Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-400

BLUE MOUND-CHESTNUT 345 KV

150 MW Capacity / 150 MW Energy

January 2021

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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.

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 storage generating facility located in McLean County, Illinois. The installed facilities will have a total capability of 150 MW with 150 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is September 24, 2024. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-400
Project Name	BLUE MOUND-CHESTNUT 345 KV
State	Illinois
County	McLean
Transmission Owner	ComEd
MFO	150
MWE	150
MWC	150
Fuel	Storage
Basecase Study Year	2024

Any new service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

4 Point of Interconnection

4.1 Primary

AG1-400 proposes a primary Point of Interconnection with the ComEd transmission system utilizing the physical interconnection facilities of the AG1-399 project which will tap the Blue Mound to Chestnut 345 kV line L9515.

1.1 Secondary

AG1-400 proposes a primary Point of Interconnection with the ComEd transmission system tapping the Brokaw to Mt. Pulaski 345 kV line.

5 Cost Summary

The AG1-400 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 250,000
Total System Network Upgrade Costs	$ 59,300,000
Total Costs	$ 59,550,000

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 2016-36, 2016-25 I.R.B. (6/20/2016). 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.

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

6 Transmission Owner Scope of Work

To accommodate interconnection of AG1-400, the relaying, SCADA, communication and metering between ComEd-owned Interconnection Substation to be built under AG1-399 would be reviewed and upgraded if needed. The preliminary cost estimate for the Attachment Facilities is estimated at $250,000. ComEd would take approximately 18-months to review and possibly upgrade the relaying, SCADA, Communication and metering after the ISA / ICSA are signed.

7 Schedule

See Sections 6 and 11.

8 Transmission Owner Analysis

See Sections 6 and 11.

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

11 Summer Peak - Load Flow Analysis - Primary POI

The Queue Project AG1-400 was evaluated as a 150.0 MW (Capacity 150.0 MW) injection tapping the Blue Mound to Chestnut 345 kV line in the ComEd area. Project AG1-400 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-400 was studied with a commercial probability of 53%. Potential network impacts were as follows:

11.1 Generation Deliverability

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

None

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	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
16850430 9	27070 4	LORETT O ; B	345. 0	CE	93940 0	AE1-172 TAP	345. 0	CE	1	COMED_P1 -2_345- L8014__R- S-C	singl e	1528. 0	112.27	115.61	DC	51.01
16973143 6	93500 0	AD1-133 TAP	345. 0	CE	27071 7	DRESDE N ; R	345. 0	CE	1	COMED_P1 -2_345- L11212_B- S-B	singl e	1656. 0	104.93	107.76	DC	46.9
16973143 7	93500 0	AD1-133 TAP	345. 0	CE	27071 7	DRESDE N ; R	345. 0	CE	1	COMED_P1 -2_345- L11212_B- S-C	singl e	1656. 0	101.15	103.98	DC	46.9
16973140 0	93940 0	AE1-172 TAP	345. 0	CE	93472 0	AD1-100 TAP	345. 0	CE	1	COMED_P1 -2_345- L8014__R- S-C	singl e	1528. 0	118.16	121.5	DC	51.01
16973140 1	93940 0	AE1-172 TAP	345. 0	CE	93472 0	AD1-100 TAP	345. 0	CE	1	COMED_P1 -2_345- L8014__R- S-B	singl e	1528. 0	112.33	115.67	DC	51.01

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	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC| DC	MW IMPACT
16850482	270668	BLUEMOUND; B	345.0	CE	270852	PONTIAC; B	345.0	CE	1	COMED_P1-2_345-L8001___-S	operation	1528.0	146.72	150.95	DC	64.5
16850484	270668	BLUEMOUND; B	345.0	CE	270852	PONTIAC; B	345.0	CE	1	Base Case	operation	1334.0	112.6	117.48	DC	65.12
16850486	270704	LORETTO; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	201.41	204.75	DC	51.01
16850488	270704	LORETTO; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	Base Case	operation	1364.0	152.21	154.82	DC	35.55
16850457	270796	KINCAID; B	345.0	CE	347955	7AUSTIN	345.0	AMIL	1	COMED_P1-2_345-L2105___-S-D	operation	1319.0	134.56	137.01	DC	32.33
16850435	270796	KINCAID; B	345.0	CE	348856	7LATHAM	345.0	AMIL	1	COMED_P1-2_345-L18806_R-S-C	operation	1434.0	111.4	113.62	DC	36.62
16850432	270819	MCLEAN; R	345.0	CE	270853	PONTIAC; R	345.0	CE	1	COMED_P1-2_345-L8002___-S	operation	1819.0	148.61	150.41	DC	32.63
16850416	270852	PONTIAC; B	345.0	CE	270704	LORETTO; B	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	189.25	192.59	DC	51.04
16850418	270852	PONTIAC; B	345.0	CE	270704	LORETTO; B	345.0	CE	1	Base Case	operation	1364.0	140.61	143.22	DC	35.59
16850453	270853	PONTIAC; R	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	operation	1656.0	169.24	172.07	DC	46.9
16850455	270853	PONTIAC; R	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	Base Case	operation	1334.0	121.67	123.76	DC	27.95
16850472	348847	7BROKAW	345.0	AMIL	270819	MCLEAN; R	345.0	CE	1	COMED_P1-2_345-L8002___-S	operation	1793.0	118.95	120.77	DC	32.67
16973148	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	167.22	169.16	DC	29.65
16973149	934720	AD1-100 TAP	345.0	CE	270926	WILTON; B	345.0	CE	1	Base Case	operation	1364.0	147.11	148.37	DC	17.29
16850465	934730	AD1-100 TAP	345.0	CE	270670	BRAIDWOOD; B	345.0	CE	1	COMED_P1-2_345-L11212_B-S-A	operation	1528.0	107.9	109.35	DC	22.15
16973143	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN; R	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	operation	1656.0	187.89	190.73	DC	46.9
16973143	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN; R	345.0	CE	1	Base Case	operation	1334.0	140.53	142.63	DC	27.95
16973175	936770	AD2-100 TAP	345.0	CE	944220	AF1-090 TAP	345.0	CE	1	EXT_P12:345:AMIL::AUSTIN:PANA:1	operation	1201.0	111.83	113.48	DC	19.78
16973139	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	219.14	222.48	DC	51.01
16973139	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	Base Case	operation	1364.0	169.54	172.15	DC	35.55
16973182	942480	AE2-261 TAP	345.0	CE	936770	AD2-100 TAP	345.0	CE	1	EXT_P12:345:AMIL::AUSTIN:PANA:1	operation	1201.0	102.7	104.35	DC	19.78
16973170	944220	AF1-090 TAP	345.0	CE	347945	7PANA	345.0	AMIL	1	COMED_P1-2_345-L2106___-S	operation	1201.0	120.63	122.79	DC	25.87
17001628	964580	AG1-321 TAP	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	operation	1656.0	175.66	178.49	DC	46.9
17001629	964580	AG1-321 TAP	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	Base Case	operation	1334.0	127.43	129.53	DC	27.95
17001651	965340	AG1-399 TAP	345.0	CE	270668	BLUEMOUND; B	345.0	CE	1	COMED_P1-2_345-L8001___-S	operation	1829.0	99.55	103.08	DC	64.56

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
168504309	1	LORETTO ; B 345.0 kV - AE1-172 TAP 345.0 kV Ckt 1	**ComEd** **CE_NUN_L11212_2 (1023) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to replace-4-345kV circuit breakers, upgrade a line relay scheme, station conductor upgrades at both terminals and recconductor a portion of the line. A preliminary estimate for the upgrades ts $47M with an estimated construction timeline of 24-30 months. Upon completion the ratings will be 1754/2246/2297/2488/2861 MVA (SN/SLTE/SSTE/SLD/ALDR).** **Project Type : FAC** **Cost : $47,000,000** **Time Estimate : 24-30 Months**	$47,000,000
169731437,169731436	2	AD1-133 TAP 345.0 kV - DRESDEN ; R 345.0 kV Ckt 1	**ComEd** **CE_NUN_8014_1 (1104) : ComEd 345kV L8014 SSTE rating is 1797 MVA. The upgrade will be sag mitigation on teh line. A preliminary estimate for the upgardes is $12.3M with a estimated construction timeline of 24 months contingenct upon line outage coordination with Dresden station. Upon completion of the upgrades the ratings will be 1461/1656/1909/1912 MVA (SN/SLTE/SSTE/SLD).** **Project Type : FAC** **Cost : $12,300,000** **Time Estimate : 24.0 Months**	$12,300,000
169731400,169731401	3	AE1-172 TAP 345.0 kV - AD1-100 TAP 345.0 kV Ckt 1	**ComEd** **CE_NUN_L11212_2 (1023) : ComEd 345kV L11212 SSTE rating is 1846 MVA. The upgrade will be to replace-4-345kV circuit breakers, upgrade a line relay scheme, station conductor upgrades at both terminals and recconductor a portion of the line. A preliminary estimate for the upgrades ts $47M with an estimated construction timeline of 24-30 months. Upon completion the ratings will be 1754/2246/2297/2488/2861 MVA (SN/SLTE/SSTE/SLD/ALDR).** **Project Type : FAC** **Cost : $47,000,000** **Time Estimate : 24-30 Months**	$47,000,000
			TOTAL COST	**$59,300,000**

11.6 Flow Gate Details - Primary POI

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
168504309	270704	LORETTO ; B	CE	939400	AE1-172 TAP	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	112.27	115.61	DC	51.01

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	17.4703	80/20	17.4703
274651	KINCAID ;2U	17.4641	80/20	17.4641
274853	TWINGROVE;U1	2.2232	80/20	2.2232
274854	TWINGROVE;U2	2.2870	80/20	2.2870
274863	CAYUGA RI;1U	2.1585	80/20	2.1585
274864	CAYUGA RI;2U	2.1585	80/20	2.1585
274880	RADFORD R;1U	2.0398	80/20	2.0398
274889	BRIGHTSTK;1U	1.7879	80/20	1.7879
924041	AB2-047 C O1	2.2352	80/20	2.2352
924261	AB2-070 C O1	6.9833	80/20	6.9833
925771	AC1-053 C	6.7517	80/20	6.7517
930461	AB1-087 CT1	16.7938	80/20	16.7938
930462	AB1-087 ST1	13.3517	80/20	13.3517
930471	AB1-088 CT1	16.7938	80/20	16.7938
930472	AB1-088 ST1	13.3517	80/20	13.3517
933446	AC2-157 1C	2.0828	80/20	2.0828
933447	AC2-157 2C	2.0828	80/20	2.0828
935001	AD1-133 C O1	89.7048	80/20	89.7048
935141	AD1-148	11.7967	80/20	11.7967
936771	AD2-100 C	23.9942	80/20	23.9942
936971	AD2-131 C	1.5806	80/20	1.5806
937211	AD2-159 C	9.3565	80/20	9.3565
939741	AE1-205 C O1	36.6131	80/20	36.6131
941731	AE2-173 O1	21.7935	80/20	21.7935
942111	AE2-223 C	8.4995	80/20	8.4995
942481	AE2-261 C	35.3059	80/20	35.3059
942601	AE2-276	2.7405	80/20	2.7405
944201	AF1-088 FTIR	54.8100	80/20	54.8100
944221	AF1-090 C O1	6.0456	80/20	6.0456
945391	AF1-204 C O1	4.1705	80/20	4.1705
945871	AF1-252 O1	10.7172	80/20	10.7172
945881	AF1-253	7.4196	80/20	7.4196
951741	J474 C	5.2474	PJM External (MISO)	5.2474
952651	J756 C	4.4978	PJM External (MISO)	4.4978
952871	J757 C	5.5356	PJM External (MISO)	5.5356
953401	J811	10.8326	PJM External (MISO)	10.8326
953651	J815	38.1850	PJM External (MISO)	38.1850
953741	J826 C	3.1200	PJM External (MISO)	3.1200
953851	J845 C	3.0789	PJM External (MISO)	3.0789
953881	J848 C	5.8590	PJM External (MISO)	5.8590
954411	J912	14.4410	PJM External (MISO)	14.4410

