
7044824	253110	09ADKINS	DAY	243453	05BEATTY	AEP	1	DAY_P1_34509-A-A	operation	1372.0	106.82	107.44	DC	19.0
2214958	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	operation	1451.0	155.84	156.6	DC	25.13
2214962	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	operation	1134.0	153.73	154.72	DC	25.72
2215099	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	operation	1421.0	110.63	116.71	DC	86.05
2215101	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	Base Case	operation	1240.0	104.8	111.28	DC	80.15
1513083	941510	AE2-148 TAP	DAY	243453	05BEATTY	AEP	1	AEP_P1-2_#762	operation	1374.0	71.02	71.63	DC	18.59
8751623	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	AEP_P1-2_#762	operation	1374.0	94.2	94.78	DC	17.57
8751628	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	Base Case	operation	1255.0	85.88	86.42	DC	14.86

13 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
1513315,1513316,70 44826,1512164,1512 985,1511560	12	09ADKINS 345.0 kV - 05BEATTY 345.0 kV Ckt 1	AEPO0004a (109) : Rebuild 13.0 miles of 2-983.1 ACAR 30/7 Rail 5 conductor on Beatty-Adkins circuit (3.7 miles of double circuit construction). Bare minimum conductor is 2-1024.5 ACAR 30/7 Rail1 which provide no additional margin. Upgrade other elements previously rated by DP&L. Ratings validation of this equipment is currently underway. This will require relay upgrades at Beatty and Adkins. Project Type : FAC Cost : \$55,000,000 Time Estimate : 24-36 Months AEPO0004b (110) : Replace equipment at Adkins station formerly owned by DP&L that is now owned by AEP. Further investigation is required to see exactly what equipment is to be replaced and whether it can be simply re-rated according to AEP's standards. Project Type : FAC Cost : \$1,000,000 Time Estimate : 36-48 Months	\$56,000,000
8751891,2215415	6	09CLINTO 345.0 kV - 09GREENE 345.0 kV Ckt 1	<u>2215415,8751891</u> No violation. Post queue loading less than 100%.	\$0
2215414	9	4BOONE CO 138.0 kV - 08LONGBR 138.0 kV Ckt 1	<u>2215414</u> No violation. Post queue loading less than 100%.	\$0
2214965,2214961,22 14963	13	7TRIMBLE CO 345.0 kV - 06CLIFTY 345.0 kV Ckt 1	<u>2214961,2214963,2214965</u> This facility is owned by LGEE. NonPJMArea (778) : The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$0
8751879,8751878	15	AC1-085 TAP 345.0 kV - AE2-221 TAP 345.0 kV Ckt 1	r190001 (352) : Replace 2000A wave trap with 3000A Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months r190003 (354) : Reconductor line with 795 ACCR high temperature conductor in a twin bundle Project Type : FAC Cost : \$54,000,000 Time Estimate : 42.0 Months r190005 (356) : Replace 2000A wave trap with 3000A Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months	\$54,200,000

ID	Index	Facility	Upgrade Description	Cost
1513447	8	4KENTON 138.0 kV - 05EMERSS 138.0 kV Ckt 1	<u>1513447</u> No violation. Post queue loading less than 100%. NonPJMArea (778) : The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$0
1513462	5	05EMERSS 138.0 kV - 05WLDCAT 138.0 kV Ckt 1	<u>1513462</u> No violation. Post queue loading less than 100%.	\$0
8751826,8751825,8751009,8751010	10	AE2-221 TAP 345.0 kV - 09CLINTO 345.0 kV Ckt 1	r190001 (352) : Replace 2000A wave trap with 3000A Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months r190004 (355) : Reconductor line with 795 ACCR high temperature conductor in a twin bundle Project Type : FAC Cost : \$10,000,000 Time Estimate : 18.0 Months r190005 (356) : Replace 2000A wave trap with 3000A Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months r190006 (357) : Replace 2000A disconnect switch with 1600A (parallel) Project Type : FAC Cost : \$125,000 Time Estimate : 12.0 Months <u>8751009,8751010</u> No violation. Post queue loading less than 100%.	\$10,225,000
1512402,1513350,7045027,1512401,1513349	1	09KILLEN 345.0 kV - 05MARQUI 345.0 kV Ckt 1	<u>1512401,1512402,7045027</u> No violation. Post queue loading less than 100%. AEPO0007a (116) : Perform sag study on Don Marquis-Killen 345kV circuit, 32.1 miles of 2-983.1 ACAR 30/7 Rail5 conductor. Since Killen will be retired, the conductor between Don Marquis and Stuart will become a complete circuit and the whole circuit will need to be sag studied. Perform sag study on Killen-Stuart 345kV circuit, 15.2 miles of 2-983.1 ACAR 30/7 Rail5 conductor. Project Type : FAC Cost : \$190,000 Time Estimate : 6-12 Months r190009 (360) : Replace 2000A wave trap with 3000A Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months	\$290,000

ID	Index	Facility	Upgrade Description	Cost
1512239,1512240	3	05BEATTY 345.0 kV - 05COLE 345.0 kV Ckt 1	<u>1512239,1512240</u> No violation. Post queue loading less than 100%.	\$0
2215406	7	09STUART 345.0 kV - AC1-085 TAP 345.0 kV Ckt 1	<u>2215406</u> No violation. Post queue loading less than 100%.	\$0
2215100,2215103,22 14721,2214720	14	7SPURLOCK 345.0 kV - 09STUART 345.0 kV Ckt 1	r190002 (353) : Replace substation riser conductor with 2500AAC (parallel) Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months r190004 (355) : Reconductor line with 795 ACCR high temperature conductor in a twin bundle Project Type : FAC Cost : \$10,000,000 Time Estimate : 18.0 Months r0005 (640) : No Violation. EKPC emergency rating 1792 MVA. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$10,100,000
1513195	11	05WLDCAT 138.0 kV - 05HILLSB 138.0 kV Ckt 1	AEP_AE1_REF_r0027 (141) : Rebuild / reconductor 10 miles of ACSR ~ 477 ~ 26/7 ~ HAWK- Conductor Section 1. Estimated cost: \$15 million. Project Type : FAC Cost : \$15,000,000 Time Estimate : 24-36 Months	\$15,000,000
2214530,2215399,22 15398,8751685,2214 864,2214865	2	09ATLNTA 345.0 kV - 09ADKINS 345.0 kV Ckt 1	r190011 (362) : Replace metering equipment to increase thermal line rating Project Type : FAC Cost : \$100,000 Time Estimate : 12.0 Months <u>2214864,2214530,2215399,2214865,8751685</u> No violation. Post queue loading less than 100%.	\$100,000
7044022,1512351	4	05BEATTY 345.0 kV - 05BIXBY 345.0 kV Ckt 1	<u>1512351,7044022</u> No violation. Post queue loading less than 100%.	\$0
			TOTAL COST	\$135,815,000

14 Flow Gate Details

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

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
1513350	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	tower	1372.0	105.69	106.89	DC	36.4

Bus #	Bus	MW Impact
253038	09KILLEN	298.51
253077	09STUART	478.92
902531	W2-040 C	0.7
902532	W2-040 E	1.13
904722	V4-073 E	0.15
913222	Y1-054 E	1.77
914372	Y2-111 E	1.12
915582	Y3-080 E	0.75
915662	Y3-099 E	0.16
915672	Y3-100 E	0.16
916182	Z1-065 E	0.54
916272	Z1-080 E	0.47
918802	AA1-099 E	0.31
925242	AB2-178 E	1.56
925921	AC1-068 C	7.92
925922	AC1-068 E	3.71
925931	AC1-069 C	7.92
925932	AC1-069 E	3.71
925981	AC1-074 C O1	7.04
925982	AC1-074 E O1	3.02
926061	AC1-085 C O1	34.6
926062	AC1-085 E O1	56.44
926101	AC1-089 C O1	4.35
926102	AC1-089 E O1	7.1
926791	AC1-165 C	7.83
926792	AC1-165 E	3.8
926801	AC1-166 C	7.83
926802	AC1-166 E	3.8
930062	AB1-014 E	13.64
931181	AB1-169	301.62
932462	AC2-066 E	0.44
932481	AC2-068 C	2.36
932482	AC2-068 E	3.86
932551	AC2-075 C	1.67
932552	AC2-075 E	0.84
932661	AC2-088 C O1	7.58
932662	AC2-088 E O1	6.24
935011	AD1-134	7.68
935031	AD1-136 C	1.07
935032	AD1-136 E	0.91
935041	AD1-140 C O1	7.32

Bus #	Bus	MW Impact
935042	AD1-140 E O1	6.06
936251	AD2-031 C O1	2.3
936252	AD2-031 E O1	3.76
936281	AD2-036 C	5.03
936282	AD2-036 E	2.51
936381	AD2-048 C	5.59
936382	AD2-048 E	2.79
936571	AD2-072 C O1	4.96
936572	AD2-072 E O1	2.43
937111	AD2-147 C O1	4.65
937112	AD2-147 E O1	6.41
937151	AD2-151 C O1	7.55
937152	AD2-151 E O1	10.43
938051	AE1-007 C	0.68
938052	AE1-007 E	1.1
938271	AE1-040 C O1	2.56
938272	AE1-040 E O1	1.29
938921	AE1-120	7.75
939141	AE1-144 C O1	13.3
939142	AE1-144 E O1	6.6
940531	AE2-038 C O1	8.87
940532	AE2-038 E O1	4.39
941411	AE2-138 C	26.57
941412	AE2-138 E	9.83
941981	AE2-210 C O1	9.04
941982	AE2-210 E O1	3.4
942061	AE2-218 C	8.21
942062	AE2-218 E	5.58
942091	AE2-221 C	32.57
942092	AE2-221 E	21.71
942231	AE2-235 C O1	6.33
942232	AE2-235 E O1	2.73
942411	AE2-254 C O1	2.36
942412	AE2-254 E O1	1.57
942521	AE2-267 C O1	2.99
942522	AE2-267 E O1	1.85
942591	AE2-275 C O1	6.97
942592	AE2-275 E O1	2.62
942781	AE2-296 O1	9.52
942891	AE2-308 C O1	11.94
942892	AE2-308 E O1	4.34
942951	AE2-315	2.31
942981	AE2-320 C O1	15.59
942982	AE2-320 E O1	7.71
943111	AE2-339 C	4.02
943112	AE2-339 E	1.98
943191	AE2-318 C	10.18
943192	AE2-318 E	4.97
943201	AE2-319 C O1	15.59
943202	AE2-319 E O1	7.71
CARR	CARR	0.47
CATAWBA	CATAWBA	0.07

Bus #	Bus	MW Impact
CBM-S1	CBM-S1	8.51
CBM-W1	CBM-W1	10.07
CBM-W2	CBM-W2	56.95
CIN	CIN	9.04
G-007	G-007	1.37
HAMLET	HAMLET	0.22
IPL	IPL	6.18
LGEE	LGEE	3.95
MEC	MEC	9.91
MECS	MECS	3.8
O-066	O-066	8.76
RENSSELAER	RENSSELAER	0.37
WEC	WEC	1.35

14.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
2215398	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1195.0	99.26	100.1	DC	22.47

Bus #	Bus	MW Impact
253038	09KILLEN	79.56
253077	09STUART	306.3
342960	1SPURLK2G	8.13
342963	1SPURLK3G	4.27
342966	1SPURLK4G	4.27
925921	AC1-068 C	18.75
925922	AC1-068 E	8.77
925931	AC1-069 C	18.75
925932	AC1-069 E	8.77
925981	AC1-074 C O1	4.24
925982	AC1-074 E O1	1.82
926791	AC1-165 C	18.53
926792	AC1-165 E	8.99
926801	AC1-166 C	18.53
926802	AC1-166 E	8.99
931181	AB1-169	192.91
932381	AC2-055 C	1.58
932382	AC2-055 E	2.57
932421	AC2-060 C	5.6
932422	AC2-060 E	3.15
932551	AC2-075 C	1.01
932552	AC2-075 E	0.51
932651	AC2-087 C O1	4.14
932652	AC2-087 E O1	3.29
932661	AC2-088 C O1	3.42
932662	AC2-088 E O1	2.82
934491	AD1-073 C	1.15
934492	AD1-073 E	0.59
935011	AD1-134	4.82
935031	AD1-136 C	0.48
935032	AD1-136 E	0.41
936281	AD2-036 C	3.03
936282	AD2-036 E	1.51
936381	AD2-048 C	3.38
936382	AD2-048 E	1.68
938271	AE1-040 C O1	3.65
938272	AE1-040 E O1	1.84
939141	AE1-144 C O1	8.26
939142	AE1-144 E O1	4.1
940531	AE2-038 C O1	5.51

Bus #	Bus	MW Impact
940532	AE2-038 E O1	2.73
941411	AE2-138 C	16.4
941412	AE2-138 E	6.07
941981	AE2-210 C O1	5.58
941982	AE2-210 E O1	2.1
942231	AE2-235 C O1	3.9
942232	AE2-235 E O1	1.68
942591	AE2-275 C O1	4.33
942592	AE2-275 E O1	1.63
942891	AE2-308 C O1	7.4
942892	AE2-308 E O1	2.69
942981	AE2-320 C O1	36.89
942982	AE2-320 E O1	18.25
943111	AE2-339 C	2.46
943112	AE2-339 E	1.21
943201	AE2-319 C O1	36.89
943202	AE2-319 E O1	18.25
CARR	CARR	0.22
CBM-S1	CBM-S1	6.15
CBM-S2	CBM-S2	1.35
CBM-W1	CBM-W1	2.67
CBM-W2	CBM-W2	34.36
CIN	CIN	4.2
CPL	CPL	0.39
G-007	G-007	0.57
IPL	IPL	2.75
LGEE	LGEE	2.19
MEC	MEC	4.59
O-066	O-066	3.67
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.47

