



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF2-225
“MCLEAN 345 KV”**

July 2020

1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is ComEd.

2 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.

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.

3 General

The Interconnection Customer (IC) has proposed a solar generating facility located in McLean County, Illinois. The installed facilities will have a total capability of 150 MW with 63 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is October 31, 2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-225
Project Name	MCLEAN 345 KV
State	Illinois
County	McLean
Transmission Owner	ComEd
MFO	150
MWE	150
MWC	63
Fuel	Solar
Basecase Study Year	2023

A new service customer with a generating facility that could be commercially operable prior to June 1st of the basecase study year is required to request an interim deliverability analysis from PJM.

4 Point of Interconnection

Queue Position AF2-225 proposes to add 150 MW solar generation to TSS 948 built under PJM queue Z2-087. The proposed addition will increase output of Z2-087 from 250 MW to 400 MW. The proposed addition is behind the Point-of-Interconnection between ComEd and Z2-087.

5 Cost Summary

The AF2-225 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$200,000
Total System Network Upgrade Costs	\$227,640,000
Total Costs	\$227,640,000

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

6 Transmission Owner Scope of Work

Attachment Facilities

To accommodate interconnection of AF2-225; the relaying, SCADA, communication, and metering between TSS 948 and McLean TSS 92 would be reviewed and upgraded if needed.

The total physical interconnection costs is given in the table below:

Description	Total Cost
The relaying, SCADA, communication, and metering between TSS 948 and McLean TSS 92 would be reviewed and upgraded if needed.	\$200,000
Total Physical Interconnection Costs	\$200,000

7 Schedule

ComEd would take approximately 18-months to review and possibly upgrade the relaying, SCADA, communication, and metering after the ISA / ICSA are signed. See Section 11.5 for System Upgrades schedule.

8 Transmission Owner Analysis

See Section 6.

9 Interconnection Customer Requirements

The Interconnection Customer is responsible for all design and construction related activities on the Interconnection Customer's side of the Point of Interconnection.

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

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

10.2 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

ComEd interconnection requirements can be found at <https://www.pjm.com/planning/design-engineering/to-tech-standards/private-comed.aspx>

To the extent that these Applicable Technical Requirements and Standards may conflict with the terms and conditions of the Tariff, the Tariff shall control.

11 Summer Peak - Load Flow Analysis

The Queue Project AF2-225 was evaluated as a 150.0 MW (Capacity 63.0 MW) injection at the McLean 345 kV substation in the ComEd area. Project AF2-225 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-225 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

11.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
96412966	270668	BLUEMOUND ; B	345.0	CE	270852	PONTIAC ; B	345.0	CE	1	COMED_P1-2_345-L8001__-S	single	1528.0	99.67	100.42	DC	11.53

11.2 Multiple Facility Contingency

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

None

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
96412600	270670	BRAIDWOOD; B	345.0	CE	270671	BRAIDWOOD; R	345.0	CE	1	ADD AD1-100 5	breaker	1726.0	120.18	121.61	DC	24.56
96412417	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	206.32	211.12	DC	73.27
96412885	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__-S-B	single	1528.0	127.41	129.42	DC	30.7
96412886	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__-S-A	single	1528.0	121.72	123.73	DC	30.7
96412432	270852	PONTIAC ; B	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	194.44	199.23	DC	73.32
96412903	270852	PONTIAC ; B	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P1-2_345-L8014__-S-B	single	1528.0	124.95	126.96	DC	30.72
96412913	270853	PONTIAC ; R	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1528.0	115.34	117.19	DC	28.29
96412602	270926	WILTON ; B	345.0	CE	275232	WILTON ; 3M	345.0	CE	1	COMED_P4_112-65-BT5-6__	breaker	1379.0	121.9	121.94	DC	21.85
96412590	270927	WILTON ; R	345.0	CE	275233	WILTON ; 4M	345.0	CE	1	COMED_P4_112-65-BT2-3__	breaker	1379.0	124.45	124.49	DC	22.29
96412601	275232	WILTON ; 3M	345.0	CE	270644	WILTON ;	765.0	CE	1	COMED_P4_112-65-BT5-6__	breaker	1379.0	121.9	121.94	DC	21.85
96412589	275233	WILTON ; 4M	345.0	CE	270644	WILTON ;	765.0	CE	1	COMED_P4_112-65-BT2-3__	breaker	1379.0	124.45	124.49	DC	22.29
96412957	917500	Z2-087 TAP	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	COMED_P1-2_345-L8002__-S	single	1793.0	104.74	107.15	DC	43.15
96412958	917500	Z2-087 TAP	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	COMED_P1-2_345-L17802__-S	single	1793.0	102.75	105.16	DC	43.17

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96413936	934720	AD1-100 TAP	345.0	CE	270926	WILTON ; B	345.0	CE	1	COMED_P7_345-L2001__B-S+_345-L2003__R-S	tower	2221.0	118.81	119.74	DC	26.53
96412437	934730	AD1-100 TAP	345.0	CE	270670	BRAIDWOOD; B	345.0	CE	1	ADD AD1-100 5	breaker	1341.0	188.67	191.78	DC	41.68
96412895	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P1-2_345-L11212__B-S-B	single	1528.0	122.98	124.83	DC	28.29
96412896	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P1-2_345-L11212__B-S-C	single	1528.0	120.02	121.87	DC	28.29
96412412	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	223.82	228.61	DC	73.27
96412871	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P1-2_345-L8014__S-B	single	1528.0	133.05	135.06	DC	30.7
96412872	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P1-2_345-L8014__S-A	single	1528.0	127.51	129.52	DC	30.7
95373673	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	AEP_P4_#3128_05EUGENE 345_A2	breaker	1466.0	149.88	149.89	DC	15.27
95373675	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	COMED_P4_080-45-BT7-8__	breaker	1466.0	136.03	136.36	DC	19.24

11.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96412961	270668	BLUEMOUND; B	345.0	CE	270852	PONTIAC ; B	345.0	CE	1	COMED_P1-2_345-L8001__S	operation	1528.0	156.79	158.59	DC	27.46
96412880	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__S-B	operation	1528.0	203.22	208.01	DC	73.09
96412882	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	Base Case	operation	1364.0	153.68	157.36	DC	50.15
96413270	270717	DRESDEN ; R	345.0	CE	270697	COLLINS ; R	345.0	CE	1	COMED_P1-2_345-L1223_TR-S	operation	1528.0	100.98	101.49	DC	16.6
96412968	270796	KINCAID ; B	345.0	CE	347955	7AUSTIN	345.0	AMILL	1	COMED_P1-2_345-L2105__S-D	operation	956.0	153.29	155.37	DC	19.93
96412973	270796	KINCAID ; B	345.0	CE	347955	7AUSTIN	345.0	AMILL	1	Base Case	operation	956.0	108.99	109.65	DC	13.86

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
96412898	270852	PONTIAC ; B	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P 1-2_345-L8014___-S-B	operation	1528.0	191.34	196.13	DC	73.14
96412900	270852	PONTIAC ; B	345.0	CE	270704	LORETTO ; B	345.0	CE	1	Base Case	operation	1364.0	141.23	144.91	DC	50.2
96412908	270853	PONTIAC ; R	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	COMED_P 1-2_345-L11212_B-S-B	operation	1528.0	186.2	190.61	DC	67.37
96412912	270853	PONTIAC ; R	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	Base Case	operation	1334.0	125.33	128.42	DC	41.25
96412944	270912	CHESTNUT ;	345.0	CE	270668	BLUEMOUN D; B	345.0	CE	1	COMED_P 1-2_345-L8001___-S	operation	1334.0	163.07	165.13	DC	27.52
96413144	348856	7LATHAM	345.0	AMIL	270912	CHESTNUT ;	345.0	CE	1	COMED_P 1-2_345-L8001___-S	operation	1707.0	114.32	115.94	DC	27.56
96412952	917500	Z2-087 TAP	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	COMED_P 1-2_345-L8002___-S	operation	1793.0	160.39	166.12	DC	102.74
96412955	917500	Z2-087 TAP	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	Base Case	operation	1679.0	121.24	128.13	DC	115.61
96412936	934720	AD1-100 TAP	345.0	CE	270926	WILTON ; B	345.0	CE	1	934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1	operation	1528.0	166.74	169.47	DC	41.66
96412941	934720	AD1-100 TAP	345.0	CE	270926	WILTON ; B	345.0	CE	1	Base Case	operation	1364.0	143.05	144.81	DC	24.02
96413095	934730	AD1-100 TAP	345.0	CE	270670	BRAIDWOOD; B	345.0	CE	1	COMED_P 1-2_345-L11212_B-S-A	operation	1341.0	119.93	122.26	DC	31.26
96412890	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P 1-2_345-L11212_B-S-B	operation	1528.0	199.03	203.44	DC	67.37
96412893	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	Base Case	operation	1334.0	137.9	140.99	DC	41.25
96412866	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P 1-2_345-L8014___-S-B	operation	1528.0	219.8	224.58	DC	73.09
96412868	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	Base Case	operation	1364.0	170.85	174.53	DC	50.15
95373952	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	AEP_P1-2_#286	operation	1466.0	138.19	138.2	DC	15.29

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
95373673,95373675	15	J1180 TAP 345.0 kV - 05SULLIVAN 345.0 kV Ckt 1	<u>AEP</u> AEPI0010a (278) : Reconductor/rebuild 0.82 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 5 Project Type : FAC Cost : \$1,640,000 Time Estimate : 24 - 36 Months AEPI0010b (279) : Reconductor/rebuild 1 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 6 Project Type : FAC Cost : \$2,000,000 Time Estimate : 24 - 36 Months AEPI0010c (280) : Replace two Sullivan 3000A Wavetrap Project Type : FAC Cost : \$400,000 Time Estimate : 12- 18 Months <u>AMIL</u> NonPJMArea (536) : The external (i.e. Non-PJM) Transmission Owner, AMIL, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$4,040,000
96413936	11	AD1-100 TAP 345.0 kV - WILTON ; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_Sta. 12 Dresden (834) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at Station 12 Dresden. The new 345kV breaker will be installed as BT CB 12-13. Initial review of this proposal is that the existing contingency will be reduced and potentially reducing the post contingency flow. PJM to confirm this proposal in study. Assuming this proposal is acceptable in solution, a preliminary estimate is \$4M with a 24 month estimated construction contingent upon outage scheduling with Station 12 Dresden. The ratings for L11212 will not change rather the contingency as stated above will be revised. Project Type : CON Cost : \$4,000,000 Time Estimate : 24.0 Months ce-019 (897) : L11212 SLD & ALDR ratings are 2221 MVA & 2554MVA respectively. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line, upgrade station conductor at both terminals, upgrade 2-345kV circuit breakers at Wilton Center. A preliminary estimate for the upgrades is \$ 43.2 M with an estimated construction timeline of 36 months. Upon completion of the upgrades the rating swill be 1912/1912/1912/2390/2749 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$43,200,000 Time Estimate : 36.0 Months	\$47,200,000

ID	Idx	Facility	Upgrade Description	Cost
96412958,96412957	10	Z2-087 TAP 345.0 kV - PONTIAC ; R 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_8001 (855) : ComEd L8001 SSTE rating is 1837 MVA. The upgrade will be to re-conductor the line, replace station conductor at both line terminals, 1-345kV motor operated disconnect switch and replace 2-345kV bus tie circuit breakers and associated disconnect switches. A preliminary estimate for the upgrades is \$19.9M with a preliminary construction timeline of 30 months. Upon completion of the upgrades the ratings will be 1825/2004/2295/2707 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$19,900,000 Time Estimate : 30.0 Months	\$19,900,000
96412601	8	WILTON ;3M 345.0 kV - WILTON ; 765.0 kV Ckt 1	<u>ComEd</u> n5145 (887) : PJM Network Upgrade (n5145): Reconfigure Wilton 765kV bus thereby allowing for 765kV L11216 (currently on Bus 6) to be relocated to Bus 8. Along with this line relocation, installation of 2-765kV BT CBs (6-8 & 8-2). Project Type : CON Cost : \$11,000,000 Time Estimate : 36-40 Months	\$11,000,000
96412602	6	WILTON ; B 345.0 kV - WILTON ;3M 345.0 kV Ckt 1		
96412589	9	WILTON ;4M 345.0 kV - WILTON ; 765.0 kV Ckt 1		
96412590	7	WILTON ; R 345.0 kV - WILTON ;4M 345.0 kV Ckt 1		
96412966	1	BLUEMOUND; B 345.0 kV - PONTIAC ; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L8002 (836) : ComEd 345kV L8002 SSTE rating is 1797 MVA. The upgrade will be to mitigate sag on the line, upgrade station conductor at both line terminals and upgrade 2-345kV circuit breakers at Pontiac station. A preliminary estimate for the upgrade is \$18.8M with an estimated construction timeline of 24-30 months. Upon completion of the upgrade the ratings will be 1461/1656/1909/1912 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$18,000,000 Time Estimate : 24-30 Months	\$18,000,000
96412437	12	AD1-100 TAP 345.0 kV - BRAIDWOOD; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L2002 (906) : ComEd 345kV L2002 SSTE rating is 1837 MVA. The upgrade will be to replace 5-345kV Bus Tie Circuit Breakers at Dresden and associated switches. L2002 345kV motor operated switch, 345kV L2002 line relay scheme upgrade, station conductor and L2002 re-conductoring required. Upon completion of the upgrade the ratings will be 2954/2954/2954/3138 MVA (SN/SLTE/SSTE/SLD). A preliminary estimate for the upgrade is \$26.2M with a 30-36 month timeline contingent upon outage coordination with Dresden Nuclear Station. Project Type : FAC Cost : \$26,200,000 Time Estimate : 30-36 Months	\$26,200,000

ID	Idx	Facility	Upgrade Description	Cost
96412872,96412871,96412412	14	AE1-172 TAP 345.0 kV - AD1-100 TAP 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_Sta. 12 Dresden (834) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at Station 12 Dresden. The new 345kV breaker will be installed as BT CB 12-13. Initial review of this proposal is that the existing contingency will be reduced and potentially reducing the post contingency flow. PJM to confirm this proposal in study. Assuming this proposal is acceptable in solution, a preliminary estimate is \$4M with a 24 month estimated construction contingent upon outage scheduling with Station 12 Dresden. The ratings for L11212 will not change rather the contingency as stated above will be revised. Project Type : CON Cost : \$4,000,000 Time Estimate : 24.0 Months	\$45,000,000
96412886,96412417,96412885	3	LORETTO ; B 345.0 kV - AE1-172 TAP 345.0 kV Ckt 1	CE_NUN_L11212_2 (856) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to replace-2-345kV circuit breakers, upgrade a line relay scheme, station conductor upgrades at both terminals and re-conductor the line. A preliminary estimate for the upgrades is \$41M with an estimated construction timeline of 24-30 months. Upon completion the ratings will be 1754/2246/2297/2488 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$41,000,000 Time Estimate : 24-30 Months	
96412600	2	BRAIDWOOD; B 345.0 kV - BRAIDWOOD; R 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_BRAIDWOOD BT (923) : Post contingency flow exceeds the SSTE rating for the 345kV Braidwood BT CB. The upgrade will be to replace the station conductor. A preliminary estimate for the upgrade is \$600,000 with an estimated construction timeline of 30 months contingent upon outage coordination at Station 20 Braidwood. Upon completion of the upgrade the new ratings will be 1872/2182/2500/2973 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$600,000 Time Estimate : 30.0 Months	\$600,000

ID	Idx	Facility	Upgrade Description	Cost
96412903,96412432	4	PONTIAC ; B 345.0 kV - LORETTO ; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_8012 (832) : ComEd 345kV L8012 SN rating is 1364 MVA. The upgrade will be to replace a 345kV bus tie circuit breaker at TSS 80 Pontiac. A preliminary estimate for the upgrade is \$3M with an estimated construction timeline of 24 months. Upon completion of the upgrade the ratings will be 1461/1656/1909/1912 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$3,000,000 Time Estimate : 24.0 Months CE_NUN_Sta. 12 Dresden (834) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at Station 12 Dresden. The new 345kV breaker will be installed as BT CB 12-13. Initial review of this proposal is that the existing contingency will be reduced and potentially reducing the post contingency flow. PJM to confirm this proposal in study. Assuming this proposal is acceptable in solution, a preliminary estimate is \$4M with a 24 month estimated construction contingent upon outage scheduling with Station 12 Dresden. The ratings for L11212 will not change rather the contingency as stated above will be revised. Project Type : CON Cost : \$4,000,000 Time Estimate : 24.0 Months CE_NUN_L8012_1 (842) : ComEd 345kV L8012 SSTE rating is 1846 MVA. The upgrade will be to replace 1-345kV bus tie circuit breaker at TSS 80 Pontiac along with all associated disconnect switches. Also required is an upgraded 1-345kV line motor operated disconnect switch and line re-conductoring along with station conductor work. A preliminary estimate for this upgrade is \$18.5M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1754/2246/2297/2488 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$18,500,000 Time Estimate : 30.0 Months	\$25,500,000
96412895,96412896	13	AD1-133 TAP 345.0 kV - DRESDEN ; R 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_8014 (833) : ComEd 345kV L8014 SSTE rating is 1797 MVA. The upgrade will be to re-conductor a section of the line, upgrade station conductor at both terminals, upgrade 1-345kV circuit breaker and associated equipment and upgrade 1- line disconnect switch. A preliminary estimate for the upgrades is \$38.2M with an estimated construction timeline of 24 months contingent upon line outage coordination with Dresden station. Upon completion of the upgrades the ratings will be 2293/2293/2293/2436 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$38,200,000 Time Estimate : 24.0 Months	\$38,200,000
96412913	5	PONTIAC ; R 345.0 kV - AD1-133 TAP 345.0 kV Ckt 1		
			TOTAL COST	\$227,640,000

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

11.6 Flow Gate Details

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

11.6.1 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
96412966	270668	BLUEMOUND; B	CE	270852	PONTIAC ; B	CE	1	COMED_P1-2_345-L8001-S	single	1528.0	99.67	100.42	DC	11.53

