



**Generation Interconnection
Feasibility Study Report
for
Queue Project AG1-435
KEWANEE-HENNEPIN 138 KV
35.2 MW Capacity / 200 MW Energy**

January 2021

Table of Contents

1	Introduction.....	5
2	Preface.....	5
3	General	6
4	Point of Interconnection.....	6
4.1	Primary.....	6
4.2	Secondary.....	6
5	Cost Summary	6
6	Transmission Owner Scope of Work	7
6.1	Attachment Facilities	7
6.2	Direct Connection Network Upgrades.....	7
6.3	Non-Direct Connection Network Upgrades	8
6.4	Notes on Cost Estimate:.....	9
7	Schedule.....	9
8	Transmission Owner Analysis.....	9
9	Interconnection Customer Requirements.....	9
10	Revenue Metering and SCADA Requirements	9
10.1	PJM Requirements	9
10.2	Meteorological Data Reporting Requirements	9
10.3	Interconnected Transmission Owner Requirements.....	10
11	Summer Peak - Load Flow Analysis - Primary POI	10
11.1	Generation Deliverability	10
11.2	Multiple Facility Contingency	10
11.3	Contribution to Previously Identified Overloads.....	10
11.4	Potential Congestion due to Local Energy Deliverability	13
11.5	System Reinforcements - Summer Peak Load Flow - Primary POI.....	15
11.6	Flow Gate Details - Primary POI	19
11.6.1	Index 1	20
11.6.2	Index 2	22
11.6.3	Index 3	24
11.6.4	Index 4	26
11.6.5	Index 5	28

11.6.6	Index 6	30
11.6.7	Index 7	32
11.6.8	Index 8	34
11.6.9	Index 9	36
11.6.10	Index 10.....	39
11.6.11	Index 11.....	42
11.6.12	Index 12.....	44
11.6.13	Index 13.....	47
11.6.14	Index 14.....	48
11.6.15	Index 15.....	49
11.6.16	Index 16.....	50
11.7	Queue Dependencies	51
11.8	Contingency Descriptions - Primary POI.....	53
12	Short Circuit Analysis - Primary POI.....	58
12.1	System Reinforcements - Short Circuit.....	58
13	Summer Peak - Load Flow Analysis - Secondary POI	58
13.1	Generation Deliverability	58
13.2	Multiple Facility Contingency	58
13.3	Contribution to Previously Identified Overloads.....	58
13.4	Potential Congestion due to Local Energy Deliverability.....	60
13.5	Flow Gate Details - Secondary POI.....	62
13.5.1	Index 1	63
13.5.2	Index 2	66
13.5.3	Index 3	68
13.5.4	Index 4	69
13.5.5	Index 5	70
13.5.6	Index 6	72
13.5.7	Index 7	74
13.5.8	Index 8	76
13.5.9	Index 9	78
13.5.10	Index 10.....	80
13.5.11	Index 11.....	82
13.5.12	Index 12.....	84

13.5.13	Index 13.....	87
13.5.14	Index 14.....	90
13.5.15	Index 15.....	92
13.5.16	Index 16.....	95
13.5.17	Index 17.....	96
13.6	Contingency Descriptions - Secondary POI.....	97
14	Affected Systems	102
14.1	MISO	102
Attachment 1: One Line Diagram.....		103

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.

The conduct of light load analysis as required under the PJM planning process is not performed during the Generation Interconnection Feasibility Study phase of the PJM study process. Additional reinforcement requirements for this Interconnection Request may be defined during the conduct of the light load analysis which shall be performed following execution of the System Impact Study agreement.

3 General

The Interconnection Customer (IC), has proposed a Wind generating facility located in Bureau County, Illinois. The installed facilities will have a total capability of 200 MW with 35.2 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-435
Project Name	KEWANEE-HENNEPIN 138 KV
State	Illinois
County	Bureau
Transmission Owner	ComEd
MFO	200
MWE	200
MWC	35.2
Fuel	Wind
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

AG1-435 has proposed a primary Point of Interconnection with the ComEd transmission system tapping the Kewanee to Hennepin Tap 138 kV line L6101.

4.2 Secondary

AG1-435 has proposed a secondary Point of Interconnection with the ComEd transmission system tying into the TSS 981 Crescent Ridge 138 kV substation.

5 Cost Summary

The AG1-435 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$ 21,000,000
Total System Network Upgrade Costs	\$ 521,950,000
Total Costs	\$ 543,950,000

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

6.1 Attachment Facilities

The AG1-435 generator lead would interconnect to a new 138kV Interconnection Substation (see details in Direct Connection section below). The required Attachment Facilities are one 138kV line MOD, a dead-end structure and revenue metering as shown in the one-line diagram.

Scope of Work	Cost Estimate
Installation of one 138kV line MOD, one dead-end structure and one set of revenue metering (see notes below on cost estimate)	\$1,000,000

6.2 Direct Connection Network Upgrades

To accommodate interconnection of AG1-435, a new 138kV Interconnection Substation would need to be built close to the 'Streator - Kewanee' 138kV transmission line L6101, 21.8 miles from Streator and 9.5 miles from Kewanee.

The scope of work includes the installation of three 138kV circuit breakers in a "breaker-and-a-half" bus configuration and cutting in the Interconnection Substation to 'Streator -Kewanee' 138kV transmission line L6101, as shown in the one-line diagram below.

The Interconnection Customer ("IC") is responsible for constructing all of the facilities on the IC side of the Point of Interconnection ("POI"). It is assumed for the purposes of this report that the IC will obtain the site for the Interconnection Substation and right-of-way between the Interconnection Substation and the 138kV transmission line.

In the event that the IC exercises the option to build the Interconnecting Substation, the IC will be required to construct all interconnection facilities that will be turned over to ComEd in accordance with ComEd published standards and the PJM Tariff.

ComEd would design, engineer and construct the tie in of the Interconnection Substation to the 'Streator - Kewanee' 138kV transmission line L6101.

The preliminary cost estimate for Direct Connection Network Upgrade is given in the following tables.

For Option to Build Direct Connection cost estimates:

Scope of Work	Cost Estimate
Installation of a new 138kV substation as described above	N/A
Transmission line tie in work (foundations, structures, conductors)	\$ 3,000,000
ComEd oversight and testing	\$ 1,500,000
Total Cost Estimate (see notes below on cost estimate)	\$ 4,500,000

For ComEd building the Interconnecting Substation cost estimates:

Scope of Work	Cost Estimate
Installation of a new 138kV substation as described above	\$ 15,000,000
Transmission line tie in work (foundations, structures, conductors)	\$ 3,000,000
Total Cost Estimate (see notes below on cost estimate)	\$ 18,000,000

ComEd would take approximately 24-months to construct the substation and transmission line work after the ISA / ICSA are signed.

6.3 Non-Direct Connection Network Upgrades

The integration of the new 138kV Interconnection Substation would require relay, communications and SCADA upgrades at the Streator TSS 61 and Kewanee TSS 74. The ComEd cost is given below:

Scope of Work	Cost Estimate
Relay/communications/SCADA upgrades at Streator TSS 61	\$ 1,000,000
Relay/communications/SCADA upgrades at Kewanee TSS 74	\$ 1,000,000
Total Cost Estimate (see notes below on cost estimate)	\$ 2,000,000

6.4 Notes on Cost Estimate:

- 1) These estimates are Order-of-Magnitude estimates of the costs that ComEd would bill to the customer for this interconnection. These estimates are based on a one-line electrical diagram of the project and the information provided by the IC.
- 2) There were no site visits performed for these estimates. There may be costs related to specific site related issues that are not identified in these estimates. The site reviews will be performed during the Facilities Study or during detailed engineering.
- 3) These estimates are not a guarantee of the maximum amount payable by the IC and the actual costs of ComEd's work may differ significantly from these estimates. IC will be responsible for paying actual costs of ComEd's work in accordance with Sections 212.1 and 217 of the PJM Open Access Transmission Tariff.
- 4) The IC is responsible for all engineering, procurement, testing and construction of all equipment on the IC's side of the POI.
- 5) These cost estimates do not include cost of acquiring right-of-way for the transmission line and purchasing any additional land, if needed, for the line terminations. The need and cost of acquiring property and associated legal costs will be investigated during Facilities Study for this project.

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 Meteorological Data Reporting Requirements

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

- Wind speed (meters/second) - (Required)
- Wind direction (decimal degrees from true north) - (Required)
- Ambient air temperature (Fahrenheit) - (Required)
- Air Pressure (Hectopascals) - (Required)
- Humidity (Percent) (Accepted, not required)

10.3 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 AG1-435 was evaluated as a 200.0 MW (Capacity 35.2 MW) injection tapping the Kewanee to Hennepin Tap 138 kV line in the ComEd area. Project AG1-435 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-435 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)

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 IMPACT
16222528	271835	KEWANEE ;23	138.0	CE	348962	4KEEMIN	138.0	AMIL	1	COMED_P2-2_074_KE-138__1	bus	223.0	96.74	120.13	DC	52.16

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 IMPACT
162222776	271835	KEWANEE ;23	138.0	CE	348962	4KEEMIN	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-B	tower	223.0	106.89	121.28	DC	32.09
162222777	271835	KEWANEE ;23	138.0	CE	348962	4KEEMIN	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-D	tower	223.0	106.89	121.28	DC	32.09
162222767	271837	KEWANEE ;12	138.0	CE	349637	4EDWARDS3	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-B	tower	189.0	110.4	123.65	DC	25.04
162222768	271837	KEWANEE ;12	138.0	CE	349637	4EDWARDS3	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-D	tower	189.0	110.4	123.65	DC	25.04
162222688	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-B	tower	449.0	171.68	187.81	DC	72.45
162222689	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-D	tower	449.0	171.68	187.81	DC	72.45
162222690	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-A	tower	449.0	120.87	137.01	DC	72.45
162222691	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-C	tower	449.0	120.87	137.01	DC	72.45
163033554	271987	MAZON ;R	138.0	CE	271187	CHANNAHO N; R	138.0	CE	1	COMED_P7-1_138-L6101___-S_+138-L7413_R-S-B	tower	230.0	120.4	132.82	DC	28.57
163033555	271987	MAZON ;R	138.0	CE	271187	CHANNAHO N; R	138.0	CE	1	COMED_P7-1_138-L6101___-S_+138-L7413_R-S-A	tower	230.0	115.64	118.82	DC	16.24
163033579	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P7-1_138-L6101___-S_+138-L7413_R-S-B	tower	280.0	113.14	123.3	DC	28.45
163033580	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P7-1_138-L6101___-S_+138-L7413_R-S-A	tower	280.0	109.25	111.85	DC	16.12
162222368	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AMIL	1	COMED_P2-2_074_KE-138___1	bus	214.0	165.37	190.66	DC	54.13
162222683	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AMIL	1	COMED_P7-1_138-L6101___-S_+138-L98105_R-S-B	tower	214.0	197.93	216.23	DC	39.17

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 LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
162222684	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AMIL	1	COMED_P7-1_138-L6101__S_+138-L98105_R-S-D	tower	214.0	197.93	216.23	DC	39.17
163033542	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	COMED_P7-1_138-L6101__S_+138-L98105_R-S-B	tower	274.0	131.64	145.93	DC	39.17
163033543	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	COMED_P7-1_138-L6101__S_+138-L98105_R-S-D	tower	274.0	131.64	145.93	DC	39.17
162222478	348935	4CORBIN	138.0	AMIL	936510	AD2-066 TAP	138.0	CE	1	COMED_P2-2_001_LA-138B__1	bus	223.0	122.34	131.73	DC	20.94
162222693	349662	7TAZEWE LL	345.0	AMIL	930760	AB1-122 TAP1	345.0	CE	1	COMED_P7-1_345-L9806__R-S_+345-L19601_B-S	tower	1479.0	181.63	184.2	DC	37.74
162222694	349662	7TAZEWE LL	345.0	AMIL	930760	AB1-122 TAP1	345.0	CE	1	COMED_P7-1_345-L0301__B-S_+345-L0303_R-S-B	tower	1479.0	165.7	168.27	DC	37.78
162222708	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P7-1_345-L9806__R-S_+345-L19601_B-S	tower	1768.0	171.21	173.35	DC	37.74
162370732	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P2-2_074_KE-138__1	bus	230.0	136.67	140.03	DC	17.13
162503960	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P4_074-38-L15508__	breaker	230.0	137.35	140.74	DC	17.32
162503961	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P4_074-38-L7413__	breaker	230.0	136.67	140.03	DC	17.13
163033533	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P7-1_138-L6101__S_+138-L7413_R-S-B	tower	230.0	139.31	153.06	DC	31.63
163033534	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P7-1_138-L6101__S_+138-L7413_R-S-A	tower	230.0	145.36	148.95	DC	18.35
162222747	946150	AF1-280 TAP	345.0	CE	274768	LEE CO EC,BP	345.0	CE	1	COMED_P7-1_138-L11106_B-R_+345-L15502_B-R-A	tower	1768.0	116.12	117.35	DC	21.71
162222748	946150	AF1-280 TAP	345.0	CE	274768	LEE CO EC,BP	345.0	CE	1	COMED_P7-1_345-L15502_B-R_+345-L16703_R-S-A	tower	1768.0	116.16	117.37	DC	21.45
170033159	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AMIL	1	COMED_P1-2_138-L6101__S-B	single	179.0	143.39	145.23	DC	3.29
162678460	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	COMED_P1-2_138-L6101__S-B	single	179.0	137.64	139.48	DC	3.29

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 LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
162678461	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	COMED_P2-1_074-L6101___-C	single	179.0	137.31	139.24	DC	3.45
162503864	962720	AG1-121 TAP	138.0	CE	271655	HENNEEPIN ; T	138.0	CE	1	COMED_P4_074-38-L15508	breaker	208.0	196.52	241.97	DC	94.55
162370706	965670	AG1-435 TAP	138.0	CE	962720	AG1-121 TAP	138.0	CE	1	COMED_P2-2_074_KE-138___1	bus	208.0	112.25	157.27	DC	93.64
162503931	965670	AG1-435 TAP	138.0	CE	962720	AG1-121 TAP	138.0	CE	1	COMED_P4_074-38-L15508	breaker	208.0	116.77	162.23	DC	94.55
162503932	965670	AG1-435 TAP	138.0	CE	962720	AG1-121 TAP	138.0	CE	1	COMED_P4_074-38-L7413___	breaker	208.0	112.25	157.27	DC	93.64

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 LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
168523273	270717	DRESDE N ; R	345.0	CE	270697	COLLINS ; R	345.0	CE	1	Base Case	operation	1334.0	104.42	104.92	DC	14.67
168523134	270828	NELSON ; B	345.0	CE	946150	AF1-280 TAP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-D	operation	1479.0	122.16	123.62	DC	21.59
168523000	271655	HENNEEPIN ; T	138.0	CE	348918	4HENNEPIN S	138.0	AM IL	1	COMED_P2-1_074-L6101___-A	operation	305.0	120.16	175.43	DC	168.59
168523002	271655	HENNEEPIN ; T	138.0	CE	348918	4HENNEPIN S	138.0	AM IL	1	Base Case	operation	269.0	99.94	117.86	DC	48.22
162678679	271835	KEWAN EE ;23	138.0	CE	271839	KEWANE E ;22	138.0	CE	1	COMED_P2-1_074-L6101___-C	operation	449.0	84.7	122.7	DC	170.6
168523348	271835	KEWAN EE ;23	138.0	CE	348962	4KEEMIN	138.0	AM IL	1	COMED_P1-2_138-L7405___R-S	operation	223.0	89.86	104.36	DC	32.33
168523187	271838	KEWAN EE ;13	138.0	CE	348923	4KEWAN EE N	138.0	AM IL	1	COMED_P1-2_138-L98105___R-S-D	operation	449.0	122.79	130.98	DC	36.77
162678700	271839	KEWAN EE ;22	138.0	CE	271845	KEWANE E ;21	138.0	CE	1	COMED_P1-2_138-L6101___-S-B	operation	449.0	86.94	116.67	DC	133.49
162678709	271844	KICKAPOO ; B	138.0	CE	271908	LASCO STA ; B	138.0	CE	1	Base Case	operation	351.0	103.13	109.32	DC	21.73
162678710	271844	KICKAPOO ; B	138.0	CE	271908	LASCO STA ; B	138.0	CE	1	COMED_P1-2_138-L7719___R-S-A	operation	442.0	94.55	100.22	DC	25.08
162678617	271845	KEWAN EE ;21	138.0	CE	271838	KEWANE E ;13	138.0	CE	1	COMED_P2-1_074-L6101___-C	operation	449.0	118.98	149.0	DC	134.78
162678621	271845	KEWAN EE ;21	138.0	CE	271838	KEWANE E ;13	138.0	CE	1	Base Case	operation	351.0	97.66	121.13	DC	82.39
162678714	271908	LASCO STA ; B	138.0	CE	271986	MAZON ; B	138.0	CE	1	COMED_P1-3_TR81_LASCO_B-S	operation	223.0	105.79	108.62	DC	13.97