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
1512240	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#8094_05BIXBY 345_C	breaker	1203.0	87.16	87.88	DC	19.11

Bus #	Bus	MW Impact
247965	Y1-063 E	0.31
253038	09KILLEN	57.08
253077	09STUART	203.01
253110	09ADKINS	20.92
902531	W2-040 C	0.83
902532	W2-040 E	1.35
904722	V4-073 E	0.18
913222	Y1-054 E	1.48
914372	Y2-111 E	1.36
915582	Y3-080 E	0.91
915662	Y3-099 E	0.14
915672	Y3-100 E	0.14
916182	Z1-065 E	0.45
916272	Z1-080 E	0.48
918802	AA1-099 E	0.32
924371	AB2-085 C O1	3.61
924372	AB2-085 E O1	1.7
925242	AB2-178 E	1.41
925921	AC1-068 C	9.96
925922	AC1-068 E	4.66
925931	AC1-069 C	9.96
925932	AC1-069 E	4.66
925981	AC1-074 C O1	3.98
925982	AC1-074 E O1	1.71
926011	AC1-078 C O1	7.53
926012	AC1-078 E O1	12.54
926061	AC1-085 C O1	18.91
926062	AC1-085 E O1	30.86
926101	AC1-089 C O1	4.31
926102	AC1-089 E O1	7.03
926791	AC1-165 C	9.84
926792	AC1-165 E	4.77
926801	AC1-166 C	9.84
926802	AC1-166 E	4.77
930062	AB1-014 E	7.84
931181	AB1-169	127.85
932201	AC2-029 C	2.07
932202	AC2-029 E	3.38
932381	AC2-055 C	2.19
932382	AC2-055 E	3.57
932411	AC2-059 C	4.02
932412	AC2-059 E	4.14

Bus #	Bus	MW Impact
932421	AC2-060 C	7.76
932422	AC2-060 E	4.36
932431	AC2-061 C	4.42
932432	AC2-061 E	4.49
932462	AC2-066 E	0.25
932481	AC2-068 C	2.78
932482	AC2-068 E	4.55
932551	AC2-075 C	0.95
932552	AC2-075 E	0.48
932651	AC2-087 C O1	5.74
932652	AC2-087 E O1	4.56
932661	AC2-088 C O1	3.98
932662	AC2-088 E O1	3.28
934481	AD1-072 C	0.88
934482	AD1-072 E	0.4
934491	AD1-073 C	1.6
934492	AD1-073 E	0.82
934561	AD1-081 C	1.51
934562	AD1-081 E	0.78
935031	AD1-136 C	0.56
935032	AD1-136 E	0.48
935041	AD1-140 C O1	9.8
935042	AD1-140 E O1	8.1
936111	AD2-016 C	4.02
936112	AD2-016 E	4.14
936251	AD2-031 C O1	2.35
936252	AD2-031 E O1	3.83
936281	AD2-036 C	2.85
936282	AD2-036 E	1.42
936381	AD2-048 C	3.26
936382	AD2-048 E	1.63
936751	AD2-096 C O1	1.34
936752	AD2-096 E O1	0.34
937111	AD2-147 C O1	11.82
937112	AD2-147 E O1	16.32
937151	AD2-151 C O1	4.31
937152	AD2-151 E O1	5.95
937231	AD2-162 C	5.05
937232	AD2-162 E	2.48
938051	AE1-007 C	0.8
938052	AE1-007 E	1.3
938271	AE1-040 C O1	4.45
938272	AE1-040 E O1	2.24
938921	AE1-120	4.45
939141	AE1-144 C O1	6.81
939142	AE1-144 E O1	3.38
940531	AE2-038 C O1	4.54
940532	AE2-038 E O1	2.25
941411	AE2-138 C	13.95
941412	AE2-138 E	5.16
941511	AE2-148 C	146.53
941512	AE2-148 E	66.28

Bus #	Bus	MW Impact
941771	AE2-180 C	6.83
941772	AE2-180 E	4.56
941981	AE2-210 C O1	4.77
941982	AE2-210 E O1	1.79
942051	AE2-217 C	7.67
942052	AE2-217 E	5.11
942061	AE2-218 C	8.97
942062	AE2-218 E	6.09
942091	AE2-221 C	23.88
942092	AE2-221 E	15.92
942231	AE2-235 C O1	3.4
942232	AE2-235 E O1	1.47
942521	AE2-267 C O1	2.6
942522	AE2-267 E O1	1.61
942781	AE2-296 O1	11.35
942951	AE2-315	2.77
942981	AE2-320 C O1	19.59
942982	AE2-320 E O1	9.69
943041	AE2-327 C	2.14
943042	AE2-327 E	1.43
943111	AE2-339 C	2.24
943112	AE2-339 E	1.1
943191	AE2-318 C	6.42
943192	AE2-318 E	3.14
943201	AE2-319 C O1	19.59
943202	AE2-319 E O1	9.69
CARR	CARR	0.47
CBM-S1	CBM-S1	8.19
CBM-S2	CBM-S2	1.35
CBM-W1	CBM-W1	4.99
CBM-W2	CBM-W2	51.55
CIN	CIN	7.52
CPL	CPL	0.33
G-007	G-007	1.24
IPL	IPL	5.21
LGEE	LGEE	3.21
MEC	MEC	7.31
O-066	O-066	8.0
RENSSELAER	RENSSELAER	0.37
WEC	WEC	0.81

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
1512351	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#3196_05BEATTY 345_302E	breaker	1203.0	77.58	78.34	DC	20.19

Bus #	Bus	MW Impact
253038	09KILLEN	52.29
253077	09STUART	214.43
253110	09ADKINS	24.08
253261	09MON D	0.21
902531	W2-040 C	0.97
902532	W2-040 E	1.58
904722	V4-073 E	0.21
913222	Y1-054 E	1.61
914372	Y2-111 E	1.61
915582	Y3-080 E	1.07
915662	Y3-099 E	0.15
915672	Y3-100 E	0.15
916182	Z1-065 E	0.5
916272	Z1-080 E	0.49
918802	AA1-099 E	0.32
925242	AB2-178 E	1.5
925921	AC1-068 C	11.33
925922	AC1-068 E	5.3
925931	AC1-069 C	11.33
925932	AC1-069 E	5.3
925981	AC1-074 C O1	4.21
925982	AC1-074 E O1	1.8
926011	AC1-078 C O1	8.49
926012	AC1-078 E O1	14.15
926061	AC1-085 C O1	20.6
926062	AC1-085 E O1	33.61
926101	AC1-089 C O1	4.17
926102	AC1-089 E O1	6.8
926791	AC1-165 C	11.2
926792	AC1-165 E	5.43
926801	AC1-166 C	11.2
926802	AC1-166 E	5.43
927182	AC1-212 E	1.27
930062	AB1-014 E	8.46
931181	AB1-169	135.05
932381	AC2-055 C	1.77
932382	AC2-055 E	2.89
932421	AC2-060 C	6.29
932422	AC2-060 E	3.54
932431	AC2-061 C	4.26
932432	AC2-061 E	4.32
932462	AC2-066 E	0.27

Bus #	Bus	MW Impact
932481	AC2-068 C	3.29
932482	AC2-068 E	5.39
932551	AC2-075 C	1.0
932552	AC2-075 E	0.5
932651	AC2-087 C O1	4.66
932652	AC2-087 E O1	3.7
932661	AC2-088 C O1	4.24
932662	AC2-088 E O1	3.49
932841	AC2-111 C O1	2.16
932842	AC2-111 E O1	3.52
934491	AD1-073 C	1.3
934492	AD1-073 E	0.67
934561	AD1-081 C	1.7
934562	AD1-081 E	0.87
935031	AD1-136 C	0.6
935032	AD1-136 E	0.51
935041	AD1-140 C O1	12.37
935042	AD1-140 E O1	10.23
936251	AD2-031 C O1	2.51
936252	AD2-031 E O1	4.09
936281	AD2-036 C	3.01
936282	AD2-036 E	1.5
936381	AD2-048 C	3.42
936382	AD2-048 E	1.71
937111	AD2-147 C O1	13.71
937112	AD2-147 E O1	18.93
937151	AD2-151 C O1	4.66
937152	AD2-151 E O1	6.43
938051	AE1-007 C	0.94
938052	AE1-007 E	1.54
938061	AE1-008 C	0.54
938062	AE1-008 E	0.88
938271	AE1-040 C O1	4.04
938272	AE1-040 E O1	2.03
938921	AE1-120	4.8
939141	AE1-144 C O1	7.14
939142	AE1-144 E O1	3.54
940531	AE2-038 C O1	4.76
940532	AE2-038 E O1	2.36
941411	AE2-138 C	14.74
941412	AE2-138 E	5.45
941511	AE2-148 C	169.93
941512	AE2-148 E	76.86
941771	AE2-180 C	7.08
941772	AE2-180 E	4.72
941941	AE2-206 C O1	2.91
941942	AE2-206 E O1	4.02
941981	AE2-210 C O1	5.04
941982	AE2-210 E O1	1.89
942051	AE2-217 C	10.75
942052	AE2-217 E	7.17
942061	AE2-218 C	11.36

Bus #	Bus	MW Impact
942062	AE2-218 E	7.72
942091	AE2-221 C	26.7
942092	AE2-221 E	17.8
942231	AE2-235 C O1	3.55
942232	AE2-235 E O1	1.54
942521	AE2-267 C O1	2.88
942522	AE2-267 E O1	1.78
942621	AE2-278 C	7.48
942622	AE2-278 E	4.99
942781	AE2-296 O1	13.29
942951	AE2-315	3.23
942981	AE2-320 C O1	22.29
942982	AE2-320 E O1	11.03
943111	AE2-339 C	2.36
943112	AE2-339 E	1.16
943191	AE2-318 C	6.94
943192	AE2-318 E	3.39
943201	AE2-319 C O1	22.29
943202	AE2-319 E O1	11.03
CARR	CARR	0.55
CBM-S1	CBM-S1	8.63
CBM-S2	CBM-S2	0.95
CBM-W1	CBM-W1	9.32
CBM-W2	CBM-W2	59.99
CIN	CIN	8.94
CPL	CPL	0.14
G-007	G-007	1.49
IPL	IPL	6.15
LGEE	LGEE	3.45
MEC	MEC	10.24
MECS	MECS	1.52
O-066	O-066	9.56
RENSSELAER	RENSSELAER	0.43
WEC	WEC	1.36

14.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513462	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOCK DPLEK	tower	185.0	94.26	97.79	DC	14.53

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.37
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O1	5.19
940532	AE2-038 E O1	2.57
941411	AE2-138 C	10.6
941412	AE2-138 E	3.92
941981	AE2-210 C O1	3.63
941982	AE2-210 E O1	1.36
942231	AE2-235 C O1	5.02
942232	AE2-235 E O1	2.17
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.87
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

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
2215415	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	97.68	98.28	DC	18.31

Bus #	Bus	MW Impact
253038	09KILLEN	67.86
253077	09STUART	257.41
914372	Y2-111 E	1.6
915582	Y3-080 E	1.06
920061	AA2-100	0.07
925981	AC1-074 C O1	3.41
925982	AC1-074 E O1	1.46
926061	AC1-085 C O1	47.84
926062	AC1-085 E O1	78.05
927182	AC1-212 E	1.42
930061	AB1-014 C	0.71
930062	AB1-014 E	9.57
931181	AB1-169	162.12
932381	AC2-055 C	1.4
932382	AC2-055 E	2.29
932421	AC2-060 C	4.98
932422	AC2-060 E	2.8
932461	AC2-066 C	0.43
932462	AC2-066 E	0.31
932551	AC2-075 C	0.81
932552	AC2-075 E	0.41
932651	AC2-087 C O1	3.69
932652	AC2-087 E O1	2.93
932661	AC2-088 C O1	4.49
932662	AC2-088 E O1	3.69
934491	AD1-073 C	1.03
934492	AD1-073 E	0.53
935011	AD1-134	3.88
935031	AD1-136 C	0.63
935032	AD1-136 E	0.54
936251	AD2-031 C O1	6.11
936252	AD2-031 E O1	9.98
936281	AD2-036 C	2.44
936282	AD2-036 E	1.22
936381	AD2-048 C	2.72
936382	AD2-048 E	1.36
937151	AD2-151 C O1	5.84
937152	AD2-151 E O1	8.06
938271	AE1-040 C O1	2.59
938272	AE1-040 E O1	1.3
938921	AE1-120	5.43
939141	AE1-144 C O1	6.83