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
954721	J750 C	3.8030	PJM External (MISO)	3.8030
954821	J955	181.6984	PJM External (MISO)	181.6984
955031	J979 C	4.6872	PJM External (MISO)	4.6872
955401	J1022 C	4.6800	PJM External (MISO)	4.6800
956151	J1102	11.4597	PJM External (MISO)	11.4597
956281	J1115 C	7.5579	PJM External (MISO)	7.5579
956451	J1139	17.7780	PJM External (MISO)	17.7780
957141	AF2-008 FTIR	27.4050	80/20	27.4050
957381	AF2-032 C	2.7086	80/20	2.7086
959341	AF2-225 C	27.4598	80/20	27.4598
959611	AF2-252 C	8.0984	80/20	8.0984
960141	AF2-305	2.4710	80/20	2.4710
960261	AF2-317	3.7750	80/20	3.7750
960611	AF2-352 C	8.0984	80/20	8.0984
963831	AG1-236 C	6.7517	80/20	6.7517
964581	AG1-321 C O1	62.9877	80/20	62.9877
965091	AG1-374 C	72.8856	80/20	72.8856
965331	AG1-398	1.9688	80/20	1.9688
965341	AG1-399 C	17.9541	80/20	17.9541
965351	AG1-400	51.0060	80/20	51.0060
965361	AG1-401 C	17.9541	80/20	17.9541
965371	AG1-402	51.0060	80/20	51.0060
965381	AG1-403 C	11.9694	80/20	11.9694
965391	AG1-404	34.0040	80/20	34.0040
965911	AG1-460 C	2.3616	80/20	2.3616
LGEE	LGEE	1.5670	Confirmed LTF	1.5670
CPLE	CPLE	1.1684	Confirmed LTF	1.1684
G-007A	G-007A	1.8653	Confirmed LTF	1.8653
VFT	VFT	5.0052	Confirmed LTF	5.0052
CBM-W2	CBM-W2	46.2246	Confirmed LTF	46.2246
TVA	TVA	5.1100	Confirmed LTF	5.1100
SIGE	SIGE	0.3437	Confirmed LTF	0.3437
CBM-S2	CBM-S2	20.7130	Confirmed LTF	20.7130
CBM-S1	CBM-S1	1.3072	Confirmed LTF	1.3072
CBM-N	CBM-N	0.9276	Confirmed LTF	0.9276
MEC	MEC	2.2008	Confirmed LTF	2.2008
LAGN	LAGN	6.7060	Confirmed LTF	6.7060

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
169731436	935000	AD1-133 TAP	CE	270717	DRESDEN ; R	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1656.0	104.93	107.76	DC	46.9

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	15.5167	80/20	15.5167
274651	KINCAID ;2U	15.5097	80/20	15.5097
274853	TWINGROVE;U1	2.0586	80/20	2.0586
274854	TWINGROVE;U2	2.1177	80/20	2.1177
274863	CAYUGA RI;1U	1.6533	80/20	1.6533
274864	CAYUGA RI;2U	1.6533	80/20	1.6533
274880	RADFORD R;1U	1.8594	80/20	1.8594
274889	BRIGHTSTK;1U	1.6657	80/20	1.6657
924041	AB2-047 C O1	2.0823	80/20	2.0823
924261	AB2-070 C O1	6.3443	80/20	6.3443
925771	AC1-053 C	6.1186	80/20	6.1186
930461	AB1-087 CT1	15.3935	80/20	15.3935
930462	AB1-087 ST1	12.2385	80/20	12.2385
930471	AB1-088 CT1	15.3935	80/20	15.3935
930472	AB1-088 ST1	12.2385	80/20	12.2385
933446	AC2-157 1C	1.9091	80/20	1.9091
933447	AC2-157 2C	1.9091	80/20	1.9091
935001	AD1-133 C O1	122.2362	80/20	122.2362
935141	AD1-148	10.6276	80/20	10.6276
936771	AD2-100 C	21.2927	80/20	21.2927
936971	AD2-131 C	1.4026	80/20	1.4026
937211	AD2-159 C	8.5289	80/20	8.5289
939401	AE1-172 C O1	20.8660	80/20	20.8660
939741	AE1-205 C O1	34.1090	80/20	34.1090
940101	AE1-252 C O1	41.9184	80/20	41.9184
941731	AE2-173 O1	20.3030	80/20	20.3030
942111	AE2-223 C	7.9182	80/20	7.9182
942481	AE2-261 C	31.3519	80/20	31.3519
942601	AE2-276	2.5120	80/20	2.5120
944201	AF1-088 FTIR	50.2400	80/20	50.2400
944221	AF1-090 C O1	5.3532	80/20	5.3532
945391	AF1-204 C O1	3.8543	80/20	3.8543
945871	AF1-252 O1	9.4898	80/20	9.4898
945881	AF1-253	6.5699	80/20	6.5699
951741	J474 C	4.9093	PJM External (MISO)	4.9093
952651	J756 C	3.8887	PJM External (MISO)	3.8887
952871	J757 C	4.7759	PJM External (MISO)	4.7759
953401	J811	10.2831	PJM External (MISO)	10.2831
953651	J815	35.4850	PJM External (MISO)	35.4850
953741	J826 C	2.9617	PJM External (MISO)	2.9617
953851	J845 C	2.9548	PJM External (MISO)	2.9548

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
953881	J848 C	5.4764	PJM External (MISO)	5.4764
954411	J912	13.5210	PJM External (MISO)	13.5210
954721	J750 C	3.4323	PJM External (MISO)	3.4323
954821	J955	168.0328	PJM External (MISO)	168.0328
955031	J979 C	4.3811	PJM External (MISO)	4.3811
955401	J1022 C	4.4425	PJM External (MISO)	4.4425
956151	J1102	10.1899	PJM External (MISO)	10.1899
956281	J1115 C	7.1136	PJM External (MISO)	7.1136
956451	J1139	17.3610	PJM External (MISO)	17.3610
957141	AF2-008 FTIR	25.1200	80/20	25.1200
957381	AF2-032 C	2.4057	80/20	2.4057
959341	AF2-225 C	25.5818	80/20	25.5818
959611	AF2-252 C	7.4988	80/20	7.4988
960141	AF2-305	2.2449	80/20	2.2449
960261	AF2-317	3.4008	80/20	3.4008
960611	AF2-352 C	7.4988	80/20	7.4988
963831	AG1-236 C	6.1186	80/20	6.1186
964581	AG1-321 C O1	67.6809	80/20	67.6809
965091	AG1-374 C	67.4892	80/20	67.4892
965331	AG1-398	1.7886	80/20	1.7886
965341	AG1-399 C	16.5095	80/20	16.5095
965351	AG1-400	46.9020	80/20	46.9020
965361	AG1-401 C	16.5095	80/20	16.5095
965371	AG1-402	46.9020	80/20	46.9020
965381	AG1-403 C	11.0063	80/20	11.0063
965391	AG1-404	31.2680	80/20	31.2680
965911	AG1-460 C	2.0971	80/20	2.0971
LGEE	LGEE	1.4784	Confirmed LTF	1.4784
CPLE	CPLE	1.0770	Confirmed LTF	1.0770
G-007A	G-007A	2.0642	Confirmed LTF	2.0642
VFT	VFT	5.5470	Confirmed LTF	5.5470
CBM-W2	CBM-W2	38.0710	Confirmed LTF	38.0710
TVA	TVA	4.2588	Confirmed LTF	4.2588
SIGE	SIGE	0.2972	Confirmed LTF	0.2972
CBM-S2	CBM-S2	18.6145	Confirmed LTF	18.6145
CBM-S1	CBM-S1	1.1085	Confirmed LTF	1.1085
CBM-N	CBM-N	1.0284	Confirmed LTF	1.0284
LAGN	LAGN	5.2238	Confirmed LTF	5.2238

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
169731400	939400	AE1-172 TAP	CE	934720	AD1-100 TAP	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	118.16	121.5	DC	51.01

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	17.4703	80/20	17.4703
274651	KINCAID ;2U	17.4641	80/20	17.4641
274853	TWINGROVE;U1	2.2232	80/20	2.2232
274854	TWINGROVE;U2	2.2870	80/20	2.2870
274863	CAYUGA RI;1U	2.1585	80/20	2.1585
274864	CAYUGA RI;2U	2.1585	80/20	2.1585
274880	RADFORD R;1U	2.0398	80/20	2.0398
274889	BRIGHTSTK;1U	1.7879	80/20	1.7879
924041	AB2-047 C O1	2.2352	80/20	2.2352
924261	AB2-070 C O1	6.9833	80/20	6.9833
925771	AC1-053 C	6.7517	80/20	6.7517
930461	AB1-087 CT1	16.7938	80/20	16.7938
930462	AB1-087 ST1	13.3517	80/20	13.3517
930471	AB1-088 CT1	16.7938	80/20	16.7938
930472	AB1-088 ST1	13.3517	80/20	13.3517
933446	AC2-157 1C	2.0828	80/20	2.0828
933447	AC2-157 2C	2.0828	80/20	2.0828
935001	AD1-133 C O1	89.7048	80/20	89.7048
935141	AD1-148	11.7967	80/20	11.7967
936771	AD2-100 C	23.9942	80/20	23.9942
936971	AD2-131 C	1.5806	80/20	1.5806
937211	AD2-159 C	9.3565	80/20	9.3565
939401	AE1-172 C O1	29.9990	80/20	29.9990
939741	AE1-205 C O1	36.6131	80/20	36.6131
940101	AE1-252 C O1	60.2658	80/20	60.2658
941731	AE2-173 O1	21.7935	80/20	21.7935
942111	AE2-223 C	8.4995	80/20	8.4995
942481	AE2-261 C	35.3059	80/20	35.3059
942601	AE2-276	2.7405	80/20	2.7405
944201	AF1-088 FTIR	54.8100	80/20	54.8100
944221	AF1-090 C O1	6.0456	80/20	6.0456
945391	AF1-204 C O1	4.1705	80/20	4.1705
945871	AF1-252 O1	10.7172	80/20	10.7172
945881	AF1-253	7.4196	80/20	7.4196
951741	J474 C	5.2474	PJM External (MISO)	5.2474
952651	J756 C	4.4978	PJM External (MISO)	4.4978
952871	J757 C	5.5356	PJM External (MISO)	5.5356
953401	J811	10.8326	PJM External (MISO)	10.8326
953651	J815	38.1850	PJM External (MISO)	38.1850
953741	J826 C	3.1200	PJM External (MISO)	3.1200
953851	J845 C	3.0789	PJM External (MISO)	3.0789

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
953881	J848 C	5.8590	PJM External (MISO)	5.8590
954411	J912	14.4410	PJM External (MISO)	14.4410
954721	J750 C	3.8030	PJM External (MISO)	3.8030
954821	J955	181.6984	PJM External (MISO)	181.6984
955031	J979 C	4.6872	PJM External (MISO)	4.6872
955401	J1022 C	4.6800	PJM External (MISO)	4.6800
956151	J1102	11.4597	PJM External (MISO)	11.4597
956281	J1115 C	7.5579	PJM External (MISO)	7.5579
956451	J1139	17.7780	PJM External (MISO)	17.7780
957141	AF2-008 FTIR	27.4050	80/20	27.4050
957381	AF2-032 C	2.7086	80/20	2.7086
959341	AF2-225 C	27.4598	80/20	27.4598
959611	AF2-252 C	8.0984	80/20	8.0984
960141	AF2-305	2.4710	80/20	2.4710
960261	AF2-317	3.7750	80/20	3.7750
960611	AF2-352 C	8.0984	80/20	8.0984
963831	AG1-236 C	6.7517	80/20	6.7517
964581	AG1-321 C O1	62.9877	80/20	62.9877
965091	AG1-374 C	72.8856	80/20	72.8856
965331	AG1-398	1.9688	80/20	1.9688
965341	AG1-399 C	17.9541	80/20	17.9541
965351	AG1-400	51.0060	80/20	51.0060
965361	AG1-401 C	17.9541	80/20	17.9541
965371	AG1-402	51.0060	80/20	51.0060
965381	AG1-403 C	11.9694	80/20	11.9694
965391	AG1-404	34.0040	80/20	34.0040
965911	AG1-460 C	2.3616	80/20	2.3616
LGEE	LGEE	1.5670	Confirmed LTF	1.5670
CPLE	CPLE	1.1684	Confirmed LTF	1.1684
G-007A	G-007A	1.8653	Confirmed LTF	1.8653
VFT	VFT	5.0052	Confirmed LTF	5.0052
CBM-W2	CBM-W2	46.2246	Confirmed LTF	46.2246
TVA	TVA	5.1100	Confirmed LTF	5.1100
SIGE	SIGE	0.3437	Confirmed LTF	0.3437
CBM-S2	CBM-S2	20.7130	Confirmed LTF	20.7130
CBM-S1	CBM-S1	1.3072	Confirmed LTF	1.3072
CBM-N	CBM-N	0.9276	Confirmed LTF	0.9276
MEC	MEC	2.2008	Confirmed LTF	2.2008
LAGN	LAGN	6.7060	Confirmed LTF	6.7060