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	17.9393	80/20	17.9393
274651	KINCAID ;2U	17.9594	80/20	17.9594
274853	TWINGROVE;U1	3.4974	80/20	3.4974
274854	TWINGROVE;U2	3.4974	80/20	3.4974
274880	GENERATOR;	2.7598	80/20	2.7598
917501	Z2-087 C	0.8211	80/20	0.8211
924041	AB2-047 C O1	5.9501	80/20	5.9501
924261	AB2-070 C O1	4.7871	80/20	4.7871
925771	AC1-053 C	4.7928	80/20	4.7928
935141	AD1-148	9.0547	80/20	9.0547
936771	AD2-100 C	22.4608	80/20	22.4608
936971	AD2-131 C	1.4796	80/20	1.4796
937211	AD2-159 C	11.5787	80/20	11.5787
939741	AE1-205 C O1	15.3787	80/20	15.3787
941731	AE2-173 O1	9.1540	80/20	9.1540
942111	AE2-223 C	3.5701	80/20	3.5701
942481	AE2-261 C	33.1316	80/20	33.1316
944221	AF1-090 C O1	5.6119	80/20	5.6119
945391	AF1-204 C O1	3.6293	80/20	3.6293
945871	AF1-252 O1	9.9484	80/20	9.9484
945881	AF1-253 O1	6.8874	80/20	6.8874
951741	J474 C	3.8670	PJM External (MISO)	3.8670

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
952251	J641	12.2892	PJM External (MISO)	12.2892
952271	J644	12.5257	PJM External (MISO)	12.5257
952651	J756 C	4.3083	PJM External (MISO)	4.3083
952871	J757 C	5.3808	PJM External (MISO)	5.3808
953401	J811	9.8624	PJM External (MISO)	9.8624
953651	J815	34.7925	PJM External (MISO)	34.7925
953741	J826 C	2.0931	PJM External (MISO)	2.0931
953851	J845 C	2.0485	PJM External (MISO)	2.0485
953881	J848 C	5.3375	PJM External (MISO)	5.3375
954411	J912	13.1270	PJM External (MISO)	13.1270
954681	J949 C	13.3739	PJM External (MISO)	13.3739
954721	J750 C	3.3193	PJM External (MISO)	3.3193
954761	J468 C	2.5746	PJM External (MISO)	2.5746
954821	J955	167.1176	PJM External (MISO)	167.1176
955031	J979 C	4.2700	PJM External (MISO)	4.2700
955401	J1022 C	3.1396	PJM External (MISO)	3.1396
955711	J1055 C	1.8227	PJM External (MISO)	1.8227
956151	J1102	10.9753	PJM External (MISO)	10.9753
956281	J1115 C	7.7117	PJM External (MISO)	7.7117
956451	J1139	14.3805	PJM External (MISO)	14.3805
957381	AF2-032 C	2.5439	80/20	2.5439
959341	AF2-225 C	11.5340	80/20	11.5340
959611	AF2-252 C	10.2402	80/20	10.2402
960141	AF2-305	1.6939	80/20	1.6939
960261	AF2-317	2.8975	80/20	2.8975
960611	AF2-352 C	10.2402	80/20	10.2402
LGEE	LGEE	1.3395	Confirmed LTF	1.3395
CPL	CPL	1.1014	Confirmed LTF	1.1014
G-007A	G-007A	1.9779	Confirmed LTF	1.9779
VFT	VFT	5.3083	Confirmed LTF	5.3083
CBM-W2	CBM-W2	39.9754	Confirmed LTF	39.9754
TVA	TVA	4.6844	Confirmed LTF	4.6844
CBM-S2	CBM-S2	10.9936	Confirmed LTF	10.9936
CBM-S1	CBM-S1	26.9317	Confirmed LTF	26.9317
MADISON	MADISON	1.1310	Confirmed LTF	1.1310
MEC	MEC	2.3152	Confirmed LTF	2.3152

11.6.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96412600	270670	BRAIDWOOD; B	CE	270671	BRAIDWOOD; R	CE	1	ADD AD1-100 5	breaker	1726.0	120.18	121.61	DC	24.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274654	BRAIDWOOD;1U	99.9077	50/50	99.9077
274853	TWINGROVE;U1	0.8797	50/50	0.8797

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274854	TWINGROVE;U2	0.8797	50/50	0.8797
274863	CAYUGA RI;1U	1.2549	50/50	1.2549
274864	CAYUGA RI;2U	1.2549	50/50	1.2549
274880	GENERATOR;	0.8066	50/50	0.8066
274882	W4-005 E	31.3157	50/50	31.3157
274890	CAYUG;1U E	29.1012	50/50	29.1012
274891	CAYUG;2U E	29.1012	50/50	29.1012
276153	W2-048 E	4.9109	Adder	5.78
290261	S-027 E	20.4003	50/50	20.4003
290265	S-028 E	20.4003	50/50	20.4003
909052	X2-022 E	14.7719	Adder	17.38
917501	Z2-087 C	0.7343	50/50	0.7343
917502	Z2-087 E	28.4890	50/50	28.4890
924041	AB2-047 C O1	5.3212	50/50	5.3212
924042	AB2-047 E O1	35.6113	50/50	35.6113
924261	AB2-070 C O1	2.1638	Adder	2.55
924262	AB2-070 E O1	13.7152	Adder	16.14
925771	AC1-053 C	2.1251	Adder	2.5
925772	AC1-053 E	14.2221	Adder	16.73
932931	AC2-117	-5.6996	Adder	-6.71
934721	AD1-100 C	61.9740	50/50	61.9740
934722	AD1-100 E	289.2120	50/50	289.2120
935001	AD1-133 C O1	12.4680	Adder	14.67
935002	AD1-133 E O1	8.3120	Adder	9.78
935141	AD1-148	3.8501	Adder	4.53
936771	AD2-100 C	7.1864	Adder	8.45
936772	AD2-100 E	4.7909	Adder	5.64
936971	AD2-131 C	0.4734	Adder	0.56
936972	AD2-131 E	2.3784	Adder	2.8
937211	AD2-159 C	3.3841	50/50	3.3841
937212	AD2-159 E	15.8440	50/50	15.8440
939351	AE1-166 C O1	34.3894	50/50	34.3894
939352	AE1-166 E O1	31.7441	50/50	31.7441
939401	AE1-172 C O1	12.8285	50/50	12.8285
939402	AE1-172 E O1	60.1908	50/50	60.1908
939741	AE1-205 C O1	13.7533	50/50	13.7533
939742	AE1-205 E O1	18.9927	50/50	18.9927
940101	AE1-252 C O1	25.7715	50/50	25.7715
940102	AE1-252 E O1	17.1810	50/50	17.1810
941551	AE2-152 C O1	39.6801	50/50	39.6801
941552	AE2-152 E O1	26.4534	50/50	26.4534
941731	AE2-173 O1	8.1865	50/50	8.1865
942111	AE2-223 C	3.1927	50/50	3.1927
942112	AE2-223 E	21.3668	50/50	21.3668
942481	AE2-261 C	10.5782	Adder	12.44
942482	AE2-261 E	7.0522	Adder	8.3
951741	J474 C	1.7693	PJM External (MISO)	1.7693
951742	J474 E	9.5722	PJM External (MISO)	9.5722
956281	J1115 C	2.5965	PJM External (MISO)	2.5965
956282	J1115 E	14.0475	PJM External (MISO)	14.0475
957381	AF2-032 C	0.4302	Adder	0.95
957382	AF2-032 E	0.2024	Adder	0.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958013	AF2-095 BAT	9.2992	50/50	9.2992
958021	AF2-096 C O1	124.6522	50/50	124.6522
958022	AF2-096 E O1	58.9478	50/50	58.9478
959341	AF2-225 C	10.3150	50/50	10.3150
959342	AF2-225 E	14.2445	50/50	14.2445
959611	AF2-252 C	2.5758	50/50	2.5758
959612	AF2-252 E	3.8637	50/50	3.8637
960141	AF2-305	0.4058	Adder	0.9
960261	AF2-317	0.6530	Adder	1.45
960603	AF2-351 BAT	4.6498	50/50	4.6498
960611	AF2-352 C	2.5758	50/50	2.5758
960612	AF2-352 E	3.8637	50/50	3.8637
LGEE	LGEE	0.4712	Confirmed LTF	0.4712
CPL	CPL	0.3685	Confirmed LTF	0.3685
G-007A	G-007A	0.4339	Confirmed LTF	0.4339
VFT	VFT	1.1675	Confirmed LTF	1.1675
CBM-W2	CBM-W2	16.3964	Confirmed LTF	16.3964
TVA	TVA	1.8270	Confirmed LTF	1.8270
CBM-S2	CBM-S2	3.8379	Confirmed LTF	3.8379
CBM-S1	CBM-S1	10.3603	Confirmed LTF	10.3603
MADISON	MADISON	1.7459	Confirmed LTF	1.7459
MEC	MEC	1.7574	Confirmed LTF	1.7574

11.6.3 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
96412417	270704	LORETTO ; B	CE	939400	AE1-172 TAP	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	206.32	211.12	DC	73.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	19.9198	50/50	19.9198
274651	KINCAID ;2U	19.9140	50/50	19.9140
274853	TWINGROVE;U1	2.6121	50/50	2.6121
274854	TWINGROVE;U2	2.6121	50/50	2.6121
274863	CAYUGA RI;1U	3.1059	50/50	3.1059
274864	CAYUGA RI;2U	3.1059	50/50	3.1059
274880	GENERATOR;	2.3938	50/50	2.3938
274882	W4-005 E	92.9332	50/50	92.9332
274890	CAYUG;1U E	72.0240	50/50	72.0240
274891	CAYUG;2U E	72.0240	50/50	72.0240
276153	W2-048 E	17.1581	50/50	17.1581
290261	S-027 E	60.5722	50/50	60.5722
290265	S-028 E	60.5722	50/50	60.5722
909052	X2-022 E	51.6116	50/50	51.6116
917501	Z2-087 C	2.1907	50/50	2.1907
917502	Z2-087 E	84.9920	50/50	84.9920

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924041	AB2-047 C O1	15.8750	50/50	15.8750
924042	AB2-047 E O1	106.2401	50/50	106.2401
924261	AB2-070 C O1	7.5652	50/50	7.5652
924262	AB2-070 E O1	47.9519	50/50	47.9519
925771	AC1-053 C	7.4285	50/50	7.4285
925772	AC1-053 E	49.7135	50/50	49.7135
935001	AD1-133 C O1	88.1514	50/50	88.1514
935002	AD1-133 E O1	58.7676	50/50	58.7676
935141	AD1-148	13.4520	50/50	13.4520
936771	AD2-100 C	25.0186	50/50	25.0186
936772	AD2-100 E	16.6790	50/50	16.6790
936971	AD2-131 C	1.6480	50/50	1.6480
936972	AD2-131 E	8.2800	50/50	8.2800
937211	AD2-159 C	10.0429	50/50	10.0429
937212	AD2-159 E	47.0190	50/50	47.0190
939741	AE1-205 C O1	41.0306	50/50	41.0306
939742	AE1-205 E O1	56.6614	50/50	56.6614
941731	AE2-173 O1	24.4230	50/50	24.4230
942111	AE2-223 C	9.5250	50/50	9.5250
942112	AE2-223 E	63.7440	50/50	63.7440
942481	AE2-261 C	36.8201	50/50	36.8201
942482	AE2-261 E	24.5467	50/50	24.5467
944221	AF1-090 C O1	6.3008	50/50	6.3008
944222	AF1-090 E O1	29.4992	50/50	29.4992
945871	AF1-252 O1	11.1696	50/50	11.1696
945881	AF1-253 O1	7.7328	50/50	7.7328
951741	J474 C	5.3123	PJM External (MISO)	5.3123
951742	J474 E	28.7408	PJM External (MISO)	28.7408
952251	J641	14.3304	PJM External (MISO)	14.3304
952271	J644	14.1460	PJM External (MISO)	14.1460
952651	J756 C	4.7153	PJM External (MISO)	4.7153
952652	J756 E	25.5111	PJM External (MISO)	25.5111
952871	J757 C	6.0528	PJM External (MISO)	6.0528
952872	J757 E	32.7473	PJM External (MISO)	32.7473
953401	J811	10.9009	PJM External (MISO)	10.9009
953651	J815	38.2450	PJM External (MISO)	38.2450
953741	J826 C	3.1365	PJM External (MISO)	3.1365
953742	J826 E	16.9695	PJM External (MISO)	16.9695
953851	J845 C	3.0456	PJM External (MISO)	3.0456
953852	J845 E	16.4772	PJM External (MISO)	16.4772
953881	J848 C	5.8531	PJM External (MISO)	5.8531
953882	J848 E	31.6669	PJM External (MISO)	31.6669
954411	J912	14.4300	PJM External (MISO)	14.4300
954721	J750 C	3.7864	PJM External (MISO)	3.7864
954722	J750 E	20.4851	PJM External (MISO)	20.4851
954761	J468 C	3.0439	PJM External (MISO)	3.0439
954762	J468 E	17.2490	PJM External (MISO)	17.2490
954821	J955	182.0312	PJM External (MISO)	182.0312
955031	J979 C	4.6825	PJM External (MISO)	4.6825
955032	J979 E	25.3335	PJM External (MISO)	25.3335
955401	J1022 C	4.7048	PJM External (MISO)	4.7048
955402	J1022 E	25.4542	PJM External (MISO)	25.4542

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
955711	J1055 C	2.3506	PJM External (MISO)	2.3506
955712	J1055 E	12.7175	PJM External (MISO)	12.7175
956151	J1102	11.7649	PJM External (MISO)	11.7649
956281	J1115 C	7.7975	PJM External (MISO)	7.7975
956282	J1115 E	42.1865	PJM External (MISO)	42.1865
956451	J1139	17.7690	PJM External (MISO)	17.7690
957381	AF2-032 C	2.8247	50/50	2.8247
957382	AF2-032 E	1.3293	50/50	1.3293
958013	AF2-095 BAT	4.6200	50/50	4.6200
958023	AF2-096 BAT	8.9907	50/50	8.9907
959341	AF2-225 C	30.7730	50/50	30.7730
959342	AF2-225 E	42.4960	50/50	42.4960
959611	AF2-252 C	7.6480	50/50	7.6480
959612	AF2-252 E	11.4720	50/50	11.4720
960141	AF2-305	2.6769	50/50	2.6769
960261	AF2-317	4.3046	50/50	4.3046
960603	AF2-351 BAT	2.3100	50/50	2.3100
960611	AF2-352 C	7.6480	50/50	7.6480
960612	AF2-352 E	11.4720	50/50	11.4720
LGEE	LGEE	1.5500	Confirmed LTF	1.5500
CPL	CPL	1.2549	Confirmed LTF	1.2549
G-007A	G-007A	2.0738	Confirmed LTF	2.0738
VFT	VFT	5.5664	Confirmed LTF	5.5664
CBM-W2	CBM-W2	48.5831	Confirmed LTF	48.5831
TVA	TVA	5.5440	Confirmed LTF	5.5440
CBM-S2	CBM-S2	12.6582	Confirmed LTF	12.6582
CBM-S1	CBM-S1	31.7711	Confirmed LTF	31.7711
MADISON	MADISON	2.9857	Confirmed LTF	2.9857
MEC	MEC	3.9169	Confirmed LTF	3.9169

11.6.4 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
96412432	270852	PONTIAC ; B	CE	270704	LORETTO ; B	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	194.44	199.23	DC	73.32

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	19.9495	50/50	19.9495
274651	KINCAID ;2U	19.9437	50/50	19.9437
274853	TWINGROVE;U1	2.6142	50/50	2.6142
274854	TWINGROVE;U2	2.6142	50/50	2.6142
274880	GENERATOR;	2.3962	50/50	2.3962
274882	W4-005 E	93.0279	50/50	93.0279
276153	W2-048 E	17.1775	50/50	17.1775
290261	S-027 E	60.6213	50/50	60.6213
290265	S-028 E	60.6213	50/50	60.6213
909052	X2-022 E	51.6699	50/50	51.6699

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
917501	Z2-087 C	2.1921	50/50	2.1921
917502	Z2-087 E	85.0460	50/50	85.0460
924041	AB2-047 C O1	15.8850	50/50	15.8850
924042	AB2-047 E O1	106.3075	50/50	106.3075
924261	AB2-070 C O1	7.5733	50/50	7.5733
924262	AB2-070 E O1	48.0029	50/50	48.0029
925771	AC1-053 C	7.4365	50/50	7.4365
925772	AC1-053 E	49.7675	50/50	49.7675
935001	AD1-133 C O1	88.2072	50/50	88.2072
935002	AD1-133 E O1	58.8048	50/50	58.8048
935141	AD1-148	13.4672	50/50	13.4672
936771	AD2-100 C	25.0576	50/50	25.0576
936772	AD2-100 E	16.7051	50/50	16.7051
936971	AD2-131 C	1.6506	50/50	1.6506
936972	AD2-131 E	8.2929	50/50	8.2929
937211	AD2-159 C	10.0531	50/50	10.0531
937212	AD2-159 E	47.0669	50/50	47.0669
939741	AE1-205 C O1	41.0567	50/50	41.0567
939742	AE1-205 E O1	56.6973	50/50	56.6973
941731	AE2-173 O1	24.4385	50/50	24.4385
942111	AE2-223 C	9.5310	50/50	9.5310
942112	AE2-223 E	63.7845	50/50	63.7845
942481	AE2-261 C	36.8757	50/50	36.8757
942482	AE2-261 E	24.5838	50/50	24.5838
944221	AF1-090 C O1	6.3117	50/50	6.3117
944222	AF1-090 E O1	29.5503	50/50	29.5503
945871	AF1-252 O1	11.1889	50/50	11.1889
945881	AF1-253 O1	7.7462	50/50	7.7462
951741	J474 C	5.3123	PJM External (MISO)	5.3123
951742	J474 E	28.7408	PJM External (MISO)	28.7408
952251	J641	14.3304	PJM External (MISO)	14.3304
952271	J644	14.1460	PJM External (MISO)	14.1460
952651	J756 C	4.7153	PJM External (MISO)	4.7153
952652	J756 E	25.5111	PJM External (MISO)	25.5111
952871	J757 C	6.0528	PJM External (MISO)	6.0528
952872	J757 E	32.7473	PJM External (MISO)	32.7473
953401	J811	10.9009	PJM External (MISO)	10.9009
953651	J815	38.2450	PJM External (MISO)	38.2450
953741	J826 C	3.1365	PJM External (MISO)	3.1365
953742	J826 E	16.9695	PJM External (MISO)	16.9695
953851	J845 C	3.0456	PJM External (MISO)	3.0456
953852	J845 E	16.4772	PJM External (MISO)	16.4772
953881	J848 C	5.8531	PJM External (MISO)	5.8531
953882	J848 E	31.6669	PJM External (MISO)	31.6669
954411	J912	14.4300	PJM External (MISO)	14.4300
954681	J949 C	15.3782	PJM External (MISO)	15.3782
954721	J750 C	3.7864	PJM External (MISO)	3.7864
954722	J750 E	20.4851	PJM External (MISO)	20.4851
954761	J468 C	3.0439	PJM External (MISO)	3.0439
954762	J468 E	17.2490	PJM External (MISO)	17.2490
954821	J955	182.0312	PJM External (MISO)	182.0312
955031	J979 C	4.6825	PJM External (MISO)	4.6825