ID	FROM BUS #	FROM BUS	kV	FROM BUS AREA	TO BUS #	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADING %	POST PROJE CT LOADING %	AC DC	MW IMP ACT
162678 636	2719 87	MAZON ; R	138 .0	CE	2711 87	CHANNA HON; R	138 .0	CE	1	Base Case	operation	173.0	126.19	130.2	DC	15.37
162678 637	2719 87	MAZON ; R	138 .0	CE	2711 87	CHANNA HON; R	138 .0	CE	1	EXT_P12:138:AMIL::MCCLEANCOUNTY:OGLESBY:1382	operation	223.0	116.54	120.2	DC	18.12
162678 661	2721 25	ESS J339; R	138 .0	CE	2713 37	DRESDEN ; R	138 .0	CE	1	Base Case	operation	210.0	123.04	126.31	DC	15.25
162678 662	2721 25	ESS J339; R	138 .0	CE	2713 37	DRESDEN ; R	138 .0	CE	1	EXT_P12:138:AMIL::MCCLEANCOUNTY:OGLESBY:1382	operation	268.0	112.01	115.04	DC	18.0
168522 992	2722 69	POWER TON ;	138 .0	CE	3496 00	4TOWER LINE	138 .0	AMIL	1	EXT_348923 4KEWANEE N 138 348974 4KEWANEE S 138 Z	operation	214.0	166.16	182.44	DC	34.83
168522 993	2722 69	POWER TON ;	138 .0	CE	3496 00	4TOWER LINE	138 .0	AMIL	1	Base Case	operation	184.0	156.54	172.06	DC	28.55
162678 565	2726 07	TOULO N ; R	138 .0	CE	2722 69	POWER TON ;	138 .0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	194.0	162.33	177.45	DC	29.34
162678 568	2726 07	TOULO N ; R	138 .0	CE	2722 69	POWER TON ;	138 .0	CE	1	Base Case	operation	155.0	145.66	164.08	DC	28.55
169750 975	3489 35	4CORBIN	138 .0	AMIL	9365 10	AD2-066 TAP	138 .0	CE	1	COMED_P1-2_138-L0112__B-S	operation	223.0	121.06	130.49	DC	21.03
169750 976	3489 35	4CORBIN	138 .0	AMIL	9365 10	AD2-066 TAP	138 .0	CE	1	Base Case	operation	173.0	107.58	112.03	DC	17.06
169750 776	3496 62	7TAZEWE L	345 .0	AMIL	9307 60	AB1-122 TAP1	345 .0	CE	1	COMED_P1-2_345-L1202__B-S	operation	1479.0	166.26	168.56	DC	33.85
169750 777	3496 62	7TAZEWE L	345 .0	AMIL	9307 60	AB1-122 TAP1	345 .0	CE	1	Base Case	operation	1201.0	152.95	155.55	DC	31.69
169750 718	9307 60	AB1-122 TAP1	345 .0	CE	2707 17	DRESDEN ; R	345 .0	CE	1	COMED_P1-2_345-L1202__B-S	operation	1479.0	191.49	193.79	DC	33.85
169750 719	9307 60	AB1-122 TAP1	345 .0	CE	2707 17	DRESDEN ; R	345 .0	CE	1	Base Case	operation	1201.0	181.99	184.64	DC	31.69
162678 605	9365 10	AD2-066 TAP	138 .0	CE	2719 87	MAZON ; R	138 .0	CE	1	Base Case	operation	173.0	149.62	154.07	DC	17.06
162678 606	9365 10	AD2-066 TAP	138 .0	CE	2719 87	MAZON ; R	138 .0	CE	1	EXT_P12:138:AMIL::MCCLEANCOUNTY:OGLESBY:1382	operation	223.0	135.21	144.24	DC	20.13
168523 078	9461 50	AF1-280 TAP	345 .0	CE	2747 68	LEE CO EC;BP	345 .0	CE	1	COMED_P1-2_345-L15502_B-R-D	operation	1479.0	138.34	139.8	DC	21.59
162678 496	9465 40	AF1-318 TAP	138 .0	CE	9616 50	AG1-005 TAP	138 .0	CE	1	COMED_P2-1_074-L6101__C	operation	179.0	230.78	235.71	DC	19.6
170033 156	9583 40	AF2-128 TAP	138 .0	CE	3489 35	4CORBIN	138 .0	AMIL	1	COMED_P1-2_138-L6101__S-B	operation	179.0	360.43	365.14	DC	18.7
162678 454	9616 50	AG1-005 TAP	138 .0	CE	9583 40	AF2-128 TAP	138 .0	CE	1	COMED_P2-1_074-L6101__C	operation	179.0	330.26	335.19	DC	19.6
162678 490	9627 20	AG1-121 TAP	138 .0	CE	2716 55	HENNEEP IN; T	138 .0	CE	1	COMED_P2-1_074-L6101__A	operation	201.0	146.17	245.67	DC	200.0
162678 495	9627 20	AG1-121 TAP	138 .0	CE	2716 55	HENNEEP IN; T	138 .0	CE	1	Base Case	operation	190.0	129.34	163.52	DC	64.94
170033 416	9656 60	AG1-434 TAP	345 .0	CE	9574 70	AF2-041 TAP	345 .0	CE	1	Base Case	operation	1334.0	142.7	143.17	DC	13.54
162678 485	9656 70	AG1-435 TAP	138 .0	CE	2718 35	KEWANEE ;23	138 .0	CE	1	COMED_P2-1_074-L6101__C	operation	201.0	146.17	245.67	DC	200.0
162678 486	9656 70	AG1-435 TAP	138 .0	CE	2718 35	KEWANEE E ;23	138 .0	CE	1	COMED_P1-2_138-L6101__S-B	operation	201.0	146.17	245.67	DC	200.0
162678 488	9656 70	AG1-435 TAP	138 .0	CE	2718 35	KEWANEE E ;23	138 .0	CE	1	Base Case	operation	190.0	72.28	143.36	DC	135.06
162678 611	9656 70	AG1-435 TAP	138 .0	CE	9627 20	AG1-121 TAP	138 .0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	201.0	121.56	154.76	DC	66.74

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
162222708	10	AB1-122 TAP1 345.0 kV - DRESDEN ; R 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L1227_3 (1121) : Re-conductor the line segment impacted and upgrade relay package. A preliminary estimate for the work is \$5M. An estimated construction timeline is 30 months subject to outage coordination with Dresden Nuclear Station. Upon completion the rating limits will be 1961/2112/2524/3015/3467 MVA (SN/SLTE/SSTE/SLD/ALDR) Project Type : FAC Cost : \$5,000,000 Time Estimate : 30.0 Months	\$5,000,000
163033542,163 033543	7	TOULON ; R 138.0 kV - POWERTON ; 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L0321_1 (1101) : ComEd 138kV L0321 ALDR rating is 315 MVA. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to reconductor the line, upgrade the station conductor upgrade the line disconnect switch. A preliminary estimate for the upgrade is \$32M. Additional costs such as multiple tower replacements were not included in this estimate and would not be determined until the Facility Study Phase. The tower replacement costs could add significantly to the project cost. The estimated construction timeline for this upgrade (minus tower replacements) is 36 months. Upon completion of the upgrade the ratings will be 245/318/372/392/451 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$32,000,000 Time Estimate : 36.0 Months	\$32,000,000
163033580,163 033579	5	ESS J339 ; R 138.0 kV - DRESDEN ; R 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L1206 (1100) : Re-conductor 138kV L1206 from Dresden Station to ESS J339. Upon completion of work the ratings will be 312/312/318/334/384 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$1,750,000 Time Estimate : 24.0 Months	\$1,750,000
162503961,162 503960,163033 533,162370732, 163033534	11	AD2-066 TAP 138.0 kV - MAZON ; R 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7713_1 (1015) : ComEd 138kV L7713 ALDR rating is 265 MVA. The upgrade will be to replace a circuit breaker and re-conductor a portion of the line. A preliminary estimate for the upgrade is \$32.2M with an estimated construction timeline of 24-30 months. Upon completion of the upgrade the ratings will be 292/321/367/280/433 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$32,200,000 Time Estimate : 24-30 Months	\$32,200,000

ID	Idx	Facility	Upgrade Description	Cost
162222768,162 222767	2	KEWANEE ;12 138.0 kV - 4EDWARDS3 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7423 (1137) : Mitigate sag on the line. A preliminary estimate is \$20.8M with a construction timeline of 36 months. Upon completion the limit rating will be 192/192/195/205/236 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$20,800,000 Time Estimate : 36.0 Months	\$20,800,000
162222694,162 222693	9	7TAZEWELL 345.0 kV - AB1- 122 TAP1 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L1227_2 (1120) : Sag mitigation the line segment impacted. A preliminary estimate for the work is \$39.9M. An estimated construction timeline is 30 months. Upon completion the rating limits will be 1679/2058/2107/2280 MVA (SN/SLTE/SSTE/SLD) Project Type : FAC Cost : \$39,900,000 Time Estimate : 30.0 Months CE_NUN_L93915 (Former L1227)_NEW LINE (1147) : Construct new 345kV from AB1-122 Interconnection Substation to Ameren (Tazewell) Station. In addition to new overhead conductor and new towers. Upgrade existing towers, new 345kV circuit breakers at the AB1-122 Interconnection Substation and facility work at Ameren's station. A minimum estimate for this upgrade will be \$306M (not including Ameren costs). A construction timeline is subject to availability of easement. This upgrade relieves the constrained path and does not impact the ratings. Project Type : CON Cost : \$306,000,000 Time Estimate : Months	\$345,900,000
162222478	8	4OGLESBY MN 138.0 kV - AD2- 066 TAP 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7713 (1007) : ComEd 138kV L7713 ALDR rating is 265 MVA. The upgrade will be to mitigate sag on a portion of the line and re-conductor as well. A preliminary estimate for the upgrade is \$22.4M with an estimated construction timeline of 24 months. Upon completion of the upgrade the ratings will be 210/268/269/280/322 MVA SN/SLTE/SSTE/SLD/ALDR. Project Type : FAC Cost : \$22,400,000 Time Estimate : 24.0 Months <u>AMIL</u> NonPJMArea (33) : The external (i.e. Non-PJM) Transmission Owner, AMIL, will not evaluate this violation until the impact study phase. Project Type : FAC	\$22,400,000

ID	Idx	Facility	Upgrade Description	Cost
170033159	13	AF2-128 TAP 138.0 kV - 4OGLESBY MN 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7713_2 (1075) : Re-conductor a portion of the line. A preliminary estimate for this upgrade is \$7.2M with an estimated construction timeline of 30 months. Upon completion of the upgrade the new ratings will be 351/449/459/498/688 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$7,200,000 Time Estimate : 30.0 Months <u>AMIL</u> NonPJMArea (33) : The external (i.e. Non-PJM) Transmission Owner, AMIL, will not evaluate this violation until the impact study phase. Project Type : FAC	\$7,200,000
162222683,162 222684,162222 368	6	POWERTON ; 138.0 kV - 4TOWERLINE 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_1404 (1043) : ComEd 138kV L1404 (former L1352) ALDR rating is 265 MVA. The upgrade will be to re-conductor the line, replace station conductor and a line trap. A preliminary estimate for the upgrade is \$5.8M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 302/332/402/482/554 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$5,800,000 Time Estimate : 30.0 Months	\$5,800,000
162678461,162 678460	14	AG1-005 TAP 138.0 kV - AF2- 128 TAP 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7713_3 (1076) : Perform sag mitigation on a portion of the line. A preliminary estimate for this upgrade is \$3.6M with an estimated construction timeline of 30 months. Upon completion of the upgrade the new ratings will be 210/268/269/280/322 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$3,600,000 Time Estimate : 30.0 Months	\$3,600,000
162222747,162 222748	12	AF1-280 TAP 345.0 kV - LEE CO EC;BP 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L15501 (1148) : Re-conductor the line, upgrade 1-345kV circuit breaker, upgrade station conductor at both line terminals, new line disconnect switches. A preliminary estimate for this upgrade is \$8.5M. Estimated construction timeline of 30 months. Upon completion the limiting ratings will be 1679/2058/2107/2280 MVA (SN/SLTE/SSTE/SLD) Project Type : FAC Cost : \$8,500,000 Time Estimate : 30.0 Months	\$8,500,000

ID	Idx	Facility	Upgrade Description	Cost
163033555,163033554	4	MAZON ; R 138.0 kV - CHANNAHON; R 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7719 (1136) : 138kV line conductor upgrades, replace station conductor at both terminals and upgrade 1-138kV circuit breaker. A preliminary estimate is \$4.5M with a construction timeline of 30 months. Upon completion the limit rating swill be 292/321/367/433 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$5,200,000 Time Estimate : 30.0 Months	\$5,200,000
162222688,162222689,162222691,162222690	3	KEWANEE ;13 138.0 kV - 4KEWANEE N 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_TSS 74 BT N-13 (1146) : The upgrade will be to re-conductor the line segment. This upgrade will need to be confirmed during the Facility Study. A preliminary estimate for the upgrade is \$2.5M. A preliminary estimate is 30 months. Upon completion of the upgrade the ratings will be 702/898/919/995 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$2,500,000 Time Estimate : 30.0 Months	\$2,500,000
162503864	15	AG1-121 TAP 138.0 kV - HENNEPIN; T 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L6101_1 (1143) : Re-conductor the line, upgrade a line trap and install new station bus at TSS 74 Kewanee. A preliminary estimate for the upgrade is \$16.5 with a preliminary construction timeline of 36 months. Note that the estimate given does not include possible tower replacements. This cost will be determined during the Facility Study Phase and could possibly have a significant impact to the total cost. Upon completion the current limiting ratings will be 351/449/459/498/573 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$16,500,000 Time Estimate : 36.0 Months	\$16,500,000

ID	Idx	Facility	Upgrade Description	Cost
162370706,162503932,162503931	16	AG1-435 TAP 138.0 kV - AG1-121 TAP 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L6101 (1142) : Re-conductor the line. A preliminary estimate for the upgrade is \$7.8 with a preliminary construction timeline of 30 months. Upon completion the current limiting ratings will be 351/449/459/498/573 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$7,800,000 Time Estimate : 30.0 Months CE_NUN_L6101_1 (1143) : Re-conductor the line, upgrade a line trap and install new station bus at TSS 74 Kewanee. A preliminary estimate for the upgrade is \$16.5 with a preliminary construction timeline of 36 months. Note that the estimate given does not include possible tower replacements. This cost will be determined during the Facility Study Phase and could possibly have a significant impact to the total cost. Upon completion the current limiting ratings will be 351/449/459/498/573 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$16,500,000 Time Estimate : 36.0 Months	\$24,300,000
162222776,162222777,162222528	1	KEWANEE ;23 138.0 kV - 4KEEMIN 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L7411 (1138) : Mitigate sag on the line. A preliminary estimate is \$2.8M with a construction timeline of 30 months. Upon completion the limit rating will be 210/268/269/280/322 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$2,800,000 Time Estimate : 30.0 Months	\$2,800,000
			TOTAL COST	\$519,950,000

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 gauge 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
162222777	271835	KEWANEE ;23	CE	348962	4KEEMIN	AMIL	1	COMED_P7-1_138-L6101_-S_+_138-L98105_R-S-D	tower	223.0	106.89	121.28	DC	32.09

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.5621	50/50	0.5621
274849	CRESCENT ;1U	0.2501	50/50	0.2501
274851	PROVIDENC;RU	0.2576	50/50	0.2576
274877	BISHOP HL;1U	0.5030	50/50	0.5030
274878	BISHOP HL;2U	0.5030	50/50	0.5030
293771	O-035 E	9.3838	50/50	9.3838
294401	BSHIL;1U E	12.7536	50/50	12.7536
294410	BSHIL;2U E	12.7536	50/50	12.7536
916211	Z1-072 E	7.1012	50/50	7.1012
925581	AC1-033 C	2.0788	50/50	2.0788
925582	AC1-033 E	13.9171	50/50	13.9171
926841	AC1-171 C O1	0.4503	Adder	0.53
926842	AC1-171 E O1	3.0076	Adder	3.54
927201	AC1-214 C O1	0.4752	50/50	0.4752
927202	AC1-214 E O1	9.5740	50/50	9.5740
934051	AD1-031 C O1	4.2672	50/50	4.2672
934052	AD1-031 E O1	6.9622	50/50	6.9622
946541	AF1-318 C O1	8.3701	50/50	8.3701
946542	AF1-318 E O1	39.1871	50/50	39.1871
953201	J715 C	0.8271	PJM External (MISO)	0.8271
953202	J715 E	4.4749	PJM External (MISO)	4.4749
957751	AF2-069 C	0.3487	50/50	0.3487
957752	AF2-069 E	1.1254	50/50	1.1254
957761	AF2-070 C	0.4914	50/50	0.4914
957762	AF2-070 E	2.3856	50/50	2.3856
958341	AF2-128 C O1	2.2183	50/50	2.2183
958342	AF2-128 E O1	10.3856	50/50	10.3856
961651	AG1-005 C O1	23.7810	50/50	23.7810
961652	AG1-005 E O1	15.8540	50/50	15.8540
962013	AG1-044 BAT	0.0190	Merchant Transmission	0.0190
962721	AG1-121 C O1	8.3268	50/50	8.3268
962722	AG1-121 E O1	38.9548	50/50	38.9548
965671	AG1-435 C O1	5.6471	50/50	5.6471
965672	AG1-435 E O1	26.4389	50/50	26.4389
990901	L-005 E	16.9930	50/50	16.9930
LGEE	LGEE	0.0691	Confirmed LTF	0.0691
CPLE	CPLE	0.0498	Confirmed LTF	0.0498
G-007A	G-007A	0.1894	Confirmed LTF	0.1894
VFT	VFT	0.5096	Confirmed LTF	0.5096

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	0.8422	Confirmed LTF	0.8422
TVA	TVA	0.0798	Confirmed LTF	0.0798
SIGE	SIGE	0.0059	Confirmed LTF	0.0059
CBM-S2	CBM-S2	0.7308	Confirmed LTF	0.7308
CBM-S1	CBM-S1	0.0251	Confirmed LTF	0.0251
CBM-N	CBM-N	0.0948	Confirmed LTF	0.0948
COTTONWOOD	COTTONWOOD	0.0168	Confirmed LTF	0.0168

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
162222768	271837	KEWANEE ;12	CE	349637	4EDWARDS3	AMIL	1	COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D	tower	189.0	110.4	123.65	DC	25.04

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.4168	50/50	0.4168
274849	CRESCENT ;1U	0.1985	50/50	0.1985
274851	PROVIDENC;RU	0.2045	50/50	0.2045
274877	BISHOP HL;1U	0.3958	50/50	0.3958
274878	BISHOP HL;2U	0.3958	50/50	0.3958
293771	O-035 E	7.4497	50/50	7.4497
294401	BSHIL;1U E	10.0344	50/50	10.0344
294410	BSHIL;2U E	10.0344	50/50	10.0344
916211	Z1-072 E	5.6376	50/50	5.6376
925581	AC1-033 C	1.6494	50/50	1.6494
925582	AC1-033 E	11.0423	50/50	11.0423
927201	AC1-214 C O1	0.3773	50/50	0.3773
927202	AC1-214 E O1	7.6007	50/50	7.6007
934051	AD1-031 C O1	3.3306	50/50	3.3306
934052	AD1-031 E O1	5.4341	50/50	5.4341
946541	AF1-318 C O1	6.6427	50/50	6.6427
946542	AF1-318 E O1	31.0996	50/50	31.0996
957751	AF2-069 C	0.2768	50/50	0.2768
957752	AF2-069 E	0.8935	50/50	0.8935
957761	AF2-070 C	0.3901	50/50	0.3901
957762	AF2-070 E	1.8939	50/50	1.8939
958341	AF2-128 C O1	1.7605	50/50	1.7605
958342	AF2-128 E O1	8.2422	50/50	8.2422
961651	AG1-005 C O1	18.8730	50/50	18.8730
961652	AG1-005 E O1	12.5820	50/50	12.5820
962721	AG1-121 C O1	6.4974	50/50	6.4974
962722	AG1-121 E O1	30.3961	50/50	30.3961
965671	AG1-435 C O1	4.4070	50/50	4.4070
965672	AG1-435 E O1	20.6330	50/50	20.6330
990901	L-005 E	12.5984	50/50	12.5984
WEC	WEC	0.1087	Confirmed LTF	0.1087
CBM-W2	CBM-W2	0.0806	Confirmed LTF	0.0806
NY	NY	0.0199	Confirmed LTF	0.0199
TVA	TVA	0.0378	Confirmed LTF	0.0378
O-066	O-066	0.2355	Confirmed LTF	0.2355
SIGE	SIGE	0.0003	Confirmed LTF	0.0003
CBM-S1	CBM-S1	0.0061	Confirmed LTF	0.0061
G-007	G-007	0.0367	Confirmed LTF	0.0367
HAMLET	HAMLET	0.0081	Confirmed LTF	0.0081

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
MEC	MEC	0.8088	Confirmed LTF	0.8088
GIBSON	GIBSON	0.0213	Confirmed LTF	0.0213
BLUEG	BLUEG	0.0642	Confirmed LTF	0.0642
TRIMBLE	TRIMBLE	0.0211	Confirmed LTF	0.0211
LAGN	LAGN	0.1383	Confirmed LTF	0.1383
CATAWBA	CATAWBA	0.0039	Confirmed LTF	0.0039
CBM-W1	CBM-W1	3.8134	Confirmed LTF	3.8134