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
AB1-087	Sullivan 345kV #1	Active
AB1-088	Sullivan 345kV #2	Active
AB2-047	Brokaw-Pontiac Midpoint	In Service
AB2-070	Mt. Pulaski-Brokaw	Engineering and Procurement
AC1-053	Lanesville-Brokaw	Active
AC2-157	Sullivan 345 kV	Active
AD1-133	Pontiac MidPoint-Dresden	Active
AD1-148	Brokaw-Lanesville	Active
AD2-100	Kincaid-Pana	Active
AD2-131	Latham Kincaid	Active
AD2-159	Chestnut 345kV	Active
AE1-172	Loretto-Wilton Center	Active
AE1-205	McLean 345 kV	Active
AE1-252	Loretto-Wilton Center	Active
AE2-173	McLean 345 kV	Active
AE2-223	McLean 345 kV	Active
AE2-261	Kincaid-Pana	Active
AE2-276	Sullivan 345kV	Active
AF1-088	Sullivan 345 kV	Active
AF1-090	Kincaid-Pana	Active
AF1-204	Eugene 345 kV	Active
AF1-252	Kincaid-Pana	Active
AF1-253	Kincaid-Pana	Active
AF2-008	Sullivan 345 kV	Active
AF2-032	Kincaid	Active
AF2-225	McLean 345 kV	Active
AF2-252	Blue Mound 345 kV	Active
AF2-305	Brokaw-Lanesville 345 kV	Active
AF2-317	Hill Topper 345 kV	Active
AF2-352	Blue Mound 34.5 kV	Active
AG1-236	Lanesville-Brokaw 345 kV	Active
AG1-321	Dresden-Pontiac Midpoint 345 kV	Active
AG1-374	Blue Mound 345 kV	Active
AG1-398	Brokaw-Lanesville 345 kV	Active
AG1-399	Blue Mound-Chestnut 345 kV	Active
AG1-400	Blue Mound-Chestnut 345 kV	Active
AG1-401	Blue Mound-Chestnut 345 kV	Active
AG1-402	Blue Mound-Chestnut 345 kV	Active
AG1-403	Clinton-Brokaw 345 kV	Active

Queue Number	Project Name	Status
AG1-404	Clinton-Brokaw 345 kV	Active
AG1-460	Kincaid-Pana 345 kV	Active
J1022	MISO	MISO
J1102	MISO	MISO
J1115	MISO	MISO
J1139	MISO	MISO
J474	MISO	MISO
J750	MISO	MISO
J756	MISO	MISO
J757	MISO	MISO
J811	MISO	MISO
J815	MISO	MISO
J826	MISO	MISO
J845	MISO	MISO
J848	MISO	MISO
J912	MISO	MISO
J955	MISO	MISO
J979	MISO	MISO

11.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
COMED_P1-2_345-L11212_B-S-C	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-C' / CONTINGENCY # 198 TRIP BRANCH FROM BUS 939400 TO BUS 270704 CKT 1 / AE1-172 TAP 345 LORETTO ; B 345 END
COMED_P1-2_345-L11212_B-S-B	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-B' / CONTINGENCY # 198 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' / CONTINGENCY # 198 TRIP BRANCH FROM BUS 270926 TO BUS 934720 CKT 1 / WILTON ; 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' / CONTINGENCY # 441 TRIP BRANCH FROM BUS 944220 TO BUS 347945 CKT 1 / AF1-090 TAP ; R 345 7PANA 345 END

Contingency Name	Contingency Definition
EXT_P12:345:AMIL::AUSTIN:PANA:1	CONTINGENCY 'EXT_P12:345:AMIL::AUSTIN:PANA:1' / 10111 OPEN BRANCH FROM BUS 347945 TO BUS 347955 CKT 1 / 347945 7PANA 345 347955 7AUSTIN 345 1 END
COMED_P1-2_345-L8001___-S	CONTINGENCY 'COMED_P1-2_345-L8001___-S' / CONTINGENCY # 542 TRIP BRANCH FROM BUS 270853 TO BUS 270819 CKT 1 / PONTIAC ; R 345 MCLEAN ; R 345 END
Base Case	
COMED_P1-2_345-L8014__R-S-B	CONTINGENCY 'COMED_P1-2_345-L8014__R-S-B' / CONTINGENCY # 545 TRIP BRANCH FROM BUS 964580 TO BUS 935000 CKT 1 / AG1-321 TAP TAP 345 AD1-133 TAP 345 END
COMED_P1-2_345-L8014__R-S-C	CONTINGENCY 'COMED_P1-2_345-L8014__R-S-C' / CONTINGENCY # 545 TRIP BRANCH FROM BUS 935000 TO BUS 270717 CKT 1 / AD1-133 TAP 345 DRESDEN ; R 345 END
COMED_P1-2_345-L2106___-S	CONTINGENCY 'COMED_P1-2_345-L2106___-S' / CONTINGENCY # 442 TRIP BRANCH FROM BUS 270796 TO BUS 347955 CKT 1 / KINCAID ; B 345 AUSTIN 345 END
COMED_P1-2_345-L18806_R-S-C	CONTINGENCY 'COMED_P1-2_345-L18806_R-S-C' / CONTINGENCY # 424 TRIP BRANCH FROM BUS 924260 TO BUS 348847 CKT 1 / AB2-070 TAP 345 7BROKAW T1 345 END
COMED_P1-2_345-L8002___-S	CONTINGENCY 'COMED_P1-2_345-L8002___-S' / CONTINGENCY # 543 TRIP BRANCH FROM BUS 270852 TO BUS 270668 CKT 1 / PONTIAC ; B 345 BLUEMOUND; B 345 END

12 Short Circuit Analysis - Primary POI

No breakers were identified as over-dutied as part of this analysis.

13 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-400 was evaluated as a 150.0 MW (Capacity 150.0 MW) injection tapping the Brokaw to Mount Polaski 345 kV line in the ComEd area. Project AG1-400 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-400 was studied with a commercial probability of 53%. Potential network impacts were as follows:

13.1 Generation Deliverability

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

None

13.2 Multiple Facility Contingency

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

None

13.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168504309	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	112.69	115.5	DC	42.92
174289523	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	209.13	212.0	DC	43.81
174289534	270852	PONTIAC ; B	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	189.46	192.33	DC	43.85
175533934	270852	PONTIAC ; B	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	105.35	108.16	DC	42.96
174289726	924260	AB2-070 TAP	345.0	CE	965340	AG1-399 TAP	345.0	CE	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	115.01	117.94	DC	43.56
174467674	925770	AC1-053 TAP	345.0	CE	924260	AB2-070 TAP	345.0	CE	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	106.1	109.03	DC	43.56
169731436	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1656.0	104.23	106.6	DC	39.17
174289707	936770	AD2-100 TAP	345.0	CE	944220	AF1-090 TAP	345.0	CE	1	COMED_P4_021-45-BT5-7__	breaker	1201.0	111.66	114.23	DC	30.75
169731400	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	118.58	121.39	DC	42.92
174289519	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	226.86	229.73	DC	43.81
174289771	942480	AE2-261 TAP	345.0	CE	936770	AD2-100 TAP	345.0	CE	1	COMED_P4_021-45-BT5-7__	breaker	1201.0	101.44	104.0	DC	30.75
174289529	964580	AG1-321 TAP	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	196.95	199.82	DC	43.85
175533918	964580	AG1-321 TAP	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	single	1528.0	110.07	112.88	DC	42.96

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
174289564	965340	AG1-399 TAP	345.0	CE	348847	7BROKAW	345.0	AMIL	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	129.65	137.68	DC	106.44

13.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168504382	270668	BLUEMOUND; B	345.0	CE	270852	PONTIAC ; B	345.0	CE	1	COMED_P1-2_345-L8001___-S	operation	1528.0	142.86	144.43	DC	24.01
168504306	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	201.31	204.12	DC	42.92
168504308	270704	LORETTO ; B	345.0	CE	939400	AE1-172 TAP	345.0	CE	1	Base Case	operation	1364.0	153.75	155.96	DC	30.15
168504459	270796	KINCAID ; B	345.0	CE	347955	7AUSTIN	345.0	AMIL	1	Base Case	operation	1200.0	98.31	100.33	DC	24.3
175720606	270796	KINCAID ; B	345.0	CE	348856	7LATHAM	345.0	AMIL	1	COMED_P1-2_345-L18806_R-S-C-2	operation	1434.0	115.7	118.43	DC	39.15
175720632	270796	KINCAID ; B	345.0	CE	347955	7AUSTIN	345.0	AMIL	1	COMED_P1-2_345-L18806_R-S-C-2	operation	1319.0	104.01	107.82	DC	50.33
168504432	270819	MCLEAN ; R	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	COMED_P1-2_345-L8002___-S	operation	1819.0	150.6	153.39	DC	50.71
168504434	270819	MCLEAN ; R	345.0	CE	270853	PONTIAC ; R	345.0	CE	1	Base Case	operation	1679.0	118.04	120.89	DC	47.86
175534045	270823	MTPULASKI ;	345.0	CE	349700	7LANSVLAM	345.0	AMIL	1	COMED_P1-2_345-L18806_R-S-C-2	operation	1327.0	90.29	101.59	DC	150.0
175533932	270852	PONTIAC ; B	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	181.67	184.48	DC	42.96
175533933	270852	PONTIAC ; B	345.0	CE	964580	AG1-321 TAP	345.0	CE	1	Base Case	operation	1364.0	135.61	137.82	DC	30.19
175533955	270853	PONTIAC ; R	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	operation	1656.0	173.87	176.24	DC	39.17

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
175533956	270853	PONTIAC ; R	345.0	CE	935000	AD1-133 TAP	345.0	CE	1	Base Case	operation	1334.0	125.2	126.94	DC	23.1
168504572	348847	7BROKAW	345.0	AMIL	270819	MCLEAN ; R	345.0	CE	1	COMED_P1-2_345-L8002___-S	operation	1793.0	120.32	123.15	DC	50.76
175534273	924260	AB2-070 TAP	345.0	CE	965340	AG1-399 TAP	345.0	CE	1	COMED_P1-2_345-L8002___-S	operation	1327.0	103.05	106.25	DC	47.74
169731488	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	168.34	169.99	DC	25.22
169731490	934720	AD1-100 TAP	345.0	CE	270926	WILTON ; B	345.0	CE	1	Base Case	operation	1364.0	146.63	147.12	DC	14.87
168504655	934730	AD1-100 TAP	345.0	CE	270670	BRAIDWOOD; B	345.0	CE	1	COMED_P1-2_345-L11212_B-S-A	operation	1528.0	108.78	110.0	DC	18.72
169731433	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P1-2_345-L11212_B-S-B	operation	1656.0	186.12	188.48	DC	39.17
169731435	935000	AD1-133 TAP	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	Base Case	operation	1334.0	137.49	139.22	DC	23.1
169731760	936770	AD2-100 TAP	345.0	CE	944220	AF1-090 TAP	345.0	CE	1	COMED_P1-2_345-L2106___-S	operation	1201.0	106.89	109.21	DC	27.93
169731397	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	219.04	221.85	DC	42.92
169731399	939400	AE1-172 TAP	345.0	CE	934720	AD1-100 TAP	345.0	CE	1	Base Case	operation	1364.0	171.08	173.29	DC	30.15
169731824	942480	AE2-261 TAP	345.0	CE	936770	AD2-100 TAP	345.0	CE	1	COMED_P1-2_345-L2106___-S	operation	1201.0	98.73	101.06	DC	27.93
169731701	944220	AF1-090 TAP	345.0	CE	347945	7PANA	345.0	AMIL	1	COMED_P1-2_345-L2106___-S	operation	1201.0	120.96	123.29	DC	27.93
175533916	964580	AG1-321 TAP	345.0	CE	270704	LORETTO ; B	345.0	CE	1	COMED_P1-2_345-L8014__R-S-C	operation	1528.0	189.14	191.95	DC	42.96
175533917	964580	AG1-321 TAP	345.0	CE	270704	LORETTO ; B	345.0	CE	1	Base Case	operation	1364.0	142.13	144.34	DC	30.19
175534041	965340	AG1-399 TAP	345.0	CE	348847	7BROKAW	345.0	AMIL	1	COMED_P1-2_345-L8002___-S	operation	1327.0	112.45	120.16	DC	102.26
175534042	965340	AG1-399 TAP	345.0	CE	348847	7BROKAW	345.0	AMIL	1	Base Case	operation	1327.0	102.47	110.11	DC	101.36

13.5 Flow Gate Details - Secondary POI

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".