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
955032	J979 E	25.3335	PJM External (MISO)	25.3335
955401	J1022 C	4.7048	PJM External (MISO)	4.7048
955402	J1022 E	25.4542	PJM External (MISO)	25.4542
955711	J1055 C	2.3506	PJM External (MISO)	2.3506
955712	J1055 E	12.7175	PJM External (MISO)	12.7175
956151	J1102	11.7649	PJM External (MISO)	11.7649
956281	J1115 C	7.7975	PJM External (MISO)	7.7975
956282	J1115 E	42.1865	PJM External (MISO)	42.1865
956451	J1139	17.7690	PJM External (MISO)	17.7690
957381	AF2-032 C	2.8289	50/50	2.8289
957382	AF2-032 E	1.3313	50/50	1.3313
958013	AF2-095 BAT	4.6076	50/50	4.6076
958023	AF2-096 BAT	8.9687	50/50	8.9687
959341	AF2-225 C	30.7925	50/50	30.7925
959342	AF2-225 E	42.5230	50/50	42.5230
959611	AF2-252 C	7.6542	50/50	7.6542
959612	AF2-252 E	11.4813	50/50	11.4813
960141	AF2-305	2.6798	50/50	2.6798
960261	AF2-317	4.3095	50/50	4.3095
960603	AF2-351 BAT	2.3038	50/50	2.3038
960611	AF2-352 C	7.6542	50/50	7.6542
960612	AF2-352 E	11.4813	50/50	11.4813
LGEE	LGEE	1.5677	Confirmed LTF	1.5677
CPLE	CPLE	1.2754	Confirmed LTF	1.2754
G-007A	G-007A	2.1482	Confirmed LTF	2.1482
VFT	VFT	5.7663	Confirmed LTF	5.7663
CBM-W2	CBM-W2	48.8370	Confirmed LTF	48.8370
TVA	TVA	5.5874	Confirmed LTF	5.5874
CBM-S2	CBM-S2	12.8374	Confirmed LTF	12.8374
CBM-S1	CBM-S1	32.0352	Confirmed LTF	32.0352
MADISON	MADISON	2.9857	Confirmed LTF	2.9857
MEC	MEC	3.9661	Confirmed LTF	3.9661

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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
96412913	270853	PONTIAC ; R	CE	935000	AD1-133 TAP	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1528.0	115.34	117.19	DC	28.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	17.5509	80/20	17.5509
274651	KINCAID ;2U	17.5442	80/20	17.5442
274853	TWINGROVE;U1	2.3753	80/20	2.3753
274854	TWINGROVE;U2	2.3753	80/20	2.3753
274863	CAYUGA RI;1U	2.3262	80/20	2.3262

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274864	CAYUGA RI;2U	2.3262	80/20	2.3262
274880	GENERATOR;	2.1589	80/20	2.1589
917501	Z2-087 C	2.0142	80/20	2.0142
924041	AB2-047 C O1	14.5961	80/20	14.5961
924261	AB2-070 C O1	6.8149	80/20	6.8149
925771	AC1-053 C	6.6841	80/20	6.6841
930461	AB1-087	29.4745	80/20	29.4745
930471	AB1-088	29.4745	80/20	29.4745
933441	AC2-157 C	4.0728	80/20	4.0728
935141	AD1-148	12.0741	80/20	12.0741
936771	AD2-100 C	22.0324	80/20	22.0324
936971	AD2-131 C	1.4513	80/20	1.4513
937211	AD2-159 C	9.0575	80/20	9.0575
939401	AE1-172 C O1	20.1389	80/20	20.1389
939741	AE1-205 C O1	37.7252	80/20	37.7252
940101	AE1-252 C O1	40.4577	80/20	40.4577
941731	AE2-173 O1	22.4555	80/20	22.4555
942111	AE2-223 C	8.7576	80/20	8.7576
942481	AE2-261 C	32.4355	80/20	32.4355
942601	AE2-276	2.6795	80/20	2.6795
944201	AF1-088 FTIR	53.5900	80/20	53.5900
944221	AF1-090 C O1	5.5419	80/20	5.5419
945391	AF1-204 C O1	4.0641	80/20	4.0641
945871	AF1-252 O1	9.8243	80/20	9.8243
945881	AF1-253 O1	6.8014	80/20	6.8014
951741	J474 C	4.8951	PJM External (MISO)	4.8951
952271	J644	12.3266	PJM External (MISO)	12.3266
952651	J756 C	4.0725	PJM External (MISO)	4.0725
952871	J757 C	5.2552	PJM External (MISO)	5.2552
953401	J811	10.1812	PJM External (MISO)	10.1812
953651	J815	35.0125	PJM External (MISO)	35.0125
953741	J826 C	2.9278	PJM External (MISO)	2.9278
953851	J845 C	2.8743	PJM External (MISO)	2.8743
953881	J848 C	5.3875	PJM External (MISO)	5.3875
954411	J912	13.3070	PJM External (MISO)	13.3070
954721	J750 C	3.3703	PJM External (MISO)	3.3703
954761	J468 C	2.9388	PJM External (MISO)	2.9388
954821	J955	165.7032	PJM External (MISO)	165.7032
955031	J979 C	4.3100	PJM External (MISO)	4.3100
955401	J1022 C	4.3917	PJM External (MISO)	4.3917
956151	J1102	10.3649	PJM External (MISO)	10.3649
956281	J1115 C	7.2200	PJM External (MISO)	7.2200
956451	J1139	17.0310	PJM External (MISO)	17.0310
957141	AF2-008 FTIR	26.7950	80/20	26.7950
957381	AF2-032 C	2.4888	80/20	2.4888
959341	AF2-225 C	28.2939	80/20	28.2939
959611	AF2-252 C	6.9548	80/20	6.9548
960141	AF2-305	2.4114	80/20	2.4114
960261	AF2-317	3.8637	80/20	3.8637
960611	AF2-352 C	6.9548	80/20	6.9548
LGEE	LGEE	1.4696	Confirmed LTF	1.4696
CPL	CPL	1.1821	Confirmed LTF	1.1821

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
G-007A	G-007A	2.3400	Confirmed LTF	2.3400
VFT	VFT	6.2888	Confirmed LTF	6.2888
CBM-W2	CBM-W2	40.8435	Confirmed LTF	40.8435
TVA	TVA	4.7488	Confirmed LTF	4.7488
CBM-S2	CBM-S2	11.6409	Confirmed LTF	11.6409
CBM-S1	CBM-S1	27.6048	Confirmed LTF	27.6048
MEC	MEC	1.1393	Confirmed LTF	1.1393

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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
96412602	270926	WILTON ; B	CE	275232	WILTON ;3M	CE	1	COMED_P4_112-65-BT5-6	breaker	1379.0	121.9	121.94	DC	21.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274771	LINCOLN ;2U	3.7664	50/50	3.7664
274772	LINCOLN ;3U	3.7664	50/50	3.7664
274773	LINCOLN ;4U	3.7664	50/50	3.7664
274774	LINCOLN ;5U	3.7664	50/50	3.7664
274775	LINCOLN ;6U	3.7664	50/50	3.7664
274776	LINCOLN ;7U	3.7664	50/50	3.7664
274777	LINCOLN ;8U	3.7664	50/50	3.7664
274830	U3-021 1	6.3035	Adder	7.42
274831	U3-021 2	6.3035	Adder	7.42
274881	PILOT HIL;1E	19.9396	Adder	23.46
274890	CAYUG;1U E	17.0054	Adder	20.01
274891	CAYUG;2U E	17.0054	Adder	20.01
275149	KELLYCK ;1E	19.9396	Adder	23.46
276167	Z1-106 E2	1.3063	Adder	1.54
276168	Z1-106 E1	1.3062	Adder	1.54
276169	Z1-107 E	2.6738	Adder	3.15
276170	Z1-108 E	2.5704	Adder	3.02
290021	O50 E	20.0260	Adder	23.56
290051	GSG-6; E	10.8913	Adder	12.81
290108	LEEDK;1U E	25.1940	Adder	29.64
293061	N-015 E	16.4434	Adder	19.35
293644	O22 E1	10.5913	Adder	12.46
293645	O22 E2	20.5595	Adder	24.19
294392	P-010 E	20.8831	Adder	24.57
910542	X3-005 E	0.7562	Adder	0.89
915011	Y3-013 1	3.8635	Adder	4.55
915021	Y3-013 2	3.8635	Adder	4.55
915031	Y3-013 3	3.8635	Adder	4.55
918052	AA1-018 E OP	16.9837	Adder	19.98
920272	AA2-123 E	2.5262	Adder	2.97
924471	AB2-096	43.7741	Adder	51.5
926311	AC1-109 1	1.9765	Adder	2.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
926321	AC1-109 2	1.9765	Adder	2.33
926331	AC1-110 1	1.9634	Adder	2.31
926341	AC1-110 2	1.9634	Adder	2.31
926351	AC1-111 1	0.7894	Adder	0.93
926361	AC1-111 2	0.7894	Adder	0.93
926371	AC1-111 3	0.7894	Adder	0.93
926381	AC1-111 4	0.7894	Adder	0.93
926391	AC1-111 5	0.7894	Adder	0.93
926401	AC1-111 6	0.7894	Adder	0.93
927451	AC1-142A 1	4.3256	Adder	5.09
927461	AC1-142A 2	4.3256	Adder	5.09
930501	AB1-091 O1	79.3394	Adder	93.34
930741	AB1-122 1O1	75.3017	Adder	88.59
930751	AB1-122 2O1	76.2303	Adder	89.68
933411	AC2-154 C	2.7061	Adder	3.18
933412	AC2-154 E	4.4152	Adder	5.19
933431	AC2-156 C O1	0.9893	Adder	1.16
933432	AC2-156 E O1	1.6142	Adder	1.9
933911	AD1-013 C	1.9232	Adder	2.26
933912	AD1-013 E	3.0721	Adder	3.61
933931	AD1-016 C	0.9600	Adder	1.13
933932	AD1-016 E	1.5662	Adder	1.84
934101	AD1-039 1	7.3796	Adder	8.68
934111	AD1-039 2	7.4706	Adder	8.79
934431	AD1-067 C	0.1368	Adder	0.16
934432	AD1-067 E	0.5750	Adder	0.68
934701	AD1-098 C O1	7.1661	Adder	8.43
934702	AD1-098 E O1	5.2320	Adder	6.16
934721	AD1-100 C	24.8523	Adder	29.24
934722	AD1-100 E	115.9774	Adder	136.44
934871	AD1-116 C	0.9891	Adder	1.16
934872	AD1-116 E	1.6138	Adder	1.9
934971	AD1-129 C	0.9344	Adder	1.1
934972	AD1-129 E	0.6230	Adder	0.73
935001	AD1-133 C O1	23.0234	Adder	27.09
935002	AD1-133 E O1	15.3490	Adder	18.06
936291	AD2-038 C O1	2.4301	Adder	2.86
936292	AD2-038 E O1	16.2627	Adder	19.13
936371	AD2-047 C O1	4.8425	Adder	5.7
936372	AD2-047 E O1	23.6427	Adder	27.81
936461	AD2-060	2.8485	Adder	3.35
936511	AD2-066 C O1	8.7640	Adder	10.31
936512	AD2-066 E O1	5.8426	Adder	6.87
937001	AD2-134 C	2.8471	Adder	3.35
937002	AD2-134 E	11.7616	Adder	13.84
937401	AD2-194 1	8.0697	Adder	9.49
937411	AD2-194 2	8.0692	Adder	9.49
938511	AE1-070 1	9.4819	Adder	11.16
938521	AE1-070 2	8.6744	Adder	10.21
938851	AE1-113 C	8.2607	Adder	9.72
938852	AE1-113 E	29.2880	Adder	34.46
939321	AE1-163 C O1	6.1063	Adder	7.18

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939322	AE1-163 E O1	37.5102	Adder	44.13
939351	AE1-166 C O1	12.2622	Adder	14.43
939352	AE1-166 E O1	11.3189	Adder	13.32
939401	AE1-172 C O1	6.7946	Adder	7.99
939402	AE1-172 E O1	31.8801	Adder	37.51
940101	AE1-252 C O1	13.6499	Adder	16.06
940102	AE1-252 E O1	9.0999	Adder	10.71
940752	AE2-062 E	0.1351	Adder	0.16
941131	AE2-107 C	7.5761	Adder	8.91
941132	AE2-107 E	5.0507	Adder	5.94
941551	AE2-152 C O1	14.1487	Adder	16.65
941552	AE2-152 E O1	9.4325	Adder	11.1
941561	AE2-153 C O1	5.1247	Adder	6.03
941562	AE2-153 E O1	23.9929	Adder	28.23
941731	AE2-173 O1	3.2665	Adder	3.84
942111	AE2-223 C	2.4140	Adder	2.84
942112	AE2-223 E	16.1551	Adder	19.01
942421	AE2-255 C O1	3.1291	Adder	3.68
942422	AE2-255 E O1	9.3872	Adder	11.04
942651	AE2-281 C O1	0.8723	Adder	1.03
942652	AE2-281 E O1	5.3586	Adder	6.3
942991	AE2-321 C	8.4508	Adder	9.94
942992	AE2-321 E	4.1623	Adder	4.9
943121	AE2-341 C	13.2079	Adder	15.54
943122	AE2-341 E	6.4858	Adder	7.63
943381	AF1-009 C	0.6199	Adder	0.73
943382	AF1-009 E	2.4796	Adder	2.92
943591	AF1-030 C O1	8.7834	Adder	10.33
943592	AF1-030 E O1	4.3457	Adder	5.11
943801	AF1-048 C	3.9504	Adder	4.65
943802	AF1-048 E	2.6336	Adder	3.1
944041	AF1-072	2.2259	Adder	2.62
944911	AF1-156 C	13.1029	Adder	15.42
944912	AF1-156 E	8.7353	Adder	10.28
945351	AF1-200 FTIR	322.6289	Merchant Transmission	322.6289
946661	AF1-330 C	2.0715	Adder	2.44
946662	AF1-330 E	0.4547	Adder	0.53
946671	AF1-331	2.4976	Adder	2.94
957021	AF2-003 C O1	3.5751	Adder	7.94
957022	AF2-003 E O1	16.7377	Adder	37.15
957331	AF2-027 C	1.3651	Adder	3.03
957332	AF2-027 E	2.0477	Adder	4.55
958011	AF2-095 C O1	10.2661	Adder	22.79
958012	AF2-095 E O1	4.8311	Adder	10.72
958021	AF2-096 C O1	19.7578	Adder	43.86
958022	AF2-096 E O1	9.3434	Adder	20.74
958481	AF2-142 C	6.2078	Adder	13.78
958482	AF2-142 E	4.1386	Adder	9.19
958491	AF2-143 C	5.9443	Adder	13.19
958492	AF2-143 E	3.9629	Adder	8.8
959341	AF2-225 C	4.1335	Adder	9.18
959342	AF2-225 E	5.7081	Adder	12.67

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959351	AF2-226 C	1.3758	Adder	3.05
959352	AF2-226 E	2.0637	Adder	4.58
960281	AF2-319 C	1.3758	Adder	3.05
960282	AF2-319 E	2.0637	Adder	4.58
960381	AF2-329	3.6323	Adder	8.06
960581	AF2-349 C	11.9583	Adder	26.54
960582	AF2-349 E	7.9722	Adder	17.7
960591	AF2-350 C O1	4.5291	Adder	10.05
960592	AF2-350 E O1	3.0194	Adder	6.7
960601	AF2-351 C O1	0.6039	Adder	1.34
960602	AF2-351 E O1	0.9058	Adder	2.01
960721	AF2-363 C O1	3.2702	Adder	7.26
960722	AF2-363 E O1	2.1801	Adder	4.84
960731	AF2-364 C O1	3.3662	Adder	7.47
960732	AF2-364 E O1	2.2441	Adder	4.98
960751	AF2-366 C O1	3.8221	Adder	8.48
960752	AF2-366 E O1	2.5480	Adder	5.66
961501	AF2-441 C O1	5.4914	Adder	12.19
961502	AF2-441 E O1	8.2371	Adder	18.28
WEC	WEC	4.5603	Confirmed LTF	4.5603
CALDERWOOD	CALDERWOOD	0.0631	Confirmed LTF	0.0631
CBM-W2	CBM-W2	25.0942	Confirmed LTF	25.0942
NY	NY	1.4306	Confirmed LTF	1.4306
CBM-W1	CBM-W1	78.1875	Confirmed LTF	78.1875
TVA	TVA	1.6184	Confirmed LTF	1.6184
O-066	O-066	16.9546	Confirmed LTF	16.9546
CHEOAH	CHEOAH	0.0771	Confirmed LTF	0.0771
CBM-S1	CBM-S1	6.0407	Confirmed LTF	6.0407
G-007	G-007	2.6218	Confirmed LTF	2.6218
MADISON	MADISON	24.3210	Confirmed LTF	24.3210
MEC	MEC	16.0171	Confirmed LTF	16.0171
BLUEG	BLUEG	2.3071	Confirmed LTF	2.3071
TRIMBLE	TRIMBLE	0.7969	Confirmed LTF	0.7969
CATAWBA	CATAWBA	0.3619	Confirmed LTF	0.3619