Bus #	Bus	MW Impact
939142	AE1-144 E O1	3.39
940531	AE2-038 C O1	4.56
940532	AE2-038 E O1	2.26
941411	AE2-138 C	13.37
941412	AE2-138 E	4.94
941981	AE2-210 C O1	4.54
941982	AE2-210 E O1	1.71
942091	AE2-221 C	86.82
942092	AE2-221 E	57.88
942231	AE2-235 C O1	3.21
942232	AE2-235 E O1	1.39
942591	AE2-275 C O1	3.48
942592	AE2-275 E O1	1.31
942891	AE2-308 C O1	5.94
942892	AE2-308 E O1	2.16
943111	AE2-339 C	1.98
943112	AE2-339 E	0.98
943191	AE2-318 C	5.63
943192	AE2-318 E	2.75
CARR	CARR	0.12
CBM-S1	CBM-S1	4.3
CBM-S2	CBM-S2	1.18
CBM-W2	CBM-W2	19.31
CIN	CIN	1.97
CPL	CPL	0.38
G-007	G-007	0.26
IPL	IPL	1.19
LGEE	LGEE	1.51
MEC	MEC	1.55
O-066	O-066	1.71
RENSSELAER	RENSSELAER	0.09
WEC	WEC	0.01

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
2215406	253077	09STUART	DAY	926060	AC1-085 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	99.17	99.81	DC	19.53

Bus #	Bus	MW Impact
253038	09KILLEN	72.83
253077	09STUART	278.48
914372	Y2-111 E	1.71
915582	Y3-080 E	1.14
920061	AA2-100	0.07
925981	AC1-074 C O1	3.59
925982	AC1-074 E O1	1.54
927182	AC1-212 E	1.37
930061	AB1-014 C	0.77
930062	AB1-014 E	10.27
931181	AB1-169	175.38
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.76
932662	AC2-088 E O1	3.92
935011	AD1-134	4.1
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.57
936282	AD2-036 E	1.28
936381	AD2-048 C	2.78
936382	AD2-048 E	1.39
937151	AD2-151 C O1	6.3
937152	AD2-151 E O1	8.7
938921	AE1-120	5.83
939141	AE1-144 C O1	7.14
939142	AE1-144 E O1	3.54
940531	AE2-038 C O1	4.76
940532	AE2-038 E O1	2.36
941411	AE2-138 C	14.26
941412	AE2-138 E	5.27
941981	AE2-210 C O1	4.84
941982	AE2-210 E O1	1.82
942231	AE2-235 C O1	3.27
942232	AE2-235 E O1	1.41
942591	AE2-275 C O1	3.67
942592	AE2-275 E O1	1.38
942891	AE2-308 C O1	6.27
942892	AE2-308 E O1	2.28

Bus #	Bus	MW Impact
943111	AE2-339 C	2.1
943112	AE2-339 E	1.04
943191	AE2-318 C	5.94
943192	AE2-318 E	2.9
CARR	CARR	0.12
CBM-S1	CBM-S1	4.49
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.59
CIN	CIN	2.14
CPL	CPL	0.38
G-007	G-007	0.28
IPL	IPL	1.31
LGEE	LGEE	1.58
MEC	MEC	1.79
O-066	O-066	1.84
RENSSELAER	RENSSELAER	0.1
WEC	WEC	0.05

14.8 Index 8

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513447	324267	4KENTON	LGEE	247034	05EMERSS	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCLCKSTUARTSPURLOCK DPLEK	tower	185.0	95.93	99.47	DC	14.53

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.37
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O1	5.19
940532	AE2-038 E O1	2.57
941411	AE2-138 C	10.6
941412	AE2-138 E	3.92
941981	AE2-210 C O1	3.63
941982	AE2-210 E O1	1.36
942231	AE2-235 C O1	5.02
942232	AE2-235 E O1	2.17
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.87
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

14.9 Index 9

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
2215414	342559	4BOON E CO	EKPC	250054	08LONGB R	DEO& K	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCKSTUARTSPURLOCK DPLEK	towe r	284.0	95.03	98.61	DC	22.42

Bus #	Bus	MW Impact
342957	1SPURLK1G	4.49
342960	1SPURLK2G	7.03
342963	1SPURLK3G	3.69
342966	1SPURLK4G	3.69
925981	AC1-074 C O1	9.17
925982	AC1-074 E O1	3.93
932551	AC2-075 C	2.18
932552	AC2-075 E	1.1
935011	AD1-134	5.06
936281	AD2-036 C	6.55
936282	AD2-036 E	3.27
936381	AD2-048 C	5.97
936382	AD2-048 E	2.98
936571	AD2-072 C O1	3.35
936572	AD2-072 E O1	1.64
939141	AE1-144 C O1	8.69
939142	AE1-144 E O1	4.31
940531	AE2-038 C O1	5.79
940532	AE2-038 E O1	2.87
941411	AE2-138 C	16.37
941412	AE2-138 E	6.05
941981	AE2-210 C O1	5.66
941982	AE2-210 E O1	2.13
942231	AE2-235 C O1	4.52
942232	AE2-235 E O1	1.95
942411	AE2-254 C O1	1.61
942412	AE2-254 E O1	1.07
942591	AE2-275 C O1	4.63
942592	AE2-275 E O1	1.74
942891	AE2-308 C O1	8.29
942892	AE2-308 E O1	3.01
943111	AE2-339 C	3.03
943112	AE2-339 E	1.49
CARR	CARR	0.05
CBM-S1	CBM-S1	4.34
CBM-S2	CBM-S2	0.84
CBM-W1	CBM-W1	0.14
CBM-W2	CBM-W2	15.68
CIN	CIN	1.16
CPL	CPL	0.25

Bus #	Bus	MW Impact
G-007	G-007	0.12
IPL	IPL	0.49
LGEE	LGEE	1.78
MEC	MEC	1.39
O-066	O-066	0.78
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.04

14.10 Index 10

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
8751825	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.05	109.69	DC	19.53

Bus #	Bus	MW Impact
253038	09KILLEN	72.83
253077	09STUART	278.48
914372	Y2-111 E	1.71
915582	Y3-080 E	1.14
920061	AA2-100	0.07
925981	AC1-074 C O1	3.59
925982	AC1-074 E O1	1.54
926061	AC1-085 C O1	52.68
926062	AC1-085 E O1	85.96
927182	AC1-212 E	1.37
930061	AB1-014 C	0.77
930062	AB1-014 E	10.27
931181	AB1-169	175.38
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.76
932662	AC2-088 E O1	3.92
935011	AD1-134	4.1
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.57
936282	AD2-036 E	1.28
936381	AD2-048 C	2.78
936382	AD2-048 E	1.39
937151	AD2-151 C O1	6.3
937152	AD2-151 E O1	8.7
938921	AE1-120	5.83
939141	AE1-144 C O1	7.14
939142	AE1-144 E O1	3.54
940531	AE2-038 C O1	4.76
940532	AE2-038 E O1	2.36
941411	AE2-138 C	14.26
941412	AE2-138 E	5.27
941981	AE2-210 C O1	4.84
941982	AE2-210 E O1	1.82
942091	AE2-221 C	96.13
942092	AE2-221 E	64.08
942231	AE2-235 C O1	3.27
942232	AE2-235 E O1	1.41
942591	AE2-275 C O1	3.67

Bus #	Bus	MW Impact
942592	AE2-275 E O1	1.38
942891	AE2-308 C O1	6.27
942892	AE2-308 E O1	2.28
943111	AE2-339 C	2.1
943112	AE2-339 E	1.04
943191	AE2-318 C	5.94
943192	AE2-318 E	2.9
CARR	CARR	0.12
CBM-S1	CBM-S1	4.49
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.59
CIN	CIN	2.14
CPL	CPL	0.38
G-007	G-007	0.28
IPL	IPL	1.31
LGEE	LGEE	1.58
MEC	MEC	1.79
O-066	O-066	1.84
RENSSELAER	RENSSELAER	0.1
WEC	WEC	0.05

14.11 Index 11

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513195	246946	05WLDCAT	AEP	243019	05HILLSB	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCLCKSTUARTSPURLOCK DPLEK	tower	185.0	146.13	149.67	DC	14.53

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.37
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
926101	AC1-089 C O1	38.82
926102	AC1-089 E O1	63.35
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O1	5.19
940532	AE2-038 E O1	2.57
941411	AE2-138 C	10.6
941412	AE2-138 E	3.92
941981	AE2-210 C O1	3.63
941982	AE2-210 E O1	1.36
942231	AE2-235 C O1	5.02
942232	AE2-235 E O1	2.17
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.87
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

14.12 Index 12

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513315	253110	09ADKINS	DAY	243453	05BEATTY	AEP	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1372.0	112.72	113.44	DC	21.79

Bus #	Bus	MW Impact
253038	09KILLEN	77.9
253077	09STUART	301.69
253110	09ADKINS	43.43
925921	AC1-068 C	18.66
925922	AC1-068 E	8.73
925931	AC1-069 C	18.66
925932	AC1-069 E	8.73
925981	AC1-074 C O1	4.09
925982	AC1-074 E O1	1.75
926791	AC1-165 C	18.44
926792	AC1-165 E	8.95
926801	AC1-166 C	18.44
926802	AC1-166 E	8.95
931181	AB1-169	190.0
932381	AC2-055 C	1.53
932382	AC2-055 E	2.5
932421	AC2-060 C	5.43
932422	AC2-060 E	3.05
932551	AC2-075 C	0.97
932552	AC2-075 E	0.49
932651	AC2-087 C O1	4.02
932652	AC2-087 E O1	3.19
932661	AC2-088 C O1	3.32
932662	AC2-088 E O1	2.73
934491	AD1-073 C	1.12
934492	AD1-073 E	0.58
935031	AD1-136 C	0.47
935032	AD1-136 E	0.4
936281	AD2-036 C	2.92
936282	AD2-036 E	1.46
936381	AD2-048 C	3.25
936382	AD2-048 E	1.62
938271	AE1-040 C O1	3.57
938272	AE1-040 E O1	1.8
939141	AE1-144 C O1	8.05
939142	AE1-144 E O1	4.0
940531	AE2-038 C O1	5.37
940532	AE2-038 E O1	2.66
941411	AE2-138 C	15.9
941412	AE2-138 E	5.88

Bus #	Bus	MW Impact
941981	AE2-210 C O1	5.4
941982	AE2-210 E O1	2.03
942231	AE2-235 C O1	3.79
942232	AE2-235 E O1	1.64
942981	AE2-320 C O1	36.71
942982	AE2-320 E O1	18.16
943111	AE2-339 C	2.37
943112	AE2-339 E	1.17
943201	AE2-319 C O1	36.71
943202	AE2-319 E O1	18.16
CARR	CARR	0.32
CBM-S1	CBM-S1	5.29
CBM-S2	CBM-S2	0.91
CBM-W1	CBM-W1	1.13
CBM-W2	CBM-W2	28.06
CIN	CIN	3.54
CPL	CPL	0.22
G-007	G-007	0.85
IPL	IPL	2.33
LGEE	LGEE	2.0
MEC	MEC	3.35
O-066	O-066	5.47
RENSSELAER	RENSSELAER	0.25
WEC	WEC	0.29

14.13 Index 13

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2214961	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	single	1451.0	157.75	159.01	DC	18.35

Bus #	Bus	MW Impact
342900	1COOPER1 G	2.08
342903	1COOPER2 G	4.04
342918	1JKCT 1G	1.65
342921	1JKCT 2G	1.65
342924	1JKCT 3G	1.65
342927	1JKCT 4G	1.09
342930	1JKCT 5G	1.09
342933	1JKCT 6G	1.09
342936	1JKCT 7G	1.09
342939	1JKCT 9G	1.12
342942	1JKCT 10G	1.12
342945	1LAUREL 1G	1.18
900404	X3-028 C	112.0
925981	AC1-074 C O1	4.94
930461	AB1-087	41.07
930471	AB1-088	41.07
932551	AC2-075 C	1.17
933441	AC2-157 C	5.67
935011	AD1-134	8.71
936281	AD2-036 C	3.53
936381	AD2-048 C	4.32
936571	AD2-072 C O1	12.28
936821	AD2-105 C O1	3.59
936831	AD2-106 C O1	2.12
936841	AD2-107 C O1	1.42
939131	AE1-143 C	11.65
940041	AE1-246 C O1	14.54
940051	AE1-247 C O1	24.7
940831	AE2-071 C O1	3.68
941341	AE2-130 C	35.81
941411	AE2-138 C	18.35
941961	AE2-208	1.54
941981	AE2-210 C O1	6.45
942231	AE2-235 C O1	2.22
942411	AE2-254 C O1	4.88
942481	AE2-261 C	9.07
942591	AE2-275 C O1	8.29
942601	AE2-276	3.74
942891	AE2-308 C O1	13.79
943111	AE2-339 C	3.94
952471	J708	48.63
952811	J759	11.49

Bus #	Bus	MW Impact
952821	J762	35.64
952861	J783 C	10.9
953611	J800	16.58
953831	J842 C	3.57
953841	J843 C	3.84
953931	J856	11.02
CARR	CARR	0.23
CBM-S1	CBM-S1	45.85
CBM-S2	CBM-S2	4.68
CBM-W1	CBM-W1	9.43
CBM-W2	CBM-W2	190.67
CIN	CIN	28.78
CPL	CPL	1.3
IPL	IPL	15.36
LGEE	LGEE	27.66
MEC	MEC	20.01
RENSSELAER	RENSSELAER	0.18
WEC	WEC	1.45