13.5.1 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
174289523	270704	LORETTO ; B	CE	939400	AE1-172 TAP	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	209.13	212.0	DC	43.81

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	18.1054	50/50	18.1054
274651	KINCAID ;2U	18.1001	50/50	18.1001
274853	TWINGROVE;U1	2.2447	50/50	2.2447
274854	TWINGROVE;U2	2.3092	50/50	2.3092
274863	CAYUGA RI;1U	2.1614	50/50	2.1614
274864	CAYUGA RI;2U	2.1614	50/50	2.1614
274880	RADFORD R;1U	2.0812	50/50	2.0812
274889	BRIGHTSTK;1U	1.8023	50/50	1.8023
276615	W2-048 GEN	12.2102	50/50	12.2102
276621	X2-022 GEN	45.8004	50/50	45.8004
290261	S-027 E	64.7618	50/50	64.7618
290265	S-028 E	64.7618	50/50	64.7618
293777	CAYUG;1U E	73.0668	50/50	73.0668
293778	CAYUG;2U E	73.0668	50/50	73.0668
293798	W4-005 E	88.3374	50/50	88.3374
917502	Z2-087 E	76.4504	50/50	76.4504
924041	AB2-047 C O1	2.2531	50/50	2.2531
924042	AB2-047 E O1	95.5630	50/50	95.5630
924261	AB2-070 C O1	7.1464	50/50	7.1464
924262	AB2-070 E O1	43.2822	50/50	43.2822
925771	AC1-053 C	6.9194	50/50	6.9194
925772	AC1-053 E	46.3066	50/50	46.3066
935001	AD1-133 C O1	90.1584	50/50	90.1584
935002	AD1-133 E O1	60.1056	50/50	60.1056
935141	AD1-148	12.1309	50/50	12.1309
936771	AD2-100 C	24.8800	50/50	24.8800
936772	AD2-100 E	16.5866	50/50	16.5866
936971	AD2-131 C	1.6389	50/50	1.6389
936972	AD2-131 E	8.2341	50/50	8.2341
937211	AD2-159 C	9.5462	50/50	9.5462
937212	AD2-159 E	44.6938	50/50	44.6938
939741	AE1-205 C O1	36.9071	50/50	36.9071
939742	AE1-205 E O1	50.9669	50/50	50.9669
941731	AE2-173 O1	21.9685	50/50	21.9685
942111	AE2-223 C	8.5677	50/50	8.5677
942112	AE2-223 E	57.3378	50/50	57.3378
942481	AE2-261 C	36.5958	50/50	36.5958
942482	AE2-261 E	24.3972	50/50	24.3972
944221	AF1-090 C O1	6.2762	50/50	6.2762
944222	AF1-090 E O1	29.3838	50/50	29.3838
945871	AF1-252 O1	11.1259	50/50	11.1259

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945881	AF1-253	7.7026	50/50	7.7026
951741	J474 C	5.3464	PJM External (MISO)	5.3464
951742	J474 E	28.9256	PJM External (MISO)	28.9256
952651	J756 C	4.8438	PJM External (MISO)	4.8438
952652	J756 E	26.2064	PJM External (MISO)	26.2064
952871	J757 C	5.9747	PJM External (MISO)	5.9747
952872	J757 E	32.3245	PJM External (MISO)	32.3245
953401	J811	11.0920	PJM External (MISO)	11.0920
953651	J815	39.3050	PJM External (MISO)	39.3050
953741	J826 C	3.1599	PJM External (MISO)	3.1599
953742	J826 E	17.0961	PJM External (MISO)	17.0961
953851	J845 C	3.1107	PJM External (MISO)	3.1107
953852	J845 E	16.8297	PJM External (MISO)	16.8297
953881	J848 C	6.0115	PJM External (MISO)	6.0115
953882	J848 E	32.5235	PJM External (MISO)	32.5235
954411	J912	14.8130	PJM External (MISO)	14.8130
954721	J750 C	3.9815	PJM External (MISO)	3.9815
954722	J750 E	21.5410	PJM External (MISO)	21.5410
954821	J955	187.1064	PJM External (MISO)	187.1064
955031	J979 C	4.8092	PJM External (MISO)	4.8092
955032	J979 E	26.0188	PJM External (MISO)	26.0188
955401	J1022 C	4.7399	PJM External (MISO)	4.7399
955402	J1022 E	25.6441	PJM External (MISO)	25.6441
955711	J1055 C	2.3738	PJM External (MISO)	2.3738
955712	J1055 E	12.8427	PJM External (MISO)	12.8427
956151	J1102	12.1114	PJM External (MISO)	12.1114
956281	J1115 C	7.6640	PJM External (MISO)	7.6640
956282	J1115 E	41.4640	PJM External (MISO)	41.4640
956451	J1139	17.9130	PJM External (MISO)	17.9130
957381	AF2-032 C	2.8070	50/50	2.8070
957382	AF2-032 E	1.3210	50/50	1.3210
958013	AF2-095 BAT	4.5372	50/50	4.5372
958023	AF2-096 BAT	9.0533	50/50	9.0533
959341	AF2-225 C	27.6803	50/50	27.6803
959342	AF2-225 E	38.2252	50/50	38.2252
959611	AF2-252 C	8.1770	50/50	8.1770
959612	AF2-252 E	12.2655	50/50	12.2655
960141	AF2-305	2.5287	50/50	2.5287
960261	AF2-317	3.8819	50/50	3.8819
960603	AF2-351 BAT	2.2686	50/50	2.2686
960611	AF2-352 C	8.1770	50/50	8.1770
960612	AF2-352 E	12.2655	50/50	12.2655
963831	AG1-236 C	6.9194	50/50	6.9194
963832	AG1-236 E	46.3066	50/50	46.3066
964581	AG1-321 C O2	72.4474	50/50	72.4474
964582	AG1-321 E O2	42.1846	50/50	42.1846
965091	AG1-374 C	73.5930	50/50	73.5930
965092	AG1-374 E	49.0620	50/50	49.0620
965331	AG1-398	2.0147	50/50	2.0147
965341	AG1-399 C O2	15.4218	50/50	15.4218
965342	AG1-399 E O2	72.2022	50/50	72.2022
965351	AG1-400 O2	43.8120	50/50	43.8120

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965361	AG1-401 C O2	15.4218	50/50	15.4218
965362	AG1-401 E O2	72.2022	50/50	72.2022
965371	AG1-402 O2	43.8120	50/50	43.8120
965381	AG1-403 C O2	10.2812	50/50	10.2812
965382	AG1-403 E O2	48.1348	50/50	48.1348
965391	AG1-404 O2	29.2080	50/50	29.2080
965911	AG1-460 C	2.4479	50/50	2.4479
965912	AG1-460 E	3.6718	50/50	3.6718
LGEE	LGEE	1.6135	Confirmed LTF	1.6135
CPLE	CPLE	1.2237	Confirmed LTF	1.2237
G-007A	G-007A	1.8748	Confirmed LTF	1.8748
VFT	VFT	5.0374	Confirmed LTF	5.0374
CBM-W2	CBM-W2	49.5309	Confirmed LTF	49.5309
TVA	TVA	5.4642	Confirmed LTF	5.4642
SIGE	SIGE	0.3583	Confirmed LTF	0.3583
CBM-S2	CBM-S2	21.8092	Confirmed LTF	21.8092
CBM-S1	CBM-S1	1.3908	Confirmed LTF	1.3908
CBM-N	CBM-N	0.9324	Confirmed LTF	0.9324
MEC	MEC	3.2559	Confirmed LTF	3.2559
LAGN	LAGN	7.3010	Confirmed LTF	7.3010

13.5.2 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
174289534	270852	PONTIAC ; B	CE	964580	AG1-321 TAP	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	189.46	192.33	DC	43.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	18.1264	50/50	18.1264
274651	KINCAID ;2U	18.1211	50/50	18.1211
274853	TWINGROVE;U1	2.2461	50/50	2.2461
274854	TWINGROVE;U2	2.3106	50/50	2.3106
274880	RADFORD R;1U	2.0829	50/50	2.0829
274889	BRIGHTSTK;1U	1.8033	50/50	1.8033
276615	W2-048 GEN	12.2215	50/50	12.2215
276621	X2-022 GEN	45.8430	50/50	45.8430
290261	S-027 E	64.7999	50/50	64.7999
290265	S-028 E	64.7999	50/50	64.7999
293798	W4-005 E	88.4107	50/50	88.4107
917502	Z2-087 E	76.4921	50/50	76.4921
924041	AB2-047 C O1	2.2544	50/50	2.2544
924042	AB2-047 E O1	95.6152	50/50	95.6152
924261	AB2-070 C O1	7.1526	50/50	7.1526
924262	AB2-070 E O1	43.3200	50/50	43.3200
925771	AC1-053 C	6.9256	50/50	6.9256
925772	AC1-053 E	46.3484	50/50	46.3484
935001	AD1-133 C O1	90.2016	50/50	90.2016
935002	AD1-133 E O1	60.1344	50/50	60.1344
935141	AD1-148	12.1422	50/50	12.1422
936771	AD2-100 C	24.9089	50/50	24.9089
936772	AD2-100 E	16.6060	50/50	16.6060
936971	AD2-131 C	1.6408	50/50	1.6408
936972	AD2-131 E	8.2437	50/50	8.2437
937211	AD2-159 C	9.5542	50/50	9.5542
937212	AD2-159 E	44.7308	50/50	44.7308
939741	AE1-205 C O1	36.9272	50/50	36.9272
939742	AE1-205 E O1	50.9948	50/50	50.9948
941731	AE2-173 O1	21.9805	50/50	21.9805
942111	AE2-223 C	8.5724	50/50	8.5724
942112	AE2-223 E	57.3691	50/50	57.3691
942481	AE2-261 C	36.6389	50/50	36.6389
942482	AE2-261 E	24.4259	50/50	24.4259
944221	AF1-090 C O1	6.2846	50/50	6.2846
944222	AF1-090 E O1	29.4234	50/50	29.4234
945871	AF1-252 O1	11.1409	50/50	11.1409
945881	AF1-253	7.7129	50/50	7.7129
951741	J474 C	5.3464	PJM External (MISO)	5.3464
951742	J474 E	28.9256	PJM External (MISO)	28.9256
952651	J756 C	4.8438	PJM External (MISO)	4.8438