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
162222689	271838	KEWANEE ;13	CE	348923	4KEWANEE N	AMIL	1	COMED_P7-1_138-L6101__-S+_138-L98105_R-S-D	tower	449.0	171.68	187.81	DC	72.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	1.2514	50/50	1.2514
274849	CRESCENT ;1U	0.5723	50/50	0.5723
274851	PROVIDENC;RU	0.5895	50/50	0.5895
274877	BISHOP HL;1U	1.1450	50/50	1.1450
274878	BISHOP HL;2U	1.1450	50/50	1.1450
276156	O-029 C	0.2054	50/50	0.2054
276157	O-029 C	0.2220	50/50	0.2220
276158	O-029 C	0.4052	50/50	0.4052
293513	O-009 C1	0.3793	50/50	0.3793
293514	O-009 C2	0.1924	50/50	0.1924
293515	O-009 C3	0.2128	50/50	0.2128
293516	O-009 E1	9.6200	50/50	9.6200
293517	O-009 E2	4.8862	50/50	4.8862
293518	O-009 E3	5.3811	50/50	5.3811
293715	O-029 E	10.2849	50/50	10.2849
293716	O-029 E	5.6390	50/50	5.6390
293717	O-029 E	5.1829	50/50	5.1829
293771	O-035 E	21.4748	50/50	21.4748
294401	BSHIL;1U E	29.0296	50/50	29.0296
294410	BSHIL;2U E	29.0296	50/50	29.0296
916211	Z1-072 E	16.2512	50/50	16.2512
925581	AC1-033 C	4.7546	50/50	4.7546
925582	AC1-033 E	31.8307	50/50	31.8307
926841	AC1-171 C O1	0.7880	Adder	0.93
926842	AC1-171 E O1	5.2632	Adder	6.19
927201	AC1-214 C O1	1.0875	50/50	1.0875
927202	AC1-214 E O1	21.9101	50/50	21.9101
934051	AD1-031 C O1	9.6359	50/50	9.6359
934052	AD1-031 E O1	15.7217	50/50	15.7217
946541	AF1-318 C O1	19.1503	50/50	19.1503
946542	AF1-318 E O1	89.6578	50/50	89.6578
957751	AF2-069 C	0.7981	50/50	0.7981
957752	AF2-069 E	2.5755	50/50	2.5755
957761	AF2-070 C	1.1245	50/50	1.1245
957762	AF2-070 E	5.4594	50/50	5.4594
958341	AF2-128 C O1	5.0753	50/50	5.0753
958342	AF2-128 E O1	23.7617	50/50	23.7617
961651	AG1-005 C O1	54.4095	50/50	54.4095
961652	AG1-005 E O1	36.2730	50/50	36.2730

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
962012	AG1-044 E	0.0149	Adder	0.03
962721	AG1-121 C O1	18.8003	50/50	18.8003
962722	AG1-121 E O1	87.9519	50/50	87.9519
965671	AG1-435 C O1	12.7508	50/50	12.7508
965672	AG1-435 E O1	59.6972	50/50	59.6972
990901	L-005 E	37.8299	50/50	37.8299
WEC	WEC	0.1521	Confirmed LTF	0.1521
CALDERWOOD	CALDERWOOD	0.0651	Confirmed LTF	0.0651
NY	NY	0.0470	Confirmed LTF	0.0470
PRAIRIE	PRAIRIE	0.6018	Confirmed LTF	0.6018
O-066	O-066	0.5788	Confirmed LTF	0.5788
CHEOAH	CHEOAH	0.0656	Confirmed LTF	0.0656
COTTONWOOD	COTTONWOOD	0.3738	Confirmed LTF	0.3738
G-007	G-007	0.0903	Confirmed LTF	0.0903
HAMLET	HAMLET	0.0641	Confirmed LTF	0.0641
GIBSON	GIBSON	0.0699	Confirmed LTF	0.0699
BLUEG	BLUEG	0.1823	Confirmed LTF	0.1823
TRIMBLE	TRIMBLE	0.0579	Confirmed LTF	0.0579
CATAWBA	CATAWBA	0.0399	Confirmed LTF	0.0399
CBM-W1	CBM-W1	0.6589	Confirmed LTF	0.6589

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
163033554	271987	MAZON ; R	CE	271187	CHANNAHON; R	CE	1	COMED_P7-1_138-L6101___-S+_138-L7413___R-S-B	tower	230.0	120.4	132.82	DC	28.57

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.3178	50/50	0.3178
274851	PROVIDENC;RU	0.3273	50/50	0.3273
293771	O-035 E	11.9235	50/50	11.9235
916211	Z1-072 E	9.0232	50/50	9.0232
926821	AC1-168 C O1	1.3234	50/50	1.3234
926822	AC1-168 E O1	8.8814	50/50	8.8814
927201	AC1-214 C O1	0.6038	50/50	0.6038
927202	AC1-214 E O1	12.1652	50/50	12.1652
936511	AD2-066 C O1	39.6003	50/50	39.6003
936512	AD2-066 E O1	26.4002	50/50	26.4002
946541	AF1-318 C O1	10.6329	50/50	10.6329
946542	AF1-318 E O1	49.7810	50/50	49.7810
953201	J715 C	3.1216	PJM External (MISO)	3.1216
953202	J715 E	16.8884	PJM External (MISO)	16.8884
957751	AF2-069 C	0.4431	50/50	0.4431
957752	AF2-069 E	1.4300	50/50	1.4300
957761	AF2-070 C	0.6244	50/50	0.6244
957762	AF2-070 E	3.0312	50/50	3.0312
958341	AF2-128 C O1	2.8180	50/50	2.8180
958342	AF2-128 E O1	13.1933	50/50	13.1933
961651	AG1-005 C O1	30.2100	50/50	30.2100
961652	AG1-005 E O1	20.1400	50/50	20.1400
962721	AG1-121 C O1	7.4150	50/50	7.4150
962722	AG1-121 E O1	34.6888	50/50	34.6888
965671	AG1-435 C O1	5.0290	50/50	5.0290
965672	AG1-435 E O1	23.5450	50/50	23.5450
966081	AG1-477 C	5.4416	50/50	5.4416
966082	AG1-477 E	1.3690	50/50	1.3690
966101	AG1-479 C (Withdrawn : 12/03/2020)	5.4416	50/50	5.4416
966102	AG1-479 E (Withdrawn : 12/03/2020)	1.3690	50/50	1.3690
LGEE	LGEE	0.0509	Confirmed LTF	0.0509
CPLE	CPLE	0.0471	Confirmed LTF	0.0471
G-007A	G-007A	0.0575	Confirmed LTF	0.0575
VFT	VFT	0.1548	Confirmed LTF	0.1548
CBM-W2	CBM-W2	2.1594	Confirmed LTF	2.1594
TVA	TVA	0.2324	Confirmed LTF	0.2324
SIGE	SIGE	0.0117	Confirmed LTF	0.0117

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-S2	CBM-S2	0.8665	Confirmed LTF	0.8665
CBM-S1	CBM-S1	0.0574	Confirmed LTF	0.0574
CBM-N	CBM-N	0.0288	Confirmed LTF	0.0288
MEC	MEC	0.5434	Confirmed LTF	0.5434
LAGN	LAGN	0.3570	Confirmed LTF	0.3570
CBM-W1	CBM-W1	0.7711	Confirmed LTF	0.7711

11.6.5 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
163033579	272125	ESS J339 ; R	CE	271337	DRESDEN ; R	CE	1	COMED_P7-1_138-L6101___S+_138-L7413___R-S-B	tower	280.0	113.14	123.3	DC	28.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274836	EQUISTAR ; R	15.6407	50/50	15.6407
274849	CRESCENT ;1U	0.3168	50/50	0.3168
274851	PROVIDENC;RU	0.3263	50/50	0.3263
293771	O-035 E	11.8874	50/50	11.8874
916211	Z1-072 E	8.9958	50/50	8.9958
926821	AC1-168 C O1	1.3172	50/50	1.3172
926822	AC1-168 E O1	8.8396	50/50	8.8396
927201	AC1-214 C O1	0.6020	50/50	0.6020
927202	AC1-214 E O1	12.1283	50/50	12.1283
936511	AD2-066 C O1	39.5586	50/50	39.5586
936512	AD2-066 E O1	26.3724	50/50	26.3724
946541	AF1-318 C O1	10.6012	50/50	10.6012
946542	AF1-318 E O1	49.6327	50/50	49.6327
953201	J715 C	3.1216	PJM External (MISO)	3.1216
953202	J715 E	16.8884	PJM External (MISO)	16.8884
957751	AF2-069 C	0.4418	50/50	0.4418
957752	AF2-069 E	1.4257	50/50	1.4257
957761	AF2-070 C	0.6225	50/50	0.6225
957762	AF2-070 E	3.0220	50/50	3.0220
958341	AF2-128 C O1	2.8095	50/50	2.8095
958342	AF2-128 E O1	13.1534	50/50	13.1534
961651	AG1-005 C O1	30.1200	50/50	30.1200
961652	AG1-005 E O1	20.0800	50/50	20.0800
962721	AG1-121 C O1	7.3833	50/50	7.3833
962722	AG1-121 E O1	34.5407	50/50	34.5407
965671	AG1-435 C O1	5.0076	50/50	5.0076
965672	AG1-435 E O1	23.4444	50/50	23.4444
966081	AG1-477 C	5.4319	50/50	5.4319
966082	AG1-477 E	1.3665	50/50	1.3665
966101	AG1-479 C (Withdrawn : 12/03/2020)	5.4319	50/50	5.4319
966102	AG1-479 E (Withdrawn : 12/03/2020)	1.3665	50/50	1.3665
LGEE	LGEE	0.0126	Confirmed LTF	0.0126
CPLE	CPLE	0.0055	Confirmed LTF	0.0055
CBM-W2	CBM-W2	1.6128	Confirmed LTF	1.6128
NY	NY	0.0216	Confirmed LTF	0.0216
TVA	TVA	0.1470	Confirmed LTF	0.1470
O-066	O-066	0.2490	Confirmed LTF	0.2490

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
SIGE	SIGE	0.0117	Confirmed LTF	0.0117
CBM-S2	CBM-S2	0.2297	Confirmed LTF	0.2297
CBM-S1	CBM-S1	0.0342	Confirmed LTF	0.0342
G-007	G-007	0.0388	Confirmed LTF	0.0388
MEC	MEC	0.4465	Confirmed LTF	0.4465
LAGN	LAGN	0.2502	Confirmed LTF	0.2502

11.6.6 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
162222684	272269	POWERTON	CE	349600	4TOWERLINE	AMIL	1	COMED_P7-1_138-L6101__-S+_138-L98105_R-S-D	tower	214.0	197.93	216.23	DC	39.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMP GROVE;RU	1.3210	50/50	1.3210
274849	CRESCENT ;1U	0.3073	50/50	0.3073
274851	PROVIDENCE;RU	0.3165	50/50	0.3165
274877	BISHOP HL;1U	0.6170	50/50	0.6170
274878	BISHOP HL;2U	0.6170	50/50	0.6170
293516	O-009 E1	4.9539	Adder	5.83
293517	O-009 E2	2.5162	Adder	2.96
293518	O-009 E3	2.7710	Adder	3.26
293715	O-029 E	5.2963	Adder	6.23
293716	O-029 E	2.9039	Adder	3.42
293717	O-029 E	2.6690	Adder	3.14
293771	O-035 E	11.5316	50/50	11.5316
294401	BSHIL;1U E	15.6424	50/50	15.6424
294410	BSHIL;2U E	15.6424	50/50	15.6424
916211	Z1-072 E	8.7266	50/50	8.7266
925581	AC1-033 C	2.5533	50/50	2.5533
925582	AC1-033 E	17.0936	50/50	17.0936
926841	AC1-171 C O1	8.1877	50/50	8.1877
926842	AC1-171 E O1	54.6905	50/50	54.6905
927201	AC1-214 C O1	0.5840	50/50	0.5840
927202	AC1-214 E O1	11.7653	50/50	11.7653
934051	AD1-031 C O1	5.2099	50/50	5.2099
934052	AD1-031 E O1	8.5003	50/50	8.5003
946541	AF1-318 C O1	10.2829	50/50	10.2829
946542	AF1-318 E O1	48.1423	50/50	48.1423
957751	AF2-069 C	0.4285	50/50	0.4285
957752	AF2-069 E	1.3830	50/50	1.3830
957761	AF2-070 C	0.6038	50/50	0.6038
957762	AF2-070 E	2.9316	50/50	2.9316
958341	AF2-128 C O1	2.7251	50/50	2.7251
958342	AF2-128 E O1	12.7583	50/50	12.7583
961651	AG1-005 C O1	29.2155	50/50	29.2155
961652	AG1-005 E O1	19.4770	50/50	19.4770
962721	AG1-121 C O1	10.1641	50/50	10.1641
962722	AG1-121 E O1	47.5500	50/50	47.5500
965671	AG1-435 C O1	6.8939	50/50	6.8939
965672	AG1-435 E O1	32.2761	50/50	32.2761
990901	L-005 E	39.9342	50/50	39.9342
WEC	WEC	0.2419	Confirmed LTF	0.2419

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CALDERWOOD	CALDERWOOD	0.0308	Confirmed LTF	0.0308
NY	NY	0.0503	Confirmed LTF	0.0503
PRAIRIE	PRAIRIE	0.2170	Confirmed LTF	0.2170
O-066	O-066	0.6057	Confirmed LTF	0.6057
CHEOAH	CHEOAH	0.0310	Confirmed LTF	0.0310
G-007	G-007	0.0945	Confirmed LTF	0.0945
HAMLET	HAMLET	0.0422	Confirmed LTF	0.0422
MEC	MEC	1.5239	Confirmed LTF	1.5239
GIBSON	GIBSON	0.1016	Confirmed LTF	0.1016
BLUEG	BLUEG	0.2344	Confirmed LTF	0.2344
TRIMBLE	TRIMBLE	0.0746	Confirmed LTF	0.0746
LAGN	LAGN	0.1050	Confirmed LTF	0.1050
CATAWBA	CATAWBA	0.0248	Confirmed LTF	0.0248
CBM-W1	CBM-W1	7.6409	Confirmed LTF	7.6409

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
163033543	272607	TOULON ;R	CE	272269	POWERTON ;	CE	1	COMED_P7-1_138-L6101__-S_+ 138-L98105_R-S-D	tower	274.0	131.64	145.93	DC	39.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	1.3210	50/50	1.3210
274849	CRESCENT ;1U	0.3073	50/50	0.3073
274851	PROVIDENC;RU	0.3165	50/50	0.3165
274877	BISHOP HL;1U	0.6170	50/50	0.6170
274878	BISHOP HL;2U	0.6170	50/50	0.6170
293516	O-009 E1	4.9539	Adder	5.83
293517	O-009 E2	2.5162	Adder	2.96
293518	O-009 E3	2.7710	Adder	3.26
293715	O-029 E	5.2963	Adder	6.23
293716	O-029 E	2.9039	Adder	3.42
293717	O-029 E	2.6690	Adder	3.14
293771	O-035 E	11.5316	50/50	11.5316
294401	BSHIL;1U E	15.6424	50/50	15.6424
294410	BSHIL;2U E	15.6424	50/50	15.6424
916211	Z1-072 E	8.7266	50/50	8.7266
925581	AC1-033 C	2.5533	50/50	2.5533
925582	AC1-033 E	17.0936	50/50	17.0936
927201	AC1-214 C O1	0.5840	50/50	0.5840
927202	AC1-214 E O1	11.7653	50/50	11.7653
934051	AD1-031 C O1	5.2099	50/50	5.2099
934052	AD1-031 E O1	8.5003	50/50	8.5003
946541	AF1-318 C O1	10.2829	50/50	10.2829
946542	AF1-318 E O1	48.1423	50/50	48.1423
957751	AF2-069 C	0.4285	50/50	0.4285
957752	AF2-069 E	1.3830	50/50	1.3830
957761	AF2-070 C	0.6038	50/50	0.6038
957762	AF2-070 E	2.9316	50/50	2.9316
958341	AF2-128 C O1	2.7251	50/50	2.7251
958342	AF2-128 E O1	12.7583	50/50	12.7583
961651	AG1-005 C O1	29.2155	50/50	29.2155
961652	AG1-005 E O1	19.4770	50/50	19.4770
962721	AG1-121 C O1	10.1641	50/50	10.1641
962722	AG1-121 E O1	47.5500	50/50	47.5500
965671	AG1-435 C O1	6.8939	50/50	6.8939
965672	AG1-435 E O1	32.2761	50/50	32.2761
990901	L-005 E	39.9342	50/50	39.9342
WEC	WEC	0.2419	Confirmed LTF	0.2419
CALDERWOOD	CALDERWOOD	0.0308	Confirmed LTF	0.0308
NY	NY	0.0503	Confirmed LTF	0.0503

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
PRAIRIE	PRAIRIE	0.2170	Confirmed LTF	0.2170
O-066	O-066	0.6057	Confirmed LTF	0.6057
CHEOAH	CHEOAH	0.0310	Confirmed LTF	0.0310
G-007	G-007	0.0945	Confirmed LTF	0.0945
HAMLET	HAMLET	0.0422	Confirmed LTF	0.0422
MEC	MEC	1.5239	Confirmed LTF	1.5239
GIBSON	GIBSON	0.1016	Confirmed LTF	0.1016
BLUEG	BLUEG	0.2344	Confirmed LTF	0.2344
TRIMBLE	TRIMBLE	0.0746	Confirmed LTF	0.0746
LAGN	LAGN	0.1050	Confirmed LTF	0.1050
CATAWBA	CATAWBA	0.0248	Confirmed LTF	0.0248
CBM-W1	CBM-W1	7.6409	Confirmed LTF	7.6409

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
162222478	348935	4CORBIN	AMIL	936510	AD2-066 TAP	CE	1	COMED_P2-2_001_LA-138B_1	bus	223.0	122.34	131.73	DC	20.94