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2214721	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	.345.DEO&K.C2 1493_RED BANK	breaker	1421.0	110.69	116.77	DC	86.05

Bus #	Bus	MW Impact
251968	08ZIMRHP	33.39
251969	08ZIMRLP	18.29
251970	08MELDL1	1.69
251971	08MELDL2	1.69
251972	08MELDL3	1.7
342957	1SPURLK1G	17.48
342960	1SPURLK2G	33.1
342963	1SPURLK3G	17.39
342966	1SPURLK4G	17.39
925981	AC1-074 C O1	15.31
925982	AC1-074 E O1	6.56
926951	AC1-182	0.8
932551	AC2-075 C	3.64
932552	AC2-075 E	1.83
935011	AD1-134	17.48
936281	AD2-036 C	10.93
936282	AD2-036 E	5.47
936381	AD2-048 C	11.97
936382	AD2-048 E	5.97
936571	AD2-072 C O1	9.64
936572	AD2-072 E O1	4.73
936821	AD2-105 C O1	4.08
936822	AD2-105 E O1	5.98
936831	AD2-106 C O1	2.82
936832	AD2-106 E O1	3.9
936841	AD2-107 C O1	2.23
936842	AD2-107 E O1	3.08
939131	AE1-143 C	7.15
939132	AE1-143 E	3.54
939141	AE1-144 C O1	32.16
939142	AE1-144 E O1	15.96
940531	AE2-038 C O1	21.45
940532	AE2-038 E O1	10.63
941411	AE2-138 C	62.82
941412	AE2-138 E	23.23
941961	AE2-208	2.43
941981	AE2-210 C O1	21.29
941982	AE2-210 E O1	8.01
942231	AE2-235 C O1	14.72
942232	AE2-235 E O1	6.36
942411	AE2-254 C O1	4.87

Bus #	Bus	MW Impact
942412	AE2-254 E O1	3.25
942591	AE2-275 C O1	15.67
942592	AE2-275 E O1	5.89
942891	AE2-308 C O1	26.79
942892	AE2-308 E O1	9.74
943111	AE2-339 C	9.06
943112	AE2-339 E	4.46
CARR	CARR	0.51
CBM-S1	CBM-S1	13.72
CBM-S2	CBM-S2	1.86
CBM-W1	CBM-W1	3.85
CBM-W2	CBM-W2	65.29
CIN	CIN	7.07
CPL	CPL	0.39
G-007	G-007	1.38
IPL	IPL	4.27
LGEE	LGEE	5.18
MEC	MEC	7.85
O-066	O-066	8.9
RENSSELAER	RENSSELAER	0.4
WEC	WEC	0.68

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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
8751878	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.11	109.75	DC	19.53

Bus #	Bus	MW Impact
253038	09KILLEN	72.83
253077	09STUART	278.48
914372	Y2-111 E	1.71
915582	Y3-080 E	1.14
920061	AA2-100	0.07
925981	AC1-074 C O1	3.59
925982	AC1-074 E O1	1.54
926061	AC1-085 C O1	52.68
926062	AC1-085 E O1	85.96
927182	AC1-212 E	1.37
930061	AB1-014 C	0.77
930062	AB1-014 E	10.27
931181	AB1-169	175.38
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.76
932662	AC2-088 E O1	3.92
935011	AD1-134	4.1
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.57
936282	AD2-036 E	1.28
936381	AD2-048 C	2.78
936382	AD2-048 E	1.39
937151	AD2-151 C O1	6.3
937152	AD2-151 E O1	8.7
938921	AE1-120	5.83
939141	AE1-144 C O1	7.14
939142	AE1-144 E O1	3.54
940531	AE2-038 C O1	4.76
940532	AE2-038 E O1	2.36
941411	AE2-138 C	14.26
941412	AE2-138 E	5.27
941981	AE2-210 C O1	4.84
941982	AE2-210 E O1	1.82
942231	AE2-235 C O1	3.27
942232	AE2-235 E O1	1.41
942591	AE2-275 C O1	3.67
942592	AE2-275 E O1	1.38
942891	AE2-308 C O1	6.27

Bus #	Bus	MW Impact
942892	AE2-308 E O1	2.28
943111	AE2-339 C	2.1
943112	AE2-339 E	1.04
943191	AE2-318 C	5.94
943192	AE2-318 E	2.9
CARR	CARR	0.12
CBM-S1	CBM-S1	4.49
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.59
CIN	CIN	2.14
CPL	CPL	0.38
G-007	G-007	0.28
IPL	IPL	1.31
LGEE	LGEE	1.58
MEC	MEC	1.79
O-066	O-066	1.84
RENSSELAER	RENSSELAER	0.1
WEC	WEC	0.05

Affected Systems

15 Affected Systems

15.1 LG&E

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

15.2 MISO

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

15.3 TVA

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

15.4 Duke Energy Progress

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

15.5 NYISO

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

Contingency Name	Contingency Definition
DEO&K-DAY-EKPC.C5 4541MELDAHLSPLCKSTUARTSPURLOC KDPLEK	CONTINGENCY 'DEO&K-DAY-EKPC.C5 4541MELDAHLSPLCKSTUARTSPURLOCKDPLEK' OPEN BRANCH FROM BUS 342838 TO BUS 249581 CKT 1 OPEN BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 END
.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	CONTINGENCY '.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUARTDPL-A' OPEN BRANCH FROM BUS 253077 TO BUS 249578 CKT 1 OPEN BRANCH FROM BUS 926060 TO BUS 253077 CKT 1 END
.138.DEO&K.C2 816_SILVERGROVE	CONTINGENCY '.138.DEO&K.C2 816_SILVERGROVE' OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249988 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250042 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250052 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250053 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 END
.345.DEO&K.C2 1493_RED BANK	CONTINGENCY '.345.DEO&K.C2 1493_RED BANK' OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 250092 CKT 1 END
AEP_P4_#2866_05BEATTY 345_304W	CONTINGENCY 'AEP_P4_#2866_05BEATTY 345_304W' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243469 CKT 3 / 243453 05BEATTY 345 243469 05BEATTY 138 3 END
.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	CONTINGENCY '.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545' OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 END
DAY_P7_34522 34598-A	CONTINGENCY 'DAY_P7_34522 34598-A' OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 1 / 253014 09CLINTO 345 253013 09CLINTO 69 1 OPEN BRANCH FROM BUS 253014 TO BUS 942090 CKT 1 / 253014 09CLINTO 345 942090 AE2- 221 TAP 345 1 END

Contingency Name	Contingency Definition
AEP_P1-2_#762	CONTINGENCY 'AEP_P1-2_#762' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 END
DAY_P2_GREENE_345	CONTINGENCY 'DAY_P2_GREENE_345' OPEN BRANCH FROM BUS 253027 TO BUS 253248 CKT 1 / 253027 09GREENE 345 253027 09SCHARL 345 1 OPEN BRANCH FROM BUS 253006 TO BUS 253027 CKT 1 / 253006 09BATH 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253027 TO BUS 253079 CKT 1 / 253027 09GREENE 345 253079 09SUGRCK 345 1 OPEN BRANCH FROM BUS 253027 TO BUS 253026 CKT 1 / 253027 09GREENE 345 253026 09GREENE 138 1 OPEN BRANCH FROM BUS 253027 TO BUS 253026 CKT 2 / 253027 09GREENE 345 253026 09GREENE 138 2 END
AEP_P4_#3195_05BEATTY 345_304E	CONTINGENCY 'AEP_P4_#3195_05BEATTY 345_304E' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END
.345.DEO&K.C2 1349_FOSTER	CONTINGENCY '.345.DEO&K.C2 1349_FOSTER' OPEN BRANCH FROM BUS 253006 TO BUS 249566 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 END
AEP_P1-2_#764	CONTINGENCY 'AEP_P1-2_#764' OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 END
DAY_P7_34569 34598 34524	CONTINGENCY 'DAY_P7_34569 34598 34524' OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 / OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 249566 TO BUS 253079 CKT 1 / 249566 08FOSTER 345 253079 09SUGRCK 345 1 END
AEP_P4_#2900_05MARQUI 345_D2	CONTINGENCY 'AEP_P4_#2900_05MARQUI 345_D2' OPEN BRANCH FROM BUS 242938 TO BUS 248003 CKT 1 / 242938 05MARQUI 345 248003 06DOE530 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 243034 CKT 3 / 242938 05MARQUI 345 243034 05MARQUI 138 3 END

Contingency Name	Contingency Definition
AEP_P4_#10715_05COLE 345_C	CONTINGENCY 'AEP_P4_#10715_05COLE 345_C' OPEN BRANCH FROM BUS 244022 TO BUS 243457 CKT 1 / 244022 05COLE 345 243457 05HAYDEN 345 1 OPEN BRANCH FROM BUS 244022 TO BUS 244023 CKT 1 / 244022 05COLE 345 244023 05COLE 138 1 END
AEP_P4_#8094_05BIXBY 345_C	CONTINGENCY 'AEP_P4_#8094_05BIXBY 345_C' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 941520 TO BUS 243454 CKT 1 / 941520 AE2-149 TAP 345 243454 05BIXBY 345 1 /* CONTINGENCY LINE ADDED FOR AE2 BUILD END
.345.DEO&K-DAY.C5 4524FOSTRUGRCRK34598FOSTERBATH	CONTINGENCY '.345.DEO&K-DAY.C5 4524FOSTRUGRCRK34598FOSTERBATH' OPEN BRANCH FROM BUS 253079 TO BUS 249566 CKT 1 OPEN BRANCH FROM BUS 253006 TO BUS 249566 CKT 1 END
.345.DEO&K.FOSTER345 BUS1+RELAYFAIL	CONTINGENCY '.345.DEO&K.FOSTER345 BUS1+RELAYFAIL' OPEN BRANCH FROM BUS 249566 TO BUS 250035 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 253079 CKT 1 END
AEP_P4_#2085_05BEATTY 345_304C	CONTINGENCY 'AEP_P4_#2085_05BEATTY 345_304C' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 END
Base Case	
AEP_P1-2_#713	CONTINGENCY 'AEP_P1-2_#713' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 END
DAY_P1_34509-A-A	CONTINGENCY 'DAY_P1_34509-A-A' OPEN BRANCH FROM BUS 253014 TO BUS 942090 CKT 1 / 253014 09CLINTO 345 942090 AE2- 221 TAP 345 1 END
DAY_P1_34522	CONTINGENCY 'DAY_P1_34522' OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 1 / 253014 09CLINTO 345 253013 09CLINTO 69 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 2 / 253014 09CLINTO 345 253013 09CLINTO 69 2 END

Contingency Name	Contingency Definition
AEP_P1-2_#10137	CONTINGENCY 'AEP_P1-2_#10137' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 END
AEP_P1-2_#10136	CONTINGENCY 'AEP_P1-2_#10136' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 OPEN BRANCH FROM BUS 243209 TO BUS 243443 CKT 2 / 243209 05ROCKPT 765 243443 05RKG2 26.0 2 REMOVE UNIT 2H FROM BUS 243443 / 243443 05RKG2 26.0 REMOVE UNIT 2L FROM BUS 243443 / 243443 05RKG2 26.0 END
AEP_P1-2_#363	CONTINGENCY 'AEP_P1-2_#363' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 END
DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	CONTINGENCY 'DAY_P7_BEATTY-S. CHARLESTON 34542_1-B' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 941510 TO BUS 253248 CKT 1 / 941510 AE2-148 TAP 345 253248 09SCHARL 345 1 END
DAY_P7_BEATTY-S. CHARLESTON 34542_1-A	CONTINGENCY 'DAY_P7_BEATTY-S. CHARLESTON 34542_1-A' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 941510 CKT 1 / 243453 05BEATTY 345 941510 AE2-148 TAP 345 1 END
AEP_P4_#6774_05MARQUI 345_D	CONTINGENCY 'AEP_P4_#6774_05MARQUI 345_D' OPEN BRANCH FROM BUS 246888 TO BUS 242938 CKT 1 / 246888 05BIERSR 345 242938 05MARQUI 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 END
AEP_P4_#3196_05BEATTY 345_302E	CONTINGENCY 'AEP_P4_#3196_05BEATTY 345_302E' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END

Short Circuit

16 Short Circuit

The following Breakers are overduty

None

17 Secondary Point of Interconnection:

AE2-138 will interconnect with the EKPC transmission system along the Avon to North Clark 345kV line.