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
952652	J756 E	26.2064	PJM External (MISO)	26.2064
952871	J757 C	5.9747	PJM External (MISO)	5.9747
952872	J757 E	32.3245	PJM External (MISO)	32.3245
953401	J811	11.0920	PJM External (MISO)	11.0920
953651	J815	39.3050	PJM External (MISO)	39.3050
953741	J826 C	3.1599	PJM External (MISO)	3.1599
953742	J826 E	17.0961	PJM External (MISO)	17.0961
953851	J845 C	3.1107	PJM External (MISO)	3.1107
953852	J845 E	16.8297	PJM External (MISO)	16.8297
953881	J848 C	6.0115	PJM External (MISO)	6.0115
953882	J848 E	32.5235	PJM External (MISO)	32.5235
954411	J912	14.8130	PJM External (MISO)	14.8130
954721	J750 C	3.9815	PJM External (MISO)	3.9815
954722	J750 E	21.5410	PJM External (MISO)	21.5410
954821	J955	187.1064	PJM External (MISO)	187.1064
955031	J979 C	4.8092	PJM External (MISO)	4.8092
955032	J979 E	26.0188	PJM External (MISO)	26.0188
955401	J1022 C	4.7399	PJM External (MISO)	4.7399
955402	J1022 E	25.6441	PJM External (MISO)	25.6441
955711	J1055 C	2.3738	PJM External (MISO)	2.3738
955712	J1055 E	12.8427	PJM External (MISO)	12.8427
956151	J1102	12.1114	PJM External (MISO)	12.1114
956281	J1115 C	7.6640	PJM External (MISO)	7.6640
956282	J1115 E	41.4640	PJM External (MISO)	41.4640
956451	J1139	17.9130	PJM External (MISO)	17.9130
957381	AF2-032 C	2.8103	50/50	2.8103
957382	AF2-032 E	1.3225	50/50	1.3225
958013	AF2-095 BAT	4.5280	50/50	4.5280
958023	AF2-096 BAT	9.0353	50/50	9.0353
959341	AF2-225 C	27.6954	50/50	27.6954
959342	AF2-225 E	38.2461	50/50	38.2461
959611	AF2-252 C	8.1818	50/50	8.1818
959612	AF2-252 E	12.2727	50/50	12.2727
960141	AF2-305	2.5309	50/50	2.5309
960261	AF2-317	3.8855	50/50	3.8855
960603	AF2-351 BAT	2.2640	50/50	2.2640
960611	AF2-352 C	8.1818	50/50	8.1818
960612	AF2-352 E	12.2727	50/50	12.2727
963831	AG1-236 C	6.9256	50/50	6.9256
963832	AG1-236 E	46.3484	50/50	46.3484
965091	AG1-374 C	73.6362	50/50	73.6362
965092	AG1-374 E	49.0908	50/50	49.0908
965331	AG1-398	2.0165	50/50	2.0165
965341	AG1-399 C O2	15.4345	50/50	15.4345
965342	AG1-399 E O2	72.2615	50/50	72.2615
965351	AG1-400 O2	43.8480	50/50	43.8480
965361	AG1-401 C O2	15.4345	50/50	15.4345
965362	AG1-401 E O2	72.2615	50/50	72.2615
965371	AG1-402 O2	43.8480	50/50	43.8480
965381	AG1-403 C O2	10.2897	50/50	10.2897
965382	AG1-403 E O2	48.1743	50/50	48.1743
965391	AG1-404 O2	29.2320	50/50	29.2320

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965911	AG1-460 C	2.4508	50/50	2.4508
965912	AG1-460 E	3.6761	50/50	3.6761
LGEE	LGEE	1.6286	Confirmed LTF	1.6286
CPLE	CPLE	1.2401	Confirmed LTF	1.2401
G-007A	G-007A	1.9324	Confirmed LTF	1.9324
VFT	VFT	5.1923	Confirmed LTF	5.1923
CBM-W2	CBM-W2	49.7459	Confirmed LTF	49.7459
TVA	TVA	5.4978	Confirmed LTF	5.4978
SIGE	SIGE	0.3583	Confirmed LTF	0.3583
CBM-S2	CBM-S2	22.0597	Confirmed LTF	22.0597
CBM-S1	CBM-S1	1.3999	Confirmed LTF	1.3999
CBM-N	CBM-N	0.9612	Confirmed LTF	0.9612
MEC	MEC	3.2940	Confirmed LTF	3.2940
LAGN	LAGN	7.3430	Confirmed LTF	7.3430

13.5.3 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
174289726	924260	AB2-070 TAP	CE	965340	AG1-399 TAP	CE	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	115.01	117.94	DC	43.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	28.2677	50/50	28.2677
274651	KINCAID ;2U	28.2677	50/50	28.2677
276615	W2-048 GEN	24.2689	50/50	24.2689
276621	X2-022 GEN	91.0329	50/50	91.0329
924261	AB2-070 C O1	16.2620	50/50	16.2620
924262	AB2-070 E O1	98.4912	50/50	98.4912
925771	AC1-053 C	15.1520	50/50	15.1520
925772	AC1-053 E	101.4020	50/50	101.4020
935141	AD1-148	24.1114	50/50	24.1114
936771	AD2-100 C	35.1742	50/50	35.1742
936772	AD2-100 E	23.4494	50/50	23.4494
936971	AD2-131 C	2.3170	50/50	2.3170
936972	AD2-131 E	11.6410	50/50	11.6410
941732	AE2-173 BAT	5.7465	50/50	5.7465
942481	AE2-261 C	55.7288	50/50	55.7288
942482	AE2-261 E	37.1525	50/50	37.1525
944221	AF1-090 C O1	6.5796	50/50	6.5796
944222	AF1-090 E O1	30.8044	50/50	30.8044
945871	AF1-252 O1	11.6638	50/50	11.6638
945881	AF1-253	8.0749	50/50	8.0749
952871	J757 C	3.6156	PJM External (MISO)	3.6156
952872	J757 E	19.5612	PJM External (MISO)	19.5612
953401	J811	7.8002	PJM External (MISO)	7.8002
953651	J815	28.8650	PJM External (MISO)	28.8650
953881	J848 C	5.3450	PJM External (MISO)	5.3450
953882	J848 E	28.9175	PJM External (MISO)	28.9175
954411	J912	11.5480	PJM External (MISO)	11.5480
954721	J750 C	3.3286	PJM External (MISO)	3.3286
954722	J750 E	18.0089	PJM External (MISO)	18.0089
954821	J955	117.5512	PJM External (MISO)	117.5512
955031	J979 C	4.2760	PJM External (MISO)	4.2760
955032	J979 E	23.1340	PJM External (MISO)	23.1340
957381	AF2-032 C	4.3826	50/50	4.3826
957382	AF2-032 E	2.0624	50/50	2.0624
960141	AF2-305	5.7542	50/50	5.7542
960261	AF2-317	7.7157	50/50	7.7157
963831	AG1-236 C	15.1520	50/50	15.1520
963832	AG1-236 E	101.4020	50/50	101.4020
965331	AG1-398	4.5846	50/50	4.5846
965352	AG1-400 BAT	43.5615	50/50	43.5615
965372	AG1-402 BAT	43.5615	50/50	43.5615

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965392	AG1-404 BAT	29.0410	50/50	29.0410
965911	AG1-460 C	3.7277	50/50	3.7277
965912	AG1-460 E	5.5915	50/50	5.5915
LGEE	LGEE	0.3500	Confirmed LTF	0.3500
CPLE	CPLE	0.4395	Confirmed LTF	0.4395
G-007A	G-007A	0.3021	Confirmed LTF	0.3021
VFT	VFT	0.8127	Confirmed LTF	0.8127
CBM-W2	CBM-W2	19.3984	Confirmed LTF	19.3984
TVA	TVA	2.5872	Confirmed LTF	2.5872
SIGE	SIGE	0.0945	Confirmed LTF	0.0945
CBM-S2	CBM-S2	8.4251	Confirmed LTF	8.4251
CBM-S1	CBM-S1	0.6133	Confirmed LTF	0.6133
CBM-N	CBM-N	0.1488	Confirmed LTF	0.1488
MEC	MEC	2.0021	Confirmed LTF	2.0021
LAGN	LAGN	3.7520	Confirmed LTF	3.7520

13.5.4 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
174467674	925770	AC1-053 TAP	CE	924260	AB2-070 TAP	CE	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	106.1	109.03	DC	43.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	28.2677	50/50	28.2677
274651	KINCAID ;2U	28.2677	50/50	28.2677
276615	W2-048 GEN	24.2689	50/50	24.2689
276621	X2-022 GEN	91.0329	50/50	91.0329
925771	AC1-053 C	15.1520	50/50	15.1520
925772	AC1-053 E	101.4020	50/50	101.4020
935141	AD1-148	24.1114	50/50	24.1114
936771	AD2-100 C	35.1742	50/50	35.1742
936772	AD2-100 E	23.4494	50/50	23.4494
936971	AD2-131 C	2.3170	50/50	2.3170
936972	AD2-131 E	11.6410	50/50	11.6410
941732	AE2-173 BAT	5.7465	50/50	5.7465
942481	AE2-261 C	55.7288	50/50	55.7288
942482	AE2-261 E	37.1525	50/50	37.1525
944221	AF1-090 C O1	6.5796	50/50	6.5796
944222	AF1-090 E O1	30.8044	50/50	30.8044
945871	AF1-252 O1	11.6638	50/50	11.6638
945881	AF1-253	8.0749	50/50	8.0749
952871	J757 C	3.6156	PJM External (MISO)	3.6156
952872	J757 E	19.5612	PJM External (MISO)	19.5612
953401	J811	7.8002	PJM External (MISO)	7.8002
953651	J815	28.8650	PJM External (MISO)	28.8650
953881	J848 C	5.3450	PJM External (MISO)	5.3450
953882	J848 E	28.9175	PJM External (MISO)	28.9175
954411	J912	11.5480	PJM External (MISO)	11.5480
954721	J750 C	3.3286	PJM External (MISO)	3.3286
954722	J750 E	18.0089	PJM External (MISO)	18.0089
954821	J955	117.5512	PJM External (MISO)	117.5512
955031	J979 C	4.2760	PJM External (MISO)	4.2760
955032	J979 E	23.1340	PJM External (MISO)	23.1340
957381	AF2-032 C	4.3826	50/50	4.3826
957382	AF2-032 E	2.0624	50/50	2.0624
959613	AF2-252 BAT	3.3590	Merchant Transmission	3.3590
960261	AF2-317	7.7157	50/50	7.7157
960613	AF2-352 BAT	3.3590	Merchant Transmission	3.3590
963831	AG1-236 C	15.1520	50/50	15.1520
963832	AG1-236 E	101.4020	50/50	101.4020
965352	AG1-400 BAT	43.5615	50/50	43.5615
965372	AG1-402 BAT	43.5615	50/50	43.5615
965392	AG1-404 BAT	29.0410	50/50	29.0410
965911	AG1-460 C	3.7277	50/50	3.7277

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965912	AG1-460 E	5.5915	50/50	5.5915
LGEE	LGEE	0.3500	Confirmed LTF	0.3500
CPLE	CPLE	0.4395	Confirmed LTF	0.4395
G-007A	G-007A	0.3021	Confirmed LTF	0.3021
VFT	VFT	0.8127	Confirmed LTF	0.8127
CBM-W2	CBM-W2	19.3984	Confirmed LTF	19.3984
TVA	TVA	2.5872	Confirmed LTF	2.5872
SIGE	SIGE	0.0945	Confirmed LTF	0.0945
CBM-S2	CBM-S2	8.4251	Confirmed LTF	8.4251
CBM-S1	CBM-S1	0.6133	Confirmed LTF	0.6133
CBM-N	CBM-N	0.1488	Confirmed LTF	0.1488
MEC	MEC	2.0021	Confirmed LTF	2.0021
LAGN	LAGN	3.7520	Confirmed LTF	3.7520

13.5.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
169731436	935000	AD1-133 TAP	CE	270717	DRESDEN ; R	CE	1	COMED_P1-2_345-L11212_B-S-B	single	1656.0	104.23	106.6	DC	39.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	15.5167	80/20	15.5167
274651	KINCAID ;2U	15.5097	80/20	15.5097
274853	TWINGROVE;U1	2.0586	80/20	2.0586
274854	TWINGROVE;U2	2.1177	80/20	2.1177
274863	CAYUGA RI;1U	1.6533	80/20	1.6533
274864	CAYUGA RI;2U	1.6533	80/20	1.6533
274880	RADFORD R;1U	1.8594	80/20	1.8594
274889	BRIGHTSTK;1U	1.6656	80/20	1.6656
924041	AB2-047 C O1	2.0823	80/20	2.0823
924261	AB2-070 C O1	6.3443	80/20	6.3443
925771	AC1-053 C	6.1186	80/20	6.1186
930461	AB1-087 CT1	15.3935	80/20	15.3935
930462	AB1-087 ST1	12.2385	80/20	12.2385
930471	AB1-088 CT1	15.3935	80/20	15.3935
930472	AB1-088 ST1	12.2385	80/20	12.2385
933446	AC2-157 1C	1.9091	80/20	1.9091
933447	AC2-157 2C	1.9091	80/20	1.9091
935001	AD1-133 C O1	122.2362	80/20	122.2362
935141	AD1-148	10.6276	80/20	10.6276
936771	AD2-100 C	21.2927	80/20	21.2927
936971	AD2-131 C	1.4026	80/20	1.4026
937211	AD2-159 C	8.5289	80/20	8.5289
939401	AE1-172 C O1	20.8660	80/20	20.8660
939741	AE1-205 C O1	34.1082	80/20	34.1082
940101	AE1-252 C O1	41.9184	80/20	41.9184
941731	AE2-173 O1	20.3025	80/20	20.3025
942111	AE2-223 C	7.9180	80/20	7.9180
942481	AE2-261 C	31.3519	80/20	31.3519
942601	AE2-276	2.5120	80/20	2.5120
944201	AF1-088 FTIR	50.2400	80/20	50.2400
944221	AF1-090 C O1	5.3532	80/20	5.3532
945391	AF1-204 C O1	3.8543	80/20	3.8543
945871	AF1-252 O1	9.4898	80/20	9.4898
945881	AF1-253	6.5699	80/20	6.5699
951741	J474 C	4.9093	PJM External (MISO)	4.9093
952651	J756 C	3.8887	PJM External (MISO)	3.8887
952871	J757 C	4.7759	PJM External (MISO)	4.7759
953401	J811	10.2831	PJM External (MISO)	10.2831
953651	J815	35.4825	PJM External (MISO)	35.4825
953741	J826 C	2.9615	PJM External (MISO)	2.9615
953851	J845 C	2.9548	PJM External (MISO)	2.9548