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274847	GR RIDGE ;BU	0.7408	50/50	0.7408
274849	CRESCENT ;1U	0.1976	50/50	0.1976
274851	PROVIDENC;RU	0.2035	50/50	0.2035
274871	GR RIDGE ;2U	0.2758	50/50	0.2758
276173	Z2-081	0.3501	50/50	0.3501
293061	N-015 E	20.5644	50/50	20.5644
293771	O-035 E	7.4130	50/50	7.4130
294392	P-010 E	26.1168	50/50	26.1168
294401	BSHIL;1U E	5.5155	Adder	6.49
294410	BSHIL;2U E	5.5155	Adder	6.49
916211	Z1-072 E	5.6099	50/50	5.6099
925581	AC1-033 C	0.9035	Adder	1.06
925582	AC1-033 E	6.0486	Adder	7.12
926821	AC1-168 C O1	1.6237	50/50	1.6237
926822	AC1-168 E O1	10.8966	50/50	10.8966
927201	AC1-214 C O1	0.3754	50/50	0.3754
927202	AC1-214 E O1	7.5633	50/50	7.5633
934051	AD1-031 C O1	1.8339	Adder	2.16
934052	AD1-031 E O1	2.9921	Adder	3.52
946541	AF1-318 C O1	9.8626	50/50	9.8626
946542	AF1-318 E O1	46.1748	50/50	46.1748
953201	J715 C	3.2780	PJM External (MISO)	3.2780
953202	J715 E	17.7350	PJM External (MISO)	17.7350
957751	AF2-069 C	0.2755	50/50	0.2755
957752	AF2-069 E	0.8891	50/50	0.8891
957761	AF2-070 C	0.3882	50/50	0.3882
957762	AF2-070 E	1.8846	50/50	1.8846
958341	AF2-128 C O1	2.7915	50/50	2.7915
958342	AF2-128 E O1	13.0695	50/50	13.0695
961651	AG1-005 C O1	28.6830	50/50	28.6830
961652	AG1-005 E O1	19.1220	50/50	19.1220
962721	AG1-121 C O1	6.1828	50/50	6.1828
962722	AG1-121 E O1	28.9248	50/50	28.9248
965671	AG1-435 C O1	3.6861	50/50	3.6861
965672	AG1-435 E O1	17.2579	50/50	17.2579
966083	AG1-477 BAT	1.5350	50/50	1.5350
966103	AG1-479 BAT (Withdrawn : 12/03/2020)	1.5350	50/50	1.5350
990901	L-005 E	7.4507	Adder	8.77
LGEE	LGEE	0.0591	Confirmed LTF	0.0591
CPL	CPL	0.0621	Confirmed LTF	0.0621
G-007A	G-007A	0.0432	Confirmed LTF	0.0432

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
VFT	VFT	0.1161	Confirmed LTF	0.1161
CBM-W2	CBM-W2	3.2256	Confirmed LTF	3.2256
TVA	TVA	0.3486	Confirmed LTF	0.3486
SIGE	SIGE	0.0156	Confirmed LTF	0.0156
CBM-S2	CBM-S2	1.1797	Confirmed LTF	1.1797
CBM-S1	CBM-S1	0.0840	Confirmed LTF	0.0840
CBM-N	CBM-N	0.0216	Confirmed LTF	0.0216
MEC	MEC	1.1457	Confirmed LTF	1.1457
LAGN	LAGN	0.5775	Confirmed LTF	0.5775
CBM-W1	CBM-W1	3.0564	Confirmed LTF	3.0564

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
162222693	349662	7TAZEWELL	AMIL	930760	AB1-122 TAP1	CE	1	COMED_P7-1_345-L9806_R-S_+345-L19601_B-S	tower	1479.0	181.63	184.2	DC	37.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274677	POWERTON ;5U	59.5206	50/50	59.5206
274678	POWERTON ;6U	59.6905	50/50	59.6905
274848	CAMPGROVE;RU	0.9151	50/50	0.9151
274849	CRESCENT ;1U	0.2820	50/50	0.2820
274851	PROVIDENC;RU	0.2905	50/50	0.2905
274861	TOP CROP ;1U	1.4232	50/50	1.4232
274862	TOP CROP ;2U	2.7150	50/50	2.7150
274877	BISHOP HL;1U	0.6239	50/50	0.6239
274878	BISHOP HL;2U	0.6239	50/50	0.6239
274879	MINONK ;1U	1.6816	50/50	1.6816
274891	OTTER CRK;1U	1.5126	50/50	1.5126
290021	O50 E	42.6352	50/50	42.6352
293516	O-009 E1	6.6087	Adder	7.77
293517	O-009 E2	3.3567	Adder	3.95
293518	O-009 E3	3.6966	Adder	4.35
293644	O22 E1	40.0060	50/50	40.0060
293645	O22 E2	77.6588	50/50	77.6588
293715	O-029 E	7.0654	Adder	8.31
293716	O-029 E	3.8739	Adder	4.56
293717	O-029 E	3.5605	Adder	4.19
293771	O-035 E	10.5832	50/50	10.5832
294401	BSHIL;1U E	15.8184	50/50	15.8184
294410	BSHIL;2U E	15.8184	50/50	15.8184
916211	Z1-072 E	8.0089	50/50	8.0089
918052	AA1-018 E OP	64.1629	50/50	64.1629
925581	AC1-033 C	2.5901	50/50	2.5901
925582	AC1-033 E	17.3400	50/50	17.3400
926821	AC1-168 C O1	1.4830	50/50	1.4830
926822	AC1-168 E O1	9.9519	50/50	9.9519
926841	AC1-171 C O1	3.2764	50/50	3.2764
926842	AC1-171 E O1	21.8853	50/50	21.8853
927201	AC1-214 C O1	0.5359	50/50	0.5359
927202	AC1-214 E O1	10.7977	50/50	10.7977
934051	AD1-031 C O1	5.2572	50/50	5.2572
934052	AD1-031 E O1	8.5776	50/50	8.5776
934871	AD1-116 C	3.7367	50/50	3.7367
934872	AD1-116 E	6.0967	50/50	6.0967
936291	AD2-038 C O1	9.5893	50/50	9.5893
936292	AD2-038 E O1	64.1747	50/50	64.1747
937531	AD2-214 C	2.8538	Adder	3.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937532	AD2-214 E	1.9025	Adder	2.24
938851	AE1-113 C O1	17.5870	50/50	17.5870
938852	AE1-113 E O1	62.3540	50/50	62.3540
939321	AE1-163 C O1	24.0962	50/50	24.0962
939322	AE1-163 E O1	148.0198	50/50	148.0198
942421	AE2-255 C O1	6.6617	50/50	6.6617
942422	AE2-255 E O1	19.9852	50/50	19.9852
942651	AE2-281 C O1	3.4423	50/50	3.4423
942652	AE2-281 E O1	21.1457	50/50	21.1457
946321	AF1-296 C O1	2.9008	Adder	3.41
946322	AF1-296 E O1	13.5809	Adder	15.98
946541	AF1-318 C O1	8.0475	50/50	8.0475
946542	AF1-318 E O1	37.6769	50/50	37.6769
951631	J456 C	4.2649	PJM External (MISO)	4.2649
951632	J456 E	23.0741	PJM External (MISO)	23.0741
951821	J541 C	5.0157	PJM External (MISO)	5.0157
951822	J541 E	27.1363	PJM External (MISO)	27.1363
952651	J756 C	3.9462	PJM External (MISO)	3.9462
952652	J756 E	21.3498	PJM External (MISO)	21.3498
952871	J757 C	5.0345	PJM External (MISO)	5.0345
952872	J757 E	27.2381	PJM External (MISO)	27.2381
953201	J715 C	1.6953	PJM External (MISO)	1.6953
953202	J715 E	9.1717	PJM External (MISO)	9.1717
953951	J859	25.6712	PJM External (MISO)	25.6712
954702	J844 E	29.2589	PJM External (MISO)	29.2589
954792	J952 E	4.6597	PJM External (MISO)	4.6597
954901	J963	0.7214	PJM External (MISO)	0.7214
954981	J974 C	16.6308	PJM External (MISO)	16.6308
954982	J974 E	89.9767	PJM External (MISO)	89.9767
955051	J981 C	2.8467	PJM External (MISO)	2.8467
955052	J981 E	15.4013	PJM External (MISO)	15.4013
955431	J1025 C	4.1638	PJM External (MISO)	4.1638
955432	J1025 E	22.5272	PJM External (MISO)	22.5272
955441	J1026 C	5.0613	PJM External (MISO)	5.0613
955442	J1026 E	27.3827	PJM External (MISO)	27.3827
955711	J1055 C	4.8810	PJM External (MISO)	4.8810
955712	J1055 E	26.4073	PJM External (MISO)	26.4073
956151	J1102	6.9972	PJM External (MISO)	6.9972
956411	J1131	8.7360	PJM External (MISO)	8.7360
956431	J1135	5.4335	PJM External (MISO)	5.4335
956841	J1182	20.8350	PJM External (MISO)	20.8350
957751	AF2-069 C	0.3933	50/50	0.3933
957752	AF2-069 E	1.2693	50/50	1.2693
957761	AF2-070 C	0.5542	50/50	0.5542
957762	AF2-070 E	2.6905	50/50	2.6905
958341	AF2-128 C O1	2.0568	50/50	2.0568
958342	AF2-128 E O1	9.6297	50/50	9.6297
958481	AF2-142 C	44.2503	50/50	44.2503
958482	AF2-142 E	29.5002	50/50	29.5002
958491	AF2-143 C	44.2584	50/50	44.2584
958492	AF2-143 E	29.5056	50/50	29.5056
959351	AF2-226 C	9.8054	50/50	9.8054

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959352	AF2-226 E	14.7081	50/50	14.7081
960281	AF2-319 C	9.8054	50/50	9.8054
960282	AF2-319 E	14.7081	50/50	14.7081
961651	AG1-005 C O1	22.5810	50/50	22.5810
961652	AG1-005 E O1	15.0540	50/50	15.0540
962721	AG1-121 C O1	9.5091	50/50	9.5091
962722	AG1-121 E O1	44.4858	50/50	44.4858
965141	AG1-379 C	36.5597	50/50	36.5597
965142	AG1-379 E	16.7343	50/50	16.7343
965671	AG1-435 C O1	6.6419	50/50	6.6419
965672	AG1-435 E O1	31.0961	50/50	31.0961
965931	AG1-462 C O1	8.0368	Adder	17.84
965932	AG1-462 E O1	5.3579	Adder	11.89
966821	AG1-553 C O1	11.7873	Adder	26.16
966822	AG1-553 E O1	2.9468	Adder	6.54
990901	L-005 E	27.6619	50/50	27.6619
LGEE	LGEE	0.3085	Confirmed LTF	0.3085
CPL	CPL	0.4900	Confirmed LTF	0.4900
CBM-W2	CBM-W2	37.6589	Confirmed LTF	37.6589
NY	NY	0.1427	Confirmed LTF	0.1427
TVA	TVA	3.9592	Confirmed LTF	3.9592
O-066	O-066	1.4941	Confirmed LTF	1.4941
SIGE	SIGE	0.1520	Confirmed LTF	0.1520
CBM-S2	CBM-S2	10.5757	Confirmed LTF	10.5757
CBM-S1	CBM-S1	0.9131	Confirmed LTF	0.9131
G-007	G-007	0.2310	Confirmed LTF	0.2310
MEC	MEC	14.5584	Confirmed LTF	14.5584
LAGN	LAGN	7.0735	Confirmed LTF	7.0735
CBM-W1	CBM-W1	36.3679	Confirmed LTF	36.3679

11.6.10 Index 10

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
162222708	930760	AB1-122 TAP1	CE	270717	DRESDEN ; R	CE	1	COMED_P7-1_345-L9806_R-S+_345-L19601_B-S	tower	1768.0	171.21	173.35	DC	37.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274677	POWERTON ;5U	59.5206	50/50	59.5206
274678	POWERTON ;6U	59.6905	50/50	59.6905
274848	CAMPGROVE;RU	0.9151	50/50	0.9151
274849	CRESCENT ;1U	0.2820	50/50	0.2820
274851	PROVIDENC;RU	0.2905	50/50	0.2905
274861	TOP CROP ;1U	1.4232	50/50	1.4232
274862	TOP CROP ;2U	2.7150	50/50	2.7150
274877	BISHOP HL;1U	0.6239	50/50	0.6239
274878	BISHOP HL;2U	0.6239	50/50	0.6239
274879	MINONK ;1U	1.6816	50/50	1.6816
274891	OTTER CRK;1U	1.5126	50/50	1.5126
290021	O50 E	42.6352	50/50	42.6352
293516	O-009 E1	6.6087	Adder	7.77
293517	O-009 E2	3.3567	Adder	3.95
293518	O-009 E3	3.6966	Adder	4.35
293644	O22 E1	40.0060	50/50	40.0060
293645	O22 E2	77.6588	50/50	77.6588
293715	O-029 E	7.0654	Adder	8.31
293716	O-029 E	3.8739	Adder	4.56
293717	O-029 E	3.5605	Adder	4.19
293771	O-035 E	10.5832	50/50	10.5832
294401	BSHIL;1U E	15.8184	50/50	15.8184
294410	BSHIL;2U E	15.8184	50/50	15.8184
916211	Z1-072 E	8.0089	50/50	8.0089
918052	AA1-018 E OP	64.1629	50/50	64.1629
925581	AC1-033 C	2.5901	50/50	2.5901
925582	AC1-033 E	17.3400	50/50	17.3400
926821	AC1-168 C O1	1.4830	50/50	1.4830
926822	AC1-168 E O1	9.9519	50/50	9.9519
926841	AC1-171 C O1	3.2764	50/50	3.2764
926842	AC1-171 E O1	21.8853	50/50	21.8853
927201	AC1-214 C O1	0.5359	50/50	0.5359
927202	AC1-214 E O1	10.7977	50/50	10.7977
930761	AB1-122 CT1	394.5247	50/50	394.5247
934051	AD1-031 C O1	5.2572	50/50	5.2572
934052	AD1-031 E O1	8.5776	50/50	8.5776
934101	AD1-039 1	38.6634	50/50	38.6634
934871	AD1-116 C	3.7367	50/50	3.7367
934872	AD1-116 E	6.0967	50/50	6.0967
936291	AD2-038 C O1	9.5893	50/50	9.5893

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936292	AD2-038 E O1	64.1747	50/50	64.1747
938851	AE1-113 C O1	17.5870	50/50	17.5870
938852	AE1-113 E O1	62.3540	50/50	62.3540
939321	AE1-163 C O1	24.0962	50/50	24.0962
939322	AE1-163 E O1	148.0198	50/50	148.0198
942421	AE2-255 C O1	6.6617	50/50	6.6617
942422	AE2-255 E O1	19.9852	50/50	19.9852
942651	AE2-281 C O1	3.4423	50/50	3.4423
942652	AE2-281 E O1	21.1457	50/50	21.1457
946321	AF1-296 C O1	2.9008	Adder	3.41
946322	AF1-296 E O1	13.5809	Adder	15.98
946541	AF1-318 C O1	8.0475	50/50	8.0475
946542	AF1-318 E O1	37.6769	50/50	37.6769
951631	J456 C	4.2649	PJM External (MISO)	4.2649
951632	J456 E	23.0741	PJM External (MISO)	23.0741
952651	J756 C	3.9462	PJM External (MISO)	3.9462
952652	J756 E	21.3498	PJM External (MISO)	21.3498
952871	J757 C	5.0345	PJM External (MISO)	5.0345
952872	J757 E	27.2381	PJM External (MISO)	27.2381
953201	J715 C	1.6953	PJM External (MISO)	1.6953
953202	J715 E	9.1717	PJM External (MISO)	9.1717
953951	J859	25.6712	PJM External (MISO)	25.6712
954702	J844 E	29.2589	PJM External (MISO)	29.2589
954792	J952 E	4.6597	PJM External (MISO)	4.6597
954981	J974 C	16.6308	PJM External (MISO)	16.6308
954982	J974 E	89.9767	PJM External (MISO)	89.9767
955051	J981 C	2.8467	PJM External (MISO)	2.8467
955052	J981 E	15.4013	PJM External (MISO)	15.4013
955431	J1025 C	4.1638	PJM External (MISO)	4.1638
955432	J1025 E	22.5272	PJM External (MISO)	22.5272
955711	J1055 C	4.8810	PJM External (MISO)	4.8810
955712	J1055 E	26.4073	PJM External (MISO)	26.4073
956151	J1102	6.9972	PJM External (MISO)	6.9972
956411	J1131	8.7360	PJM External (MISO)	8.7360
956431	J1135	5.4335	PJM External (MISO)	5.4335
957751	AF2-069 C	0.3933	50/50	0.3933
957752	AF2-069 E	1.2693	50/50	1.2693
957761	AF2-070 C	0.5542	50/50	0.5542
957762	AF2-070 E	2.6905	50/50	2.6905
958341	AF2-128 C O1	2.0568	50/50	2.0568
958342	AF2-128 E O1	9.6297	50/50	9.6297
958481	AF2-142 C	44.2503	50/50	44.2503
958482	AF2-142 E	29.5002	50/50	29.5002
958491	AF2-143 C	44.2584	50/50	44.2584
958492	AF2-143 E	29.5056	50/50	29.5056
959351	AF2-226 C	9.8054	50/50	9.8054
959352	AF2-226 E	14.7081	50/50	14.7081
960281	AF2-319 C	9.8054	50/50	9.8054
960282	AF2-319 E	14.7081	50/50	14.7081
961651	AG1-005 C O1	22.5810	50/50	22.5810
961652	AG1-005 E O1	15.0540	50/50	15.0540
962721	AG1-121 C O1	9.5091	50/50	9.5091

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
962722	AG1-121 E O1	44.4858	50/50	44.4858
965141	AG1-379 C	36.5597	50/50	36.5597
965142	AG1-379 E	16.7343	50/50	16.7343
965671	AG1-435 C O1	6.6419	50/50	6.6419
965672	AG1-435 E O1	31.0961	50/50	31.0961
965931	AG1-462 C O1	8.0368	Adder	17.84
965932	AG1-462 E O1	5.3579	Adder	11.89
966821	AG1-553 C O1	11.7873	Adder	26.16
966822	AG1-553 E O1	2.9468	Adder	6.54
990901	L-005 E	27.6619	50/50	27.6619
LGEE	LGEE	0.3085	Confirmed LTF	0.3085
CPL	CPL	0.4900	Confirmed LTF	0.4900
CBM-W2	CBM-W2	37.6589	Confirmed LTF	37.6589
NY	NY	0.1427	Confirmed LTF	0.1427
TVA	TVA	3.9592	Confirmed LTF	3.9592
O-066	O-066	1.4941	Confirmed LTF	1.4941
SIGE	SIGE	0.1520	Confirmed LTF	0.1520
CBM-S2	CBM-S2	10.5757	Confirmed LTF	10.5757
CBM-S1	CBM-S1	0.9131	Confirmed LTF	0.9131
G-007	G-007	0.2310	Confirmed LTF	0.2310
MEC	MEC	14.5584	Confirmed LTF	14.5584
LAGN	LAGN	7.0735	Confirmed LTF	7.0735
CBM-W1	CBM-W1	36.3679	Confirmed LTF	36.3679