18 Option 2 : Network Impacts

The Queue Project AE2-138 was evaluated as a 260.0 MW (Capacity 189.8 MW) injection tapping the Avon to North Clark 345kV line in the EKPC area. Project AE2-138 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-138 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

19 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
7045027	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	AEP_P1-2_#762	single	1372.0	93.1	93.91	DC	24.51
8751685	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P1-2_#764	single	1195.0	90.29	91.66	DC	16.44

20 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
1512239	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#3195_05BEATTY 345_304E	breaker	1203.0	87.22	87.95	DC	19.53
1512240	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#8094_05BIXBY 345_C	breaker	1203.0	87.9	88.62	DC	19.17
1512351	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#3196_05BEATTY 345_302E	breaker	1203.0	78.31	79.07	DC	20.21
7044022	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#10715_05COLE 345_C	breaker	1203.0	70.86	71.58	DC	19.28
1513462	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	185.0	94.32	97.83	DC	14.42
2215415	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	97.68	98.27	DC	17.97
8751891	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRCK34598FOSTERBATH	tower	1374.0	91.97	92.52	DC	16.56
1512401	253038	09KILLN	DAY	242938	05MARQUI	AEP	1	AEP_P4_#2085_05BEATTY 345_304C	breaker	1372.0	96.28	97.39	DC	33.9
1512402	253038	09KILLN	DAY	242938	05MARQUI	AEP	1	AEP_P4_#2866_05BEATTY 345_304W	breaker	1372.0	95.8	96.9	DC	33.58
2215406	253077	09STUART	DAY	926060	AC1-085 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	99.2	99.83	DC	19.16
2214530	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P2_GREENE_345	bus	1195.0	97.14	97.92	DC	20.88
2214864	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P4_#6774_05MARQUI 345_D	breaker	1195.0	98.39	99.24	DC	22.48
2214865	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	AEP_P4_#2900_05MARQUI 345_D2	breaker	1195.0	94.74	95.6	DC	22.76
2215398	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1195.0	98.95	99.79	DC	22.19
2215399	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P7_34522 34598-A	tower	1195.0	96.54	97.29	DC	20.0
1513447	324267	4KENTON	LGEE	247034	05EMERS	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	185.0	96.0	99.51	DC	14.42
2215414	342559	4BOONECO	EKPC	250054	08LONGBR	DEO&K	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	284.0	94.89	98.49	DC	22.52
8751009	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	.345.DEO&K.FOSTER345 BUS1+RELAYFAIL	breaker	1374.0	97.16	97.74	DC	17.87
8751010	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	.345.DEO&K.C2 1349_FOSTER	breaker	1374.0	96.57	97.15	DC	17.79

21 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/D C	MW IMPACT
1513195	246946	05WLDCA T	AEP	243019	05HILLSB	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOC KDPLEK	tower	185.0	146.19	149.7	DC	14.42
1513349	253038	09KILLEN	DAY	242938	05MARQ UI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-A	tower	1372.0	106.01	107.2	DC	36.04
1513350	253038	09KILLEN	DAY	242938	05MARQ UI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	tower	1372.0	106.01	107.2	DC	36.04
1511560	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P2_GREENE_345	bus	1372.0	109.51	110.17	DC	20.19
1512164	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	AEP_P4_#6774_05MARQUI 345_D	breaker	1372.0	111.96	112.68	DC	21.8
1512985	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P1_34522	single	1372.0	107.08	107.53	DC	13.72
1513315	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1372.0	112.46	113.16	DC	21.5
1513316	253110	09ADKINS	DAY	243453	05BEATT Y	AEP	1	DAY_P7_34522 34598-A	tower	1372.0	110.02	110.66	DC	19.31
2214961	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	AEP_P1-2_#363	single	1451.0	157.76	159.05	DC	18.71
2214963	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	AEP_P1-2_#10136	single	1451.0	152.11	153.42	DC	18.81
2214965	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVE C	1	Base Case	single	1134.0	147.56	149.24	DC	19.13
2214720	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.138.DEO&K.C2 816_SILVERGROVE	breaker	1421.0	110.47	116.45	DC	84.68
2214721	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.345.DEO&K.C2 1493_RED BANK	breaker	1421.0	110.36	116.34	DC	84.62
2215100	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	single	1421.0	108.33	112.7	DC	61.77
2215103	342838	7SPURLO CK	EKPC	253077	09STUAR T	DAY	1	Base Case	single	1240.0	103.97	108.62	DC	57.56
8751878	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.13	109.76	DC	19.16
8751879	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRK34598FOSTERBATH	tower	1374.0	103.27	103.85	DC	17.63
8751825	942090	AE2-221 TAP	DAY	253014	09CLINT O	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.06	109.69	DC	19.16
8751826	942090	AE2-221 TAP	DAY	253014	09CLINT O	DAY	1	.345.DEO&K-DAY.C5 4524FOSTRSUGRCRK34598FOSTERBATH	tower	1374.0	103.2	103.78	DC	17.63

22 Potential Congestion due to Local Energy Deliverability

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

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection

Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
1513084	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P1-2_#713	operation	1203.0	80.14	80.83	DC	18.6
7045032	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P1-2_#10137	operation	1203.0	71.4	72.12	DC	19.28
1513128	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	AEP_P1-2_#762	operation	1372.0	95.59	96.69	DC	33.57
8751681	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	DAY_P1_34509-A-A	operation	1195.0	92.72	93.46	DC	19.47
7044824	253110	09ADKINS	DAY	243453	05BEATTY	AEP	1	DAY_P1_34509-A-A	operation	1372.0	106.87	107.49	DC	18.79
2214958	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	operation	1451.0	155.85	156.63	DC	25.63
2214962	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	operation	1134.0	153.74	154.75	DC	26.21
2215099	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	operation	1421.0	110.3	116.28	DC	84.62
2215101	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	Base Case	operation	1240.0	104.7	111.07	DC	78.86
1513083	941510	AE2-148 TAP	DAY	243453	05BEATTY	AEP	1	AEP_P1-2_#762	operation	1374.0	71.63	72.25	DC	18.68
8751623	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	AEP_P1-2_#762	operation	1374.0	94.12	94.68	DC	17.23

23 Flow Gate Details

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

23.1 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
1513350	253038	09KILLEN	DAY	242938	05MARQUI	AEP	1	DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	tower	1372.0	106.01	107.2	DC	36.04

Bus #	Bus	MW Impact
253038	09KILLEN	298.8
253077	09STUART	479.97
902531	W2-040 C	0.71
902532	W2-040 E	1.15
904722	V4-073 E	0.15
913222	Y1-054 E	1.79
914372	Y2-111 E	1.14
915582	Y3-080 E	0.76
915662	Y3-099 E	0.16
915672	Y3-100 E	0.16
916182	Z1-065 E	0.54
916272	Z1-080 E	0.47
918802	AA1-099 E	0.32
925242	AB2-178 E	1.57
925921	AC1-068 C	7.95
925922	AC1-068 E	3.72
925931	AC1-069 C	7.95
925932	AC1-069 E	3.72
925981	AC1-074 C O1	7.06
925982	AC1-074 E O1	3.03
926061	AC1-085 C O1	34.71
926062	AC1-085 E O1	56.64
926101	AC1-089 C O1	4.38
926102	AC1-089 E O1	7.15
926791	AC1-165 C	7.85
926792	AC1-165 E	3.81
926801	AC1-166 C	7.85
926802	AC1-166 E	3.81
930062	AB1-014 E	13.7
931181	AB1-169	302.28
932462	AC2-066 E	0.44
932481	AC2-068 C	2.39
932482	AC2-068 E	3.91
932551	AC2-075 C	1.68
932552	AC2-075 E	0.85
932661	AC2-088 C O1	7.6
932662	AC2-088 E O1	6.26
935011	AD1-134	7.71
935031	AD1-136 C	1.07
935032	AD1-136 E	0.91
935041	AD1-140 C O1	7.66

Bus #	Bus	MW Impact
935042	AD1-140 E O1	6.33
936251	AD2-031 C O1	2.32
936252	AD2-031 E O1	3.79
936281	AD2-036 C	5.05
936282	AD2-036 E	2.52
936381	AD2-048 C	5.61
936382	AD2-048 E	2.8
936571	AD2-072 C O1	4.99
936572	AD2-072 E O1	2.44
937111	AD2-147 C O1	4.7
937112	AD2-147 E O1	6.49
937151	AD2-151 C O1	7.58
937152	AD2-151 E O1	10.47
938051	AE1-007 C	0.68
938052	AE1-007 E	1.12
938271	AE1-040 C O1	2.58
938272	AE1-040 E O1	1.3
938921	AE1-120	7.78
939141	AE1-144 C O1	13.34
939142	AE1-144 E O1	6.62
940531	AE2-038 C O2	8.36
940532	AE2-038 E O2	4.17
941411	AE2-138 C O2	26.31
941412	AE2-138 E O2	9.73
941981	AE2-210 C O2	9.19
941982	AE2-210 E O2	3.46
942061	AE2-218 C	8.32
942062	AE2-218 E	5.65
942091	AE2-221 C	32.74
942092	AE2-221 E	21.83
942231	AE2-235 C O2	7.89
942232	AE2-235 E O2	3.41
942411	AE2-254 C O2	2.38
942412	AE2-254 E O2	1.58
942521	AE2-267 C O2	2.92
942522	AE2-267 E O2	1.8
942591	AE2-275 C O2	6.92
942592	AE2-275 E O2	2.6
942781	AE2-296 O2	9.74
942891	AE2-308 C O1	11.55
942892	AE2-308 E O1	4.2
942951	AE2-315	2.34
942981	AE2-320 C O2	17.35
942982	AE2-320 E O2	8.59
943111	AE2-339 C	4.03
943112	AE2-339 E	1.98
943191	AE2-318 C	10.23
943192	AE2-318 E	4.99
943201	AE2-319 C O2	17.35
943202	AE2-319 E O2	8.59
CARR	CARR	0.48
CATAWBA	CATAWBA	0.07

Bus #	Bus	MW Impact
CBM-S1	CBM-S1	8.57
CBM-W1	CBM-W1	10.14
CBM-W2	CBM-W2	57.35
CIN	CIN	9.1
G-007	G-007	1.38
HAMLET	HAMLET	0.22
IPL	IPL	6.22
LGEE	LGEE	3.97
MEC	MEC	9.98
MECS	MECS	3.82
O-066	O-066	8.83
RENSSELAER	RENSSELAER	0.38
WEC	WEC	1.36

23.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC/D C	MW IMPAC T
2215398	253100	09ATLNTA	DAY	253110	09ADKINS	DAY	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1195.0	98.95	99.79	DC	22.19

Bus #	Bus	MW Impact
253038	09KILLEN	79.62
253077	09STUART	306.48
342960	1SPURLK2G	8.14
342963	1SPURLK3G	4.28
342966	1SPURLK4G	4.28
925921	AC1-068 C	18.75
925922	AC1-068 E	8.77
925931	AC1-069 C	18.75
925932	AC1-069 E	8.77
925981	AC1-074 C O1	4.24
925982	AC1-074 E O1	1.82
926791	AC1-165 C	18.53
926792	AC1-165 E	8.99
926801	AC1-166 C	18.53
926802	AC1-166 E	8.99
931181	AB1-169	193.02
932381	AC2-055 C	1.58
932382	AC2-055 E	2.58
932421	AC2-060 C	5.61
932422	AC2-060 E	3.15
932551	AC2-075 C	1.01
932552	AC2-075 E	0.51
932651	AC2-087 C O1	4.15
932652	AC2-087 E O1	3.29
932661	AC2-088 C O1	3.43
932662	AC2-088 E O1	2.82
934491	AD1-073 C	1.16
934492	AD1-073 E	0.6
935031	AD1-136 C	0.48
935032	AD1-136 E	0.41
936281	AD2-036 C	3.03
936282	AD2-036 E	1.51
936381	AD2-048 C	3.38
936382	AD2-048 E	1.69
938271	AE1-040 C O1	3.66
938272	AE1-040 E O1	1.84
939141	AE1-144 C O1	8.27
939142	AE1-144 E O1	4.1
940531	AE2-038 C O2	5.22
940532	AE2-038 E O2	2.6

Bus #	Bus	MW Impact
941411	AE2-138 C O2	16.2
941412	AE2-138 E O2	5.99
941981	AE2-210 C O2	5.66
941982	AE2-210 E O2	2.13
942231	AE2-235 C O2	4.86
942232	AE2-235 E O2	2.1
942981	AE2-320 C O2	43.7
942982	AE2-320 E O2	21.62
943111	AE2-339 C	2.47
943112	AE2-339 E	1.21
943201	AE2-319 C O2	43.7
943202	AE2-319 E O2	21.62
CARR	CARR	0.22
CBM-S1	CBM-S1	6.17
CBM-S2	CBM-S2	1.35
CBM-W1	CBM-W1	2.7
CBM-W2	CBM-W2	34.5
CIN	CIN	4.22
CPLE	CPLE	0.39
G-007	G-007	0.57
IPL	IPL	2.77
LGEE	LGEE	2.2
MEC	MEC	4.62
O-066	O-066	3.69
RENSSELAER	RENSSELAER	0.18
WEC	WEC	0.47

23.3 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
1512240	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#8094_05BIXBY 345_C	breaker	1203.0	87.9	88.62	DC	19.17