11.6.7 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
96412590	270927	WILTON ; R	CE	275233	WILTON ;4M	CE	1	COMED_P4_112-65-BT2-3__	breaker	1379.0	124.45	124.49	DC	22.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274771	LINCOLN ;2U	3.8683	50/50	3.8683
274772	LINCOLN ;3U	3.8683	50/50	3.8683
274773	LINCOLN ;4U	3.8683	50/50	3.8683
274774	LINCOLN ;5U	3.8683	50/50	3.8683
274775	LINCOLN ;6U	3.8683	50/50	3.8683

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274776	LINCOLN ;7U	3.8683	50/50	3.8683
274777	LINCOLN ;8U	3.8683	50/50	3.8683
274830	U3-021 1	6.4380	Adder	7.57
274831	U3-021 2	6.4380	Adder	7.57
274881	PILOT HIL;1E	20.3561	Adder	23.95
274890	CAYUG;1U E	17.3451	Adder	20.41
274891	CAYUG;2U E	17.3451	Adder	20.41
275149	KELLYCK ;1E	20.3561	Adder	23.95
276167	Z1-106 E2	1.3342	Adder	1.57
276168	Z1-106 E1	1.3341	Adder	1.57
276169	Z1-107 E	2.7309	Adder	3.21
276170	Z1-108 E	2.6251	Adder	3.09
290021	O50 E	20.4530	Adder	24.06
290051	GSG-6; E	11.1236	Adder	13.09
290108	LEEDK;1U E	25.7295	Adder	30.27
293061	N-015 E	16.7861	Adder	19.75
293644	O22 E1	10.8153	Adder	12.72
293645	O22 E2	20.9944	Adder	24.7
294392	P-010 E	21.3184	Adder	25.08
910542	X3-005 E	0.7727	Adder	0.91
915011	Y3-013 1	3.9461	Adder	4.64
915021	Y3-013 2	3.9461	Adder	4.64
915031	Y3-013 3	3.9461	Adder	4.64
918052	AA1-018 E OP	17.3542	Adder	20.42
920272	AA2-123 E	2.5799	Adder	3.04
924471	AB2-096	44.7083	Adder	52.6
926311	AC1-109 1	2.0186	Adder	2.37
926321	AC1-109 2	2.0186	Adder	2.37
926331	AC1-110 1	2.0052	Adder	2.36
926341	AC1-110 2	2.0052	Adder	2.36
926351	AC1-111 1	0.8063	Adder	0.95
926361	AC1-111 2	0.8063	Adder	0.95
926371	AC1-111 3	0.8063	Adder	0.95
926381	AC1-111 4	0.8063	Adder	0.95
926391	AC1-111 5	0.8063	Adder	0.95
926401	AC1-111 6	0.8063	Adder	0.95
927451	AC1-142A 1	4.4186	Adder	5.2
927461	AC1-142A 2	4.4186	Adder	5.2
930501	AB1-091 O1	80.9897	Adder	95.28
930741	AB1-122 1O1	76.8999	Adder	90.47
930751	AB1-122 2O1	77.8579	Adder	91.6
933411	AC2-154 C	2.7626	Adder	3.25
933412	AC2-154 E	4.5074	Adder	5.3
933431	AC2-156 C O1	1.0103	Adder	1.19
933432	AC2-156 E O1	1.6485	Adder	1.94
933911	AD1-013 C	1.9642	Adder	2.31
933912	AD1-013 E	3.1375	Adder	3.69
933931	AD1-016 C	0.9804	Adder	1.15
933932	AD1-016 E	1.5996	Adder	1.88
934101	AD1-039 1	7.5362	Adder	8.87
934111	AD1-039 2	7.6301	Adder	8.98
934431	AD1-067 C	0.1397	Adder	0.16

Bus #	Bus	Gendoliv MW Impact	Type	Full MW Impact
934432	AD1-067 E	0.5873	Adder	0.69
934701	AD1-098 C O1	7.3184	Adder	8.61
934702	AD1-098 E O1	5.3432	Adder	6.29
934721	AD1-100 C	25.3457	Adder	29.82
934722	AD1-100 E	118.2800	Adder	139.15
934871	AD1-116 C	1.0107	Adder	1.19
934872	AD1-116 E	1.6490	Adder	1.94
934971	AD1-129 C	0.9544	Adder	1.12
934972	AD1-129 E	0.6363	Adder	0.75
935001	AD1-133 C O1	23.5023	Adder	27.65
935002	AD1-133 E O1	15.6682	Adder	18.43
936291	AD2-038 C O1	2.4826	Adder	2.92
936292	AD2-038 E O1	16.6143	Adder	19.55
936371	AD2-047 C O1	4.9436	Adder	5.82
936372	AD2-047 E O1	24.1366	Adder	28.4
936461	AD2-060	2.9080	Adder	3.42
936511	AD2-066 C O1	8.9497	Adder	10.53
936512	AD2-066 E O1	5.9665	Adder	7.02
937001	AD2-134 C	2.9079	Adder	3.42
937002	AD2-134 E	12.0124	Adder	14.13
937401	AD2-194 1	8.2426	Adder	9.7
937411	AD2-194 2	8.2421	Adder	9.7
938511	AE1-070 1	9.6851	Adder	11.39
938521	AE1-070 2	8.8603	Adder	10.42
938851	AE1-113 C	8.4369	Adder	9.93
938852	AE1-113 E	29.9126	Adder	35.19
939321	AE1-163 C O1	6.2383	Adder	7.34
939322	AE1-163 E O1	38.3212	Adder	45.08
939351	AE1-166 C O1	12.5095	Adder	14.72
939352	AE1-166 E O1	11.5472	Adder	13.58
939401	AE1-172 C O1	6.9294	Adder	8.15
939402	AE1-172 E O1	32.5126	Adder	38.25
940101	AE1-252 C O1	13.9207	Adder	16.38
940102	AE1-252 E O1	9.2805	Adder	10.92
940752	AE2-062 E	0.1379	Adder	0.16
941131	AE2-107 C	7.7372	Adder	9.1
941132	AE2-107 E	5.1581	Adder	6.07
941551	AE2-152 C O1	14.4340	Adder	16.98
941552	AE2-152 E O1	9.6227	Adder	11.32
941561	AE2-153 C O1	5.2303	Adder	6.15
941562	AE2-153 E O1	24.4874	Adder	28.81
941731	AE2-173 O1	3.3326	Adder	3.92
942111	AE2-223 C	2.4629	Adder	2.9
942112	AE2-223 E	16.4823	Adder	19.39
942421	AE2-255 C O1	3.1958	Adder	3.76
942422	AE2-255 E O1	9.5874	Adder	11.28
942651	AE2-281 C O1	0.8912	Adder	1.05
942652	AE2-281 E O1	5.4745	Adder	6.44
942991	AE2-321 C	8.6313	Adder	10.15
942992	AE2-321 E	4.2513	Adder	5.0
943121	AE2-341 C	13.4892	Adder	15.87
943122	AE2-341 E	6.6239	Adder	7.79

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943381	AF1-009 C	0.6331	Adder	0.74
943382	AF1-009 E	2.5323	Adder	2.98
943591	AF1-030 C O1	8.9705	Adder	10.55
943592	AF1-030 E O1	4.4383	Adder	5.22
943801	AF1-048 C	4.0348	Adder	4.75
943802	AF1-048 E	2.6899	Adder	3.16
944041	AF1-072	2.2734	Adder	2.67
944911	AF1-156 C	13.3730	Adder	15.73
944912	AF1-156 E	8.9153	Adder	10.49
945351	AF1-200 FTIR	329.4462	Merchant Transmission	329.4462
946661	AF1-330 C	2.1155	Adder	2.49
946662	AF1-330 E	0.4644	Adder	0.55
946671	AF1-331	2.5508	Adder	3.0
957021	AF2-003 C O1	3.6510	Adder	8.1
957022	AF2-003 E O1	17.0932	Adder	37.94
957331	AF2-027 C	1.3943	Adder	3.1
957332	AF2-027 E	2.0914	Adder	4.64
958011	AF2-095 C O1	10.4805	Adder	23.26
958012	AF2-095 E O1	4.9320	Adder	10.95
958021	AF2-096 C O1	20.1649	Adder	44.76
958022	AF2-096 E O1	9.5360	Adder	21.17
958481	AF2-142 C	6.3433	Adder	14.08
958482	AF2-142 E	4.2288	Adder	9.39
958491	AF2-143 C	6.0728	Adder	13.48
958492	AF2-143 E	4.0486	Adder	8.99
959341	AF2-225 C	4.2172	Adder	9.36
959342	AF2-225 E	5.8238	Adder	12.93
959351	AF2-226 C	1.4049	Adder	3.12
959352	AF2-226 E	2.1074	Adder	4.68
960281	AF2-319 C	1.4049	Adder	3.12
960282	AF2-319 E	2.1074	Adder	4.68
960381	AF2-329	3.7097	Adder	8.23
960581	AF2-349 C	12.2138	Adder	27.11
960582	AF2-349 E	8.1425	Adder	18.07
960591	AF2-350 C O1	4.6238	Adder	10.26
960592	AF2-350 E O1	3.0825	Adder	6.84
960601	AF2-351 C O1	0.6165	Adder	1.37
960602	AF2-351 E O1	0.9248	Adder	2.05
960721	AF2-363 C O1	3.3397	Adder	7.41
960722	AF2-363 E O1	2.2265	Adder	4.94
960731	AF2-364 C O1	3.4379	Adder	7.63
960732	AF2-364 E O1	2.2919	Adder	5.09
960751	AF2-366 C O1	3.9034	Adder	8.66
960752	AF2-366 E O1	2.6023	Adder	5.78
961501	AF2-441 C O1	5.6075	Adder	12.45
961502	AF2-441 E O1	8.4112	Adder	18.67
WEC	WEC	4.6573	Confirmed LTF	4.6573
CALDERWOOD	CALDERWOOD	0.0656	Confirmed LTF	0.0656
CBM-W2	CBM-W2	25.6101	Confirmed LTF	25.6101
NY	NY	1.4616	Confirmed LTF	1.4616
CBM-W1	CBM-W1	79.8388	Confirmed LTF	79.8388
TVA	TVA	1.6492	Confirmed LTF	1.6492

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
O-066	O-066	17.3242	Confirmed LTF	17.3242
CHEOAH	CHEOAH	0.0801	Confirmed LTF	0.0801
CBM-S1	CBM-S1	6.1514	Confirmed LTF	6.1514
G-007	G-007	2.6780	Confirmed LTF	2.6780
MADISON	MADISON	24.8371	Confirmed LTF	24.8371
MEC	MEC	16.3540	Confirmed LTF	16.3540
BLUEG	BLUEG	2.3592	Confirmed LTF	2.3592
TRIMBLE	TRIMBLE	0.8147	Confirmed LTF	0.8147
CATAWBA	CATAWBA	0.3703	Confirmed LTF	0.3703

11.6.8 Index 8

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
96412601	275232	WILTON ;3M	CE	270644	WILTON ;	CE	1	COMED_P4_112-65-BT5-6__	breaker	1379.0	121.9	121.94	DC	21.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274771	LINCOLN ;2U	3.7664	50/50	3.7664
274772	LINCOLN ;3U	3.7664	50/50	3.7664
274773	LINCOLN ;4U	3.7664	50/50	3.7664
274774	LINCOLN ;5U	3.7664	50/50	3.7664
274775	LINCOLN ;6U	3.7664	50/50	3.7664
274776	LINCOLN ;7U	3.7664	50/50	3.7664
274777	LINCOLN ;8U	3.7664	50/50	3.7664
274830	U3-021 1	6.3035	Adder	7.42
274831	U3-021 2	6.3035	Adder	7.42
274881	PILOT HIL;1E	19.9396	Adder	23.46
274890	CAYUG;1U E	17.0054	Adder	20.01
274891	CAYUG;2U E	17.0054	Adder	20.01
275149	KELLYCK ;1E	19.9396	Adder	23.46
276167	Z1-106 E2	1.3063	Adder	1.54
276168	Z1-106 E1	1.3062	Adder	1.54
276169	Z1-107 E	2.6738	Adder	3.15
276170	Z1-108 E	2.5704	Adder	3.02
290021	O50 E	20.0260	Adder	23.56
290051	GSG-6; E	10.8913	Adder	12.81
290108	LEEDK;1U E	25.1940	Adder	29.64
293061	N-015 E	16.4434	Adder	19.35
293644	O22 E1	10.5913	Adder	12.46
293645	O22 E2	20.5595	Adder	24.19
294392	P-010 E	20.8831	Adder	24.57
910542	X3-005 E	0.7562	Adder	0.89
915011	Y3-013 1	3.8635	Adder	4.55
915021	Y3-013 2	3.8635	Adder	4.55
915031	Y3-013 3	3.8635	Adder	4.55
918052	AA1-018 E OP	16.9837	Adder	19.98
920272	AA2-123 E	2.5262	Adder	2.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924471	AB2-096	43.7741	Adder	51.5
926311	AC1-109 1	1.9765	Adder	2.33
926321	AC1-109 2	1.9765	Adder	2.33
926331	AC1-110 1	1.9634	Adder	2.31
926341	AC1-110 2	1.9634	Adder	2.31
926351	AC1-111 1	0.7894	Adder	0.93
926361	AC1-111 2	0.7894	Adder	0.93
926371	AC1-111 3	0.7894	Adder	0.93
926381	AC1-111 4	0.7894	Adder	0.93
926391	AC1-111 5	0.7894	Adder	0.93
926401	AC1-111 6	0.7894	Adder	0.93
927451	AC1-142A 1	4.3256	Adder	5.09
927461	AC1-142A 2	4.3256	Adder	5.09
930501	AB1-091 O1	79.3394	Adder	93.34
930741	AB1-122 1O1	75.3017	Adder	88.59
930751	AB1-122 2O1	76.2303	Adder	89.68
933411	AC2-154 C	2.7061	Adder	3.18
933412	AC2-154 E	4.4152	Adder	5.19
933431	AC2-156 C O1	0.9893	Adder	1.16
933432	AC2-156 E O1	1.6142	Adder	1.9
933911	AD1-013 C	1.9232	Adder	2.26
933912	AD1-013 E	3.0721	Adder	3.61
933931	AD1-016 C	0.9600	Adder	1.13
933932	AD1-016 E	1.5662	Adder	1.84
934101	AD1-039 1	7.3796	Adder	8.68
934111	AD1-039 2	7.4706	Adder	8.79
934431	AD1-067 C	0.1368	Adder	0.16
934432	AD1-067 E	0.5750	Adder	0.68
934701	AD1-098 C O1	7.1661	Adder	8.43
934702	AD1-098 E O1	5.2320	Adder	6.16
934721	AD1-100 C	24.8523	Adder	29.24
934722	AD1-100 E	115.9774	Adder	136.44
934871	AD1-116 C	0.9891	Adder	1.16
934872	AD1-116 E	1.6138	Adder	1.9
934971	AD1-129 C	0.9344	Adder	1.1
934972	AD1-129 E	0.6230	Adder	0.73
935001	AD1-133 C O1	23.0234	Adder	27.09
935002	AD1-133 E O1	15.3490	Adder	18.06
936291	AD2-038 C O1	2.4301	Adder	2.86
936292	AD2-038 E O1	16.2627	Adder	19.13
936371	AD2-047 C O1	4.8425	Adder	5.7
936372	AD2-047 E O1	23.6427	Adder	27.81
936461	AD2-060	2.8485	Adder	3.35
936511	AD2-066 C O1	8.7640	Adder	10.31
936512	AD2-066 E O1	5.8426	Adder	6.87
937001	AD2-134 C	2.8471	Adder	3.35
937002	AD2-134 E	11.7616	Adder	13.84
937401	AD2-194 1	8.0697	Adder	9.49
937411	AD2-194 2	8.0692	Adder	9.49
938511	AE1-070 1	9.4819	Adder	11.16
938521	AE1-070 2	8.6744	Adder	10.21
938851	AE1-113 C	8.2607	Adder	9.72