11.6.11 Index 11

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
163033533	936510	AD2-066 TAP	CE	271987	MAZON ; R	CE	1	COMED_P7-1_138-L6101__S+_138-L7413__R-S-B	tower	230.0	139.31	153.06	DC	31.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.3552	50/50	0.3552
274851	PROVIDENC;RU	0.3658	50/50	0.3658
293771	O-035 E	13.3271	50/50	13.3271
916211	Z1-072 E	10.0854	50/50	10.0854
926821	AC1-168 C O1	1.4441	50/50	1.4441
926822	AC1-168 E O1	9.6912	50/50	9.6912
927201	AC1-214 C O1	0.6749	50/50	0.6749
927202	AC1-214 E O1	13.5972	50/50	13.5972
936511	AD2-066 C O1	44.8934	50/50	44.8934
936512	AD2-066 E O1	29.9289	50/50	29.9289
946541	AF1-318 C O1	11.8847	50/50	11.8847
946542	AF1-318 E O1	55.6416	50/50	55.6416
953201	J715 C	3.4871	PJM External (MISO)	3.4871
953202	J715 E	18.8659	PJM External (MISO)	18.8659
957751	AF2-069 C	0.4953	50/50	0.4953
957752	AF2-069 E	1.5984	50/50	1.5984
957761	AF2-070 C	0.6979	50/50	0.6979
957762	AF2-070 E	3.3881	50/50	3.3881
958341	AF2-128 C O1	3.1497	50/50	3.1497
958342	AF2-128 E O1	14.7465	50/50	14.7465
961651	AG1-005 C O1	33.7665	50/50	33.7665
961652	AG1-005 E O1	22.5110	50/50	22.5110
962721	AG1-121 C O1	8.2080	50/50	8.2080
962722	AG1-121 E O1	38.3988	50/50	38.3988
965671	AG1-435 C O1	5.5669	50/50	5.5669
965672	AG1-435 E O1	26.0631	50/50	26.0631
966083	AG1-477 BAT	1.3602	50/50	1.3602
966103	AG1-479 BAT (Withdrawn : 12/03/2020)	1.3602	50/50	1.3602
LGEE	LGEE	0.0547	Confirmed LTF	0.0547
CPLE	CPLE	0.0512	Confirmed LTF	0.0512
G-007A	G-007A	0.0599	Confirmed LTF	0.0599
VFT	VFT	0.1613	Confirmed LTF	0.1613
CBM-W2	CBM-W2	2.4013	Confirmed LTF	2.4013
TVA	TVA	0.2576	Confirmed LTF	0.2576
SIGE	SIGE	0.0127	Confirmed LTF	0.0127
CBM-S2	CBM-S2	0.9500	Confirmed LTF	0.9500
CBM-S1	CBM-S1	0.0631	Confirmed LTF	0.0631
CBM-N	CBM-N	0.0288	Confirmed LTF	0.0288

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
MEC	MEC	0.6340	Confirmed LTF	0.6340
LAGN	LAGN	0.4007	Confirmed LTF	0.4007
CBM-W1	CBM-W1	1.1356	Confirmed LTF	1.1356

11.6.12 Index 12

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
162222748	946150	AF1-280 TAP	CE	274768	LEE CO EC;BP	CE	1	COMED_P7-1_345-L15502_B-R+_345-L16703_R-S-A	tower	1768.0	116.16	117.37	DC	21.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	37.0988	50/50	37.0988
274663	QUAD CITI;2U	37.2081	50/50	37.2081
274699	CORDOVA ;1C	6.5438	50/50	6.5438
274700	CORDOVA ;2C	6.5438	50/50	6.5438
274701	CORDOVA ;1S	7.3617	50/50	7.3617
274715	NELSON EC;1C	10.1476	50/50	10.1476
274716	NELSON EC;1S	7.4042	50/50	7.4042
274717	NELSON EC;2C	10.2260	50/50	10.2260
274718	NELSON EC;2S	7.4705	50/50	7.4705
274848	CAMP GROVE;RU	0.4467	50/50	0.4467
274849	CRESCENT ;1U	0.1623	50/50	0.1623
274851	PROVIDENC;RU	0.1672	50/50	0.1672
274877	BISHOP HL;1U	0.3896	50/50	0.3896
274878	BISHOP HL;2U	0.3896	50/50	0.3896
276156	O-029 C	0.4634	50/50	0.4634
276157	O-029 C	0.5010	50/50	0.5010
276158	O-029 C	0.9143	50/50	0.9143
293513	O-009 C1	0.8558	50/50	0.8558
293514	O-009 C2	0.4342	50/50	0.4342
293515	O-009 C3	0.4801	50/50	0.4801
293516	O-009 E1	21.7086	50/50	21.7086
293517	O-009 E2	11.0263	50/50	11.0263
293518	O-009 E3	12.1430	50/50	12.1430
293715	O-029 E	23.2089	50/50	23.2089
293716	O-029 E	12.7251	50/50	12.7251
293717	O-029 E	11.6958	50/50	11.6958
293771	O-035 E	6.0917	50/50	6.0917
294401	BSHIL;1U E	9.8776	50/50	9.8776
294410	BSHIL;2U E	9.8776	50/50	9.8776
295110	SUBLETTE C	0.1171	50/50	0.1171
295111	SUBLETTE E	5.2875	50/50	5.2875
916211	Z1-072 E	4.6099	50/50	4.6099
919221	AA1-146	9.4663	50/50	9.4663
919581	AA2-030 C	60.0007	50/50	60.0007
920273	AA2-123 BAT	2.3628	50/50	2.3628
925581	AC1-033 C	1.6178	50/50	1.6178
925582	AC1-033 E	10.8309	50/50	10.8309
927201	AC1-214 C O1	0.3085	50/50	0.3085
927202	AC1-214 E O1	6.2152	50/50	6.2152

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934051	AD1-031 C O1	3.2862	50/50	3.2862
934052	AD1-031 E O1	5.3616	50/50	5.3616
937531	AD2-214 C	11.2632	50/50	11.2632
937532	AD2-214 E	7.5088	50/50	7.5088
939051	AE1-134 1	4.6625	50/50	4.6625
939061	AE1-134 2	4.6625	50/50	4.6625
943411	AF1-012 C	40.1257	50/50	40.1257
943412	AF1-012 E	26.7505	50/50	26.7505
943803	AF1-048 BAT	6.1058	50/50	6.1058
946151	AF1-280 C O1	66.2518	50/50	66.2518
946152	AF1-280 E O1	30.4662	50/50	30.4662
946161	AF1-281 C O1	1.4508	50/50	1.4508
946162	AF1-281 E O1	8.2210	50/50	8.2210
946321	AF1-296 C O1	9.3131	50/50	9.3131
946322	AF1-296 E O1	43.6016	50/50	43.6016
951381	J504	5.2420	PJM External (MISO)	5.2420
951421	J514	3.2700	PJM External (MISO)	3.2700
951511	J530 C	5.6125	PJM External (MISO)	5.6125
951512	J530 E	22.4500	PJM External (MISO)	22.4500
954702	J844 E	16.0230	PJM External (MISO)	16.0230
954792	J952 E	7.2495	PJM External (MISO)	7.2495
954901	J963	1.3009	PJM External (MISO)	1.3009
955051	J981 C	4.0485	PJM External (MISO)	4.0485
955052	J981 E	21.9035	PJM External (MISO)	21.9035
955971	J1084	34.2570	PJM External (MISO)	34.2570
956411	J1131	17.9560	PJM External (MISO)	17.9560
957471	AF2-041 C	68.7780	50/50	68.7780
957472	AF2-041 E	34.3890	50/50	34.3890
957751	AF2-069 C	0.2264	50/50	0.2264
957752	AF2-069 E	0.7306	50/50	0.7306
957761	AF2-070 C	0.3190	50/50	0.3190
957762	AF2-070 E	1.5486	50/50	1.5486
958911	AF2-182 C	87.0462	50/50	87.0462
958912	AF2-182 E	58.0308	50/50	58.0308
958921	AF2-183 C	15.4749	50/50	15.4749
958922	AF2-183 E	23.2123	50/50	23.2123
959081	AF2-199 C	22.9260	50/50	22.9260
959082	AF2-199 E	11.4630	50/50	11.4630
959091	AF2-200 C O1	45.8520	50/50	45.8520
959092	AF2-200 E O1	22.9260	50/50	22.9260
960551	AF2-346 C	17.1967	50/50	17.1967
960552	AF2-346 E	11.4645	50/50	11.4645
961011	AF2-392 C O1	10.0683	50/50	10.0683
961012	AF2-392 E O1	47.1377	50/50	47.1377
961021	AF2-393 O1	17.1618	50/50	17.1618
961031	AF2-394 O1	11.4412	50/50	11.4412
962012	AG1-044 E	0.1720	50/50	0.1720
964462	AG1-309 NFTW	520.5480	50/50	520.5480
965061	AG1-371	11.4630	50/50	11.4630
965071	AG1-372	7.6420	50/50	7.6420
965081	AG1-373	3.8210	50/50	3.8210
965661	AG1-434 C O1	13.4506	50/50	13.4506

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965662	AG1-434 E O1	62.9734	50/50	62.9734
965671	AG1-435 C O1	3.7752	50/50	3.7752
965672	AG1-435 E O1	17.6748	50/50	17.6748
965931	AG1-462 C O1	46.7928	50/50	46.7928
965932	AG1-462 E O1	31.1952	50/50	31.1952
966521	AG1-521 C O1	15.8456	50/50	15.8456
966522	AG1-521 E O1	3.9614	50/50	3.9614
966821	AG1-553 C O1	68.6294	50/50	68.6294
966822	AG1-553 E O1	17.1574	50/50	17.1574
990901	L-005 E	13.5036	50/50	13.5036
LGEE	LGEE	0.3946	Confirmed LTF	0.3946
CPL	CPL	0.6095	Confirmed LTF	0.6095
G-007A	G-007A	0.8295	Confirmed LTF	0.8295
VFT	VFT	2.2252	Confirmed LTF	2.2252
CBM-W2	CBM-W2	24.1293	Confirmed LTF	24.1293
TVA	TVA	2.9806	Confirmed LTF	2.9806
SIGE	SIGE	0.0630	Confirmed LTF	0.0630
CBM-S2	CBM-S2	11.1499	Confirmed LTF	11.1499
CBM-S1	CBM-S1	0.7057	Confirmed LTF	0.7057
CBM-N	CBM-N	0.4128	Confirmed LTF	0.4128
MEC	MEC	15.5229	Confirmed LTF	15.5229
LAGN	LAGN	5.3900	Confirmed LTF	5.3900
CBM-W1	CBM-W1	25.8949	Confirmed LTF	25.8949

11.6.13 Index 13

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
170033159	958340	AF2-128 TAP	CE	348935	4CORBIN	AMIL	1	COMED_P1-2_138-L6101___-S-B	single	179.0	143.39	145.23	DC	3.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMP GROVE;RU	0.3234	80/20	0.3234
274849	CRESCENT ;1U	0.5338	80/20	0.5338
274851	PROVIDENCE;RU	0.5498	80/20	0.5498
274877	BISHOP HL;1U	0.2955	80/20	0.2955
274878	BISHOP HL;2U	0.2955	80/20	0.2955
925581	AC1-033 C	1.2323	80/20	1.2323
927201	AC1-214 C O1	1.0144	80/20	1.0144
934051	AD1-031 C O1	2.4868	80/20	2.4868
946541	AF1-318 C O1	35.8726	80/20	35.8726
957751	AF2-069 C	0.7444	80/20	0.7444
957761	AF2-070 C	1.0489	80/20	1.0489
958341	AF2-128 C O1	10.4908	80/20	10.4908
961651	AG1-005 C O1	105.5835	80/20	105.5835
962721	AG1-121 C O1	4.8511	80/20	4.8511
965671	AG1-435 C O1	3.2905	80/20	3.2905
WEC	WEC	0.1062	Confirmed LTF	0.1062
CBM-W2	CBM-W2	0.7616	Confirmed LTF	0.7616
NY	NY	0.0216	Confirmed LTF	0.0216
TVA	TVA	0.0840	Confirmed LTF	0.0840
CBM-S2	CBM-S2	0.0104	Confirmed LTF	0.0104
CBM-S1	CBM-S1	0.0160	Confirmed LTF	0.0160
HAMLET	HAMLET	0.0029	Confirmed LTF	0.0029
MEC	MEC	1.0106	Confirmed LTF	1.0106
GIBSON	GIBSON	0.0284	Confirmed LTF	0.0284
BLUEG	BLUEG	0.0764	Confirmed LTF	0.0764
TRIMBLE	TRIMBLE	0.0256	Confirmed LTF	0.0256
LAGN	LAGN	0.2310	Confirmed LTF	0.2310
CBM-W1	CBM-W1	4.2761	Confirmed LTF	4.2761

11.6.14 Index 14

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
162678461	961650	AG1-005 TAP	CE	958340	AF2-128 TAP	CE	1	COMED_P2-1_074-L6101___-C	single	179.0	137.31	139.24	DC	3.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.3398	80/20	0.3398
274849	CRESCENT ;1U	0.5436	80/20	0.5436
274851	PROVIDENC;RU	0.5599	80/20	0.5599
274877	BISHOP HL;1U	0.3097	80/20	0.3097
274878	BISHOP HL;2U	0.3097	80/20	0.3097
925581	AC1-033 C	1.2915	80/20	1.2915
927201	AC1-214 C O1	1.0330	80/20	1.0330
934051	AD1-031 C O1	2.6065	80/20	2.6065
946541	AF1-318 C O1	36.3277	80/20	36.3277
957751	AF2-069 C	0.7581	80/20	0.7581
957761	AF2-070 C	1.0682	80/20	1.0682
961651	AG1-005 C O1	106.9020	80/20	106.9020
962721	AG1-121 C O1	5.0852	80/20	5.0852
965671	AG1-435 C O1	3.4489	80/20	3.4489
WEC	WEC	0.1096	Confirmed LTF	0.1096
CBM-W2	CBM-W2	0.9766	Confirmed LTF	0.9766
NY	NY	0.0210	Confirmed LTF	0.0210
TVA	TVA	0.1078	Confirmed LTF	0.1078
SIGE	SIGE	0.0009	Confirmed LTF	0.0009
CBM-S2	CBM-S2	0.0940	Confirmed LTF	0.0940
CBM-S1	CBM-S1	0.0217	Confirmed LTF	0.0217
MEC	MEC	1.0948	Confirmed LTF	1.0948
GIBSON	GIBSON	0.0224	Confirmed LTF	0.0224
BLUEG	BLUEG	0.0677	Confirmed LTF	0.0677
TRIMBLE	TRIMBLE	0.0223	Confirmed LTF	0.0223
LAGN	LAGN	0.2713	Confirmed LTF	0.2713
CBM-W1	CBM-W1	4.5425	Confirmed LTF	4.5425

11.6.15 Index 15

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
162503864	962720	AG1-121 TAP	CE	271655	HENNEPIN; T	CE	1	COMED_P4_074-38-L15508_	breaker	208.0	196.52	241.97	DC	94.55

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	1.1070	50/50	1.1070
274877	BISHOP HL;1U	1.0130	50/50	1.0130
274878	BISHOP HL;2U	1.0130	50/50	1.0130
293516	O-009 E1	5.5948	Adder	6.58
293517	O-009 E2	2.8417	Adder	3.34
293518	O-009 E3	3.1295	Adder	3.68
293715	O-029 E	5.9814	Adder	7.04
293716	O-029 E	3.2795	Adder	3.86
293717	O-029 E	3.0142	Adder	3.55
294401	BSHIL;1U E	25.6840	50/50	25.6840
294410	BSHIL;2U E	25.6840	50/50	25.6840
926841	AC1-171 C O1	0.6825	Adder	0.8
926842	AC1-171 E O1	4.5585	Adder	5.36
934051	AD1-031 C O1	8.5455	50/50	8.5455
934052	AD1-031 E O1	13.9427	50/50	13.9427
962721	AG1-121 C O1	29.3354	50/50	29.3354
962722	AG1-121 E O1	137.2378	50/50	137.2378
965671	AG1-435 C O1	16.6404	50/50	16.6404
965672	AG1-435 E O1	77.9076	50/50	77.9076
990901	L-005 E	33.4639	50/50	33.4639
WEC	WEC	0.1188	Confirmed LTF	0.1188
CBM-W2	CBM-W2	0.7347	Confirmed LTF	0.7347
NY	NY	0.0221	Confirmed LTF	0.0221
TVA	TVA	0.0784	Confirmed LTF	0.0784
O-066	O-066	0.2625	Confirmed LTF	0.2625
SIGE	SIGE	0.0022	Confirmed LTF	0.0022
CBM-S1	CBM-S1	0.0156	Confirmed LTF	0.0156
G-007	G-007	0.0410	Confirmed LTF	0.0410
HAMLET	HAMLET	0.0035	Confirmed LTF	0.0035
MEC	MEC	0.7850	Confirmed LTF	0.7850
GIBSON	GIBSON	0.0142	Confirmed LTF	0.0142
BLUEG	BLUEG	0.0573	Confirmed LTF	0.0573
TRIMBLE	TRIMBLE	0.0189	Confirmed LTF	0.0189
LAGN	LAGN	0.2013	Confirmed LTF	0.2013
CATAWBA	CATAWBA	0.0007	Confirmed LTF	0.0007
CBM-W1	CBM-W1	3.8555	Confirmed LTF	3.8555

11.6.16 Index 16

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
162503931	965670	AG1-435 TAP	CE	962720	AG1-121 TAP	CE	1	COMED_P4_074-38-L15508_	breaker	208.0	116.77	162.23	DC	94.55

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMP GROVE;RU	1.1070	50/50	1.1070
274877	BISHOP HL;1U	1.0130	50/50	1.0130
274878	BISHOP HL;2U	1.0130	50/50	1.0130
293516	O-009 E1	5.5948	Adder	6.58
293517	O-009 E2	2.8417	Adder	3.34
293518	O-009 E3	3.1295	Adder	3.68
293715	O-029 E	5.9814	Adder	7.04
293716	O-029 E	3.2795	Adder	3.86
293717	O-029 E	3.0142	Adder	3.55
294401	BSHIL;1U E	25.6840	50/50	25.6840
294410	BSHIL;2U E	25.6840	50/50	25.6840
926841	AC1-171 C O1	0.6825	Adder	0.8
926842	AC1-171 E O1	4.5585	Adder	5.36
934051	AD1-031 C O1	8.5455	50/50	8.5455
934052	AD1-031 E O1	13.9427	50/50	13.9427
965671	AG1-435 C O1	16.6404	50/50	16.6404
965672	AG1-435 E O1	77.9076	50/50	77.9076
990901	L-005 E	33.4639	50/50	33.4639
WEC	WEC	0.1188	Confirmed LTF	0.1188
CBM-W2	CBM-W2	0.7347	Confirmed LTF	0.7347
NY	NY	0.0221	Confirmed LTF	0.0221
TVA	TVA	0.0784	Confirmed LTF	0.0784
O-066	O-066	0.2625	Confirmed LTF	0.2625
SIGE	SIGE	0.0022	Confirmed LTF	0.0022
CBM-S1	CBM-S1	0.0156	Confirmed LTF	0.0156
G-007	G-007	0.0410	Confirmed LTF	0.0410
HAMLET	HAMLET	0.0035	Confirmed LTF	0.0035
MEC	MEC	0.7850	Confirmed LTF	0.7850
GIBSON	GIBSON	0.0142	Confirmed LTF	0.0142
BLUEG	BLUEG	0.0573	Confirmed LTF	0.0573
TRIMBLE	TRIMBLE	0.0189	Confirmed LTF	0.0189
LAGN	LAGN	0.2013	Confirmed LTF	0.2013
CATAWBA	CATAWBA	0.0007	Confirmed LTF	0.0007
CBM-W1	CBM-W1	3.8555	Confirmed LTF	3.8555