Bus #	Bus	MW Impact
247965	Y1-063 E	0.34
253038	09KILLEN	57.61
253077	09STUART	204.91
253110	09ADKINS	20.95
253261	09MON D	0.18
902531	W2-040 C	0.85
902532	W2-040 E	1.39
904722	V4-073 E	0.19
913222	Y1-054 E	1.5
914372	Y2-111 E	1.4
915582	Y3-080 E	0.93
915662	Y3-099 E	0.14
915672	Y3-100 E	0.14
916182	Z1-065 E	0.46
916272	Z1-080 E	0.48
918802	AA1-099 E	0.32
924371	AB2-085 C O1	3.65
924372	AB2-085 E O1	1.72
925242	AB2-178 E	1.43
925921	AC1-068 C	9.99
925922	AC1-068 E	4.67
925931	AC1-069 C	9.99
925932	AC1-069 E	4.67
925981	AC1-074 C O1	4.03
925982	AC1-074 E O1	1.73
926011	AC1-078 C O1	7.94
926012	AC1-078 E O1	13.23
926061	AC1-085 C O1	19.13
926062	AC1-085 E O1	31.22
926101	AC1-089 C O1	4.37
926102	AC1-089 E O1	7.13
926791	AC1-165 C	9.87
926792	AC1-165 E	4.79
926801	AC1-166 C	9.87
926802	AC1-166 E	4.79
930062	AB1-014 E	7.94
931181	AB1-169	129.05
932201	AC2-029 C	2.07
932202	AC2-029 E	3.38
932381	AC2-055 C	2.21
932382	AC2-055 E	3.6
932411	AC2-059 C	4.03

Bus #	Bus	MW Impact
932412	AC2-059 E	4.16
932421	AC2-060 C	7.82
932422	AC2-060 E	4.4
932431	AC2-061 C	4.49
932432	AC2-061 E	4.55
932462	AC2-066 E	0.26
932481	AC2-068 C	2.85
932482	AC2-068 E	4.66
932551	AC2-075 C	0.96
932552	AC2-075 E	0.48
932651	AC2-087 C O1	5.79
932652	AC2-087 E O1	4.6
932661	AC2-088 C O1	4.03
932662	AC2-088 E O1	3.31
934481	AD1-072 C	0.89
934482	AD1-072 E	0.4
934491	AD1-073 C	1.61
934492	AD1-073 E	0.83
934561	AD1-081 C	1.59
934562	AD1-081 E	0.82
935031	AD1-136 C	0.57
935032	AD1-136 E	0.48
935041	AD1-140 C O1	10.62
935042	AD1-140 E O1	8.78
936111	AD2-016 C	4.03
936112	AD2-016 E	4.16
936251	AD2-031 C O1	2.38
936252	AD2-031 E O1	3.88
936281	AD2-036 C	2.88
936282	AD2-036 E	1.44
936381	AD2-048 C	3.3
936382	AD2-048 E	1.65
936751	AD2-096 C O1	1.35
936752	AD2-096 E O1	0.34
937111	AD2-147 C O1	11.88
937112	AD2-147 E O1	16.4
937151	AD2-151 C O1	4.36
937152	AD2-151 E O1	6.02
937231	AD2-162 C	5.07
937232	AD2-162 E	2.48
938051	AE1-007 C	0.82
938052	AE1-007 E	1.33
938271	AE1-040 C O1	4.49
938272	AE1-040 E O1	2.26
938921	AE1-120	4.51
939141	AE1-144 C O1	6.88
939142	AE1-144 E O1	3.42
940531	AE2-038 C O2	4.4
940532	AE2-038 E O2	2.19
941411	AE2-138 C O2	13.99
941412	AE2-138 E O2	5.18
941511	AE2-148 C	146.83

Bus #	Bus	MW Impact
941512	AE2-148 E	66.41
941771	AE2-180 C	7.02
941772	AE2-180 E	4.68
941981	AE2-210 C O2	4.86
941982	AE2-210 E O2	1.83
942051	AE2-217 C	8.95
942052	AE2-217 E	5.97
942061	AE2-218 C	9.21
942062	AE2-218 E	6.26
942091	AE2-221 C	24.2
942092	AE2-221 E	16.13
942231	AE2-235 C O2	3.91
942232	AE2-235 E O2	1.69
942521	AE2-267 C O2	2.51
942522	AE2-267 E O2	1.55
942621	AE2-278 C	6.66
942622	AE2-278 E	4.44
942781	AE2-296 O2	11.76
942861	AE2-305 C O2	3.45
942862	AE2-305 E O2	2.3
942951	AE2-315	2.84
942981	AE2-320 C O2	21.42
942982	AE2-320 E O2	10.6
943041	AE2-327 C	2.15
943042	AE2-327 E	1.44
943111	AE2-339 C	2.27
943112	AE2-339 E	1.12
943191	AE2-318 C	6.51
943192	AE2-318 E	3.18
943201	AE2-319 C O2	21.42
943202	AE2-319 E O2	10.6
CARR	CARR	0.47
CBM-S1	CBM-S1	8.31
CBM-S2	CBM-S2	1.37
CBM-W1	CBM-W1	5.12
CBM-W2	CBM-W2	52.37
CIN	CIN	7.64
CPL	CPL	0.33
G-007	G-007	1.26
IPL	IPL	5.29
LGEE	LGEE	3.25
MEC	MEC	7.44
O-066	O-066	8.13
RENSSELAER	RENSSELAER	0.37
WEC	WEC	0.83

23.4 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
1512351	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#3196_05BEATTY 345_302E	breaker	1203.0	78.31	79.07	DC	20.21

Bus #	Bus	MW Impact
253038	09KILLEN	52.79
253077	09STUART	216.16
253110	09ADKINS	24.12
253261	09MON D	0.21
902531	W2-040 C	0.99
902532	W2-040 E	1.61
904722	V4-073 E	0.22
913222	Y1-054 E	1.63
914372	Y2-111 E	1.64
915582	Y3-080 E	1.09
915662	Y3-099 E	0.15
915672	Y3-100 E	0.15
916182	Z1-065 E	0.5
916272	Z1-080 E	0.49
918802	AA1-099 E	0.33
925242	AB2-178 E	1.52
925921	AC1-068 C	11.36
925922	AC1-068 E	5.31
925931	AC1-069 C	11.36
925932	AC1-069 E	5.31
925981	AC1-074 C O1	4.25
925982	AC1-074 E O1	1.82
926011	AC1-078 C O1	8.83
926012	AC1-078 E O1	14.71
926061	AC1-085 C O1	20.8
926062	AC1-085 E O1	33.93
926101	AC1-089 C O1	4.23
926102	AC1-089 E O1	6.89
926791	AC1-165 C	11.23
926792	AC1-165 E	5.45
926801	AC1-166 C	11.23
926802	AC1-166 E	5.45
927182	AC1-212 E	1.29
930062	AB1-014 E	8.54
931181	AB1-169	136.14
932381	AC2-055 C	1.79
932382	AC2-055 E	2.92
932421	AC2-060 C	6.35
932422	AC2-060 E	3.57
932431	AC2-061 C	4.32
932432	AC2-061 E	4.38
932462	AC2-066 E	0.28

Bus #	Bus	MW Impact
932481	AC2-068 C	3.35
932482	AC2-068 E	5.49
932551	AC2-075 C	1.01
932552	AC2-075 E	0.51
932651	AC2-087 C O1	4.7
932652	AC2-087 E O1	3.73
932661	AC2-088 C O1	4.28
932662	AC2-088 E O1	3.52
932841	AC2-111 C O1	2.19
932842	AC2-111 E O1	3.57
934491	AD1-073 C	1.31
934492	AD1-073 E	0.67
934561	AD1-081 C	1.77
934562	AD1-081 E	0.91
935031	AD1-136 C	0.6
935032	AD1-136 E	0.51
935041	AD1-140 C O1	13.04
935042	AD1-140 E O1	10.78
936251	AD2-031 C O1	2.53
936252	AD2-031 E O1	4.13
936281	AD2-036 C	3.04
936282	AD2-036 E	1.52
936381	AD2-048 C	3.46
936382	AD2-048 E	1.73
937111	AD2-147 C O1	13.76
937112	AD2-147 E O1	19.01
937151	AD2-151 C O1	4.7
937152	AD2-151 E O1	6.5
938051	AE1-007 C	0.96
938052	AE1-007 E	1.57
938061	AE1-008 C	0.55
938062	AE1-008 E	0.89
938271	AE1-040 C O1	4.08
938272	AE1-040 E O1	2.05
938921	AE1-120	4.85
939141	AE1-144 C O1	7.2
939142	AE1-144 E O1	3.57
940531	AE2-038 C O2	4.59
940532	AE2-038 E O2	2.28
941411	AE2-138 C O2	14.76
941412	AE2-138 E O2	5.46
941511	AE2-148 C	170.27
941512	AE2-148 E	77.01
941771	AE2-180 C	7.24
941772	AE2-180 E	4.83
941981	AE2-210 C O2	5.13
941982	AE2-210 E O2	1.93
942051	AE2-217 C	11.79
942052	AE2-217 E	7.86
942061	AE2-218 C	11.57
942062	AE2-218 E	7.86
942091	AE2-221 C	26.98

Bus #	Bus	MW Impact
942092	AE2-221 E	17.99
942231	AE2-235 C O2	4.12
942232	AE2-235 E O2	1.78
942521	AE2-267 C O2	2.75
942522	AE2-267 E O2	1.7
942621	AE2-278 C	9.46
942622	AE2-278 E	6.31
942781	AE2-296 O2	13.6
942861	AE2-305 C O2	4.9
942862	AE2-305 E O2	3.26
942951	AE2-315	3.29
942981	AE2-320 C O2	24.55
942982	AE2-320 E O2	12.14
943111	AE2-339 C	2.39
943112	AE2-339 E	1.18
943191	AE2-318 C	7.02
943192	AE2-318 E	3.43
943201	AE2-319 C O2	24.55
943202	AE2-319 E O2	12.14
CARR	CARR	0.55
CBM-S1	CBM-S1	8.74
CBM-S2	CBM-S2	0.97
CBM-W1	CBM-W1	9.46
CBM-W2	CBM-W2	60.79
CIN	CIN	9.06
CPL	CPL	0.15
G-007	G-007	1.51
IPL	IPL	6.23
LGEE	LGEE	3.49
MEC	MEC	10.38
MECS	MECS	1.56
O-066	O-066	9.68
RENSSELAER	RENSSELAER	0.44
WEC	WEC	1.38

23.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513462	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOCK DPLEK	tower	185.0	94.32	97.83	DC	14.42

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.38
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O2	5.19
940532	AE2-038 E O2	2.59
941411	AE2-138 C O2	10.52
941412	AE2-138 E O2	3.89
941981	AE2-210 C O2	3.65
941982	AE2-210 E O2	1.37
942231	AE2-235 C O2	3.78
942232	AE2-235 E O2	1.63
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.88
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

23.6 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
2215415	253014	09CLINTO	DAY	253027	09GREENE	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	97.68	98.27	DC	17.97

Bus #	Bus	MW Impact
253038	09KILLEN	67.65
253077	09STUART	256.65
914372	Y2-111 E	1.62
915582	Y3-080 E	1.08
920061	AA2-100	0.07
925981	AC1-074 C O1	3.39
925982	AC1-074 E O1	1.45
926061	AC1-085 C O1	47.73
926062	AC1-085 E O1	77.87
927182	AC1-212 E	1.43
930061	AB1-014 C	0.71
930062	AB1-014 E	9.53
931181	AB1-169	161.63
932381	AC2-055 C	1.4
932382	AC2-055 E	2.28
932421	AC2-060 C	4.95
932422	AC2-060 E	2.78
932461	AC2-066 C	0.43
932462	AC2-066 E	0.31
932551	AC2-075 C	0.81
932552	AC2-075 E	0.41
932651	AC2-087 C O1	3.66
932652	AC2-087 E O1	2.91
932661	AC2-088 C O1	4.47
932662	AC2-088 E O1	3.68
934491	AD1-073 C	1.02
934492	AD1-073 E	0.53
935011	AD1-134	3.86
935031	AD1-136 C	0.63
935032	AD1-136 E	0.54
936251	AD2-031 C O1	6.1
936252	AD2-031 E O1	9.95
936281	AD2-036 C	2.42
936282	AD2-036 E	1.21
936381	AD2-048 C	2.71
936382	AD2-048 E	1.35
937151	AD2-151 C O1	5.82
937152	AD2-151 E O1	8.03
938271	AE1-040 C O1	2.57
938272	AE1-040 E O1	1.29
938921	AE1-120	5.41
939141	AE1-144 C O1	6.8

Bus #	Bus	MW Impact
939142	AE1-144 E O1	3.38
940531	AE2-038 C O2	4.29
940532	AE2-038 E O2	2.14
941411	AE2-138 C O2	13.12
941412	AE2-138 E O2	4.85
941981	AE2-210 C O2	4.59
941982	AE2-210 E O2	1.73
942091	AE2-221 C	86.63
942092	AE2-221 E	57.75
942231	AE2-235 C O2	4.0
942232	AE2-235 E O2	1.73
942591	AE2-275 C O2	3.44
942592	AE2-275 E O2	1.29
942891	AE2-308 C O1	5.71
942892	AE2-308 E O1	2.08
943111	AE2-339 C	1.97
943112	AE2-339 E	0.97
943191	AE2-318 C	5.6
943192	AE2-318 E	2.73
CARR	CARR	0.11
CBM-S1	CBM-S1	4.26
CBM-S2	CBM-S2	1.18
CBM-W2	CBM-W2	19.08
CIN	CIN	1.94
CPL	CPL	0.38
G-007	G-007	0.26
IPL	IPL	1.17
LGEE	LGEE	1.49
MEC	MEC	1.51
O-066	O-066	1.67
RENSSELAER	RENSSELAER	0.09
WEC	WEC	0.01