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
938852	AE1-113 E	29.2880	Adder	34.46
939321	AE1-163 C O1	6.1063	Adder	7.18
939322	AE1-163 E O1	37.5102	Adder	44.13
939351	AE1-166 C O1	12.2622	Adder	14.43
939352	AE1-166 E O1	11.3189	Adder	13.32
939401	AE1-172 C O1	6.7946	Adder	7.99
939402	AE1-172 E O1	31.8801	Adder	37.51
940101	AE1-252 C O1	13.6499	Adder	16.06
940102	AE1-252 E O1	9.0999	Adder	10.71
940752	AE2-062 E	0.1351	Adder	0.16
941131	AE2-107 C	7.5761	Adder	8.91
941132	AE2-107 E	5.0507	Adder	5.94
941551	AE2-152 C O1	14.1487	Adder	16.65
941552	AE2-152 E O1	9.4325	Adder	11.1
941561	AE2-153 C O1	5.1247	Adder	6.03
941562	AE2-153 E O1	23.9929	Adder	28.23
941731	AE2-173 O1	3.2665	Adder	3.84
942111	AE2-223 C	2.4140	Adder	2.84
942112	AE2-223 E	16.1551	Adder	19.01
942421	AE2-255 C O1	3.1291	Adder	3.68
942422	AE2-255 E O1	9.3872	Adder	11.04
942651	AE2-281 C O1	0.8723	Adder	1.03
942652	AE2-281 E O1	5.3586	Adder	6.3
942991	AE2-321 C	8.4508	Adder	9.94
942992	AE2-321 E	4.1623	Adder	4.9
943121	AE2-341 C	13.2079	Adder	15.54
943122	AE2-341 E	6.4858	Adder	7.63
943381	AF1-009 C	0.6199	Adder	0.73
943382	AF1-009 E	2.4796	Adder	2.92
943591	AF1-030 C O1	8.7834	Adder	10.33
943592	AF1-030 E O1	4.3457	Adder	5.11
943801	AF1-048 C	3.9504	Adder	4.65
943802	AF1-048 E	2.6336	Adder	3.1
944041	AF1-072	2.2259	Adder	2.62
944911	AF1-156 C	13.1029	Adder	15.42
944912	AF1-156 E	8.7353	Adder	10.28
945351	AF1-200 FTIR	322.6289	Merchant Transmission	322.6289
946661	AF1-330 C	2.0715	Adder	2.44
946662	AF1-330 E	0.4547	Adder	0.53
946671	AF1-331	2.4976	Adder	2.94
957021	AF2-003 C O1	3.5751	Adder	7.94
957022	AF2-003 E O1	16.7377	Adder	37.15
957331	AF2-027 C	1.3651	Adder	3.03
957332	AF2-027 E	2.0477	Adder	4.55
958011	AF2-095 C O1	10.2661	Adder	22.79
958012	AF2-095 E O1	4.8311	Adder	10.72
958021	AF2-096 C O1	19.7578	Adder	43.86
958022	AF2-096 E O1	9.3434	Adder	20.74
958481	AF2-142 C	6.2078	Adder	13.78
958482	AF2-142 E	4.1386	Adder	9.19
958491	AF2-143 C	5.9443	Adder	13.19
958492	AF2-143 E	3.9629	Adder	8.8

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959341	AF2-225 C	4.1335	Adder	9.18
959342	AF2-225 E	5.7081	Adder	12.67
959351	AF2-226 C	1.3758	Adder	3.05
959352	AF2-226 E	2.0637	Adder	4.58
960281	AF2-319 C	1.3758	Adder	3.05
960282	AF2-319 E	2.0637	Adder	4.58
960381	AF2-329	3.6323	Adder	8.06
960581	AF2-349 C	11.9583	Adder	26.54
960582	AF2-349 E	7.9722	Adder	17.7
960591	AF2-350 C O1	4.5291	Adder	10.05
960592	AF2-350 E O1	3.0194	Adder	6.7
960601	AF2-351 C O1	0.6039	Adder	1.34
960602	AF2-351 E O1	0.9058	Adder	2.01
960721	AF2-363 C O1	3.2702	Adder	7.26
960722	AF2-363 E O1	2.1801	Adder	4.84
960731	AF2-364 C O1	3.3662	Adder	7.47
960732	AF2-364 E O1	2.2441	Adder	4.98
960751	AF2-366 C O1	3.8221	Adder	8.48
960752	AF2-366 E O1	2.5480	Adder	5.66
961501	AF2-441 C O1	5.4914	Adder	12.19
961502	AF2-441 E O1	8.2371	Adder	18.28
WEC	WEC	4.5603	Confirmed LTF	4.5603
CALDERWOOD	CALDERWOOD	0.0631	Confirmed LTF	0.0631
CBM-W2	CBM-W2	25.0942	Confirmed LTF	25.0942
NY	NY	1.4306	Confirmed LTF	1.4306
CBM-W1	CBM-W1	78.1875	Confirmed LTF	78.1875
TVA	TVA	1.6184	Confirmed LTF	1.6184
O-066	O-066	16.9546	Confirmed LTF	16.9546
CHEOAH	CHEOAH	0.0771	Confirmed LTF	0.0771
CBM-S1	CBM-S1	6.0407	Confirmed LTF	6.0407
G-007	G-007	2.6218	Confirmed LTF	2.6218
MADISON	MADISON	24.3210	Confirmed LTF	24.3210
MEC	MEC	16.0171	Confirmed LTF	16.0171
BLUEG	BLUEG	2.3071	Confirmed LTF	2.3071
TRIMBLE	TRIMBLE	0.7969	Confirmed LTF	0.7969
CATAWBA	CATAWBA	0.3619	Confirmed LTF	0.3619

11.6.9 Index 9

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
96412589	275233	WILTON ;4M	CE	270644	WILTON ;	CE	1	COMED_P4_112-65-BT2-3__	breaker	1379.0	124.45	124.49	DC	22.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274771	LINCOLN ;2U	3.8683	50/50	3.8683
274772	LINCOLN ;3U	3.8683	50/50	3.8683
274773	LINCOLN ;4U	3.8683	50/50	3.8683

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274774	LINCOLN ;5U	3.8683	50/50	3.8683
274775	LINCOLN ;6U	3.8683	50/50	3.8683
274776	LINCOLN ;7U	3.8683	50/50	3.8683
274777	LINCOLN ;8U	3.8683	50/50	3.8683
274830	U3-021 1	6.4380	Adder	7.57
274831	U3-021 2	6.4380	Adder	7.57
274881	PILOT HIL;1E	20.3561	Adder	23.95
274890	CAYUG;1U E	17.3451	Adder	20.41
274891	CAYUG;2U E	17.3451	Adder	20.41
275149	KELLYCK ;1E	20.3561	Adder	23.95
276167	Z1-106 E2	1.3342	Adder	1.57
276168	Z1-106 E1	1.3341	Adder	1.57
276169	Z1-107 E	2.7309	Adder	3.21
276170	Z1-108 E	2.6251	Adder	3.09
290021	O50 E	20.4530	Adder	24.06
290051	GSG-6; E	11.1236	Adder	13.09
290108	LEEDK;1U E	25.7295	Adder	30.27
293061	N-015 E	16.7861	Adder	19.75
293644	O22 E1	10.8153	Adder	12.72
293645	O22 E2	20.9944	Adder	24.7
294392	P-010 E	21.3184	Adder	25.08
910542	X3-005 E	0.7727	Adder	0.91
915011	Y3-013 1	3.9461	Adder	4.64
915021	Y3-013 2	3.9461	Adder	4.64
915031	Y3-013 3	3.9461	Adder	4.64
918052	AA1-018 E OP	17.3542	Adder	20.42
920272	AA2-123 E	2.5799	Adder	3.04
924471	AB2-096	44.7083	Adder	52.6
926311	AC1-109 1	2.0186	Adder	2.37
926321	AC1-109 2	2.0186	Adder	2.37
926331	AC1-110 1	2.0052	Adder	2.36
926341	AC1-110 2	2.0052	Adder	2.36
926351	AC1-111 1	0.8063	Adder	0.95
926361	AC1-111 2	0.8063	Adder	0.95
926371	AC1-111 3	0.8063	Adder	0.95
926381	AC1-111 4	0.8063	Adder	0.95
926391	AC1-111 5	0.8063	Adder	0.95
926401	AC1-111 6	0.8063	Adder	0.95
927451	AC1-142A 1	4.4186	Adder	5.2
927461	AC1-142A 2	4.4186	Adder	5.2
930501	AB1-091 O1	80.9897	Adder	95.28
930741	AB1-122 1O1	76.8999	Adder	90.47
930751	AB1-122 2O1	77.8579	Adder	91.6
933411	AC2-154 C	2.7626	Adder	3.25
933412	AC2-154 E	4.5074	Adder	5.3
933431	AC2-156 C O1	1.0103	Adder	1.19
933432	AC2-156 E O1	1.6485	Adder	1.94
933911	AD1-013 C	1.9642	Adder	2.31
933912	AD1-013 E	3.1375	Adder	3.69
933931	AD1-016 C	0.9804	Adder	1.15
933932	AD1-016 E	1.5996	Adder	1.88
934101	AD1-039 1	7.5362	Adder	8.87

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934111	AD1-039 2	7.6301	Adder	8.98
934431	AD1-067 C	0.1397	Adder	0.16
934432	AD1-067 E	0.5873	Adder	0.69
934701	AD1-098 C O1	7.3184	Adder	8.61
934702	AD1-098 E O1	5.3432	Adder	6.29
934721	AD1-100 C	25.3457	Adder	29.82
934722	AD1-100 E	118.2800	Adder	139.15
934871	AD1-116 C	1.0107	Adder	1.19
934872	AD1-116 E	1.6490	Adder	1.94
934971	AD1-129 C	0.9544	Adder	1.12
934972	AD1-129 E	0.6363	Adder	0.75
935001	AD1-133 C O1	23.5023	Adder	27.65
935002	AD1-133 E O1	15.6682	Adder	18.43
936291	AD2-038 C O1	2.4826	Adder	2.92
936292	AD2-038 E O1	16.6143	Adder	19.55
936371	AD2-047 C O1	4.9436	Adder	5.82
936372	AD2-047 E O1	24.1366	Adder	28.4
936461	AD2-060	2.9080	Adder	3.42
936511	AD2-066 C O1	8.9497	Adder	10.53
936512	AD2-066 E O1	5.9665	Adder	7.02
937001	AD2-134 C	2.9079	Adder	3.42
937002	AD2-134 E	12.0124	Adder	14.13
937401	AD2-194 1	8.2426	Adder	9.7
937411	AD2-194 2	8.2421	Adder	9.7
938511	AE1-070 1	9.6851	Adder	11.39
938521	AE1-070 2	8.8603	Adder	10.42
938851	AE1-113 C	8.4369	Adder	9.93
938852	AE1-113 E	29.9126	Adder	35.19
939321	AE1-163 C O1	6.2383	Adder	7.34
939322	AE1-163 E O1	38.3212	Adder	45.08
939351	AE1-166 C O1	12.5095	Adder	14.72
939352	AE1-166 E O1	11.5472	Adder	13.58
939401	AE1-172 C O1	6.9294	Adder	8.15
939402	AE1-172 E O1	32.5126	Adder	38.25
940101	AE1-252 C O1	13.9207	Adder	16.38
940102	AE1-252 E O1	9.2805	Adder	10.92
940752	AE2-062 E	0.1379	Adder	0.16
941131	AE2-107 C	7.7372	Adder	9.1
941132	AE2-107 E	5.1581	Adder	6.07
941551	AE2-152 C O1	14.4340	Adder	16.98
941552	AE2-152 E O1	9.6227	Adder	11.32
941561	AE2-153 C O1	5.2303	Adder	6.15
941562	AE2-153 E O1	24.4874	Adder	28.81
941731	AE2-173 O1	3.3326	Adder	3.92
942111	AE2-223 C	2.4629	Adder	2.9
942112	AE2-223 E	16.4823	Adder	19.39
942421	AE2-255 C O1	3.1958	Adder	3.76
942422	AE2-255 E O1	9.5874	Adder	11.28
942651	AE2-281 C O1	0.8912	Adder	1.05
942652	AE2-281 E O1	5.4745	Adder	6.44
942991	AE2-321 C	8.6313	Adder	10.15
942992	AE2-321 E	4.2513	Adder	5.0

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943121	AE2-341 C	13.4892	Adder	15.87
943122	AE2-341 E	6.6239	Adder	7.79
943381	AF1-009 C	0.6331	Adder	0.74
943382	AF1-009 E	2.5323	Adder	2.98
943591	AF1-030 C O1	8.9705	Adder	10.55
943592	AF1-030 E O1	4.4383	Adder	5.22
943801	AF1-048 C	4.0348	Adder	4.75
943802	AF1-048 E	2.6899	Adder	3.16
944041	AF1-072	2.2734	Adder	2.67
944911	AF1-156 C	13.3730	Adder	15.73
944912	AF1-156 E	8.9153	Adder	10.49
945351	AF1-200 FTIR	329.4462	Merchant Transmission	329.4462
946661	AF1-330 C	2.1155	Adder	2.49
946662	AF1-330 E	0.4644	Adder	0.55
946671	AF1-331	2.5508	Adder	3.0
957021	AF2-003 C O1	3.6510	Adder	8.1
957022	AF2-003 E O1	17.0932	Adder	37.94
957331	AF2-027 C	1.3943	Adder	3.1
957332	AF2-027 E	2.0914	Adder	4.64
958011	AF2-095 C O1	10.4805	Adder	23.26
958012	AF2-095 E O1	4.9320	Adder	10.95
958021	AF2-096 C O1	20.1649	Adder	44.76
958022	AF2-096 E O1	9.5360	Adder	21.17
958481	AF2-142 C	6.3433	Adder	14.08
958482	AF2-142 E	4.2288	Adder	9.39
958491	AF2-143 C	6.0728	Adder	13.48
958492	AF2-143 E	4.0486	Adder	8.99
959341	AF2-225 C	4.2172	Adder	9.36
959342	AF2-225 E	5.8238	Adder	12.93
959351	AF2-226 C	1.4049	Adder	3.12
959352	AF2-226 E	2.1074	Adder	4.68
960281	AF2-319 C	1.4049	Adder	3.12
960282	AF2-319 E	2.1074	Adder	4.68
960381	AF2-329	3.7097	Adder	8.23
960581	AF2-349 C	12.2138	Adder	27.11
960582	AF2-349 E	8.1425	Adder	18.07
960591	AF2-350 C O1	4.6238	Adder	10.26
960592	AF2-350 E O1	3.0825	Adder	6.84
960601	AF2-351 C O1	0.6165	Adder	1.37
960602	AF2-351 E O1	0.9248	Adder	2.05
960721	AF2-363 C O1	3.3397	Adder	7.41
960722	AF2-363 E O1	2.2265	Adder	4.94
960731	AF2-364 C O1	3.4379	Adder	7.63
960732	AF2-364 E O1	2.2919	Adder	5.09
960751	AF2-366 C O1	3.9034	Adder	8.66
960752	AF2-366 E O1	2.6023	Adder	5.78
961501	AF2-441 C O1	5.6075	Adder	12.45
961502	AF2-441 E O1	8.4112	Adder	18.67
WEC	WEC	4.6573	Confirmed LTF	4.6573
CALDERWOOD	CALDERWOOD	0.0656	Confirmed LTF	0.0656
CBM-W2	CBM-W2	25.6101	Confirmed LTF	25.6101
NY	NY	1.4616	Confirmed LTF	1.4616

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W1	CBM-W1	79.8388	Confirmed LTF	79.8388
TVA	TVA	1.6492	Confirmed LTF	1.6492
O-066	O-066	17.3242	Confirmed LTF	17.3242
CHEOAH	CHEOAH	0.0801	Confirmed LTF	0.0801
CBM-S1	CBM-S1	6.1514	Confirmed LTF	6.1514
G-007	G-007	2.6780	Confirmed LTF	2.6780
MADISON	MADISON	24.8371	Confirmed LTF	24.8371
MEC	MEC	16.3540	Confirmed LTF	16.3540
BLUEG	BLUEG	2.3592	Confirmed LTF	2.3592
TRIMBLE	TRIMBLE	0.8147	Confirmed LTF	0.8147
CATAWBA	CATAWBA	0.3703	Confirmed LTF	0.3703

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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
96412957	917500	Z2-087 TAP	CE	270853	PONTIAC ; R	CE	1	COMED_P1-2_345-L8002__-S	single	1793.0	104.74	107.15	DC	43.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	18.2117	80/20	18.2117
274651	KINCAID ;2U	18.1829	80/20	18.1829
274853	TWINGROVE;U1	1.5078	80/20	1.5078
274854	TWINGROVE;U2	1.5078	80/20	1.5078
274880	GENERATOR;	1.7365	80/20	1.7365
917501	Z2-087 C	3.0719	80/20	3.0719
924041	AB2-047 C O1	22.2612	80/20	22.2612
924261	AB2-070 C O1	8.7981	80/20	8.7981
925771	AC1-053 C	8.5527	80/20	8.5527
926841	AC1-171 C O1	0.5823	80/20	0.5823
930461	AB1-087	32.0980	80/20	32.0980
930471	AB1-088	32.0980	80/20	32.0980
933441	AC2-157 C	4.4354	80/20	4.4354
935141	AD1-148	15.1361	80/20	15.1361
936771	AD2-100 C	22.9219	80/20	22.9219
936971	AD2-131 C	1.5099	80/20	1.5099
937211	AD2-159 C	7.2854	80/20	7.2854
939741	AE1-205 C O1	57.5366	80/20	57.5366
941731	AE2-173 O1	34.2480	80/20	34.2480
942111	AE2-223 C	13.3567	80/20	13.3567
942481	AE2-261 C	33.6806	80/20	33.6806
942601	AE2-276	2.9180	80/20	2.9180
944201	AF1-088 FTIR	58.3600	80/20	58.3600
944221	AF1-090 C O1	5.8027	80/20	5.8027
945391	AF1-204 C O1	4.5275	80/20	4.5275
945871	AF1-252 O1	10.2866	80/20	10.2866
945881	AF1-253 O1	7.1215	80/20	7.1215

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
951741	J474 C	5.8456	PJM External (MISO)	5.8456
952271	J644	12.7963	PJM External (MISO)	12.7963
952651	J756 C	4.1100	PJM External (MISO)	4.1100
952871	J757 C	5.4333	PJM External (MISO)	5.4333
953401	J811	10.4594	PJM External (MISO)	10.4594
953651	J815	35.8350	PJM External (MISO)	35.8350
953741	J826 C	3.6515	PJM External (MISO)	3.6515
953851	J845 C	3.5620	PJM External (MISO)	3.5620
953881	J848 C	5.5068	PJM External (MISO)	5.5068
954411	J912	13.6260	PJM External (MISO)	13.6260
954721	J750 C	3.5416	PJM External (MISO)	3.5416
954761	J468 C	3.1748	PJM External (MISO)	3.1748
954821	J955	168.3760	PJM External (MISO)	168.3760
955031	J979 C	4.4054	PJM External (MISO)	4.4054
955401	J1022 C	5.4772	PJM External (MISO)	5.4772
956151	J1102	10.3173	PJM External (MISO)	10.3173
956281	J1115 C	6.9064	PJM External (MISO)	6.9064
956451	J1139	18.9750	PJM External (MISO)	18.9750
957141	AF2-008 FTIR	29.1800	80/20	29.1800
957381	AF2-032 C	2.5825	80/20	2.5825
959341	AF2-225 C	43.1525	80/20	43.1525
959611	AF2-252 C	4.4148	80/20	4.4148
960141	AF2-305	3.1132	80/20	3.1132
960261	AF2-317	4.8436	80/20	4.8436
960611	AF2-352 C	4.4148	80/20	4.4148
LGEE	LGEE	1.5780	Confirmed LTF	1.5780
CPL	CPL	1.2575	Confirmed LTF	1.2575
G-007A	G-007A	2.3591	Confirmed LTF	2.3591
VFT	VFT	6.3339	Confirmed LTF	6.3339
CBM-W2	CBM-W2	45.5773	Confirmed LTF	45.5773
TVA	TVA	5.1982	Confirmed LTF	5.1982
CBM-S2	CBM-S2	12.4732	Confirmed LTF	12.4732
CBM-S1	CBM-S1	30.1352	Confirmed LTF	30.1352
MADISON	MADISON	1.0947	Confirmed LTF	1.0947
MEC	MEC	2.2818	Confirmed LTF	2.2818