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
AA1-146	Nelson	Active
AA2-030	Nelson	Active
AA2-123	Marengo 34kV	In Service
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Engineering and Procurement
AC1-033	Kewanee	Active
AC1-168	Kewanee-Streator	Active
AC1-171	Powerton	Active
AC1-214	Crescent Ridge	In Service
AD1-031	Kewanee 138 kV	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-116	Nevada 345 kV	Active
AD2-038	Powerton	Active
AD2-066	Mazon-Crescent Ridge	Active
AD2-214	Rock Falls-Garden Plains	Active
AE1-113	Mole Creek 345 kV	Active
AE1-134	Nelson 345 kV	Active
AE1-163	Powerton-Nevada 345 kV	Active
AE2-255	Molecreek 345 kV	Active
AE2-281	Powerton-Nevada 345 kV	Active
AF1-012	Electric Junc-Nelson	Active
AF1-048	Belvidere-Marengo	Active
AF1-280	Nelson-Lee County	Active
AF1-281	Nelson-Lee County	Active
AF1-296	Garden Plain 138 kV	Active
AF1-318	Crescent Ridge-Corbin	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-069	Crescent Ridge 138 kV	Active
AF2-070	Crescent Ridge 138 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
AF2-226	Katydid Road 345 kV	Active
AF2-319	Katydid Road 345 kV	Active
AF2-346	Electric Junction-Nelson 345 kV	Active

Queue Number	Project Name	Status
AF2-392	Nelson-Dixon 138 kV	Active
AF2-393	Nelson-Dixon 138 kV	Active
AF2-394	Nelson-Dixon 138 kV	Active
AG1-005	Corbin-Crescent Ridge 138 kV	Active
AG1-044	Whiteside County	Active
AG1-121	Crescent Ridge 138 kV	Active
AG1-309	Byron 345 kV	Active
AG1-371	Nelson-Electric Junction 345 kV	Active
AG1-372	Nelson-Electric Junction 345 kV	Active
AG1-373	Nelson-Electric Junction 345 kV	Active
AG1-379	Minonk 345 kV	Active
AG1-434	Electric Junction-Nelson 345 kV	Active
AG1-435	Kewanee-Hennepin 138 kV	Active
AG1-462	Quad Cities-Sterling Steel 345 kV	Active
AG1-477	Grundy County 34.5 kV	Active
AG1-479	Grundy County 34.5 kV II	Withdrawn
AG1-521	Dixon-McGirr Road 138 kV	Active
AG1-553	Cordova 345 kV	Active
Z1-072	Crescent Ridge	In Service
Z2-081	Streator 34.5kV	In Service
J1025	MISO	MISO
J1026	MISO	MISO
J1055	MISO	MISO
J1084	MISO	MISO
J1102	MISO	MISO
J1131	MISO	MISO
J1135	MISO	MISO
J1182	MISO	MISO
J456	MISO	MISO
J504	MISO	MISO
J514	MISO	MISO
J530	MISO	MISO
J541	MISO	MISO
J715	MISO	MISO
J756	MISO	MISO
J757	MISO	MISO
J844	MISO	MISO
J859	MISO	MISO
J952	MISO	MISO
J963	MISO	MISO
J974	MISO	MISO
J981	MISO	MISO

11.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
COMED_P2-2_001_LA-138B__1	CONTINGENCY 'COMED_P2-2_001_LA-138B__1' / CONTINGENCY # 1 DISCONNECT BUS 271908 / LASCO STA; B 138 END
COMED_P1-2_138-L6101__-S-B	CONTINGENCY 'COMED_P1-2_138-L6101__-S-B' / CONTINGENCY # 505 TRIP BRANCH FROM BUS 271655 TO BUS 962720 CKT 1 / HENNEEPIN; T 138 AG1-121 TAP 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 926820 TO BUS 271655 CKT 1 / AC1-168 TAP 138 HENNEEPIN; T 138 END
COMED_P1-2_138-L98105_R-S-D	CONTINGENCY 'COMED_P1-2_138-L98105_R-S-D' / CONTINGENCY # 576 TRIP BRANCH FROM BUS 958340 TO BUS 348935 CKT 1 / AF2-128 TA ; 4CORBIN 138 END
COMED_P1-2_138-L7719__R-S-A	CONTINGENCY 'COMED_P1-2_138-L7719__R-S-A' / CONTINGENCY # 536 TRIP BRANCH FROM BUS 271987 TO BUS 271187 CKT 1 / MAZON ; R 138 CHANNAHON; R 138 TRIP BRANCH FROM BUS 271987 TO BUS 936510 CKT 1 / MAZON ; R 138 AD2-066 TAP 138 CLOSE LINE FROM BUS 271986 TO BUS 271987 CKT 1 / MAZON ; B 138 MAZON ; R 138 END
COMED_P7-1_345-L0301__B-S+_345-L0303__R-S-B	CONTINGENCY 'COMED_P7-1_345-L0301__B-S+_345-L0303__R-S-B' / CONTINGENCY # 4 TRIP BRANCH FROM BUS 270854 TO BUS 270790 CKT 1 / POWERTON ; B 345 KATYDID ; B 345 TRIP BRANCH FROM BUS 936290 TO BUS 270827 CKT 1 / AD2-038 TAP 345 NEVADA ; 345 REMOVE SWSHUNT FROM BUS 270827 / NEVADA ; 345 END
COMED_P2-1_074-L6101__-A	CONTINGENCY 'COMED_P2-1_074-L6101__-A' / CONTINGENCY # 83 TRIP BRANCH FROM BUS 271835 TO BUS 965670 CKT 1 / KEWANEE ;23 138 AG1-435 TAP 138 END
COMED_P2-1_074-L6101__-C	CONTINGENCY 'COMED_P2-1_074-L6101__-C' / CONTINGENCY # 83 TRIP BRANCH FROM BUS 962720 TO BUS 271655 CKT 1 / AG1-121 TAP 138 HENNEEPIN; T 138 END

Contingency Name	Contingency Definition
COMED_P1-3_TR81_LASCO_B-S	CONTINGENCY 'COMED_P1-3_TR81_LASCO_B-S' / CONTINGENCY # 591 TRIP BRANCH FROM BUS 270802 TO BUS 270803 CKT 1 / LASCO STA; B 345 LASCO STA; R 345 TRIP BRANCH FROM BUS 270802 TO BUS 271908 CKT 1 / LASCO STA; B 345 LASCO STA; B 138 END
EXT_P12:138:AMIL::MCCLEANCOU NTY:OGLESBY:1382	CONTINGENCY 'EXT_P12:138:AMIL::MCCLEANCOUNTY:OGLESBY:1382' / 10351 OPEN BRANCH FROM BUS 272017 TO BUS 348881 CKT 1 / 272017 MINONK ; 138 348881 4MINONK TAP 138 1 OPEN BRANCH FROM BUS 348880 TO BUS 348881 CKT 1 / 348880 4EL PASO 138 348881 4MINONK TAP 138 1 OPEN BRANCH FROM BUS 348881 TO BUS 348935 CKT 1 / 348881 4MINONK TAP 138 348935 4CORBIN 138 1 OPEN BRANCH FROM BUS 348854 TO BUS 348880 CKT 1 / 348854 4MCCLEAN CO 138 348880 4EL PASO 138 1 OPEN BRANCH FROM BUS 349373 TO BUS 348880 CKT 1 / 349373 1EL PASO 34.5 348880 4EL PASO 138 1 OPEN BRANCH FROM BUS 349380 TO BUS 348880 CKT 1 / 349380 2EL PASO 69.0 348880 4EL PASO 138 1 END
COMED_P1-2_345-L15502_B-R-D	CONTINGENCY 'COMED_P1-2_345-L15502_B-R-D' / CONTINGENCY # 347 TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELECT JCT; B 345 END
COMED_P7-1_138-L11106_B- R+_345-L15502_B-R-A	CONTINGENCY 'COMED_P7-1_138-L11106_B-R+_345-L15502_B-R-A' / CONTINGENCY # 58 TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT JCT; B 138 ESS W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272948 CKT 1 / GLIDDEN ;BT 138 CHI W CTR 138 TRIP BRANCH FROM BUS 272948 TO BUS 271558 CKT 1 / CHI W CTR 138 GLIDDEN ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDDEN ;BT 138 WATERMAN ; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / ESS W541 ; B 138 N AURORA ; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AURORA ; B 138 SUGAR GRV; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR GRV; B 138 GLIDDEN ;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / ESS W541 ; B 138 ESS W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR GRV; B 138 SUGAR GRV; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AURORA ; B 138 N AURORA ; R 138 TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELECT JCT; B 345 END

Contingency Name	Contingency Definition
COMED_P2-2_074_KE-138__1	CONTINGENCY 'COMED_P2-2_074_KE-138__1' / CONTINGENCY # 55 DISCONNECT BUS 271836 / KEWANEE ;11 138 DISCONNECT BUS 271837 / KEWANEE ;12 138 DISCONNECT BUS 271838 / KEWANEE ;13 138 END
COMED_P1-2_138-L7405__R-S	CONTINGENCY 'COMED_P1-2_138-L7405__R-S' / CONTINGENCY # 526 TRIP BRANCH FROM BUS 271836 TO BUS 272110 CKT 1 / KEWANEE ;11 138 NORMANDY ; B 138 TRIP BRANCH FROM BUS 272110 TO BUS 272505 CKT 1 / NORMANDY ; B 138 SCHAUFF R; R 138 MOVE 100 PERCENT LOAD FROM BUS 272110 TO BUS 272111 / NORMANDY ; B 138 NORMANDY ; R 138 END
COMED_P7-1_345-L15502_B-R+_345-L16703_R-S-A	CONTINGENCY 'COMED_P7-1_345-L15502_B-R+_345-L16703_R-S-A' / CONTINGENCY # 136 TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELECT JCT; B 345 TRIP BRANCH FROM BUS 270846 TO BUS 270847 CKT 1 / PLANO ; B 345 PLANO ; R 345 TRIP BRANCH FROM BUS 270847 TO BUS 270733 CKT 1 / PLANO ; R 345 ELECT JCT;3R 345 END
COMED_P4_074-38-L7413__	CONTINGENCY 'COMED_P4_074-38-L7413__' / CONTINGENCY # 251 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 DISCONNECT BUS 271836 / KEWANEE ;11 138 DISCONNECT BUS 271837 / KEWANEE ;12 138 DISCONNECT BUS 271838 / KEWANEE ;13 138 END
COMED_P7-1_138-L6101__S+_138-L98105_R-S-A	CONTINGENCY 'COMED_P7-1_138-L6101__S+_138-L98105_R-S-A' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 962720 CKT 1 / HENNEEPIN; T 138 AG1-121 TAP 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 272521 TO BUS 926820 CKT 1 / STREATOR ; 138 AC1-168 TAP 138 TRIP BRANCH FROM BUS 271241 TO BUS 946540 CKT 1 / CRESCENT ; R 138 AF1-318 TAP MN 138 END

Contingency Name	Contingency Definition
COMED_P7-1_138-L6101___-S+_138-L98105_R-S-B	CONTINGENCY 'COMED_P7-1_138-L6101___-S+_138-L98105_R-S-B' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 962720 CKT 1 / HENNEEPIN; T 138 AG1-121 TAP 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 272521 TO BUS 926820 CKT 1 / STREATOR ; 138 AC1-168 TAP 138 TRIP BRANCH FROM BUS 958340 TO BUS 348935 CKT 1 / AF2-128 TAP 138 4OGLESBY MN 138 END
COMED_P7-1_138-L6101___-S+_138-L98105_R-S-C	CONTINGENCY 'COMED_P7-1_138-L6101___-S+_138-L98105_R-S-C' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 962720 CKT 1 / HENNEEPIN; T 138 AG1-121 TAP 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 926820 TO BUS 271655 CKT 1 / AC1-168 TAP ; 138 HENNEEPIN; T 138 TRIP BRANCH FROM BUS 271241 TO BUS 946540 CKT 1 / CRESCENT ; R 138 AF1-318 TAP MN 138 END
COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D	CONTINGENCY 'COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 962720 CKT 1 / HENNEEPIN; T 138 AG1-121 TAP 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 926820 TO BUS 271655 CKT 1 / AC1-168 TAP ; 138 HENNEEPIN; T 138 TRIP BRANCH FROM BUS 958340 TO BUS 348935 CKT 1 / AF2-128 TAP 138 4OGLESBY MN 138 END
EXT_348923 4KEWANEE N 138 348974 4KEWANEE S 138 Z	CONTINGENCY 'EXT_348923 4KEWANEE N 138 348974 4KEWANEE S 138 Z' OPEN BRANCH FROM BUS 348923 TO BUS 348974 CKT Z END
Base Case	
COMED_P7-1_345-L9806___R-S+_345-L19601_B-S	CONTINGENCY 'COMED_P7-1_345-L9806___R-S+_345-L19601_B-S' / CONTINGENCY # 238 TRIP BRANCH FROM BUS 270827 TO BUS 270769 CKT 1 / NEVADA ; 345 GOODINGS ;2R 345 TRIP BRANCH FROM BUS 270790 TO BUS 270770 CKT 1 / KATYDID ; B 345 GOODINGS ;4B 345 END

Contingency Name	Contingency Definition
COMED_P7-1_138-L6101__ - S+_138-L7413__R-S-A	CONTINGENCY 'COMED_P7-1_138-L6101__ -S+_138-L7413__R-S-A' / CONTINGENCY # 207 TRIP BRANCH FROM BUS 272521 TO BUS 926820 CKT 1 / STREATOR ; 138 AC1-168 TAP 138 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 END
COMED_P1-2_138-L0112__B-S	CONTINGENCY 'COMED_P1-2_138-L0112__B-S' / CONTINGENCY # 127 TRIP BRANCH FROM BUS 271844 TO BUS 271908 CKT 1 / KICKAPOO ; B 138 LASCO STA; B 138 END
COMED_P7-1_138-L6101__ - S+_138-L7413__R-S-B	CONTINGENCY 'COMED_P7-1_138-L6101__ -S+_138-L7413__R-S-B' / CONTINGENCY # 207 TRIP BRANCH FROM BUS 965670 TO BUS 271835 CKT 1 / AG1-435 TAP 138 KEWANEE ;23 138 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 END
COMED_P1-2_345-L1202__B-S	CONTINGENCY 'COMED_P1-2_345-L1202__B-S' / CONTINGENCY # 254 TRIP BRANCH FROM BUS 270716 TO BUS 930770 CKT 1 / DRESDEN ; B 345 AB1-122 345 END
COMED_P4_074-38-L15508__	CONTINGENCY 'COMED_P4_074-38-L15508__' / CONTINGENCY # 248 TRIP BRANCH FROM BUS 271331 TO BUS 271333 CKT 1 / DIXON ;8R 138 DIXON ; R 138 TRIP BRANCH FROM BUS 272097 TO BUS 271331 CKT 1 / NELSON ;RT 138 DIXON ;8R 138 TRIP BRANCH FROM BUS 272097 TO BUS 272095 CKT 1 / NELSON ;RT 138 NELSON ; R 138 TRIP BRANCH FROM BUS 272505 TO BUS 272097 CKT 1 / SCHAUFF R; R 138 NELSON ;RT 138 MOVE 100 PERCENT LOAD FROM BUS 271331 TO BUS 271330 / DIXON ;8R 138 DIXON ;7B 138 DISCONNECT BUS 271836 / KEWANEE ;11 138 DISCONNECT BUS 271837 / KEWANEE ;12 138 DISCONNECT BUS 271838 / KEWANEE ;13 138 END

12 Short Circuit Analysis - Primary POI

The following Breakers are overdutied

Bus Number	Bus Name	BREAKER	Type	Capacity (Amps)	Duty Percentage Post Queue	Duty Percentage Pre Queue
	Kewanee 2 138.kV	74 7411	T	19469.6	120.69%	114.89%

12.1 System Reinforcements - Short Circuit

- Upgrade the existing overdutied 138kV circuit breaker with a new 138kV circuit breaker that has a interrupting fault rating of 63kA at 3 cycles. Estimated cost is \$3M with a 24-30 month estimated construction timeline. No change in one line or relay schemes.

13 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-435 was evaluated as a 200.0 MW (Capacity 35.2 MW) injection at the Crescent Ridge 138 kV substation in the ComEd area. Project AG1-435 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-435 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)

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 PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
171061660	270828	NELSON ;B	345.0	CE	946150	AF1-280 TAP	345.0	CE	1	COMED_P7-1_138-L11106_B-R+_345-L15502_B-R	tower	1768.0	99.92	101.09	DC	20.83
174303077	271835	KEWANE E ;23	138.0	CE	348962	4KEEMI N	138.0	AMI L	1	COMED_P4_187-38-BT5-6__	breake r	223.0	93.63	107.55	DC	31.04

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADING %	POST PROJE CT LOADING %	ACDC	MW IMPACT
162678440	271241	CRESCENT ; R	138.0	CE	271836	KEWANEE ;11	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	single	214.0	145.72	162.16	DC	35.19
162678441	271241	CRESCENT ; R	138.0	CE	271836	KEWANEE ;11	138.0	CE	1	COMED_P1-2_138-L98105_R-S-C	single	214.0	139.28	155.72	DC	35.19
162222776	271835	KEWANEE ;23	138.0	CE	348962	4KEEMIN	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-B	tower	223.0	106.57	120.78	DC	31.7
162222777	271835	KEWANEE ;23	138.0	CE	348962	4KEEMIN	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-D	tower	223.0	106.57	120.78	DC	31.7
162678452	271836	KEWANEE ;11	138.0	CE	271837	KEWANEE ;12	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	single	246.0	138.25	150.5	DC	30.15
162678453	271836	KEWANEE ;11	138.0	CE	271837	KEWANEE ;12	138.0	CE	1	COMED_P1-2_138-L98105_R-S-C	single	246.0	133.46	145.71	DC	30.15
162222767	271837	KEWANEE ;12	138.0	CE	349637	4EDWARD3	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-B	tower	189.0	110.51	123.82	DC	25.17
162222768	271837	KEWANEE ;12	138.0	CE	349637	4EDWARD3	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-D	tower	189.0	110.51	123.82	DC	25.17
162222688	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-B	tower	449.0	171.72	187.88	DC	72.55
162222689	271838	KEWANEE ;13	138.0	CE	348923	4KEWANEE N	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-D	tower	449.0	171.72	187.88	DC	72.55
162370777	271987	MAZON ; R	138.0	CE	271187	CHANNAHON ; R	138.0	CE	1	COMED_P2-2_074_KE-138__1	bus	230.0	128.65	145.31	DC	38.31
162504030	271987	MAZON ; R	138.0	CE	271187	CHANNAHON ; R	138.0	CE	1	COMED_P4_074-38-L15508__	breaker	230.0	129.19	145.87	DC	38.36
162504031	271987	MAZON ; R	138.0	CE	271187	CHANNAHON ; R	138.0	CE	1	COMED_P4_074-38-L7413__	breaker	230.0	128.65	145.31	DC	38.31
163033554	271987	MAZON ; R	138.0	CE	271187	CHANNAHON ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-B	tower	230.0	127.94	145.46	DC	40.28
163033555	271987	MAZON ; R	138.0	CE	271187	CHANNAHON ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-A	tower	230.0	135.32	152.46	DC	39.44
162370794	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P2-2_074_KE-138__1	bus	280.0	119.87	133.51	DC	38.19
162504041	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P4_074-38-L15508__	breaker	280.0	120.27	133.93	DC	38.24
162504042	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P4_074-38-L7413__	breaker	280.0	119.87	133.51	DC	38.19
163033579	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-B	tower	280.0	119.34	133.68	DC	40.16
163033580	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-A	tower	280.0	125.35	139.39	DC	39.32
162222683	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-B	tower	214.0	197.80	216.01	DC	38.96
162222684	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AM IL	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-D	tower	214.0	197.80	216.01	DC	38.96
162222685	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AM IL	1	COMED_P7-1_138-L7411_R-S + 138-L7405_R-S	tower	214.0	164.87	182.45	DC	37.62
163033542	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-B	tower	274.0	131.54	145.76	DC	38.96
163033543	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L98105_R-S-D	tower	274.0	131.54	145.76	DC	38.96
162222479	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	COMED_P2-2_074_KE-138__1	bus	223.0	122.63	141.85	DC	42.85
162222757	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-B	tower	223.0	119.07	139.26	DC	45.02
162222758	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	COMED_P7-1_138-L6101__ - S + 138-L7413_R-S-A	tower	223.0	131.44	151.39	DC	44.5
174302894	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	COMED_P4_074-38-L15508__	breaker	223.0	123.26	142.5	DC	42.9
162222693	349662	7TAZEWELL	345.0	AMI L	930760	AB1-122 TAP1	345.0	CE	1	COMED_P7-1_345-L9806_R-S + 345-L19601_B-S	tower	1479.0	181.56	183.99	DC	35.76
162222694	349662	7TAZEWELL	345.0	AMI L	930760	AB1-122 TAP1	345.0	CE	1	COMED_P7-1_345-L0301_B-S + 345-L0303_R-S-B	tower	1479.0	165.63	168.07	DC	35.8
162222373	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P2-2_116_GG-345R__2	bus	1479.0	172.48	174.65	DC	31.88
162222374	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P2-2_111_EJ-345B__1	bus	1479.0	167.37	169.49	DC	31.42