23.7 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
2215406	253077	09STUART	DAY	926060	AC1-085 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	99.2	99.83	DC	19.16

Bus #	Bus	MW Impact
253038	09KILLEN	72.63
253077	09STUART	277.71
914372	Y2-111 E	1.73
915582	Y3-080 E	1.15
920061	AA2-100	0.07
925981	AC1-074 C O1	3.58
925982	AC1-074 E O1	1.53
927182	AC1-212 E	1.38
930061	AB1-014 C	0.76
930062	AB1-014 E	10.23
931181	AB1-169	174.9
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.75
932662	AC2-088 E O1	3.91
935011	AD1-134	4.08
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.56
936282	AD2-036 E	1.28
936381	AD2-048 C	2.76
936382	AD2-048 E	1.38
937151	AD2-151 C O1	6.28
937152	AD2-151 E O1	8.67
938921	AE1-120	5.81
939141	AE1-144 C O1	7.11
939142	AE1-144 E O1	3.53
940531	AE2-038 C O2	4.46
940532	AE2-038 E O2	2.22
941411	AE2-138 C O2	13.99
941412	AE2-138 E O2	5.17
941981	AE2-210 C O2	4.89
941982	AE2-210 E O2	1.84
942231	AE2-235 C O2	4.24
942232	AE2-235 E O2	1.83
942591	AE2-275 C O2	3.63
942592	AE2-275 E O2	1.37
942891	AE2-308 C O1	6.02
942892	AE2-308 E O1	2.19

Bus #	Bus	MW Impact
943111	AE2-339 C	2.09
943112	AE2-339 E	1.03
943191	AE2-318 C	5.92
943192	AE2-318 E	2.89
CARR	CARR	0.12
CBM-S1	CBM-S1	4.46
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.37
CIN	CIN	2.11
CPL	CPL	0.38
G-007	G-007	0.28
IPL	IPL	1.28
LGEE	LGEE	1.57
MEC	MEC	1.75
O-066	O-066	1.79
RENSSELAER	RENSSELAER	0.09
WEC	WEC	0.04

23.8 Index 8

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
1513447	324267	4KENTON	LGEE	247034	05EMERSS	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCLCKSTUARTSPURLOCK DPLEK	tower	185.0	96.0	99.51	DC	14.42

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.38
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O2	5.19
940532	AE2-038 E O2	2.59
941411	AE2-138 C O2	10.52
941412	AE2-138 E O2	3.89
941981	AE2-210 C O2	3.65
941982	AE2-210 E O2	1.37
942231	AE2-235 C O2	3.78
942232	AE2-235 E O2	1.63
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.88
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

23.9 Index 9

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
2215414	342559	4BOON E CO	EKPC	250054	08LONGB R	DEO& K	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCKSTUARTSPURLOCK DPLEK	towe r	284.0	94.89	98.49	DC	22.52

Bus #	Bus	MW Impact
342957	1SPURLK1G	4.49
342960	1SPURLK2G	7.03
342963	1SPURLK3G	3.69
342966	1SPURLK4G	3.69
925981	AC1-074 C O1	9.16
925982	AC1-074 E O1	3.93
932551	AC2-075 C	2.18
932552	AC2-075 E	1.1
935011	AD1-134	5.06
936281	AD2-036 C	6.55
936282	AD2-036 E	3.27
936381	AD2-048 C	5.97
936382	AD2-048 E	2.98
936571	AD2-072 C O1	3.35
936572	AD2-072 E O1	1.64
939141	AE1-144 C O1	8.69
939142	AE1-144 E O1	4.31
940531	AE2-038 C O2	5.46
940532	AE2-038 E O2	2.72
941411	AE2-138 C O2	16.44
941412	AE2-138 E O2	6.08
941981	AE2-210 C O2	5.64
941982	AE2-210 E O2	2.12
942231	AE2-235 C O2	5.02
942232	AE2-235 E O2	2.17
942411	AE2-254 C O2	1.62
942412	AE2-254 E O2	1.08
942591	AE2-275 C O2	4.58
942592	AE2-275 E O2	1.72
942891	AE2-308 C O1	7.72
942892	AE2-308 E O1	2.81
943111	AE2-339 C	3.03
943112	AE2-339 E	1.49
CARR	CARR	0.05
CBM-S1	CBM-S1	4.34
CBM-S2	CBM-S2	0.84
CBM-W1	CBM-W1	0.14
CBM-W2	CBM-W2	15.68
CIN	CIN	1.16
CPL	CPL	0.25

Bus #	Bus	MW Impact
G-007	G-007	0.12
IPL	IPL	0.49
LGEE	LGEE	1.78
MEC	MEC	1.39
O-066	O-066	0.78
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.04

23.10 Index 10

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
8751825	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.06	109.69	DC	19.16

Bus #	Bus	MW Impact
253038	09KILLEN	72.63
253077	09STUART	277.71
914372	Y2-111 E	1.73
915582	Y3-080 E	1.15
920061	AA2-100	0.07
925981	AC1-074 C O1	3.58
925982	AC1-074 E O1	1.53
926061	AC1-085 C O1	52.57
926062	AC1-085 E O1	85.78
927182	AC1-212 E	1.38
930061	AB1-014 C	0.76
930062	AB1-014 E	10.23
931181	AB1-169	174.9
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.75
932662	AC2-088 E O1	3.91
935011	AD1-134	4.08
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.56
936282	AD2-036 E	1.28
936381	AD2-048 C	2.76
936382	AD2-048 E	1.38
937151	AD2-151 C O1	6.28
937152	AD2-151 E O1	8.67
938921	AE1-120	5.81
939141	AE1-144 C O1	7.11
939142	AE1-144 E O1	3.53
940531	AE2-038 C O2	4.46
940532	AE2-038 E O2	2.22
941411	AE2-138 C O2	13.99
941412	AE2-138 E O2	5.17
941981	AE2-210 C O2	4.89
941982	AE2-210 E O2	1.84
942091	AE2-221 C	95.94
942092	AE2-221 E	63.96
942231	AE2-235 C O2	4.24
942232	AE2-235 E O2	1.83
942591	AE2-275 C O2	3.63

Bus #	Bus	MW Impact
942592	AE2-275 E O2	1.37
942891	AE2-308 C O1	6.02
942892	AE2-308 E O1	2.19
943111	AE2-339 C	2.09
943112	AE2-339 E	1.03
943191	AE2-318 C	5.92
943192	AE2-318 E	2.89
CARR	CARR	0.12
CBM-S1	CBM-S1	4.46
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.37
CIN	CIN	2.11
CPLE	CPLE	0.38
G-007	G-007	0.28
IPL	IPL	1.28
LGEE	LGEE	1.57
MEC	MEC	1.75
O-066	O-066	1.79
RENSSELAER	RENSSELAER	0.09
WEC	WEC	0.04

23.11 Index 11

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
1513195	246946	05WLDCAT	AEP	243019	05HILLSB	AEP	1	DEO&K-DAY-EKPC.C5 4541MELDAHLSRCLKSTUARTSPURLOCK DPLEK	tower	185.0	146.19	149.7	DC	14.42

Bus #	Bus	MW Impact
916272	Z1-080 E	0.56
918802	AA1-099 E	0.38
925981	AC1-074 C O1	3.21
925982	AC1-074 E O1	1.38
926101	AC1-089 C O1	38.82
926102	AC1-089 E O1	63.34
932551	AC2-075 C	0.76
932552	AC2-075 E	0.38
936281	AD2-036 C	2.3
936282	AD2-036 E	1.15
936381	AD2-048 C	3.99
936382	AD2-048 E	1.99
939141	AE1-144 C O1	7.78
939142	AE1-144 E O1	3.86
940531	AE2-038 C O2	5.19
940532	AE2-038 E O2	2.59
941411	AE2-138 C O2	10.52
941412	AE2-138 E O2	3.89
941981	AE2-210 C O2	3.65
941982	AE2-210 E O2	1.37
942231	AE2-235 C O2	3.78
942232	AE2-235 E O2	1.63
943111	AE2-339 C	1.72
943112	AE2-339 E	0.85
CARR	CARR	0.06
CBM-S1	CBM-S1	2.9
CBM-S2	CBM-S2	0.49
CBM-W1	CBM-W1	0.88
CBM-W2	CBM-W2	13.06
CIN	CIN	1.27
CPL	CPL	0.13
G-007	G-007	0.15
IPL	IPL	0.71
LGEE	LGEE	1.12
MEC	MEC	1.58
O-066	O-066	0.96
RENSSELAER	RENSSELAER	0.04
WEC	WEC	0.14

23.12 Index 12

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC/D C	MW IMPAC T
1513315	253110	09ADKINS	DAY	243453	05BEATTY	AEP	1	.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUART DPL-A	tower	1372.0	112.46	113.16	DC	21.5

Bus #	Bus	MW Impact
253038	09KILLEN	77.96
253077	09STUART	301.86
253110	09ADKINS	43.43
925921	AC1-068 C	18.66
925922	AC1-068 E	8.73
925931	AC1-069 C	18.66
925932	AC1-069 E	8.73
925981	AC1-074 C O1	4.09
925982	AC1-074 E O1	1.75
926791	AC1-165 C	18.44
926792	AC1-165 E	8.95
926801	AC1-166 C	18.44
926802	AC1-166 E	8.95
931181	AB1-169	190.11
932381	AC2-055 C	1.53
932382	AC2-055 E	2.5
932421	AC2-060 C	5.44
932422	AC2-060 E	3.06
932551	AC2-075 C	0.97
932552	AC2-075 E	0.49
932651	AC2-087 C O1	4.03
932652	AC2-087 E O1	3.19
932661	AC2-088 C O1	3.33
932662	AC2-088 E O1	2.74
934491	AD1-073 C	1.12
934492	AD1-073 E	0.58
935031	AD1-136 C	0.47
935032	AD1-136 E	0.4
936281	AD2-036 C	2.92
936282	AD2-036 E	1.46
938271	AE1-040 C O1	3.58
938272	AE1-040 E O1	1.8
939141	AE1-144 C O1	8.06
939142	AE1-144 E O1	4.0
940531	AE2-038 C O2	5.08
940532	AE2-038 E O2	2.53
941411	AE2-138 C O2	15.7
941412	AE2-138 E O2	5.81
941981	AE2-210 C O2	5.49
941982	AE2-210 E O2	2.06

Bus #	Bus	MW Impact
942231	AE2-235 C O2	4.75
942232	AE2-235 E O2	2.05
942981	AE2-320 C O2	43.52
942982	AE2-320 E O2	21.53
943111	AE2-339 C	2.38
943112	AE2-339 E	1.17
943201	AE2-319 C O2	43.52
943202	AE2-319 E O2	21.53
CARR	CARR	0.32
CBM-S1	CBM-S1	5.31
CBM-S2	CBM-S2	0.91
CBM-W1	CBM-W1	1.16
CBM-W2	CBM-W2	28.2
CIN	CIN	3.56
CPL	CPL	0.22
G-007	G-007	0.85
IPL	IPL	2.35
LGEE	LGEE	2.01
MEC	MEC	3.38
O-066	O-066	5.49
RENSSELAER	RENSSELAER	0.26
WEC	WEC	0.29

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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
2214961	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	single	1451.0	157.76	159.05	DC	18.71

Bus #	Bus	MW Impact
342900	1COOPER1 G	2.08
342903	1COOPER2 G	4.04
342918	1JKCT 1G	1.65
342921	1JKCT 2G	1.65
342924	1JKCT 3G	1.65
342927	1JKCT 4G	1.09
342930	1JKCT 5G	1.09
342933	1JKCT 6G	1.09
342936	1JKCT 7G	1.09
342939	1JKCT 9G	1.12
342942	1JKCT 10G	1.12
342945	1LAUREL 1G	1.18
900404	X3-028 C	112.02
925981	AC1-074 C O1	4.94
930461	AB1-087	41.07
930471	AB1-088	41.07
932551	AC2-075 C	1.17
933441	AC2-157 C	5.68
935011	AD1-134	8.71
936281	AD2-036 C	3.53
936381	AD2-048 C	4.32
936571	AD2-072 C O1	12.29
936821	AD2-105 C O1	3.59
936831	AD2-106 C O1	2.12
936841	AD2-107 C O1	1.42
939131	AE1-143 C	11.65
940041	AE1-246 C O1	14.54
940051	AE1-247 C O1	24.7
940831	AE2-071 C O2	3.69
941341	AE2-130 C	35.81
941411	AE2-138 C O2	18.71
941961	AE2-208	1.54
941981	AE2-210 C O2	6.32
942411	AE2-254 C O2	4.88
942481	AE2-261 C	9.07
942591	AE2-275 C O2	8.19
942601	AE2-276	3.74
942891	AE2-308 C O1	14.12
943111	AE2-339 C	3.94
952471	J708	48.63
952811	J759	11.49
952821	J762	35.64

Bus #	Bus	MW Impact
952861	J783 C	10.9
953611	J800	16.58
953831	J842 C	3.57
953841	J843 C	3.84
953931	J856	11.02
CARR	CARR	0.23
CBM-S1	CBM-S1	45.85
CBM-S2	CBM-S2	4.68
CBM-W1	CBM-W1	9.44
CBM-W2	CBM-W2	190.69
CIN	CIN	28.78
CPL	CPL	1.3
IPL	IPL	15.36
LGEE	LGEE	27.66
MEC	MEC	20.02
RENSSELAER	RENSSELAER	0.18
WEC	WEC	1.45