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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
96413936	934720	AD1-100 TAP	CE	270926	WILTON ; B	CE	1	COMED_P7_345-L2001__B-S_+_345-L2003__R-S	tower	2221.0	118.81	119.74	DC	26.53

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274654	BRAIDWOOD;1U	47.1072	50/50	47.1072
274655	BRAIDWOOD;2U	45.7454	50/50	45.7454

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274660	LASCO STA;1U	29.7712	50/50	29.7712
274661	LASCO STA;2U	29.8914	50/50	29.8914
274847	GR RIDGE ;BU	0.6528	50/50	0.6528
274853	TWINGROVE;U1	0.9571	50/50	0.9571
274854	TWINGROVE;U2	0.9571	50/50	0.9571
274863	CAYUGA RI;1U	1.3220	50/50	1.3220
274864	CAYUGA RI;2U	1.3220	50/50	1.3220
274871	GR RIDGE ;2U	0.8291	50/50	0.8291
274880	GENERATOR;	0.8854	50/50	0.8854
274881	PILOT HIL;1E	20.2230	50/50	20.2230
274882	W4-005 E	34.3755	50/50	34.3755
274887	PILOT HIL;1U	0.8721	50/50	0.8721
274888	KELLYCK ;1U	0.8721	50/50	0.8721
274890	CAYUG;1U E	30.6564	50/50	30.6564
274891	CAYUG;2U E	30.6564	50/50	30.6564
275149	KELLYCK ;1E	20.2230	50/50	20.2230
276153	W2-048 E	6.4163	50/50	6.4163
290261	S-027 E	22.1934	50/50	22.1934
290265	S-028 E	22.1934	50/50	22.1934
293061	N-015 E	15.1380	50/50	15.1380
294392	P-010 E	19.2253	50/50	19.2253
909052	X2-022 E	19.3001	50/50	19.3001
917501	Z2-087 C	0.7931	50/50	0.7931
917502	Z2-087 E	30.7719	50/50	30.7719
924041	AB2-047 C O1	5.7476	50/50	5.7476
924042	AB2-047 E O1	38.4649	50/50	38.4649
924261	AB2-070 C O1	2.8181	50/50	2.8181
924262	AB2-070 E O1	17.8627	50/50	17.8627
925771	AC1-053 C	2.7703	50/50	2.7703
925772	AC1-053 E	18.5397	50/50	18.5397
926821	AC1-168 C O1	0.5733	Adder	0.67
926822	AC1-168 E O1	3.8476	Adder	4.53
930501	AB1-091 O1	91.9655	50/50	91.9655
933411	AC2-154 C	2.7444	50/50	2.7444
933412	AC2-154 E	4.4776	50/50	4.4776
934721	AD1-100 C	51.5040	50/50	51.5040
934722	AD1-100 E	240.3520	50/50	240.3520
935001	AD1-133 C O1	15.0200	Adder	17.67
935002	AD1-133 E O1	10.0133	Adder	11.78
935141	AD1-148	5.0303	50/50	5.0303
936371	AD2-047 C O1	4.9110	50/50	4.9110
936372	AD2-047 E O1	23.9770	50/50	23.9770
936461	AD2-060	2.8888	50/50	2.8888
936771	AD2-100 C	8.0786	Adder	9.5
936772	AD2-100 E	5.3857	Adder	6.34
936971	AD2-131 C	0.5322	Adder	0.63
936972	AD2-131 E	2.6736	Adder	3.15
937211	AD2-159 C	3.7148	50/50	3.7148
937212	AD2-159 E	17.3921	50/50	17.3921
939351	AE1-166 C O1	22.5124	50/50	22.5124
939352	AE1-166 E O1	20.7806	50/50	20.7806
939401	AE1-172 C O1	13.4051	50/50	13.4051

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939402	AE1-172 E O1	62.8960	50/50	62.8960
939741	AE1-205 C O1	14.8554	50/50	14.8554
939742	AE1-205 E O1	20.5146	50/50	20.5146
940101	AE1-252 C O1	26.9298	50/50	26.9298
940102	AE1-252 E O1	17.9532	50/50	17.9532
941551	AE2-152 C O1	25.9758	50/50	25.9758
941552	AE2-152 E O1	17.3172	50/50	17.3172
941561	AE2-153 C O1	7.3403	50/50	7.3403
941562	AE2-153 E O1	34.3657	50/50	34.3657
941731	AE2-173 O1	8.8425	50/50	8.8425
942111	AE2-223 C	3.4486	50/50	3.4486
942112	AE2-223 E	23.0789	50/50	23.0789
942481	AE2-261 C	11.9095	Adder	14.01
942482	AE2-261 E	7.9396	Adder	9.34
944221	AF1-090 C O1	2.0232	Adder	2.38
944222	AF1-090 E O1	9.4722	Adder	11.14
944911	AF1-156 C	18.7677	50/50	18.7677
944912	AF1-156 E	12.5118	50/50	12.5118
945871	AF1-252 O1	3.5866	Adder	4.22
945881	AF1-253 O1	2.4830	Adder	2.92
946541	AF1-318 C O1	2.5213	Adder	2.97
946542	AF1-318 E O1	11.8057	Adder	13.89
951741	J474 C	1.8519	PJM External (MISO)	1.8519
951742	J474 E	10.0194	PJM External (MISO)	10.0194
953741	J826 C	1.0380	PJM External (MISO)	1.0380
953742	J826 E	5.6160	PJM External (MISO)	5.6160
954821	J955	61.0144	PJM External (MISO)	61.0144
955401	J1022 C	1.5570	PJM External (MISO)	1.5570
955402	J1022 E	8.4240	PJM External (MISO)	8.4240
956151	J1102	4.3260	PJM External (MISO)	4.3260
956281	J1115 C	2.6642	PJM External (MISO)	2.6642
956282	J1115 E	14.4138	PJM External (MISO)	14.4138
957381	AF2-032 C	0.4845	Adder	1.08
957382	AF2-032 E	0.2280	Adder	0.51
958011	AF2-095 C O1	19.6452	50/50	19.6452
958012	AF2-095 E O1	9.2448	50/50	9.2448
958021	AF2-096 C O1	58.7744	50/50	58.7744
958022	AF2-096 E O1	27.7943	50/50	27.7943
958341	AF2-128 C O1	0.3635	Adder	0.81
958342	AF2-128 E O1	1.7016	Adder	3.78
959341	AF2-225 C	11.1416	50/50	11.1416
959342	AF2-225 E	15.3860	50/50	15.3860
959611	AF2-252 C	2.8022	50/50	2.8022
959612	AF2-252 E	4.2033	50/50	4.2033
960141	AF2-305	0.9972	50/50	0.9972
960261	AF2-317	1.6097	50/50	1.6097
960591	AF2-350 C O1	8.6670	50/50	8.6670
960592	AF2-350 E O1	5.7780	50/50	5.7780
960601	AF2-351 C O1	1.1556	50/50	1.1556
960602	AF2-351 E O1	1.7334	50/50	1.7334
960611	AF2-352 C	2.8022	50/50	2.8022
960612	AF2-352 E	4.2033	50/50	4.2033

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
WEC	WEC	0.4237	Confirmed LTF	0.4237
LGEE	LGEE	0.0867	Confirmed LTF	0.0867
CBM-W2	CBM-W2	17.3464	Confirmed LTF	17.3464
NY	NY	0.3987	Confirmed LTF	0.3987
CBM-W1	CBM-W1	9.0322	Confirmed LTF	9.0322
TVA	TVA	1.5218	Confirmed LTF	1.5218
O-066	O-066	4.6570	Confirmed LTF	4.6570
CBM-S2	CBM-S2	0.3526	Confirmed LTF	0.3526
CBM-S1	CBM-S1	7.7788	Confirmed LTF	7.7788
G-007	G-007	0.7197	Confirmed LTF	0.7197
MADISON	MADISON	6.6024	Confirmed LTF	6.6024
MEC	MEC	4.3936	Confirmed LTF	4.3936

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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
96412437	934730	AD1-100 TAP	CE	270670	BRAIDWOOD; B	CE	1	ADD AD1-100 5	breaker	1341.0	188.67	191.78	DC	41.68

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	11.4292	50/50	11.4292
274651	KINCAID ;2U	11.4253	50/50	11.4253
274853	TWINGROVE;U1	1.4931	50/50	1.4931
274854	TWINGROVE;U2	1.4931	50/50	1.4931
274863	CAYUGA RI;1U	2.1258	50/50	2.1258
274864	CAYUGA RI;2U	2.1258	50/50	2.1258
274880	GENERATOR;	1.3693	50/50	1.3693
274882	W4-005 E	53.1588	50/50	53.1588
274890	CAYUG;1U E	49.2960	50/50	49.2960
274891	CAYUG;2U E	49.2960	50/50	49.2960
276153	W2-048 E	9.8006	50/50	9.8006
290261	S-027 E	34.6247	50/50	34.6247
290265	S-028 E	34.6247	50/50	34.6247
909052	X2-022 E	29.4803	50/50	29.4803
917501	Z2-087 C	1.2461	50/50	1.2461
917502	Z2-087 E	48.3442	50/50	48.3442
924041	AB2-047 C O1	9.0298	50/50	9.0298
924042	AB2-047 E O1	60.4302	50/50	60.4302
924261	AB2-070 C O1	4.3181	50/50	4.3181
924262	AB2-070 E O1	27.3700	50/50	27.3700
925771	AC1-053 C	4.2409	50/50	4.2409
925772	AC1-053 E	28.3811	50/50	28.3811
934721	AD1-100 C	104.8155	50/50	104.8155
934722	AD1-100 E	489.1390	50/50	489.1390
935001	AD1-133 C O1	25.1586	50/50	25.1586
935002	AD1-133 E O1	16.7724	50/50	16.7724

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
935141	AD1-148	7.6837	50/50	7.6837
936771	AD2-100 C	14.3602	50/50	14.3602
936772	AD2-100 E	9.5735	50/50	9.5735
936971	AD2-131 C	0.9460	50/50	0.9460
936972	AD2-131 E	4.7525	50/50	4.7525
937211	AD2-159 C	5.7446	50/50	5.7446
937212	AD2-159 E	26.8954	50/50	26.8954
939351	AE1-166 C O1	58.1506	50/50	58.1506
939352	AE1-166 E O1	53.6774	50/50	53.6774
939401	AE1-172 C O1	21.7181	50/50	21.7181
939402	AE1-172 E O1	101.9008	50/50	101.9008
939741	AE1-205 C O1	23.3386	50/50	23.3386
939742	AE1-205 E O1	32.2294	50/50	32.2294
940101	AE1-252 C O1	43.6302	50/50	43.6302
940102	AE1-252 E O1	29.0868	50/50	29.0868
941551	AE2-152 C O1	67.0968	50/50	67.0968
941552	AE2-152 E O1	44.7312	50/50	44.7312
941731	AE2-173 O1	13.8920	50/50	13.8920
942111	AE2-223 C	5.4179	50/50	5.4179
942112	AE2-223 E	36.2581	50/50	36.2581
942481	AE2-261 C	21.1279	50/50	21.1279
942482	AE2-261 E	14.0853	50/50	14.0853
944221	AF1-090 C O1	3.6203	50/50	3.6203
944222	AF1-090 E O1	16.9497	50/50	16.9497
945871	AF1-252 O1	6.4178	50/50	6.4178
945881	AF1-253 O1	4.4431	50/50	4.4431
951741	J474 C	3.0019	PJM External (MISO)	3.0019
951742	J474 E	16.2409	PJM External (MISO)	16.2409
952651	J756 C	2.6740	PJM External (MISO)	2.6740
952652	J756 E	14.4672	PJM External (MISO)	14.4672
953651	J815	21.6550	PJM External (MISO)	21.6550
953741	J826 C	1.7701	PJM External (MISO)	1.7701
953742	J826 E	9.5769	PJM External (MISO)	9.5769
953851	J845 C	1.7148	PJM External (MISO)	1.7148
953852	J845 E	9.2772	PJM External (MISO)	9.2772
953881	J848 C	3.3131	PJM External (MISO)	3.3131
953882	J848 E	17.9244	PJM External (MISO)	17.9244
954411	J912	8.1660	PJM External (MISO)	8.1660
954721	J750 C	2.1460	PJM External (MISO)	2.1460
954722	J750 E	11.6105	PJM External (MISO)	11.6105
954821	J955	103.1368	PJM External (MISO)	103.1368
955031	J979 C	2.6504	PJM External (MISO)	2.6504
955032	J979 E	14.3396	PJM External (MISO)	14.3396
955401	J1022 C	2.6552	PJM External (MISO)	2.6552
955402	J1022 E	14.3653	PJM External (MISO)	14.3653
956151	J1102	6.6682	PJM External (MISO)	6.6682
956281	J1115 C	4.4167	PJM External (MISO)	4.4167
956282	J1115 E	23.8953	PJM External (MISO)	23.8953
957381	AF2-032 C	1.6207	50/50	1.6207
957382	AF2-032 E	0.7627	50/50	0.7627
958013	AF2-095 BAT	2.0322	Merchant Transmission	2.0322
958023	AF2-096 BAT	12.2468	50/50	12.2468

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959341	AF2-225 C	17.5039	50/50	17.5039
959342	AF2-225 E	24.1721	50/50	24.1721
959611	AF2-252 C	4.3718	50/50	4.3718
959612	AF2-252 E	6.5577	50/50	6.5577
960141	AF2-305	1.5279	50/50	1.5279
960261	AF2-317	2.4588	50/50	2.4588
960603	AF2-351 BAT	1.0161	Merchant Transmission	1.0161
960611	AF2-352 C	4.3718	50/50	4.3718
960612	AF2-352 E	6.5577	50/50	6.5577
LGEE	LGEE	0.9482	Confirmed LTF	0.9482
CPL	CPL	0.7984	Confirmed LTF	0.7984
G-007A	G-007A	1.4769	Confirmed LTF	1.4769
VFT	VFT	3.9667	Confirmed LTF	3.9667
CBM-W2	CBM-W2	28.6650	Confirmed LTF	28.6650
TVA	TVA	3.3348	Confirmed LTF	3.3348
CBM-S2	CBM-S2	7.9417	Confirmed LTF	7.9417
CBM-S1	CBM-S1	19.1615	Confirmed LTF	19.1615
MADISON	MADISON	1.8850	Confirmed LTF	1.8850
MEC	MEC	2.5488	Confirmed LTF	2.5488

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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
96412895	935000	AD1-133 TAP	CE	270717	DRESDEN ; R	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1528.0	122.98	124.83	DC	28.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	17.5509	80/20	17.5509
274651	KINCAID ;2U	17.5442	80/20	17.5442
274853	TWINGROVE;U1	2.3753	80/20	2.3753
274854	TWINGROVE;U2	2.3753	80/20	2.3753
274863	CAYUGA RI;1U	2.3262	80/20	2.3262
274864	CAYUGA RI;2U	2.3262	80/20	2.3262
274880	GENERATOR;	2.1589	80/20	2.1589
917501	ZZ-087 C	2.0142	80/20	2.0142
924041	AB2-047 C O1	14.5961	80/20	14.5961
924261	AB2-070 C O1	6.8149	80/20	6.8149
925771	AC1-053 C	6.6841	80/20	6.6841
930461	AB1-087	29.4745	80/20	29.4745
930471	AB1-088	29.4745	80/20	29.4745
933441	AC2-157 C	4.0728	80/20	4.0728
935001	AD1-133 C O1	118.7712	80/20	118.7712
935141	AD1-148	12.0741	80/20	12.0741
936771	AD2-100 C	22.0324	80/20	22.0324
936971	AD2-131 C	1.4513	80/20	1.4513