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
953881	J848 C	5.4760	PJM External (MISO)	5.4760
954411	J912	13.5210	PJM External (MISO)	13.5210
954721	J750 C	3.4323	PJM External (MISO)	3.4323
954821	J955	168.0224	PJM External (MISO)	168.0224
955031	J979 C	4.3808	PJM External (MISO)	4.3808
955401	J1022 C	4.4423	PJM External (MISO)	4.4423
956151	J1102	10.1899	PJM External (MISO)	10.1899
956281	J1115 C	7.1133	PJM External (MISO)	7.1133
956451	J1139	17.3610	PJM External (MISO)	17.3610
957141	AF2-008 FTIR	25.1200	80/20	25.1200
957381	AF2-032 C	2.4057	80/20	2.4057
959341	AF2-225 C	25.5811	80/20	25.5811
959611	AF2-252 C	7.4988	80/20	7.4988
960141	AF2-305	2.2449	80/20	2.2449
960261	AF2-317	3.4008	80/20	3.4008
960611	AF2-352 C	7.4988	80/20	7.4988
963831	AG1-236 C	6.1186	80/20	6.1186
964581	AG1-321 C O2	58.8695	80/20	58.8695
965091	AG1-374 C	67.4892	80/20	67.4892
965331	AG1-398	1.7886	80/20	1.7886
965341	AG1-399 C O2	13.7871	80/20	13.7871
965351	AG1-400 O2	39.1680	80/20	39.1680
965361	AG1-401 C O2	13.7871	80/20	13.7871
965371	AG1-402 O2	39.1680	80/20	39.1680
965381	AG1-403 C O2	9.1914	80/20	9.1914
965391	AG1-404 O2	26.1120	80/20	26.1120
965911	AG1-460 C	2.0971	80/20	2.0971
LGEE	LGEE	1.4784	Confirmed LTF	1.4784
CPLE	CPLE	1.0770	Confirmed LTF	1.0770
G-007A	G-007A	2.0642	Confirmed LTF	2.0642
VFT	VFT	5.5470	Confirmed LTF	5.5470
CBM-W2	CBM-W2	38.0710	Confirmed LTF	38.0710
TVA	TVA	4.2588	Confirmed LTF	4.2588
SIGE	SIGE	0.2972	Confirmed LTF	0.2972
CBM-S2	CBM-S2	18.6145	Confirmed LTF	18.6145
CBM-S1	CBM-S1	1.1085	Confirmed LTF	1.1085
CBM-N	CBM-N	1.0284	Confirmed LTF	1.0284
LAGN	LAGN	5.2238	Confirmed LTF	5.2238

13.5.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
174289707	936770	AD2-100 TAP	CE	944220	AF1-090 TAP	CE	1	COMED_P4_021-45-BT5-7__	breaker	1201.0	111.66	114.23	DC	30.75

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	47.4081	50/50	47.4081
274651	KINCAID ;2U	47.4081	50/50	47.4081
276615	W2-048 GEN	16.7801	50/50	16.7801
276621	X2-022 GEN	62.9425	50/50	62.9425
290261	S-027 E	10.0266	Adder	11.8
290265	S-028 E	10.0266	Adder	11.8
293798	W4-005 E	19.9475	Adder	23.47
917502	Z2-087 E	13.8789	Adder	16.33
924042	AB2-047 E O1	17.3487	Adder	20.41
924261	AB2-070 C O1	6.6898	50/50	6.6898
924262	AB2-070 E O1	40.5170	50/50	40.5170
925771	AC1-053 C	7.3798	50/50	7.3798
925772	AC1-053 E	49.3882	50/50	49.3882
935141	AD1-148	16.6713	50/50	16.6713
936771	AD2-100 C	76.5236	50/50	76.5236
936772	AD2-100 E	51.0157	50/50	51.0157
936971	AD2-131 C	5.0408	50/50	5.0408
936972	AD2-131 E	25.3257	50/50	25.3257
937211	AD2-159 C	2.1556	Adder	2.54
937212	AD2-159 E	10.0923	Adder	11.87
939741	AE1-205 C O1	6.7002	Adder	7.88
939742	AE1-205 E O1	9.2526	Adder	10.89
941731	AE2-173 O1	3.9882	Adder	4.69
942111	AE2-223 C	1.5554	Adder	1.83
942112	AE2-223 E	10.4092	Adder	12.25
942481	AE2-261 C	100.1895	50/50	100.1895
942482	AE2-261 E	66.7930	50/50	66.7930
945872	AF1-252 BAT	15.5682	50/50	15.5682
945882	AF1-253 BAT	10.7780	50/50	10.7780
951741	J474 C	2.0220	PJM External (MISO)	2.0220
951742	J474 E	10.9395	PJM External (MISO)	10.9395
952651	J756 C	2.2566	PJM External (MISO)	2.2566
952652	J756 E	12.2089	PJM External (MISO)	12.2089
953741	J826 C	1.1926	PJM External (MISO)	1.1926
953742	J826 E	6.4524	PJM External (MISO)	6.4524
955401	J1022 C	1.7889	PJM External (MISO)	1.7889
955402	J1022 E	9.6786	PJM External (MISO)	9.6786
955711	J1055 C	1.6183	PJM External (MISO)	1.6183
955712	J1055 E	8.7555	PJM External (MISO)	8.7555
956151	J1102	5.6210	PJM External (MISO)	5.6210
956281	J1115 C	2.5774	PJM External (MISO)	2.5774

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
956282	J1115 E	13.9446	PJM External (MISO)	13.9446
957381	AF2-032 C	7.3501	50/50	7.3501
957382	AF2-032 E	3.4589	50/50	3.4589
959341	AF2-225 C	5.0251	Adder	5.91
959342	AF2-225 E	6.9395	Adder	8.16
959611	AF2-252 C	1.2660	Adder	1.49
959612	AF2-252 E	1.8990	Adder	2.23
960141	AF2-305	2.3672	50/50	2.3672
960261	AF2-317	5.3348	50/50	5.3348
960611	AF2-352 C	1.2660	Adder	1.49
960612	AF2-352 E	1.8990	Adder	2.23
963831	AG1-236 C	7.3798	50/50	7.3798
963832	AG1-236 E	49.3882	50/50	49.3882
965091	AG1-374 C	6.0388	Adder	13.4
965092	AG1-374 E	4.0258	Adder	8.94
965331	AG1-398	1.8860	50/50	1.8860
965341	AG1-399 C O2	10.8240	50/50	10.8240
965342	AG1-399 E O2	50.6760	50/50	50.6760
965351	AG1-400 O2	30.7500	50/50	30.7500
965361	AG1-401 C O2	10.8240	50/50	10.8240
965362	AG1-401 E O2	50.6760	50/50	50.6760
965371	AG1-402 O2	30.7500	50/50	30.7500
965381	AG1-403 C O2	7.2160	50/50	7.2160
965382	AG1-403 E O2	33.7840	50/50	33.7840
965391	AG1-404 O2	20.5000	50/50	20.5000
965911	AG1-460 C	6.7016	50/50	6.7016
965912	AG1-460 E	10.0525	50/50	10.0525
WEC	WEC	0.5131	Confirmed LTF	0.5131
CALDERWOOD	CALDERWOOD	0.9264	Confirmed LTF	0.9264
NY	NY	0.3904	Confirmed LTF	0.3904
PRAIRIE	PRAIRIE	14.0464	Confirmed LTF	14.0464
O-066	O-066	4.8994	Confirmed LTF	4.8994
CHEOAH	CHEOAH	0.9264	Confirmed LTF	0.9264
COTTONWOOD	COTTONWOOD	5.6658	Confirmed LTF	5.6658
G-007	G-007	0.7655	Confirmed LTF	0.7655
HAMLET	HAMLET	0.7756	Confirmed LTF	0.7756
GIBSON	GIBSON	0.9812	Confirmed LTF	0.9812
BLUEG	BLUEG	2.1301	Confirmed LTF	2.1301
TRIMBLE	TRIMBLE	0.6583	Confirmed LTF	0.6583
CATAWBA	CATAWBA	0.4973	Confirmed LTF	0.4973
CBM-W1	CBM-W1	2.4815	Confirmed LTF	2.4815

13.5.7 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
174289519	939400	AE1-172 TAP	CE	934720	AD1-100 TAP	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	226.86	229.73	DC	43.81

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	18.1054	50/50	18.1054
274651	KINCAID ;2U	18.1001	50/50	18.1001
274853	TWINGROVE;U1	2.2447	50/50	2.2447
274854	TWINGROVE;U2	2.3092	50/50	2.3092
274863	CAYUGA RI;1U	2.1614	50/50	2.1614
274864	CAYUGA RI;2U	2.1614	50/50	2.1614
274880	RADFORD R;1U	2.0812	50/50	2.0812
274889	BRIGHTSTK;1U	1.8023	50/50	1.8023
276615	W2-048 GEN	12.2102	50/50	12.2102
276621	X2-022 GEN	45.8004	50/50	45.8004
290261	S-027 E	64.7618	50/50	64.7618
290265	S-028 E	64.7618	50/50	64.7618
293777	CAYUG;1U E	73.0668	50/50	73.0668
293778	CAYUG;2U E	73.0668	50/50	73.0668
293798	W4-005 E	88.3374	50/50	88.3374
917502	Z2-087 E	76.4504	50/50	76.4504
924041	AB2-047 C O1	2.2531	50/50	2.2531
924042	AB2-047 E O1	95.5630	50/50	95.5630
924261	AB2-070 C O1	7.1464	50/50	7.1464
924262	AB2-070 E O1	43.2822	50/50	43.2822
925771	AC1-053 C	6.9194	50/50	6.9194
925772	AC1-053 E	46.3066	50/50	46.3066
935001	AD1-133 C O1	90.1584	50/50	90.1584
935002	AD1-133 E O1	60.1056	50/50	60.1056
935141	AD1-148	12.1309	50/50	12.1309
936771	AD2-100 C	24.8800	50/50	24.8800
936772	AD2-100 E	16.5866	50/50	16.5866
936971	AD2-131 C	1.6389	50/50	1.6389
936972	AD2-131 E	8.2341	50/50	8.2341
937211	AD2-159 C	9.5462	50/50	9.5462
937212	AD2-159 E	44.6938	50/50	44.6938
939401	AE1-172 C O1	29.9936	50/50	29.9936
939402	AE1-172 E O1	140.7289	50/50	140.7289
939741	AE1-205 C O1	36.9071	50/50	36.9071
939742	AE1-205 E O1	50.9669	50/50	50.9669
940101	AE1-252 C O1	60.2550	50/50	60.2550
940102	AE1-252 E O1	40.1700	50/50	40.1700
941731	AE2-173 O1	21.9685	50/50	21.9685
942111	AE2-223 C	8.5677	50/50	8.5677
942112	AE2-223 E	57.3378	50/50	57.3378
942481	AE2-261 C	36.5958	50/50	36.5958