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 PROJE CT LOADING %	POST PROJE CT LOADING %	AC DC	MW IMPACT
162222708	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P7-1_345-L9806_R-S_ + 345-L19601_B-S	tower	1768.0	171.14	173.18	DC	35.76
162222709	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P7-1_345-L0301_B-S_ + 345-L0303_R-S-B	tower	1768.0	158.81	160.84	DC	35.8
174302795	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	COMED_P4_012-45-BT4-5__	breaker	1479.0	187.59	189.73	DC	31.56
162370732	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P2-2_074_KE-138__1	bus	230.0	151.13	169.76	DC	42.85
162503960	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P4_074-38-L15508__	breaker	230.0	151.75	170.4	DC	42.9
162503961	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P4_074-38-L7413__	breaker	230.0	151.13	169.76	DC	42.85
163033533	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S_ + 138-L7413_R-S-B	tower	230.0	147.94	167.51	DC	45.02
163033534	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P7-1_138-L6101__ - S_ + 138-L7413_R-S-A	tower	230.0	159.87	179.22	DC	44.5
162222748	946150	AF1-280 TAP	345.0	CE	274768	LEE CO EC,BP	345.0	CE	1	COMED_P7-1_345-L15502_B-R_ + 345-L16703_R-S-A	tower	1768.0	113.53	114.69	DC	20.57
171061567	946150	AF1-280 TAP	345.0	CE	274768	LEE CO EC,BP	345.0	CE	1	COMED_P7-1_138-L11106_B-R_ + 345-L15502_B-R	tower	1768.0	113.51	114.68	DC	20.83
162222363	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	COMED_P2-2_111_EJ-345B__1	bus	179.0	410.89	448.82	DC	67.91
162222679	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	COMED_P7-1_345-L15502_B-R_ + 345-L16703_R-S-A	tower	179.0	410.46	448.4	DC	67.92
170033161	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	Base Case	single	179.0	143.26	149.92	DC	11.92
171061174	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	COMED_P2-2_074_KE-138__2	bus	179.0	410.11	452.13	DC	75.21
171061493	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	COMED_P7-1_138-L11106_B-R_ + 345-L15502_B-R	tower	179.0	411.15	449.09	DC	67.92
174718499	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AM IL	1	EXT_P21:138:AMIL::MCLEANCO:ELPASOTAP	single	179.0	149.28	155.64	DC	11.37
162678464	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	EXT_P21:138:AMIL::KEWANEE:PRINCETONTAP	single	179.0	146.31	153.08	DC	12.12
162678465	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	Base Case	single	179.0	137.31	143.97	DC	11.92
177508496	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	EXT_P12:138:AMIL::HENNEPIN:KEWANEE:1552	single	179.0	145.08	151.85	DC	12.12

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADING %	POST PROJE CT LOADING %	AC DC	MW IMPACT
168523273	270717	DRESDE N ; R	345.0	CE	270697	COLLINS ; R	345.0	CE	1	Base Case	operation	1334.0	103.09	103.59	DC	14.51

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 PROJE CT LOADING %	POST PROJE CT LOADING %	AC DC	MW IMPACT
168523134	270828	NELSON ; B	345.0	CE	946150	AF1-280 TAP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-D	operation	1479.0	119.01	120.41	DC	20.71
162678435	271241	CRESCENT ; R	138.0	CE	271836	KEWANE E ;11	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	214.0	539.19	632.62	DC	199.96
162678439	271241	CRESCENT ; R	138.0	CE	271836	KEWANE E ;11	138.0	CE	1	Base Case	operation	190.0	252.73	322.32	DC	132.23
162896063	271241	CRESCENT ; R	138.0	CE	946540	AF1-318 TAP	138.0	CE	1	COMED_P1-2_138-L7413__R-S	operation	179.0	293.25	404.96	DC	199.96
162896068	271241	CRESCENT ; R	138.0	CE	946540	AF1-318 TAP	138.0	CE	1	Base Case	operation	179.0	151.35	189.19	DC	67.73
175550757	271835	KEWANE E ;23	138.0	CE	348962	4KEEMIN	138.0	AM IL	1	COMED_P1-2_138-L98105_R-S-D	operation	223.0	94.11	107.0	DC	28.74
177508698	271835	KEWANE E ;23	138.0	CE	271655	HENNEEP IN; T	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	201.0	138.66	150.46	DC	23.73
162678448	271836	KEWANE E ;11	138.0	CE	271837	KEWANE E ;12	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	246.0	443.68	513.32	DC	171.31
162678450	271836	KEWANE E ;11	138.0	CE	271837	KEWANE E ;12	138.0	CE	1	Base Case	operation	190.0	233.24	290.82	DC	109.4
162678592	271837	KEWANE E ;12	138.0	CE	271838	KEWANE E ;13	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	449.0	218.52	251.63	DC	148.65
168523454	271837	KEWANE E ;12	138.0	CE	349637	4EDWARD S3	138.0	AM IL	1	COMED_P1-2_138-L98105_R-S-D	operation	189.0	95.06	107.04	DC	22.65
177508547	271837	KEWANE E ;12	138.0	CE	271838	KEWANE E ;13	138.0	CE	1	Base Case	operation	351.0	115.25	141.45	DC	91.96
168523187	271838	KEWANE E ;13	138.0	CE	348923	4KEWANE E N	138.0	AM IL	1	COMED_P1-2_138-L98105_R-S-D	operation	449.0	135.52	149.1	DC	60.95
177508735	271838	KEWANE E ;13	138.0	CE	271845	KEWANE E ;21	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	449.0	111.72	131.25	DC	87.7
177508779	271839	KEWANE E ;22	138.0	CE	271835	KEWANE E ;23	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	449.0	102.14	113.83	DC	52.47
162678709	271844	KICKAPOO ; B	138.0	CE	271908	LASCO STA; B	138.0	CE	1	Base Case	operation	351.0	101.18	107.06	DC	20.64
162678718	271845	KEWANE E ;21	138.0	CE	271839	KEWANE E ;22	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	449.0	135.3	154.82	DC	87.66
162678714	271908	LASCO STA; B	138.0	CE	271986	MAZON ; B	138.0	CE	1	COMED_P1-3_TR81_LASCO_B-S	operation	223.0	104.84	107.5	DC	13.14
162678636	271987	MAZON ; R	138.0	CE	271187	CHANNAHON; R	138.0	CE	1	Base Case	operation	173.0	126.87	131.86	DC	19.15
177508702	271987	MAZON ; R	138.0	CE	271187	CHANNAHON; R	138.0	CE	1	COMED_P1-2_138-L7413__R-S	operation	223.0	126.65	143.36	DC	37.26
162678661	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	Base Case	operation	210.0	123.6	127.68	DC	19.03
177508719	272125	ESS J339 ; R	138.0	CE	271337	DRESDEN ; R	138.0	CE	1	COMED_P1-2_138-L7413__R-S	operation	268.0	120.24	134.09	DC	37.14
168522993	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AM IL	1	Base Case	operation	184.0	158.08	172.98	DC	27.41
174718621	272269	POWER TON ;	138.0	CE	349600	4TOWERLINE	138.0	AM IL	1	COMED_P1-2_138-L98105_R-S-B	operation	214.0	160.98	177.42	DC	35.17
162678565	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	COMED_P1-2_138-L98105_R-S-D	operation	194.0	169.55	187.67	DC	35.17
162678568	272607	TOULON ; R	138.0	CE	272269	POWER TON ;	138.0	CE	1	Base Case	operation	155.0	147.48	165.17	DC	27.41
169750976	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	Base Case	operation	173.0	118.38	130.73	DC	21.37
175306042	348935	4CORBIN	138.0	AMI L	936510	AD2-066 TAP	138.0	CE	1	COMED_P1-2_138-L7413__R-S	operation	223.0	120.5	139.19	DC	41.68
169750776	349662	7TAZEWELL	345.0	AMI L	930760	AB1-122 TAP1	345.0	CE	1	COMED_P1-2_345-L1202__B-S	operation	1479.0	166.19	168.35	DC	31.9
169750777	349662	7TAZEWELL	345.0	AMI L	930760	AB1-122 TAP1	345.0	CE	1	Base Case	operation	120.10	152.81	155.32	DC	29.96
169750719	930760	AB1-122 TAP1	345.0	CE	270717	DRESDEN ; R	345.0	CE	1	Base Case	operation	120.10	181.91	184.42	DC	29.96
162678605	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	Base Case	operation	173.0	160.42	172.77	DC	21.37

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 PROJE CT LOADING %	POST PROJE CT LOADING %	AC DC	MW IMPACT
162678608	936510	AD2-066 TAP	138.0	CE	271987	MAZON ; R	138.0	CE	1	COMED_P1-2_138-L7413__R-S	operation	223.0	153.6	172.29	DC	41.68
168523078	946150	AF1-280 TAP	345.0	CE	274768	LEE CO EC;BP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-D	operation	1479.0	135.18	136.58	DC	20.71
162895859	946540	AF1-318 TAP	138.0	CE	961650	AG1-005 TAP	138.0	CE	1	EXT_P21:138:AMIL::EKEWANEE:P RINCETONTAP	operation	179.0	282.03	320.51	DC	68.88
162895860	946540	AF1-318 TAP	138.0	CE	961650	AG1-005 TAP	138.0	CE	1	Base Case	operation	179.0	268.76	306.6	DC	67.73
170033158	958340	AF2-128 TAP	138.0	CE	348935	4CORBIN	138.0	AMIL	1	Base Case	operation	179.0	404.5	442.34	DC	67.73
162678458	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	EXT_P21:138:AMIL::EKEWANEE:P RINCETONTAP	operation	179.0	381.41	419.89	DC	68.88
162678459	961650	AG1-005 TAP	138.0	CE	958340	AF2-128 TAP	138.0	CE	1	Base Case	operation	179.0	370.18	408.02	DC	67.73

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 gauge 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
171061660	270828	NELSON ; B	CE	946150	AF1-280 TAP	CE	1	COMED_P7-1_138-L11106_B-R+_345-L15502_B-R	tower	1768.0	99.92	101.09	DC	20.83

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	37.4294	50/50	37.4294
274663	QUAD CITI;2U	37.5404	50/50	37.5404
274699	CORDOVA ;1C	6.6018	50/50	6.6018
274700	CORDOVA ;2C	6.6018	50/50	6.6018
274701	CORDOVA ;1S	7.4271	50/50	7.4271
274715	NELSON EC;1C	10.2222	50/50	10.2222
274716	NELSON EC;1S	7.4586	50/50	7.4586
274717	NELSON EC;2C	10.3012	50/50	10.3012
274718	NELSON EC;2S	7.5254	50/50	7.5254
274848	CAMPGROVE;RU	0.4525	50/50	0.4525
274849	CRESCENT ;1U	0.1643	50/50	0.1643
274851	PROVIDENC;RU	0.1692	50/50	0.1692
274877	BISHOP HL;1U	0.3944	50/50	0.3944
274878	BISHOP HL;2U	0.3944	50/50	0.3944
276156	O-029 C	0.4685	50/50	0.4685
276157	O-029 C	0.5065	50/50	0.5065
276158	O-029 C	0.9244	50/50	0.9244
293513	O-009 C1	0.8653	50/50	0.8653
293514	O-009 C2	0.4390	50/50	0.4390
293515	O-009 C3	0.4854	50/50	0.4854
293516	O-009 E1	21.9498	50/50	21.9498
293517	O-009 E2	11.1488	50/50	11.1488
293518	O-009 E3	12.2779	50/50	12.2779
293715	O-029 E	23.4668	50/50	23.4668
293716	O-029 E	12.8665	50/50	12.8665
293717	O-029 E	11.8257	50/50	11.8257
293771	O-035 E	6.1657	50/50	6.1657
294401	BSHIL;1U E	9.9984	50/50	9.9984
294410	BSHIL;2U E	9.9984	50/50	9.9984
295110	SUBLETTE C	0.1193	50/50	0.1193
295111	SUBLETTE E	5.3890	50/50	5.3890
916211	Z1-072 E	4.6659	50/50	4.6659
919221	AA1-146	9.5359	50/50	9.5359
919581	AA2-030 C	60.4419	50/50	60.4419
920273	AA2-123 BAT	2.3106	50/50	2.3106
925581	AC1-033 C	1.6375	50/50	1.6375
925582	AC1-033 E	10.9625	50/50	10.9625
927201	AC1-214 C O1	0.3122	50/50	0.3122
927202	AC1-214 E O1	6.2907	50/50	6.2907
934051	AD1-031 C O1	3.3261	50/50	3.3261

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934052	AD1-031 E O1	5.4267	50/50	5.4267
937531	AD2-214 C	11.3759	50/50	11.3759
937532	AD2-214 E	7.5839	50/50	7.5839
939051	AE1-134 1	4.6968	50/50	4.6968
939061	AE1-134 2	4.6968	50/50	4.6968
943411	AF1-012 C	40.4197	50/50	40.4197
943412	AF1-012 E	26.9465	50/50	26.9465
943803	AF1-048 BAT	5.9649	50/50	5.9649
946163	AF1-281 BAT	10.2724	50/50	10.2724
946321	AF1-296 C O1	9.4072	50/50	9.4072
946322	AF1-296 E O1	44.0420	50/50	44.0420
951381	J504	5.2940	PJM External (MISO)	5.2940
951421	J514	3.3000	PJM External (MISO)	3.3000
951511	J530 C	5.6565	PJM External (MISO)	5.6565
951512	J530 E	22.6260	PJM External (MISO)	22.6260
954702	J844 E	16.1362	PJM External (MISO)	16.1362
954792	J952 E	7.3040	PJM External (MISO)	7.3040
954901	J963	1.3110	PJM External (MISO)	1.3110
955051	J981 C	4.0782	PJM External (MISO)	4.0782
955052	J981 E	22.0638	PJM External (MISO)	22.0638
955971	J1084	34.4835	PJM External (MISO)	34.4835
956411	J1131	18.0800	PJM External (MISO)	18.0800
957471	AF2-041 C	69.2820	50/50	69.2820
957472	AF2-041 E	34.6410	50/50	34.6410
957751	AF2-069 C	0.2291	50/50	0.2291
957752	AF2-069 E	0.7395	50/50	0.7395
957761	AF2-070 C	0.3229	50/50	0.3229
957762	AF2-070 E	1.5675	50/50	1.5675
958923	AF2-183 BAT	41.0896	50/50	41.0896
959081	AF2-199 C	23.0940	50/50	23.0940
959082	AF2-199 E	11.5470	50/50	11.5470
959091	AF2-200 C O1	46.1880	50/50	46.1880
959092	AF2-200 E O1	23.0940	50/50	23.0940
960551	AF2-346 C	17.3228	50/50	17.3228
960552	AF2-346 E	11.5485	50/50	11.5485
961011	AF2-392 C O1	10.1996	50/50	10.1996
961012	AF2-392 E O1	47.7524	50/50	47.7524
961021	AF2-393 O1	17.3856	50/50	17.3856
961031	AF2-394 O1	11.5904	50/50	11.5904
962012	AG1-044 E	0.1737	50/50	0.1737
962721	AG1-121 C O2	5.4054	50/50	5.4054
962722	AG1-121 E O2	25.2876	50/50	25.2876
964462	AG1-309 NFTW	514.7730	50/50	514.7730
965061	AG1-371	11.5470	50/50	11.5470
965071	AG1-372	7.6980	50/50	7.6980
965081	AG1-373	3.8490	50/50	3.8490
965671	AG1-435 C O2	3.6661	50/50	3.6661
965672	AG1-435 E O2	17.1639	50/50	17.1639
965931	AG1-462 C O2	49.0140	50/50	49.0140
965932	AG1-462 E O2	32.6760	50/50	32.6760
966521	AG1-521 C O2	16.9064	50/50	16.9064
966522	AG1-521 E O2	4.2266	50/50	4.2266

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966821	AG1-553 C O2	69.6432	50/50	69.6432
966822	AG1-553 E O2	17.4108	50/50	17.4108
990901	L-005 E	13.6772	50/50	13.6772
LGEE	LGEE	0.3902	Confirmed LTF	0.3902
CPLE	CPLE	0.6074	Confirmed LTF	0.6074
G-007A	G-007A	0.7960	Confirmed LTF	0.7960
VFT	VFT	2.1350	Confirmed LTF	2.1350
CBM-W2	CBM-W2	24.4339	Confirmed LTF	24.4339
TVA	TVA	3.0114	Confirmed LTF	3.0114
SIGE	SIGE	0.0646	Confirmed LTF	0.0646
CBM-S2	CBM-S2	11.1604	Confirmed LTF	11.1604
CBM-S1	CBM-S1	0.7117	Confirmed LTF	0.7117
CBM-N	CBM-N	0.3960	Confirmed LTF	0.3960
MEC	MEC	15.7629	Confirmed LTF	15.7629
LAGN	LAGN	5.4600	Confirmed LTF	5.4600
CBM-W1	CBM-W1	27.2409	Confirmed LTF	27.2409