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937211	AD2-159 C	9.0575	80/20	9.0575
939401	AE1-172 C O1	20.1389	80/20	20.1389
939741	AE1-205 C O1	37.7252	80/20	37.7252
940101	AE1-252 C O1	40.4577	80/20	40.4577
941731	AE2-173 O1	22.4555	80/20	22.4555
942111	AE2-223 C	8.7576	80/20	8.7576
942481	AE2-261 C	32.4355	80/20	32.4355
942601	AE2-276	2.6795	80/20	2.6795
944201	AF1-088 FTIR	53.5900	80/20	53.5900
944221	AF1-090 C O1	5.5419	80/20	5.5419
945391	AF1-204 C O1	4.0641	80/20	4.0641
945871	AF1-252 O1	9.8243	80/20	9.8243
945881	AF1-253 O1	6.8014	80/20	6.8014
951741	J474 C	4.8951	PJM External (MISO)	4.8951
952271	J644	12.3266	PJM External (MISO)	12.3266
952651	J756 C	4.0725	PJM External (MISO)	4.0725
952871	J757 C	5.2552	PJM External (MISO)	5.2552
953401	J811	10.1812	PJM External (MISO)	10.1812
953651	J815	35.0125	PJM External (MISO)	35.0125
953741	J826 C	2.9278	PJM External (MISO)	2.9278
953851	J845 C	2.8743	PJM External (MISO)	2.8743
953881	J848 C	5.3875	PJM External (MISO)	5.3875
954411	J912	13.3070	PJM External (MISO)	13.3070
954721	J750 C	3.3703	PJM External (MISO)	3.3703
954761	J468 C	2.9388	PJM External (MISO)	2.9388
954821	J955	165.7032	PJM External (MISO)	165.7032
955031	J979 C	4.3100	PJM External (MISO)	4.3100
955401	J1022 C	4.3917	PJM External (MISO)	4.3917
956151	J1102	10.3649	PJM External (MISO)	10.3649
956281	J1115 C	7.2200	PJM External (MISO)	7.2200
956451	J1139	17.0310	PJM External (MISO)	17.0310
957141	AF2-008 FTIR	26.7950	80/20	26.7950
957381	AF2-032 C	2.4888	80/20	2.4888
959341	AF2-225 C	28.2939	80/20	28.2939
959611	AF2-252 C	6.9548	80/20	6.9548
960141	AF2-305	2.4114	80/20	2.4114
960261	AF2-317	3.8637	80/20	3.8637
960611	AF2-352 C	6.9548	80/20	6.9548
LGEE	LGEE	1.4696	Confirmed LTF	1.4696
CPL	CPL	1.1821	Confirmed LTF	1.1821
G-007A	G-007A	2.3400	Confirmed LTF	2.3400
VFT	VFT	6.2888	Confirmed LTF	6.2888
CBM-W2	CBM-W2	40.8435	Confirmed LTF	40.8435
TVA	TVA	4.7488	Confirmed LTF	4.7488
CBM-S2	CBM-S2	11.6409	Confirmed LTF	11.6409
CBM-S1	CBM-S1	27.6048	Confirmed LTF	27.6048
MEC	MEC	1.1393	Confirmed LTF	1.1393

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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
96412412	939400	AE1-172 TAP	CE	934720	AD1-100 TAP	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	223.82	228.61	DC	73.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	19.9198	50/50	19.9198
274651	KINCAID ;2U	19.9140	50/50	19.9140
274853	TWINGROVE;U1	2.6121	50/50	2.6121
274854	TWINGROVE;U2	2.6121	50/50	2.6121
274863	CAYUGA RI;1U	3.1059	50/50	3.1059
274864	CAYUGA RI;2U	3.1059	50/50	3.1059
274880	GENERATOR;	2.3938	50/50	2.3938
274882	W4-005 E	92.9332	50/50	92.9332
274890	CAYUG;1U E	72.0240	50/50	72.0240
274891	CAYUG;2U E	72.0240	50/50	72.0240
276153	W2-048 E	17.1581	50/50	17.1581
290261	S-027 E	60.5722	50/50	60.5722
290265	S-028 E	60.5722	50/50	60.5722
909052	X2-022 E	51.6116	50/50	51.6116
917501	Z2-087 C	2.1907	50/50	2.1907
917502	Z2-087 E	84.9920	50/50	84.9920
924041	AB2-047 C O1	15.8750	50/50	15.8750
924042	AB2-047 E O1	106.2401	50/50	106.2401
924261	AB2-070 C O1	7.5652	50/50	7.5652
924262	AB2-070 E O1	47.9519	50/50	47.9519
925771	AC1-053 C	7.4285	50/50	7.4285
925772	AC1-053 E	49.7135	50/50	49.7135
935001	AD1-133 C O1	88.1514	50/50	88.1514
935002	AD1-133 E O1	58.7676	50/50	58.7676
935141	AD1-148	13.4520	50/50	13.4520
936771	AD2-100 C	25.0186	50/50	25.0186
936772	AD2-100 E	16.6790	50/50	16.6790
936971	AD2-131 C	1.6480	50/50	1.6480
936972	AD2-131 E	8.2800	50/50	8.2800
937211	AD2-159 C	10.0429	50/50	10.0429
937212	AD2-159 E	47.0190	50/50	47.0190
939401	AE1-172 C O1	29.6684	50/50	29.6684
939402	AE1-172 E O1	139.2029	50/50	139.2029
939741	AE1-205 C O1	41.0306	50/50	41.0306
939742	AE1-205 E O1	56.6614	50/50	56.6614
940101	AE1-252 C O1	59.6016	50/50	59.6016
940102	AE1-252 E O1	39.7344	50/50	39.7344
941731	AE2-173 O1	24.4230	50/50	24.4230
942111	AE2-223 C	9.5250	50/50	9.5250
942112	AE2-223 E	63.7440	50/50	63.7440
942481	AE2-261 C	36.8201	50/50	36.8201

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942482	AE2-261 E	24.5467	50/50	24.5467
944221	AF1-090 C O1	6.3008	50/50	6.3008
944222	AF1-090 E O1	29.4992	50/50	29.4992
945871	AF1-252 O1	11.1696	50/50	11.1696
945881	AF1-253 O1	7.7328	50/50	7.7328
951741	J474 C	5.3123	PJM External (MISO)	5.3123
951742	J474 E	28.7408	PJM External (MISO)	28.7408
952251	J641	14.3304	PJM External (MISO)	14.3304
952271	J644	14.1460	PJM External (MISO)	14.1460
952651	J756 C	4.7153	PJM External (MISO)	4.7153
952652	J756 E	25.5111	PJM External (MISO)	25.5111
952871	J757 C	6.0528	PJM External (MISO)	6.0528
952872	J757 E	32.7473	PJM External (MISO)	32.7473
953401	J811	10.9009	PJM External (MISO)	10.9009
953651	J815	38.2450	PJM External (MISO)	38.2450
953741	J826 C	3.1365	PJM External (MISO)	3.1365
953742	J826 E	16.9695	PJM External (MISO)	16.9695
953851	J845 C	3.0456	PJM External (MISO)	3.0456
953852	J845 E	16.4772	PJM External (MISO)	16.4772
953881	J848 C	5.8531	PJM External (MISO)	5.8531
953882	J848 E	31.6669	PJM External (MISO)	31.6669
954411	J912	14.4300	PJM External (MISO)	14.4300
954721	J750 C	3.7864	PJM External (MISO)	3.7864
954722	J750 E	20.4851	PJM External (MISO)	20.4851
954761	J468 C	3.0439	PJM External (MISO)	3.0439
954762	J468 E	17.2490	PJM External (MISO)	17.2490
954821	J955	182.0312	PJM External (MISO)	182.0312
955031	J979 C	4.6825	PJM External (MISO)	4.6825
955032	J979 E	25.3335	PJM External (MISO)	25.3335
955401	J1022 C	4.7048	PJM External (MISO)	4.7048
955402	J1022 E	25.4542	PJM External (MISO)	25.4542
955711	J1055 C	2.3506	PJM External (MISO)	2.3506
955712	J1055 E	12.7175	PJM External (MISO)	12.7175
956151	J1102	11.7649	PJM External (MISO)	11.7649
956281	J1115 C	7.7975	PJM External (MISO)	7.7975
956282	J1115 E	42.1865	PJM External (MISO)	42.1865
956451	J1139	17.7690	PJM External (MISO)	17.7690
957381	AF2-032 C	2.8247	50/50	2.8247
957382	AF2-032 E	1.3293	50/50	1.3293
958013	AF2-095 BAT	4.6200	50/50	4.6200
958023	AF2-096 BAT	8.9907	50/50	8.9907
959341	AF2-225 C	30.7730	50/50	30.7730
959342	AF2-225 E	42.4960	50/50	42.4960
959611	AF2-252 C	7.6480	50/50	7.6480
959612	AF2-252 E	11.4720	50/50	11.4720
960141	AF2-305	2.6769	50/50	2.6769
960261	AF2-317	4.3046	50/50	4.3046
960603	AF2-351 BAT	2.3100	50/50	2.3100
960611	AF2-352 C	7.6480	50/50	7.6480
960612	AF2-352 E	11.4720	50/50	11.4720
LGEE	LGEE	1.5500	Confirmed LTF	1.5500
CPL	CPL	1.2549	Confirmed LTF	1.2549

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
G-007A	G-007A	2.0738	Confirmed LTF	2.0738
VFT	VFT	5.5664	Confirmed LTF	5.5664
CBM-W2	CBM-W2	48.5831	Confirmed LTF	48.5831
TVA	TVA	5.5440	Confirmed LTF	5.5440
CBM-S2	CBM-S2	12.6582	Confirmed LTF	12.6582
CBM-S1	CBM-S1	31.7711	Confirmed LTF	31.7711
MADISON	MADISON	2.9857	Confirmed LTF	2.9857
MEC	MEC	3.9169	Confirmed LTF	3.9169

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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
95373673	956820	J1180 TAP	AMIL	247712	OSSULLIVAN	AEP	1	AEP_P4_#3128_05EUGENE 345_A2	breaker	1466.0	149.88	149.89	DC	15.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	16.4201	50/50	16.4201
274651	KINCAID ;2U	16.4134	50/50	16.4134
274830	U3-021 1	2.7006	Adder	3.18
274831	U3-021 2	2.7006	Adder	3.18
274853	TWINGROVE;U1	0.8780	50/50	0.8780
274854	TWINGROVE;U2	0.8780	50/50	0.8780
274859	EASYR;U1 E	5.8205	Adder	6.85
274860	EASYR;U2 E	5.8205	Adder	6.85
274880	GENERATOR;	1.1644	50/50	1.1644
274882	W4-005 E	45.2070	50/50	45.2070
274890	CAYUG;1U E	8.8046	Adder	10.36
274891	CAYUG;2U E	8.8046	Adder	10.36
276153	W2-048 E	9.4531	50/50	9.4531
290021	O50 E	9.3106	Adder	10.95
290051	GSG-6; E	4.7900	Adder	5.64
290108	LEEDK;1U E	10.5689	Adder	12.43
290261	S-027 E	20.3607	50/50	20.3607
290265	S-028 E	20.3607	50/50	20.3607
293516	O-009 E1	5.4128	Adder	6.37
293517	O-009 E2	2.7493	Adder	3.23
293518	O-009 E3	3.0277	Adder	3.56
293644	O22 E1	4.2351	Adder	4.98
293645	O22 E2	8.2211	Adder	9.67
293715	O-029 E	5.7868	Adder	6.81
293716	O-029 E	3.1728	Adder	3.73
293717	O-029 E	2.9162	Adder	3.43
293771	O-035 E	4.3577	Adder	5.13
294401	BSHIL;1U E	5.9235	Adder	6.97
294410	BSHIL;2U E	5.9235	Adder	6.97
294763	P-046 E	4.6158	Adder	5.43
909052	X2-022 E	28.4350	50/50	28.4350

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
917501	Z2-087 C	0.4565	50/50	0.4565
917502	Z2-087 E	17.7115	50/50	17.7115
918052	AA1-018 E OP	6.8407	Adder	8.05
919581	AA2-030	9.9554	Adder	11.71
920272	AA2-123 E	1.0469	Adder	1.23
924041	AB2-047 C O1	3.3082	50/50	3.3082
924042	AB2-047 E O1	22.1393	50/50	22.1393
924261	AB2-070 C O1	3.8212	50/50	3.8212
924262	AB2-070 E O1	24.2207	50/50	24.2207
924471	AB2-096	18.7544	Adder	22.06
925581	AC1-033 C	0.9699	Adder	1.14
925582	AC1-033 E	6.4929	Adder	7.64
925771	AC1-053 C	3.8568	50/50	3.8568
925772	AC1-053 E	25.8112	50/50	25.8112
926431	AC1-114	1.1133	Adder	1.31
926821	AC1-168 C O1	0.7021	Adder	0.83
926822	AC1-168 E O1	4.7116	Adder	5.54
926841	AC1-171 C O1	1.0395	50/50	1.0395
926842	AC1-171 E O1	6.9433	50/50	6.9433
927201	AC1-214 C O1	1.3986	Adder	1.65
927202	AC1-214 E O1	4.4460	Adder	5.23
927511	AC1-113 1	0.5567	Adder	0.65
927521	AC1-113 2	0.5567	Adder	0.65
930481	AB1-089	30.3080	Adder	35.66
930741	AB1-122 1O1	30.2194	Adder	35.55
932881	AC2-115 1	1.1133	Adder	1.31
932891	AC2-115 2	1.1133	Adder	1.31
932921	AC2-116	0.3897	Adder	0.46
933911	AD1-013 C	0.8324	Adder	0.98
933912	AD1-013 E	1.3297	Adder	1.56
933931	AD1-016 C	0.3978	Adder	0.47
933932	AD1-016 E	0.6491	Adder	0.76
934051	AD1-031 C O1	1.9693	Adder	2.32
934052	AD1-031 E O1	3.2131	Adder	3.78
934101	AD1-039 1	2.9615	Adder	3.48
934431	AD1-067 C	0.0601	Adder	0.07
934432	AD1-067 E	0.2529	Adder	0.3
934651	AD1-096 C	0.4384	Adder	0.52
934652	AD1-096 E	0.7153	Adder	0.84
934701	AD1-098 C O1	3.1831	Adder	3.74
934702	AD1-098 E O1	2.3240	Adder	2.73
934871	AD1-116 C	0.3984	Adder	0.47
934872	AD1-116 E	0.6500	Adder	0.76
934971	AD1-129 C	0.4056	Adder	0.48
934972	AD1-129 E	0.2704	Adder	0.32
935001	AD1-133 C O1	12.2446	Adder	14.41
935002	AD1-133 E O1	8.1631	Adder	9.6
935141	AD1-148	7.4113	50/50	7.4113
936291	AD2-038 C O1	1.1607	Adder	1.37
936292	AD2-038 E O1	7.7681	Adder	9.14
936511	AD2-066 C O1	4.0625	Adder	4.78
936512	AD2-066 E O1	2.7083	Adder	3.19

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936771	AD2-100 C	22.4645	50/50	22.4645
936772	AD2-100 E	14.9764	50/50	14.9764
936791	AD2-102 C	6.7901	Adder	7.99
936792	AD2-102 E	4.5268	Adder	5.33
936971	AD2-131 C	1.4798	50/50	1.4798
936972	AD2-131 E	7.4347	50/50	7.4347
937001	AD2-134 C	1.2522	Adder	1.47
937002	AD2-134 E	5.1728	Adder	6.09
937211	AD2-159 C	4.8853	50/50	4.8853
937212	AD2-159 E	22.8722	50/50	22.8722
937311	AD2-172 C	1.2117	Adder	1.43
937312	AD2-172 E	1.6732	Adder	1.97
937531	AD2-214 C	2.7588	Adder	3.25
937532	AD2-214 E	1.8392	Adder	2.16
938851	AE1-113 C	3.8406	Adder	4.52
938852	AE1-113 E	13.6167	Adder	16.02
938861	AE1-114 C O1	2.0247	Adder	2.38
938862	AE1-114 E O1	6.9079	Adder	8.13
939051	AE1-134 1	0.7736	Adder	0.91
939061	AE1-134 2	0.7736	Adder	0.91
939321	AE1-163 C O1	2.9167	Adder	3.43
939322	AE1-163 E O1	17.9172	Adder	21.08
939401	AE1-172 C O1	2.9603	Adder	3.48
939402	AE1-172 E O1	13.8898	Adder	16.34
939741	AE1-205 C O1	8.5504	50/50	8.5504
939742	AE1-205 E O1	11.8076	50/50	11.8076
940101	AE1-252 C O1	5.9471	Adder	7.0
940102	AE1-252 E O1	3.9647	Adder	4.66
940501	AE2-035 C	1.2117	Adder	1.43
940502	AE2-035 E	1.6732	Adder	1.97
941131	AE2-107 C	3.1503	Adder	3.71
941132	AE2-107 E	2.1002	Adder	2.47
941343	AE2-130 BAT	31.8120	50/50	31.8120
941731	AE2-173 O1	5.0895	50/50	5.0895
942111	AE2-223 C	1.9849	50/50	1.9849
942112	AE2-223 E	13.2836	50/50	13.2836
942421	AE2-255 C O1	1.4548	Adder	1.71
942422	AE2-255 E O1	4.3643	Adder	5.13
942481	AE2-261 C	31.0577	50/50	31.0577
942482	AE2-261 E	20.7052	50/50	20.7052
942602	AE2-276 BAT	14.0105	50/50	14.0105
942651	AE2-281 C O1	0.4167	Adder	0.49
942652	AE2-281 E O1	2.5596	Adder	3.01
942991	AE2-321 C	3.5189	Adder	4.14
942992	AE2-321 E	1.7332	Adder	2.04
943381	AF1-009 C	0.2754	Adder	0.32
943382	AF1-009 E	1.1014	Adder	1.3
943401	AF1-011 C	0.7389	Adder	0.87
943402	AF1-011 E	1.2404	Adder	1.46
943411	AF1-012 C	6.4046	Adder	7.53
943412	AF1-012 E	4.2697	Adder	5.02
943801	AF1-048 C	1.6450	Adder	1.94