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942482	AE2-261 E	24.3972	50/50	24.3972
944221	AF1-090 C O1	6.2762	50/50	6.2762
944222	AF1-090 E O1	29.3838	50/50	29.3838
945871	AF1-252 O1	11.1259	50/50	11.1259
945881	AF1-253	7.7026	50/50	7.7026
951741	J474 C	5.3464	PJM External (MISO)	5.3464
951742	J474 E	28.9256	PJM External (MISO)	28.9256
952651	J756 C	4.8438	PJM External (MISO)	4.8438
952652	J756 E	26.2064	PJM External (MISO)	26.2064
952871	J757 C	5.9747	PJM External (MISO)	5.9747
952872	J757 E	32.3245	PJM External (MISO)	32.3245
953401	J811	11.0920	PJM External (MISO)	11.0920
953651	J815	39.3050	PJM External (MISO)	39.3050
953741	J826 C	3.1599	PJM External (MISO)	3.1599
953742	J826 E	17.0961	PJM External (MISO)	17.0961
953851	J845 C	3.1107	PJM External (MISO)	3.1107
953852	J845 E	16.8297	PJM External (MISO)	16.8297
953881	J848 C	6.0115	PJM External (MISO)	6.0115
953882	J848 E	32.5235	PJM External (MISO)	32.5235
954411	J912	14.8130	PJM External (MISO)	14.8130
954721	J750 C	3.9815	PJM External (MISO)	3.9815
954722	J750 E	21.5410	PJM External (MISO)	21.5410
954821	J955	187.1064	PJM External (MISO)	187.1064
955031	J979 C	4.8092	PJM External (MISO)	4.8092
955032	J979 E	26.0188	PJM External (MISO)	26.0188
955401	J1022 C	4.7399	PJM External (MISO)	4.7399
955402	J1022 E	25.6441	PJM External (MISO)	25.6441
955711	J1055 C	2.3738	PJM External (MISO)	2.3738
955712	J1055 E	12.8427	PJM External (MISO)	12.8427
956151	J1102	12.1114	PJM External (MISO)	12.1114
956281	J1115 C	7.6640	PJM External (MISO)	7.6640
956282	J1115 E	41.4640	PJM External (MISO)	41.4640
956451	J1139	17.9130	PJM External (MISO)	17.9130
957381	AF2-032 C	2.8070	50/50	2.8070
957382	AF2-032 E	1.3210	50/50	1.3210
958013	AF2-095 BAT	4.5372	50/50	4.5372
958023	AF2-096 BAT	9.0533	50/50	9.0533
959341	AF2-225 C	27.6803	50/50	27.6803
959342	AF2-225 E	38.2252	50/50	38.2252
959611	AF2-252 C	8.1770	50/50	8.1770
959612	AF2-252 E	12.2655	50/50	12.2655
960141	AF2-305	2.5287	50/50	2.5287
960261	AF2-317	3.8819	50/50	3.8819
960603	AF2-351 BAT	2.2686	50/50	2.2686
960611	AF2-352 C	8.1770	50/50	8.1770
960612	AF2-352 E	12.2655	50/50	12.2655
963831	AG1-236 C	6.9194	50/50	6.9194
963832	AG1-236 E	46.3066	50/50	46.3066
964581	AG1-321 C O2	72.4474	50/50	72.4474
964582	AG1-321 E O2	42.1846	50/50	42.1846
965091	AG1-374 C	73.5930	50/50	73.5930
965092	AG1-374 E	49.0620	50/50	49.0620

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965331	AG1-398	2.0147	50/50	2.0147
965341	AG1-399 C O2	15.4218	50/50	15.4218
965342	AG1-399 E O2	72.2022	50/50	72.2022
965351	AG1-400 O2	43.8120	50/50	43.8120
965361	AG1-401 C O2	15.4218	50/50	15.4218
965362	AG1-401 E O2	72.2022	50/50	72.2022
965371	AG1-402 O2	43.8120	50/50	43.8120
965381	AG1-403 C O2	10.2812	50/50	10.2812
965382	AG1-403 E O2	48.1348	50/50	48.1348
965391	AG1-404 O2	29.2080	50/50	29.2080
965911	AG1-460 C	2.4479	50/50	2.4479
965912	AG1-460 E	3.6718	50/50	3.6718
LGEE	LGEE	1.6135	Confirmed LTF	1.6135
CPLE	CPLE	1.2237	Confirmed LTF	1.2237
G-007A	G-007A	1.8748	Confirmed LTF	1.8748
VFT	VFT	5.0374	Confirmed LTF	5.0374
CBM-W2	CBM-W2	49.5309	Confirmed LTF	49.5309
TVA	TVA	5.4642	Confirmed LTF	5.4642
SIGE	SIGE	0.3583	Confirmed LTF	0.3583
CBM-S2	CBM-S2	21.8092	Confirmed LTF	21.8092
CBM-S1	CBM-S1	1.3908	Confirmed LTF	1.3908
CBM-N	CBM-N	0.9324	Confirmed LTF	0.9324
MEC	MEC	3.2559	Confirmed LTF	3.2559
LAGN	LAGN	7.3010	Confirmed LTF	7.3010

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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
174289771	942480	AE2-261 TAP	CE	936770	AD2-100 TAP	CE	1	COMED_P4_021-45-BT5-7__	breaker	1201.0	101.44	104.0	DC	30.75

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	47.4081	50/50	47.4081
274651	KINCAID ;2U	47.4081	50/50	47.4081
276615	W2-048 GEN	16.7801	50/50	16.7801
276621	X2-022 GEN	62.9425	50/50	62.9425
290261	S-027 E	10.0266	Adder	11.8
290265	S-028 E	10.0266	Adder	11.8
293798	W4-005 E	19.9475	Adder	23.47
917502	Z2-087 E	13.8789	Adder	16.33
924042	AB2-047 E O1	17.3487	Adder	20.41
924261	AB2-070 C O1	6.6898	50/50	6.6898
924262	AB2-070 E O1	40.5170	50/50	40.5170
925771	AC1-053 C	7.3798	50/50	7.3798
925772	AC1-053 E	49.3882	50/50	49.3882
935141	AD1-148	16.6713	50/50	16.6713
936973	AD2-131 BAT	19.6335	50/50	19.6335
937211	AD2-159 C	2.1556	Adder	2.54
937212	AD2-159 E	10.0923	Adder	11.87
939741	AE1-205 C O1	6.7002	Adder	7.88
939742	AE1-205 E O1	9.2526	Adder	10.89
941731	AE2-173 O1	3.9882	Adder	4.69
942111	AE2-223 C	1.5554	Adder	1.83
942112	AE2-223 E	10.4092	Adder	12.25
942481	AE2-261 C	100.1895	50/50	100.1895
942482	AE2-261 E	66.7930	50/50	66.7930
945872	AF1-252 BAT	15.5682	50/50	15.5682
945882	AF1-253 BAT	10.7780	50/50	10.7780
951741	J474 C	2.0220	PJM External (MISO)	2.0220
951742	J474 E	10.9395	PJM External (MISO)	10.9395
952651	J756 C	2.2566	PJM External (MISO)	2.2566
952652	J756 E	12.2089	PJM External (MISO)	12.2089
953741	J826 C	1.1926	PJM External (MISO)	1.1926
953742	J826 E	6.4524	PJM External (MISO)	6.4524
954721	J750 C	1.4871	PJM External (MISO)	1.4871
954722	J750 E	8.0454	PJM External (MISO)	8.0454
955401	J1022 C	1.7889	PJM External (MISO)	1.7889
955402	J1022 E	9.6786	PJM External (MISO)	9.6786
955711	J1055 C	1.6183	PJM External (MISO)	1.6183
955712	J1055 E	8.7555	PJM External (MISO)	8.7555
956151	J1102	5.6210	PJM External (MISO)	5.6210
956281	J1115 C	2.5774	PJM External (MISO)	2.5774
956282	J1115 E	13.9446	PJM External (MISO)	13.9446

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957381	AF2-032 C	7.3501	50/50	7.3501
957382	AF2-032 E	3.4589	50/50	3.4589
959341	AF2-225 C	5.0251	Adder	5.91
959342	AF2-225 E	6.9395	Adder	8.16
959611	AF2-252 C	1.2660	Adder	1.49
959612	AF2-252 E	1.8990	Adder	2.23
960141	AF2-305	2.3672	50/50	2.3672
960261	AF2-317	5.3348	50/50	5.3348
960611	AF2-352 C	1.2660	Adder	1.49
960612	AF2-352 E	1.8990	Adder	2.23
963831	AG1-236 C	7.3798	50/50	7.3798
963832	AG1-236 E	49.3882	50/50	49.3882
964581	AG1-321 C O2	3.6495	Adder	8.1
964582	AG1-321 E O2	2.1250	Adder	4.72
965091	AG1-374 C	6.0388	Adder	13.4
965092	AG1-374 E	4.0258	Adder	8.94
965331	AG1-398	1.8860	50/50	1.8860
965341	AG1-399 C O2	10.8240	50/50	10.8240
965342	AG1-399 E O2	50.6760	50/50	50.6760
965351	AG1-400 O2	30.7500	50/50	30.7500
965361	AG1-401 C O2	10.8240	50/50	10.8240
965362	AG1-401 E O2	50.6760	50/50	50.6760
965371	AG1-402 O2	30.7500	50/50	30.7500
965381	AG1-403 C O2	7.2160	50/50	7.2160
965382	AG1-403 E O2	33.7840	50/50	33.7840
965391	AG1-404 O2	20.5000	50/50	20.5000
965911	AG1-460 C	6.7016	50/50	6.7016
965912	AG1-460 E	10.0525	50/50	10.0525
WEC	WEC	0.5131	Confirmed LTF	0.5131
CALDERWOOD	CALDERWOOD	0.9264	Confirmed LTF	0.9264
NY	NY	0.3904	Confirmed LTF	0.3904
PRAIRIE	PRAIRIE	14.0464	Confirmed LTF	14.0464
O-066	O-066	4.8994	Confirmed LTF	4.8994
CHEOAH	CHEOAH	0.9264	Confirmed LTF	0.9264
COTTONWOOD	COTTONWOOD	5.6658	Confirmed LTF	5.6658
G-007	G-007	0.7655	Confirmed LTF	0.7655
HAMLET	HAMLET	0.7756	Confirmed LTF	0.7756
GIBSON	GIBSON	0.9812	Confirmed LTF	0.9812
BLUEG	BLUEG	2.1301	Confirmed LTF	2.1301
TRIMBLE	TRIMBLE	0.6583	Confirmed LTF	0.6583
CATAWBA	CATAWBA	0.4973	Confirmed LTF	0.4973
CBM-W1	CBM-W1	2.4815	Confirmed LTF	2.4815

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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
174289529	964580	AG1-321 TAP	CE	270704	LORETTO ; B	CE	1	COMED_P4_012-45-BT12-14	breaker	1528.0	196.95	199.82	DC	43.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	18.1264	50/50	18.1264
274651	KINCAID ;2U	18.1211	50/50	18.1211
274853	TWINGROVE;U1	2.2461	50/50	2.2461
274854	TWINGROVE;U2	2.3106	50/50	2.3106
274880	RADFORD R;1U	2.0829	50/50	2.0829
274889	BRIGHTSTK;1U	1.8033	50/50	1.8033
276615	W2-048 GEN	12.2215	50/50	12.2215
276621	X2-022 GEN	45.8430	50/50	45.8430
290261	S-027 E	64.7999	50/50	64.7999
290265	S-028 E	64.7999	50/50	64.7999
293798	W4-005 E	88.4107	50/50	88.4107
917502	Z2-087 E	76.4921	50/50	76.4921
924041	AB2-047 C O1	2.2544	50/50	2.2544
924042	AB2-047 E O1	95.6152	50/50	95.6152
924261	AB2-070 C O1	7.1526	50/50	7.1526
924262	AB2-070 E O1	43.3200	50/50	43.3200
925771	AC1-053 C	6.9256	50/50	6.9256
925772	AC1-053 E	46.3484	50/50	46.3484
935001	AD1-133 C O1	90.2016	50/50	90.2016
935002	AD1-133 E O1	60.1344	50/50	60.1344
935141	AD1-148	12.1422	50/50	12.1422
936771	AD2-100 C	24.9089	50/50	24.9089
936772	AD2-100 E	16.6060	50/50	16.6060
936971	AD2-131 C	1.6408	50/50	1.6408
936972	AD2-131 E	8.2437	50/50	8.2437
937211	AD2-159 C	9.5542	50/50	9.5542
937212	AD2-159 E	44.7308	50/50	44.7308
939741	AE1-205 C O1	36.9272	50/50	36.9272
939742	AE1-205 E O1	50.9948	50/50	50.9948
941731	AE2-173 O1	21.9805	50/50	21.9805
942111	AE2-223 C	8.5724	50/50	8.5724
942112	AE2-223 E	57.3691	50/50	57.3691
942481	AE2-261 C	36.6389	50/50	36.6389
942482	AE2-261 E	24.4259	50/50	24.4259
944221	AF1-090 C O1	6.2846	50/50	6.2846
944222	AF1-090 E O1	29.4234	50/50	29.4234
945871	AF1-252 O1	11.1409	50/50	11.1409
945881	AF1-253	7.7129	50/50	7.7129
951741	J474 C	5.3464	PJM External (MISO)	5.3464
951742	J474 E	28.9256	PJM External (MISO)	28.9256
952651	J756 C	4.8438	PJM External (MISO)	4.8438