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2214721	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	.345.DEO&K.C2 1493_RED BANK	breaker	1421.0	110.36	116.34	DC	84.62

Bus #	Bus	MW Impact
251968	08ZIMRHP	33.39
251969	08ZIMRLP	18.29
251970	08MELDL1	1.69
251971	08MELDL2	1.69
251972	08MELDL3	1.7
342957	1SPURLK1G	17.48
342960	1SPURLK2G	33.1
342963	1SPURLK3G	17.39
342966	1SPURLK4G	17.39
925981	AC1-074 C O1	15.31
925982	AC1-074 E O1	6.56
926951	AC1-182	0.8
932551	AC2-075 C	3.64
932552	AC2-075 E	1.83
935011	AD1-134	17.48
936281	AD2-036 C	10.93
936282	AD2-036 E	5.47
936381	AD2-048 C	11.97
936382	AD2-048 E	5.97
936571	AD2-072 C O1	9.64
936572	AD2-072 E O1	4.73
936821	AD2-105 C O1	4.08
936822	AD2-105 E O1	5.98
936841	AD2-107 C O1	2.23
936842	AD2-107 E O1	3.08
939131	AE1-143 C	7.15
939132	AE1-143 E	3.54
939141	AE1-144 C O1	32.16
939142	AE1-144 E O1	15.96
940531	AE2-038 C O2	20.11
940532	AE2-038 E O2	10.02
941411	AE2-138 C O2	61.77
941412	AE2-138 E O2	22.85
941961	AE2-208	2.43
941981	AE2-210 C O2	21.64
941982	AE2-210 E O2	8.14
942231	AE2-235 C O2	19.29
942232	AE2-235 E O2	8.33
942411	AE2-254 C O2	4.88
942412	AE2-254 E O2	3.25
942591	AE2-275 C O2	15.55

Bus #	Bus	MW Impact
942592	AE2-275 E O2	5.85
942891	AE2-308 C O1	25.76
942892	AE2-308 E O1	9.37
943111	AE2-339 C	9.06
943112	AE2-339 E	4.46
CARR	CARR	0.51
CBM-S1	CBM-S1	13.73
CBM-S2	CBM-S2	1.86
CBM-W1	CBM-W1	3.87
CBM-W2	CBM-W2	65.34
CIN	CIN	7.07
CPL	CPL	0.39
G-007	G-007	1.38
IPL	IPL	4.27
LGEE	LGEE	5.19
MEC	MEC	7.86
O-066	O-066	8.9
RENSSELAER	RENSSELAER	0.4
WEC	WEC	0.68

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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
8751878	926060	AC1-085 TAP	DAY	942090	AE2-221 TAP	DAY	1	DAY_P7_34569 34598 34524	tower	1374.0	109.13	109.76	DC	19.16

Bus #	Bus	MW Impact
253038	09KILLEN	72.63
253077	09STUART	277.71
914372	Y2-111 E	1.73
915582	Y3-080 E	1.15
920061	AA2-100	0.07
925981	AC1-074 C O1	3.58
925982	AC1-074 E O1	1.53
926061	AC1-085 C O1	52.57
926062	AC1-085 E O1	85.78
927182	AC1-212 E	1.38
930061	AB1-014 C	0.76
930062	AB1-014 E	10.23
931181	AB1-169	174.9
932461	AC2-066 C	0.46
932462	AC2-066 E	0.33
932551	AC2-075 C	0.85
932552	AC2-075 E	0.43
932661	AC2-088 C O1	4.75
932662	AC2-088 E O1	3.91
935011	AD1-134	4.08
935031	AD1-136 C	0.67
935032	AD1-136 E	0.57
936281	AD2-036 C	2.56
936282	AD2-036 E	1.28
936381	AD2-048 C	2.76
936382	AD2-048 E	1.38
937151	AD2-151 C O1	6.28
937152	AD2-151 E O1	8.67
938921	AE1-120	5.81
939141	AE1-144 C O1	7.11
939142	AE1-144 E O1	3.53
940531	AE2-038 C O2	4.46
940532	AE2-038 E O2	2.22
941411	AE2-138 C O2	13.99
941412	AE2-138 E O2	5.17
941981	AE2-210 C O2	4.89
941982	AE2-210 E O2	1.84
942231	AE2-235 C O2	4.24
942232	AE2-235 E O2	1.83
942591	AE2-275 C O2	3.63
942592	AE2-275 E O2	1.37
942891	AE2-308 C O1	6.02

Bus #	Bus	MW Impact
942892	AE2-308 E O1	2.19
943111	AE2-339 C	2.09
943112	AE2-339 E	1.03
943191	AE2-318 C	5.92
943192	AE2-318 E	2.89
CARR	CARR	0.12
CBM-S1	CBM-S1	4.46
CBM-S2	CBM-S2	1.19
CBM-W2	CBM-W2	20.37
CIN	CIN	2.11
CPL	CPL	0.38
G-007	G-007	0.28
IPL	IPL	1.28
LGEE	LGEE	1.57
MEC	MEC	1.75
O-066	O-066	1.79
RENSSELAER	RENSSELAER	0.09
WEC	WEC	0.04

Affected Systems

24 Affected Systems

24.1 LG&E

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

24.2 MISO

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

24.3 TVA

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

24.4 Duke Energy Progress

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

24.5 NYISO

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

Contingency Name	Contingency Definition
DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOCKDPLEK	CONTINGENCY 'DEO&K-DAY-EKPC.C5 4541MELDAHLSPRLCKSTUARTSPURLOCKDPLEK' OPEN BRANCH FROM BUS 342838 TO BUS 249581 CKT 1 OPEN BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 END
.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUARTDPL-A	CONTINGENCY '.345.DEO&K-DAY.C5 4511HILLCRESTSTUARTCLINTONSTUARTDPL-A' OPEN BRANCH FROM BUS 253077 TO BUS 249578 CKT 1 OPEN BRANCH FROM BUS 926060 TO BUS 253077 CKT 1 END
.138.DEO&K.C2 816_SILVERGROVE	CONTINGENCY '.138.DEO&K.C2 816_SILVERGROVE' OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249988 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250042 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250052 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 250053 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 END
.345.DEO&K.C2 1493_RED BANK	CONTINGENCY '.345.DEO&K.C2 1493_RED BANK' OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 250092 CKT 1 END
AEP_P4_#2866_05BEATTY 345_304W	CONTINGENCY 'AEP_P4_#2866_05BEATTY 345_304W' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243469 CKT 3 / 243453 05BEATTY 345 243469 05BEATTY 138 3 END
.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545	CONTINGENCY '.345.DEO&K.B2 RED BANK-SG-ZIMMER 4545' OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 END
DAY_P7_34522 34598-A	CONTINGENCY 'DAY_P7_34522 34598-A' OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 1 / 253014 09CLINTO 345 253013 09CLINTO 69 1 OPEN BRANCH FROM BUS 253014 TO BUS 942090 CKT 1 / 253014 09CLINTO 345 942090 AE2- 221 TAP 345 1 END

Contingency Name	Contingency Definition
AEP_P1-2_#762	CONTINGENCY 'AEP_P1-2_#762' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 END
DAY_P2_GREENE_345	CONTINGENCY 'DAY_P2_GREENE_345' OPEN BRANCH FROM BUS 253027 TO BUS 253248 CKT 1 / 253027 09GREENE 345 253027 09SCHARL 345 1 OPEN BRANCH FROM BUS 253006 TO BUS 253027 CKT 1 / 253006 09BATH 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253027 TO BUS 253079 CKT 1 / 253027 09GREENE 345 253079 09SUGRCK 345 1 OPEN BRANCH FROM BUS 253027 TO BUS 253026 CKT 1 / 253027 09GREENE 345 253026 09GREENE 138 1 OPEN BRANCH FROM BUS 253027 TO BUS 253026 CKT 2 / 253027 09GREENE 345 253026 09GREENE 138 2 END
AEP_P4_#3195_05BEATTY 345_304E	CONTINGENCY 'AEP_P4_#3195_05BEATTY 345_304E' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END
.345.DEO&K.C2 1349_FOSTER	CONTINGENCY '.345.DEO&K.C2 1349_FOSTER' OPEN BRANCH FROM BUS 253006 TO BUS 249566 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 END
AEP_P1-2_#764	CONTINGENCY 'AEP_P1-2_#764' OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 END
DAY_P7_34569 34598 34524	CONTINGENCY 'DAY_P7_34569 34598 34524' OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 / OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 249566 TO BUS 253079 CKT 1 / 249566 08FOSTER 345 253079 09SUGRCK 345 1 END
AEP_P4_#2900_05MARQUI 345_D2	CONTINGENCY 'AEP_P4_#2900_05MARQUI 345_D2' OPEN BRANCH FROM BUS 242938 TO BUS 248003 CKT 1 / 242938 05MARQUI 345 248003 06DOES30 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 243034 CKT 3 / 242938 05MARQUI 345 243034 05MARQUI 138 3 END

Contingency Name	Contingency Definition
AEP_P4_#10715_05COLE 345_C	CONTINGENCY 'AEP_P4_#10715_05COLE 345_C' OPEN BRANCH FROM BUS 244022 TO BUS 243457 CKT 1 / 244022 05COLE 345 243457 05HAYDEN 345 1 OPEN BRANCH FROM BUS 244022 TO BUS 244023 CKT 1 / 244022 05COLE 345 244023 05COLE 138 1 END
AEP_P4_#8094_05BIXBY 345_C	CONTINGENCY 'AEP_P4_#8094_05BIXBY 345_C' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 941520 TO BUS 243454 CKT 1 / 941520 AE2-149 TAP 345 243454 05BIXBY 345 1 /* CONTINGENCY LINE ADDED FOR AE2 BUILD END
.345.DEO&K-DAY.C5 4524FOSTRUGRCRK34598FOSTERBATH	CONTINGENCY '.345.DEO&K-DAY.C5 4524FOSTRUGRCRK34598FOSTERBATH' OPEN BRANCH FROM BUS 253079 TO BUS 249566 CKT 1 OPEN BRANCH FROM BUS 253006 TO BUS 249566 CKT 1 END
.345.DEO&K.FOSTER345 BUS1+RELAYFAIL	CONTINGENCY '.345.DEO&K.FOSTER345 BUS1+RELAYFAIL' OPEN BRANCH FROM BUS 249566 TO BUS 250035 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 OPEN BRANCH FROM BUS 249566 TO BUS 253079 CKT 1 END
AEP_P4_#2085_05BEATTY 345_304C	CONTINGENCY 'AEP_P4_#2085_05BEATTY 345_304C' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 END
Base Case	
AEP_P1-2_#713	CONTINGENCY 'AEP_P1-2_#713' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 END
DAY_P1_34509-A-A	CONTINGENCY 'DAY_P1_34509-A-A' OPEN BRANCH FROM BUS 253014 TO BUS 942090 CKT 1 / 253014 09CLINTO 345 942090 AE2- 221 TAP 345 1 END
DAY_P1_34522	CONTINGENCY 'DAY_P1_34522' OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 1 / 253014 09CLINTO 345 253013 09CLINTO 69 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 2 / 253014 09CLINTO 345 253013 09CLINTO 69 2 END

Contingency Name	Contingency Definition
AEP_P1-2_#10137	CONTINGENCY 'AEP_P1-2_#10137' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 END
AEP_P1-2_#10136	CONTINGENCY 'AEP_P1-2_#10136' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 OPEN BRANCH FROM BUS 243209 TO BUS 243443 CKT 2 / 243209 05ROCKPT 765 243443 05RKG2 26.0 2 REMOVE UNIT 2H FROM BUS 243443 / 243443 05RKG2 26.0 REMOVE UNIT 2L FROM BUS 243443 / 243443 05RKG2 26.0 END
AEP_P1-2_#363	CONTINGENCY 'AEP_P1-2_#363' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 END
DAY_P7_BEATTY-S. CHARLESTON 34542_1-B	CONTINGENCY 'DAY_P7_BEATTY-S. CHARLESTON 34542_1-B' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 941510 TO BUS 253248 CKT 1 / 941510 AE2-148 TAP 345 253248 09SCHARL 345 1 END
DAY_P7_BEATTY-S. CHARLESTON 34542_1-A	CONTINGENCY 'DAY_P7_BEATTY-S. CHARLESTON 34542_1-A' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 941510 CKT 1 / 243453 05BEATTY 345 941510 AE2-148 TAP 345 1 END
AEP_P4_#6774_05MARQUI 345_D	CONTINGENCY 'AEP_P4_#6774_05MARQUI 345_D' OPEN BRANCH FROM BUS 246888 TO BUS 242938 CKT 1 / 246888 05BIERSR 345 242938 05MARQUI 345 1 OPEN BRANCH FROM BUS 242938 TO BUS 253038 CKT 1 / 242938 05MARQUI 345 253038 09KILLEN 345 1 END
AEP_P4_#3196_05BEATTY 345_302E	CONTINGENCY 'AEP_P4_#3196_05BEATTY 345_302E' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END

Short Circuit

25 Short Circuit

The following Breakers are overduty

None