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943802	AF1-048 E	1.0966	Adder	1.29
943921	AF1-060	0.5966	Adder	0.7
944202	AF1-088 FTWR	280.2100	50/50	280.2100
944221	AF1-090 C O1	6.8094	50/50	6.8094
944222	AF1-090 E O1	31.8806	50/50	31.8806
945871	AF1-252 O1	12.0713	50/50	12.0713
945881	AF1-253 O1	8.3570	50/50	8.3570
946151	AF1-280 C O1	8.4217	Adder	9.91
946152	AF1-280 E O1	3.8727	Adder	4.56
946161	AF1-281 C	0.1844	Adder	0.22
946162	AF1-281 E	1.0450	Adder	1.23
946321	AF1-296 C O1	2.6152	Adder	3.08
946322	AF1-296 E O1	12.2439	Adder	14.4
946501	AF1-314 C	2.1528	Adder	2.53
946502	AF1-314 E	10.0791	Adder	11.86
946531	AF1-317 C O1	1.2199	Adder	1.44
946541	AF1-318 C O1	3.8549	Adder	4.54
946542	AF1-318 E O1	18.0499	Adder	21.24
946661	AF1-330 C	0.8584	Adder	1.01
946662	AF1-330 E	0.1884	Adder	0.22
946671	AF1-331	1.0810	Adder	1.27
955131	J991	25.9737	PJM External (MISO)	25.9737
957021	AF2-003 C O1	1.5955	Adder	3.54
957022	AF2-003 E O1	7.4696	Adder	16.58
957381	AF2-032 C	2.3285	50/50	2.3285
957382	AF2-032 E	1.0957	50/50	1.0957
957471	AF2-041 C	5.3746	Adder	11.93
957472	AF2-041 E	3.5831	Adder	7.95
957751	AF2-069 C	0.0858	Adder	0.19
957752	AF2-069 E	0.2770	Adder	0.61
957761	AF2-070 C	0.1209	Adder	0.27
957762	AF2-070 E	0.5872	Adder	1.3
958341	AF2-128 C O1	0.5406	Adder	1.2
958342	AF2-128 E O1	2.5309	Adder	5.62
958481	AF2-142 C	2.5004	Adder	5.55
958482	AF2-142 E	1.6669	Adder	3.7
958491	AF2-143 C	2.8394	Adder	6.3
958492	AF2-143 E	1.8929	Adder	4.2
958911	AF2-182	5.8644	Adder	13.02
958921	AF2-183 C	1.0426	Adder	2.31
958922	AF2-183 E	1.5638	Adder	3.47
959081	AF2-199 C	1.7915	Adder	3.98
959082	AF2-199 E	1.1944	Adder	2.65
959091	AF2-200 C	3.5831	Adder	7.95
959092	AF2-200 E	2.3887	Adder	5.3
959101	AF2-201 C O1	1.5718	Adder	3.49
959102	AF2-201 E O1	4.5136	Adder	10.02
959341	AF2-225 C	6.4128	50/50	6.4128
959342	AF2-225 E	8.8557	50/50	8.8557
959351	AF2-226 C	0.5502	Adder	1.22
959352	AF2-226 E	0.8252	Adder	1.83
959611	AF2-252 C	2.5708	50/50	2.5708

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959612	AF2-252 E	3.8562	50/50	3.8562
959761	AF2-267 C O1	1.1351	Adder	2.52
959762	AF2-267 E O1	5.3142	Adder	11.8
960141	AF2-305	1.3521	50/50	1.3521
960261	AF2-317	2.3716	50/50	2.3716
960281	AF2-319 C	0.5502	Adder	1.22
960282	AF2-319 E	0.8252	Adder	1.83
960551	AF2-346 C	1.4548	Adder	3.23
960552	AF2-346 E	0.9698	Adder	2.15
960581	AF2-349 C	5.0843	Adder	11.29
960582	AF2-349 E	3.3896	Adder	7.52
960611	AF2-352 C	2.5708	50/50	2.5708
960612	AF2-352 E	3.8562	50/50	3.8562
960623	AF2-353 BAT	31.8120	50/50	31.8120
960721	AF2-363 C O1	1.3562	Adder	3.01
960722	AF2-363 E O1	0.9042	Adder	2.01
960751	AF2-366 C O1	1.5712	Adder	3.49
960752	AF2-366 E O1	1.0474	Adder	2.32
961011	AF2-392 C O1	1.1727	Adder	2.6
961012	AF2-392 E O1	5.4902	Adder	12.19
961021	AF2-393 O1	1.9989	Adder	4.44
961031	AF2-394 O1	1.3326	Adder	2.96
990901	L-005 E	9.1810	Adder	10.8
WEC	WEC	2.0201	Confirmed LTF	2.0201
CPL	CPL	0.5953	Confirmed LTF	0.5953
CBM-W2	CBM-W2	70.4668	Confirmed LTF	70.4668
NY	NY	0.4468	Confirmed LTF	0.4468
CBM-W1	CBM-W1	61.5742	Confirmed LTF	61.5742
TVA	TVA	7.7938	Confirmed LTF	7.7938
O-066	O-066	4.9930	Confirmed LTF	4.9930
CBM-S2	CBM-S2	8.6238	Confirmed LTF	8.6238
CBM-S1	CBM-S1	36.9257	Confirmed LTF	36.9257
G-007	G-007	0.7706	Confirmed LTF	0.7706
MADISON	MADISON	25.0367	Confirmed LTF	25.0367
MEC	MEC	15.7613	Confirmed LTF	15.7613
BLUEG	BLUEG	2.7151	Confirmed LTF	2.7151
TRIMBLE	TRIMBLE	1.0039	Confirmed LTF	1.0039

11.7 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

Queue Number	Project Name	Status
AA1-018	Powerton-Goodings Grove	In Service

Queue Number	Project Name	Status
AA2-030	Nelson	Active
AA2-123	Marengo 34kV	In Service
AB1-087	Sullivan 345kV #1	Active
AB1-088	Sullivan 345kV #2	Active
AB1-089	Byron-Wayne 345kV #1	Active
AB1-091	Davis Creek 345kV	Active
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Active
AB2-047	Brokaw-Pontiac Midpoint	Engineering and Procurement
AB2-070	Brokaw-Lanesville	Active
AB2-096	Silver Lake-Cherry Valley	Active
AC1-033	Kewanee	Active
AC1-053	Lanesville-Brokaw	Active
AC1-109	Aurora 345kV	Active
AC1-110	Aurora 138kV	Active
AC1-111	Aurora 138kV	Active
AC1-113	Rockford	Active
AC1-114	Rockford II	Active
AC1-142A	Joliet	Active
AC1-168	Kewanee-Streator	Active
AC1-171	Powerton	Active
AC1-214	Crescent Ridge	Engineering and Procurement
AC2-115	Rockford	Active
AC2-116	Rockford II	Active
AC2-117	University Park North	Engineering and Procurement
AC2-154	Davis Creek 138kV	Active
AC2-156	Sandwich 34.5kV	Active
AC2-157	Sullivan 345 kV	Active
AD1-013	Twombly Road 138kV	Active
AD1-016	Marengo	Active
AD1-031	Kewanee 138 kV	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-067	Mendota Hills	Active
AD1-096	Stillman Valley 34 kV	Active
AD1-098	Dixon-McGirr	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD1-116	Nevada 345 kV	Active
AD1-129	Belvidere 34 kV	Active
AD1-133	Pontiac MidPoint-Dresden	Active
AD1-148	Brokaw-Lanesville	Active
AD2-038	Powerton	Active
AD2-047	Davis Creek 138 kV	Active
AD2-060	Davis Creek 138kV	Active
AD2-066	Mazon-Crescent Ridge	Active
AD2-100	Kincaid-Pana	Active
AD2-102	Wempletown 345 kV	Active
AD2-131	Latham Kincaid	Active
AD2-134	Shady Oaks	Active
AD2-159	Chestnut 345kV	Active
AD2-172	Lena 138kV	Active
AD2-194	Elwood	Active
AD2-214	Rock Falls-Garden Plains	Active
AE1-070	Elwood 345 kV	Active

Queue Number	Project Name	Status
AE1-113	Mole Creek 345 kV	Active
AE1-114	Maryland-Lancaster 138 kV	Active
AE1-134	Nelson 345 kV	Active
AE1-163	Powerton-Nevada 345 kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE1-172	Loretto-Wilton Center	Active
AE1-205	McLean 345 kV	Active
AE1-252	Loretto-Wilton Center	Active
AE2-035	Lena 138 kV	Active
AE2-062	Normantown	Active
AE2-107	Haumesser Road 138 kV	Active
AE2-130	Rockport 765 kV	Active
AE2-152	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-153	Braidwood-Davis Creek	Active
AE2-173	McLean 345 kV	Active
AE2-223	McLean 345 kV	Active
AE2-255	Molecreek 345 kV	Active
AE2-261	Kincaid-Pana	Active
AE2-276	Sullivan 345kV	Active
AE2-281	Powerton-Nevada 345 kV	Active
AE2-321	Belvidere-Marengo 138 kV	Active
AE2-341	Sandwich-Plano	Active
AF1-009	Dixon-McGirr	Active
AF1-011	Schauff Road	Active
AF1-012	Electric Junc-Nelson	Active
AF1-030	Plano-R 138 kV	Active
AF1-048	Belvidere-Marengo	Active
AF1-060	Lena 138 kV	Active
AF1-072	Rocky Road	Active
AF1-088	Sullivan 345 kV	Active
AF1-090	Kincaid-Pana	Active
AF1-156	Braidwood-Davis Creek	Active
AF1-200	Plano 345 kV	Active
AF1-204	Eugene 345 kV	Active
AF1-252	Kincaid-Pana	Active
AF1-253	Kincaid-Pana	Active
AF1-280	Nelson-Lee County	Active
AF1-281	Nelson-Lee County	Active
AF1-296	Garden Plain 138 kV	Active
AF1-314	Lena 138 kV	Active
AF1-317	Electric Jct-Nelson	Active
AF1-318	Crescent Ridge-Corbin	Active
AF1-330	Marengo	Active
AF1-331	Twombly Road	Active
AF2-003	Powerton-Mole Creek	Active
AF2-008	Sullivan 345 kV	Active
AF2-027	Zion Energy Center 345 kV	Active
AF2-032	Kincaid	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-069	Crescent Ridge 138 kV	Active
AF2-070	Crescent Ridge 138 kV	Active
AF2-095	Wilmington-Davis Creek	Active

Queue Number	Project Name	Status
AF2-096	Braidwood-East Frankfort 345 kV	Active
AF2-128	Crescent Ridge-Corbin 138 kV	Active
AF2-142	Nevada 345 kV	Active
AF2-143	Powerton-Nevada 345 kV	Active
AF2-182	Nelson-Lee County 345 kV II	Active
AF2-183	Nelson-Lee County 345 kV	Active
AF2-199	Nelson-Electric Junction 345 kV	Active
AF2-200	Nelson-Electric Junction 345 kV	Active
AF2-201	Lena-Ecogrove 138 kV	Active
AF2-225	McLean 345 kV	Active
AF2-226	Katydid Road 345 kV	Active
AF2-252	Blue Mound 345 kV	Active
AF2-267	Lancaster 138 kV	Active
AF2-305	Brokaw-Lanesville 345 kV	Active
AF2-317	Hill Topper 345 kV	Active
AF2-319	Katydid Road 345 kV	Active
AF2-329	Sandwich-Plano 138 kV	Active
AF2-346	Electric Junction-Nelson 345 kV	Active
AF2-349	Garden Prairie-Silver Lake 345 kV	Active
AF2-350	Kensington 138 kV	Active
AF2-351	Kensington 138 kV	Active
AF2-352	Blue Mound 34.5 kV	Active
AF2-353	Rockport 765 kV	Active
AF2-363	Glidden 138 kV	Active
AF2-364	Wayne Red 138 kV	Active
AF2-366	Glidden-Waterman 345 kV	Active
AF2-392	Nelson-Dixon 138 kV	Active
AF2-393	Nelson-Dixon 138 kV	Active
AF2-394	Nelson-Dixon 138 kV	Active
AF2-441	Burnham 138kV	Active
U3-021	Silver Lake-Cherry Valley	Active
W2-048	Brokaw-Lanesville	In Service
W4-005	Blue Mound-Latham	Partially in Service - Under Construction
X2-022	Brokaw-Lanesville	In Service
X3-005	Wildwood 12kV	In Service
Y3-013	Zion Energy Center	Active
Z1-106	West Chicago 34kV	In Service
Z1-107	Joliet 34kV	In Service
Z1-108	McHenry 34kV	In Service
Z2-087	Pontiac MidPoint-Brokaw 345kV	In Service
J1022	MISO	MISO
J1055	MISO	MISO
J1102	MISO	MISO
J1115	MISO	MISO
J1139	MISO	MISO
J468	MISO	MISO
J474	MISO	MISO
J641	MISO	MISO
J644	MISO	MISO
J750	MISO	MISO
J756	MISO	MISO
J757	MISO	MISO

Queue Number	Project Name	Status
J811	MISO	MISO
J815	MISO	MISO
J826	MISO	MISO
J845	MISO	MISO
J848	MISO	MISO
J912	MISO	MISO
J949	MISO	MISO
J955	MISO	MISO
J979	MISO	MISO
J991	MISO	MISO

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
COMED_P1-2_345-L11212_B-S-C	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-C' TRIP BRANCH FROM BUS 939400 TO BUS 270704 CKT 1 / AE1-172 TAP 345 LORET; B 345 END
COMED_P1-2_345-L11212_B-S-B	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-B' TRIP BRANCH FROM BUS 934720 TO BUS 939400 CKT 1 / AD1-100 TAP 345 AE1-172 TAP 345 END
COMED_P1-2_345-L11212_B-S-A	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-A' TRIP BRANCH FROM BUS 270926 TO BUS 934720 CKT 1 / WILTO; B 345 AD1-100 TAP 345 END
934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1	CONTINGENCY '934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1' OPEN BRANCH FROM BUS 934725 TO BUS 934730 CKT 1 END
COMED_P1-2_345-L2105___-S-D	CONTINGENCY 'COMED_P1-2_345-L2105___-S-D' TRIP BRANCH FROM BUS 944220 TO BUS 347945 CKT 1 / AF1-090 TAP 345 7PANA 345 END
AEP_P4_#3128_05EUGENE 345_A2	CONTINGENCY 'AEP_P4_#3128_05EUGENE 345_A2' OPEN BRANCH FROM BUS 243221 TO BUS 249504 CKT 1 / 243221 05EUGENE 345 249504 08CAYSUB 345 1 OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END

Contingency Name	Contingency Definition
COMED_P4_112-65-BT2-3__	CONTINGENCY 'COMED_P4_112-65-BT2-3__' TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1 / WILTO; 765 COLLI; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1 / WILTO;3M 345 WILTO; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1 / WILTO;3M 345 WILTO; B 345 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1 / WILTO;3M 345 WILTO;3C 33 END
ADD AD1-100 5	CONTINGENCY 'ADD AD1-100 5' OPEN BRANCH FROM BUS 934730 TO BUS 270710 CKT 1 / AD1-100 - DAVIS CREEK OPEN BRANCH FROM BUS 934720 TO BUS 270926 CKT 1 / AD1-100 - WILTON END
COMED_P1-2_345-L17802__-S	CONTINGENCY 'COMED_P1-2_345-L17802__-S' TRIP BRANCH FROM BUS 270668 TO BUS 270912 CKT 1 / BLUEM; B 345 CHESTNUT 345 END
COMED_P4_012-45-BT12-14	CONTINGENCY 'COMED_P4_012-45-BT12-14' TRIP BRANCH FROM BUS 270717 TO BUS 930740 CKT 1 / DRESDEN ; R 345 AB1-122 TAP 345 TRIP BRANCH FROM BUS 935000 TO BUS 270717 CKT 1 / AD1-133 TAP 345 DRESDEN ; R 345 END
COMED_P1-2_345-L8014__-S-A	CONTINGENCY 'COMED_P1-2_345-L8014__-S-A' TRIP BRANCH FROM BUS 270853 TO BUS 935000 CKT 1 / PONTIAC ; R 345 AD1-133 TAP 345 END
COMED_P1-2_345-L8001__-S	CONTINGENCY 'COMED_P1-2_345-L8001__-S' TRIP BRANCH FROM BUS 270853 TO BUS 917500 CKT 1 / PONTI; R 345 Z2-087 TAP 345 END
COMED_P1-2_345-L8014__-S-B	CONTINGENCY 'COMED_P1-2_345-L8014__-S-B' TRIP BRANCH FROM BUS 935000 TO BUS 270717 CKT 1 / AD1-133 TAP 345 DRESDEN ; R 345 END
Base Case	

Contingency Name	Contingency Definition
COMED_P1-2_345-L1223_TR-S	CONTINGENCY 'COMED_P1-2_345-L1223_TR-S' TRIP BRANCH FROM BUS 270717 TO BUS 270731 CKT 1 / DRES; R 345 ELECT;4R 345 TRIP BRANCH FROM BUS 275180 TO BUS 270717 CKT 1 / DRES;3M 138 DRES; R 345 TRIP BRANCH FROM BUS 275180 TO BUS 271336 CKT 1 / DRES;3M 138 DRES; B 138 TRIP BRANCH FROM BUS 275180 TO BUS 275280 CKT 1 / DRES;3M 138 DRES;3C 34.5 END
COMED_P4_080-45-BT7-8__	CONTINGENCY 'COMED_P4_080-45-BT7-8__' TRIP BRANCH FROM BUS 270853 TO BUS 917500 CKT 1 / PONTIAC ; R 345 Z2-087 TAP 345 TRIP BRANCH FROM BUS 270853 TO BUS 935000 CKT 1 / PONTIAC ; R 345 AD1-133 TAP 345 END
AEP_P1-2_#286	CONTINGENCY 'AEP_P1-2_#286' OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END
COMED_P4_112-65-BT5-6__	CONTINGENCY 'COMED_P4_112-65-BT5-6__' TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1 / WILTO; 765 COLLI; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1 / WILTO;4M 345 WILTO; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1 / WILTO;4M 345 WILTO; R 345 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1 / WILTO;4M 345 WILTO;4C 33 END
COMED_P7_345-L2001__B-S+_345-L2003__R-S	CONTINGENCY 'COMED_P7_345-L2001__B-S+_345-L2003__R-S' TRIP BRANCH FROM BUS 270670 TO BUS 270728 CKT 1 / BRAID; B 345 E FRA; B 345 TRIP BRANCH FROM BUS 270728 TO BUS 270766 CKT 1 / E FRA; B 345 GOODI;3B 345 TRIP BRANCH FROM BUS 270728 TO BUS 274750 CKT 1 / E FRA; B 345 CRETE;BP 345 TRIP BRANCH FROM BUS 270671 TO BUS 270729 CKT 1 / BRAID; R 345 E FRA; R 345 END
COMED_P1-2_345-L8002__-S	CONTINGENCY 'COMED_P1-2_345-L8002__-S' TRIP BRANCH FROM BUS 270852 TO BUS 270668 CKT 1 / PONTI; B 345 BLUEM; B 345 END

12 Short Circuit Analysis

The following breakers are overdutied:

None

12.1 System Reinforcements - Short Circuit

None

13 Affected Systems

13.1 MISO

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