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
952652	J756 E	26.2064	PJM External (MISO)	26.2064
952871	J757 C	5.9747	PJM External (MISO)	5.9747
952872	J757 E	32.3245	PJM External (MISO)	32.3245
953401	J811	11.0920	PJM External (MISO)	11.0920
953651	J815	39.3050	PJM External (MISO)	39.3050
953741	J826 C	3.1599	PJM External (MISO)	3.1599
953742	J826 E	17.0961	PJM External (MISO)	17.0961
953851	J845 C	3.1107	PJM External (MISO)	3.1107
953852	J845 E	16.8297	PJM External (MISO)	16.8297
953881	J848 C	6.0115	PJM External (MISO)	6.0115
953882	J848 E	32.5235	PJM External (MISO)	32.5235
954411	J912	14.8130	PJM External (MISO)	14.8130
954721	J750 C	3.9815	PJM External (MISO)	3.9815
954722	J750 E	21.5410	PJM External (MISO)	21.5410
954821	J955	187.1064	PJM External (MISO)	187.1064
955031	J979 C	4.8092	PJM External (MISO)	4.8092
955032	J979 E	26.0188	PJM External (MISO)	26.0188
955401	J1022 C	4.7399	PJM External (MISO)	4.7399
955402	J1022 E	25.6441	PJM External (MISO)	25.6441
955711	J1055 C	2.3738	PJM External (MISO)	2.3738
955712	J1055 E	12.8427	PJM External (MISO)	12.8427
956151	J1102	12.1114	PJM External (MISO)	12.1114
956281	J1115 C	7.6640	PJM External (MISO)	7.6640
956282	J1115 E	41.4640	PJM External (MISO)	41.4640
956451	J1139	17.9130	PJM External (MISO)	17.9130
957381	AF2-032 C	2.8103	50/50	2.8103
957382	AF2-032 E	1.3225	50/50	1.3225
958013	AF2-095 BAT	4.5280	50/50	4.5280
958023	AF2-096 BAT	9.0353	50/50	9.0353
959341	AF2-225 C	27.6954	50/50	27.6954
959342	AF2-225 E	38.2461	50/50	38.2461
959611	AF2-252 C	8.1818	50/50	8.1818
959612	AF2-252 E	12.2727	50/50	12.2727
960141	AF2-305	2.5309	50/50	2.5309
960261	AF2-317	3.8855	50/50	3.8855
960603	AF2-351 BAT	2.2640	50/50	2.2640
960611	AF2-352 C	8.1818	50/50	8.1818
960612	AF2-352 E	12.2727	50/50	12.2727
963831	AG1-236 C	6.9256	50/50	6.9256
963832	AG1-236 E	46.3484	50/50	46.3484
964581	AG1-321 C O2	72.4765	50/50	72.4765
964582	AG1-321 E O2	42.2015	50/50	42.2015
965091	AG1-374 C	73.6362	50/50	73.6362
965092	AG1-374 E	49.0908	50/50	49.0908
965331	AG1-398	2.0165	50/50	2.0165
965341	AG1-399 C O2	15.4345	50/50	15.4345
965342	AG1-399 E O2	72.2615	50/50	72.2615
965351	AG1-400 O2	43.8480	50/50	43.8480
965361	AG1-401 C O2	15.4345	50/50	15.4345
965362	AG1-401 E O2	72.2615	50/50	72.2615
965371	AG1-402 O2	43.8480	50/50	43.8480
965381	AG1-403 C O2	10.2897	50/50	10.2897

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965382	AG1-403 E O2	48.1743	50/50	48.1743
965391	AG1-404 O2	29.2320	50/50	29.2320
965911	AG1-460 C	2.4508	50/50	2.4508
965912	AG1-460 E	3.6761	50/50	3.6761
LGEE	LGEE	1.6286	Confirmed LTF	1.6286
CPLE	CPLE	1.2401	Confirmed LTF	1.2401
G-007A	G-007A	1.9324	Confirmed LTF	1.9324
VFT	VFT	5.1923	Confirmed LTF	5.1923
CBM-W2	CBM-W2	49.7459	Confirmed LTF	49.7459
TVA	TVA	5.4978	Confirmed LTF	5.4978
SIGE	SIGE	0.3583	Confirmed LTF	0.3583
CBM-S2	CBM-S2	22.0597	Confirmed LTF	22.0597
CBM-S1	CBM-S1	1.3999	Confirmed LTF	1.3999
CBM-N	CBM-N	0.9612	Confirmed LTF	0.9612
MEC	MEC	3.2940	Confirmed LTF	3.2940
LAGN	LAGN	7.3430	Confirmed LTF	7.3430

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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
174289564	965340	AG1-399 TAP	CE	348847	7BROKAW	AMIL	1	COMED_P4_021-45-BT5-7__	breaker	1327.0	129.65	137.68	DC	106.44

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	28.2677	50/50	28.2677
274651	KINCAID ;2U	28.2677	50/50	28.2677
276615	W2-048 GEN	24.2689	50/50	24.2689
276621	X2-022 GEN	91.0329	50/50	91.0329
924261	AB2-070 C O1	16.2620	50/50	16.2620
924262	AB2-070 E O1	98.4912	50/50	98.4912
925771	AC1-053 C	15.1520	50/50	15.1520
925772	AC1-053 E	101.4020	50/50	101.4020
935141	AD1-148	24.1114	50/50	24.1114
936771	AD2-100 C	35.1742	50/50	35.1742
936772	AD2-100 E	23.4494	50/50	23.4494
936971	AD2-131 C	2.3170	50/50	2.3170
936972	AD2-131 E	11.6410	50/50	11.6410
941732	AE2-173 BAT	5.7465	50/50	5.7465
942481	AE2-261 C	55.7288	50/50	55.7288
942482	AE2-261 E	37.1525	50/50	37.1525
944221	AF1-090 C O1	6.5796	50/50	6.5796
944222	AF1-090 E O1	30.8044	50/50	30.8044
945871	AF1-252 O1	11.6638	50/50	11.6638
945881	AF1-253	8.0749	50/50	8.0749
953651	J815	28.8650	PJM External (MISO)	28.8650
953881	J848 C	5.3450	PJM External (MISO)	5.3450
953882	J848 E	28.9175	PJM External (MISO)	28.9175
954411	J912	11.5480	PJM External (MISO)	11.5480
954721	J750 C	3.3286	PJM External (MISO)	3.3286
954722	J750 E	18.0089	PJM External (MISO)	18.0089
954821	J955	117.5512	PJM External (MISO)	117.5512
955031	J979 C	4.2760	PJM External (MISO)	4.2760
955032	J979 E	23.1340	PJM External (MISO)	23.1340
957381	AF2-032 C	4.3826	50/50	4.3826
957382	AF2-032 E	2.0624	50/50	2.0624
960141	AF2-305	5.7542	50/50	5.7542
960261	AF2-317	7.7157	50/50	7.7157
963831	AG1-236 C	15.1520	50/50	15.1520
963832	AG1-236 E	101.4020	50/50	101.4020
965331	AG1-398	4.5846	50/50	4.5846
965341	AG1-399 C O2	37.4664	50/50	37.4664
965342	AG1-399 E O2	175.4106	50/50	175.4106
965351	AG1-400 O2	106.4385	50/50	106.4385
965361	AG1-401 C O2	37.4664	50/50	37.4664
965362	AG1-401 E O2	175.4106	50/50	175.4106

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965371	AG1-402 O2	106.4385	50/50	106.4385
965381	AG1-403 C O2	24.9776	50/50	24.9776
965382	AG1-403 E O2	116.9404	50/50	116.9404
965391	AG1-404 O2	70.9590	50/50	70.9590
965911	AG1-460 C	3.7277	50/50	3.7277
965912	AG1-460 E	5.5915	50/50	5.5915
LGEE	LGEE	0.3500	Confirmed LTF	0.3500
CPLE	CPLE	0.4395	Confirmed LTF	0.4395
G-007A	G-007A	0.3021	Confirmed LTF	0.3021
VFT	VFT	0.8127	Confirmed LTF	0.8127
CBM-W2	CBM-W2	19.3984	Confirmed LTF	19.3984
TVA	TVA	2.5872	Confirmed LTF	2.5872
SIGE	SIGE	0.0945	Confirmed LTF	0.0945
CBM-S2	CBM-S2	8.4251	Confirmed LTF	8.4251
CBM-S1	CBM-S1	0.6133	Confirmed LTF	0.6133
CBM-N	CBM-N	0.1488	Confirmed LTF	0.1488
MEC	MEC	2.0021	Confirmed LTF	2.0021
LAGN	LAGN	3.7520	Confirmed LTF	3.7520

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
COMED_P1-2_345-L11212_B-S-B	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-B' / 1292 OPEN BRANCH FROM BUS 934720 TO BUS 939400 CKT 1 / 934720 AD1-100 TAP 345 939400 AE1-172 TAP 345 1 END
COMED_P1-2_345-L11212_B-S-A	CONTINGENCY 'COMED_P1-2_345-L11212_B-S-A' / 2852 OPEN BRANCH FROM BUS 270926 TO BUS 934720 CKT 1 / 270926 WILTON ; B 345 934720 AD1-100 TAP 345 1 END
934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1	CONTINGENCY '934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1' / 1288 OPEN BRANCH FROM BUS 934725 TO BUS 934730 CKT 1 / 934725 AD1-100 JNT 345 934730 AD1-100 TAP 345 1 END
COMED_P1-2_345-L18806_R-S-C-2	CONTINGENCY 'COMED_P1-2_345-L18806_R-S-C-2' / 1001 OPEN BRANCH FROM BUS 348847 TO BUS 965340 CKT 1 / 348847 7BROKAW 345 965340 AG1-399 TAP 345 1 END

Contingency Name	Contingency Definition
COMED_P4_021-45-BT5-7__	CONTINGENCY 'COMED_P4_021-45-BT5-7__' / 1023 OPEN BRANCH FROM BUS 270796 TO BUS 347955 CKT 1 / 270796 KINCAID ; B 345 347955 7AUSTIN 345 1 OPEN BRANCH FROM BUS 270796 TO BUS 348856 CKT 1 / 270796 KINCAID ; B 345 348856 7LATHAM 345 1 END
COMED_P4_012-45-BT12-14	CONTINGENCY 'COMED_P4_012-45-BT12-14' / 1099 OPEN BRANCH FROM BUS 270717 TO BUS 930760 CKT 1 / 270717 DRESDEN ; R 345 930760 AB1-122 TAP1 345 1 OPEN BRANCH FROM BUS 270717 TO BUS 935000 CKT 1 / 270717 DRESDEN ; R 345 935000 AD1-133 TAP 345 1 END
COMED_P1-2_345-L8001___-S	CONTINGENCY 'COMED_P1-2_345-L8001___-S' / 1581 OPEN BRANCH FROM BUS 270819 TO BUS 270853 CKT 1 / 270819 MCLEAN ; R 345 270853 PONTIAC ; R 345 1 END
Base Case	
COMED_P1-2_345-L2106___-S	CONTINGENCY 'COMED_P1-2_345-L2106___-S' / 1644 OPEN BRANCH FROM BUS 270796 TO BUS 347955 CKT 1 / 270796 KINCAID ; B 345 347955 7AUSTIN 345 1 END
COMED_P1-2_345-L8014__R-S-C	CONTINGENCY 'COMED_P1-2_345-L8014__R-S-C' / 1081 OPEN BRANCH FROM BUS 270717 TO BUS 935000 CKT 1 / 270717 DRESDEN ; R 345 935000 AD1-133 TAP 345 1 END
COMED_P1-2_345-L8002___-S	CONTINGENCY 'COMED_P1-2_345-L8002___-S' / 1398 OPEN BRANCH FROM BUS 270668 TO BUS 270852 CKT 1 / 270668 BLUEMOUND; B 345 270852 PONTIAC ; B 345 1 END

14 Affected Systems

None

Attachment 1: One Line Diagram