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
162222777	271835	KEWANEE ;23	CE	348962	4KEEMIN	AMIL	1	COMED_P7-1_138-L6101_-S_+_138-L98105_R-S-D	tower	223.0	106.57	120.78	DC	31.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.5621	50/50	0.5621
274849	CRESCENT ;1U	0.2500	50/50	0.2500
274851	PROVIDENC;RU	0.2576	50/50	0.2576
274877	BISHOP HL;1U	0.5030	50/50	0.5030
274878	BISHOP HL;2U	0.5030	50/50	0.5030
293771	O-035 E	9.3826	50/50	9.3826
294401	BSHIL;1U E	12.7520	50/50	12.7520
294410	BSHIL;2U E	12.7520	50/50	12.7520
916211	Z1-072 E	7.1004	50/50	7.1004
925581	AC1-033 C	2.0787	50/50	2.0787
925582	AC1-033 E	13.9162	50/50	13.9162
926841	AC1-171 C O1	0.4502	Adder	0.53
926842	AC1-171 E O1	3.0070	Adder	3.54
927201	AC1-214 C O1	0.4752	50/50	0.4752
927202	AC1-214 E O1	9.5728	50/50	9.5728
934051	AD1-031 C O1	4.2669	50/50	4.2669
934052	AD1-031 E O1	6.9618	50/50	6.9618
946541	AF1-318 C O1	8.3691	50/50	8.3691
946542	AF1-318 E O1	39.1822	50/50	39.1822
953201	J715 C	0.8271	PJM External (MISO)	0.8271
953202	J715 E	4.4749	PJM External (MISO)	4.4749
957751	AF2-069 C	0.3487	50/50	0.3487
957752	AF2-069 E	1.1253	50/50	1.1253
957761	AF2-070 C	0.4913	50/50	0.4913
957762	AF2-070 E	2.3853	50/50	2.3853
958341	AF2-128 C O1	2.2182	50/50	2.2182
958342	AF2-128 E O1	10.3850	50/50	10.3850
961651	AG1-005 C O1	23.7795	50/50	23.7795
961652	AG1-005 E O1	15.8530	50/50	15.8530
962013	AG1-044 BAT	0.0190	Merchant Transmission	0.0190
962721	AG1-121 C O2	8.2256	50/50	8.2256
962722	AG1-121 E O2	38.4814	50/50	38.4814
965671	AG1-435 C O2	5.5788	50/50	5.5788
965672	AG1-435 E O2	26.1192	50/50	26.1192
990901	L-005 E	16.9917	50/50	16.9917
LGEE	LGEE	0.0691	Confirmed LTF	0.0691
CPLE	CPLE	0.0491	Confirmed LTF	0.0491
G-007A	G-007A	0.1870	Confirmed LTF	0.1870
VFT	VFT	0.5031	Confirmed LTF	0.5031

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	0.8333	Confirmed LTF	0.8333
TVA	TVA	0.0784	Confirmed LTF	0.0784
SIGE	SIGE	0.0060	Confirmed LTF	0.0060
CBM-S2	CBM-S2	0.7308	Confirmed LTF	0.7308
CBM-S1	CBM-S1	0.0247	Confirmed LTF	0.0247
CBM-N	CBM-N	0.0936	Confirmed LTF	0.0936
COTTONWOOD	COTTONWOOD	0.0189	Confirmed LTF	0.0189

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
162678440	271241	CRESCENT ; R	CE	271836	KEWANEE ;11	CE	1	COMED_P1-2_138-L98105_R-S-D	single	214.0	145.72	162.16	DC	35.19

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	1.5774	80/20	1.5774
274851	PROVIDENC;RU	1.6247	80/20	1.6247
927201	AC1-214 C O1	2.9974	80/20	2.9974
946541	AF1-318 C O1	52.7839	80/20	52.7839
957751	AF2-069 C	2.1995	80/20	2.1995
957761	AF2-070 C	3.0993	80/20	3.0993
958341	AF2-128 C O1	13.9891	80/20	13.9891
961651	AG1-005 C O1	149.9685	80/20	149.9685
962721	AG1-121 C O2	51.8891	80/20	51.8891
965671	AG1-435 C O2	35.1926	80/20	35.1926
CALDERWOOD	CALDERWOOD	0.0104	Confirmed LTF	0.0104
NY	NY	0.0116	Confirmed LTF	0.0116
PRAIRIE	PRAIRIE	0.0542	Confirmed LTF	0.0542
CHEOAH	CHEOAH	0.0105	Confirmed LTF	0.0105
COTTONWOOD	COTTONWOOD	0.0441	Confirmed LTF	0.0441
HAMLET	HAMLET	0.0121	Confirmed LTF	0.0121
GIBSON	GIBSON	0.0115	Confirmed LTF	0.0115
BLUEG	BLUEG	0.0365	Confirmed LTF	0.0365
TRIMBLE	TRIMBLE	0.0117	Confirmed LTF	0.0117
CATAWBA	CATAWBA	0.0073	Confirmed LTF	0.0073

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
162678452	271836	KEWANEE ;11	CE	271837	KEWANEE ;12	CE	1	COMED_P1-2_138-L98105_R-S-D	single	246.0	138.25	150.5	DC	30.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	1.3514	80/20	1.3514
274851	PROVIDENC;RU	1.3919	80/20	1.3919
276156	O-029 C	0.2114	80/20	0.2114
276157	O-029 C	0.2285	80/20	0.2285
276158	O-029 C	0.4170	80/20	0.4170
293513	O-009 C1	0.3904	80/20	0.3904
293514	O-009 C2	0.1980	80/20	0.1980
293515	O-009 C3	0.2190	80/20	0.2190
295110	SUBLETTE C	0.0258	80/20	0.0258
927201	AC1-214 C O1	2.5679	80/20	2.5679
946541	AF1-318 C O1	45.2194	80/20	45.2194
957751	AF2-069 C	1.8844	80/20	1.8844
957761	AF2-070 C	2.6553	80/20	2.6553
958341	AF2-128 C O1	11.9843	80/20	11.9843
961651	AG1-005 C O1	128.4765	80/20	128.4765
962721	AG1-121 C O2	44.4544	80/20	44.4544
965671	AG1-435 C O2	30.1502	80/20	30.1502
WEC	WEC	0.2662	Confirmed LTF	0.2662
CALDERWOOD	CALDERWOOD	0.0373	Confirmed LTF	0.0373
NY	NY	0.0559	Confirmed LTF	0.0559
PRAIRIE	PRAIRIE	0.2273	Confirmed LTF	0.2273
CHEOAH	CHEOAH	0.0375	Confirmed LTF	0.0375
HAMLET	HAMLET	0.0491	Confirmed LTF	0.0491
MEC	MEC	1.0869	Confirmed LTF	1.0869
GIBSON	GIBSON	0.0890	Confirmed LTF	0.0890
BLUEG	BLUEG	0.2257	Confirmed LTF	0.2257
TRIMBLE	TRIMBLE	0.0718	Confirmed LTF	0.0718
LAGN	LAGN	0.0367	Confirmed LTF	0.0367
CATAWBA	CATAWBA	0.0290	Confirmed LTF	0.0290
CBM-W1	CBM-W1	6.7997	Confirmed LTF	6.7997

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
162222768	271837	KEWANEE ;12	CE	349637	4EDWARDS3	AMIL	1	COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D	tower	189.0	110.51	123.82	DC	25.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.4168	50/50	0.4168
274849	CRESCENT ;1U	0.1985	50/50	0.1985
274851	PROVIDENC;RU	0.2045	50/50	0.2045
274877	BISHOP HL;1U	0.3958	50/50	0.3958
274878	BISHOP HL;2U	0.3958	50/50	0.3958
293771	O-035 E	7.4497	50/50	7.4497
294401	BSHIL;1U E	10.0344	50/50	10.0344
294410	BSHIL;2U E	10.0344	50/50	10.0344
916211	Z1-072 E	5.6376	50/50	5.6376
925581	AC1-033 C	1.6494	50/50	1.6494
925582	AC1-033 E	11.0423	50/50	11.0423
927201	AC1-214 C O1	0.3773	50/50	0.3773
927202	AC1-214 E O1	7.6007	50/50	7.6007
934051	AD1-031 C O1	3.3306	50/50	3.3306
934052	AD1-031 E O1	5.4341	50/50	5.4341
946541	AF1-318 C O1	6.6432	50/50	6.6432
946542	AF1-318 E O1	31.1020	50/50	31.1020
957751	AF2-069 C	0.2768	50/50	0.2768
957752	AF2-069 E	0.8935	50/50	0.8935
957761	AF2-070 C	0.3901	50/50	0.3901
957762	AF2-070 E	1.8939	50/50	1.8939
958341	AF2-128 C O1	1.7605	50/50	1.7605
958342	AF2-128 E O1	8.2422	50/50	8.2422
961651	AG1-005 C O1	18.8745	50/50	18.8745
961652	AG1-005 E O1	12.5830	50/50	12.5830
962721	AG1-121 C O2	6.5311	50/50	6.5311
962722	AG1-121 E O2	30.5540	50/50	30.5540
965671	AG1-435 C O2	4.4296	50/50	4.4296
965672	AG1-435 E O2	20.7384	50/50	20.7384
990901	L-005 E	12.5996	50/50	12.5996
WEC	WEC	0.1087	Confirmed LTF	0.1087
CBM-W2	CBM-W2	0.0806	Confirmed LTF	0.0806
NY	NY	0.0199	Confirmed LTF	0.0199
TVA	TVA	0.0378	Confirmed LTF	0.0378
O-066	O-066	0.2423	Confirmed LTF	0.2423
SIGE	SIGE	0.0004	Confirmed LTF	0.0004
CBM-S1	CBM-S1	0.0061	Confirmed LTF	0.0061
G-007	G-007	0.0378	Confirmed LTF	0.0378
HAMLET	HAMLET	0.0081	Confirmed LTF	0.0081

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
MEC	MEC	0.8104	Confirmed LTF	0.8104
GIBSON	GIBSON	0.0213	Confirmed LTF	0.0213
BLUEG	BLUEG	0.0642	Confirmed LTF	0.0642
TRIMBLE	TRIMBLE	0.0211	Confirmed LTF	0.0211
LAGN	LAGN	0.1383	Confirmed LTF	0.1383
CATAWBA	CATAWBA	0.0039	Confirmed LTF	0.0039
CBM-W1	CBM-W1	3.8134	Confirmed LTF	3.8134

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
162222689	271838	KEWANEE ;13	CE	348923	4KEWANEE N	AMIL	1	COMED_P7-1_138-L6101__-S+_138-L98105_R-S-D	tower	449.0	171.72	187.88	DC	72.55

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	1.2515	50/50	1.2515
274849	CRESCENT ;1U	0.5723	50/50	0.5723
274851	PROVIDENC;RU	0.5895	50/50	0.5895
274877	BISHOP HL;1U	1.1450	50/50	1.1450
274878	BISHOP HL;2U	1.1450	50/50	1.1450
276156	O-029 C	0.2054	50/50	0.2054
276157	O-029 C	0.2221	50/50	0.2221
276158	O-029 C	0.4053	50/50	0.4053
293513	O-009 C1	0.3793	50/50	0.3793
293514	O-009 C2	0.1924	50/50	0.1924
293515	O-009 C3	0.2128	50/50	0.2128
293516	O-009 E1	9.6225	50/50	9.6225
293517	O-009 E2	4.8875	50/50	4.8875
293518	O-009 E3	5.3824	50/50	5.3824
293715	O-029 E	10.2875	50/50	10.2875
293716	O-029 E	5.6405	50/50	5.6405
293717	O-029 E	5.1842	50/50	5.1842
293771	O-035 E	21.4754	50/50	21.4754
294401	BSHIL;1U E	29.0304	50/50	29.0304
294410	BSHIL;2U E	29.0304	50/50	29.0304
916211	Z1-072 E	16.2516	50/50	16.2516
925581	AC1-033 C	4.7548	50/50	4.7548
925582	AC1-033 E	31.8316	50/50	31.8316
926841	AC1-171 C O1	0.7880	Adder	0.93
926842	AC1-171 E O1	5.2632	Adder	6.19
927201	AC1-214 C O1	1.0875	50/50	1.0875
927202	AC1-214 E O1	21.9107	50/50	21.9107
934051	AD1-031 C O1	9.6361	50/50	9.6361
934052	AD1-031 E O1	15.7221	50/50	15.7221
946541	AF1-318 C O1	19.1509	50/50	19.1509
946542	AF1-318 E O1	89.6603	50/50	89.6603
957751	AF2-069 C	0.7981	50/50	0.7981
957752	AF2-069 E	2.5756	50/50	2.5756
957761	AF2-070 C	1.1246	50/50	1.1246
957762	AF2-070 E	5.4595	50/50	5.4595
958341	AF2-128 C O1	5.0755	50/50	5.0755
958342	AF2-128 E O1	23.7624	50/50	23.7624
961651	AG1-005 C O1	54.4110	50/50	54.4110
961652	AG1-005 E O1	36.2740	50/50	36.2740

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
962012	AG1-044 E	0.0150	Adder	0.03
962721	AG1-121 C O2	18.8272	50/50	18.8272
962722	AG1-121 E O2	88.0781	50/50	88.0781
965671	AG1-435 C O2	12.7692	50/50	12.7692
965672	AG1-435 E O2	59.7829	50/50	59.7829
990901	L-005 E	37.8312	50/50	37.8312
WEC	WEC	0.1525	Confirmed LTF	0.1525
CALDERWOOD	CALDERWOOD	0.0656	Confirmed LTF	0.0656
NY	NY	0.0470	Confirmed LTF	0.0470
PRAIRIE	PRAIRIE	0.6018	Confirmed LTF	0.6018
O-066	O-066	0.5788	Confirmed LTF	0.5788
CHEOAH	CHEOAH	0.0656	Confirmed LTF	0.0656
COTTONWOOD	COTTONWOOD	0.3738	Confirmed LTF	0.3738
G-007	G-007	0.0903	Confirmed LTF	0.0903
HAMLET	HAMLET	0.0641	Confirmed LTF	0.0641
GIBSON	GIBSON	0.0699	Confirmed LTF	0.0699
BLUEG	BLUEG	0.1840	Confirmed LTF	0.1840
TRIMBLE	TRIMBLE	0.0579	Confirmed LTF	0.0579
CATAWBA	CATAWBA	0.0399	Confirmed LTF	0.0399
CBM-W1	CBM-W1	0.6589	Confirmed LTF	0.6589

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
163033555	271987	MAZON ; R	CE	271187	CHANNAHON; R	CE	1	COMED_P7-1_138-L6101___-S+_138-L7413___R-S-A	tower	230.0	135.32	152.46	DC	39.44

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.3111	50/50	0.3111
274851	PROVIDENC;RU	0.3204	50/50	0.3204
293771	O-035 E	11.6736	50/50	11.6736
294401	BSHIL;1U E	3.7788	Adder	4.45
294410	BSHIL;2U E	3.7788	Adder	4.45
916211	Z1-072 E	8.8341	50/50	8.8341
925581	AC1-033 C	0.6182	Adder	0.73
925582	AC1-033 E	4.1387	Adder	4.87
926821	AC1-168 C O1	1.4083	50/50	1.4083
926822	AC1-168 E O1	9.4509	50/50	9.4509
927201	AC1-214 C O1	0.5912	50/50	0.5912
927202	AC1-214 E O1	11.9103	50/50	11.9103
934051	AD1-031 C O1	1.2576	Adder	1.48
934052	AD1-031 E O1	2.0518	Adder	2.41
936511	AD2-066 C O1	39.4305	50/50	39.4305
936512	AD2-066 E O1	26.2870	50/50	26.2870
946541	AF1-318 C O1	10.4101	50/50	10.4101
946542	AF1-318 E O1	48.7380	50/50	48.7380
953201	J715 C	3.0462	PJM External (MISO)	3.0462
953202	J715 E	16.4808	PJM External (MISO)	16.4808
957751	AF2-069 C	0.4338	50/50	0.4338
957752	AF2-069 E	1.4000	50/50	1.4000
957761	AF2-070 C	0.6113	50/50	0.6113
957762	AF2-070 E	2.9677	50/50	2.9677
958341	AF2-128 C O1	2.7589	50/50	2.7589
958342	AF2-128 E O1	12.9169	50/50	12.9169
961651	AG1-005 C O1	29.5770	50/50	29.5770
961652	AG1-005 E O1	19.7180	50/50	19.7180
962721	AG1-121 C O2	10.2342	50/50	10.2342
962722	AG1-121 E O2	47.8777	50/50	47.8777
965671	AG1-435 C O2	6.9411	50/50	6.9411
965672	AG1-435 E O2	32.4969	50/50	32.4969
966081	AG1-477 C	5.3834	50/50	5.3834
966082	AG1-477 E	1.3543	50/50	1.3543
966101	AG1-479 C (Withdrawn : 12/03/2020)	5.3834	50/50	5.3834
966102	AG1-479 E (Withdrawn : 12/03/2020)	1.3543	50/50	1.3543
LGEE	LGEE	0.0540	Confirmed LTF	0.0540

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CPLE	CPLE	0.0532	Confirmed LTF	0.0532
G-007A	G-007A	0.0551	Confirmed LTF	0.0551
VFT	VFT	0.1484	Confirmed LTF	0.1484
CBM-W2	CBM-W2	2.5715	Confirmed LTF	2.5715
TVA	TVA	0.2786	Confirmed LTF	0.2786
SIGE	SIGE	0.0129	Confirmed LTF	0.0129
CBM-S2	CBM-S2	0.9918	Confirmed LTF	0.9918
CBM-S1	CBM-S1	0.0676	Confirmed LTF	0.0676
CBM-N	CBM-N	0.0264	Confirmed LTF	0.0264
MEC	MEC	0.7866	Confirmed LTF	0.7866
LAGN	LAGN	0.4445	Confirmed LTF	0.4445
CBM-W1	CBM-W1	1.7104	Confirmed LTF	1.7104

13.5.8 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
163033580	272125	ESS J339 ; R	CE	271337	DRESDEN ; R	CE	1	COMED_P7-1_138-L6101__-S+_138-L7413__R-S-A	tower	280.0	125.35	139.39	DC	39.32

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274836	EQUISTAR ; R	15.6223	50/50	15.6223
274849	CRESCENT ;1U	0.3101	50/50	0.3101
274851	PROVIDENC;RU	0.3194	50/50	0.3194
293771	O-035 E	11.6375	50/50	11.6375
294401	BSHIL;1U E	3.7380	Adder	4.4
294410	BSHIL;2U E	3.7380	Adder	4.4
916211	Z1-072 E	8.8068	50/50	8.8068
925581	AC1-033 C	0.6114	Adder	0.72
925582	AC1-033 E	4.0933	Adder	4.82
926821	AC1-168 C O1	1.4021	50/50	1.4021
926822	AC1-168 E O1	9.4091	50/50	9.4091
927201	AC1-214 C O1	0.5893	50/50	0.5893
927202	AC1-214 E O1	11.8734	50/50	11.8734
934051	AD1-031 C O1	1.2440	Adder	1.46
934052	AD1-031 E O1	2.0297	Adder	2.39
936511	AD2-066 C O1	39.3880	50/50	39.3880
936512	AD2-066 E O1	26.2587	50/50	26.2587
946541	AF1-318 C O1	10.3779	50/50	10.3779
946542	AF1-318 E O1	48.5872	50/50	48.5872
953201	J715 C	3.0462	PJM External (MISO)	3.0462
953202	J715 E	16.4808	PJM External (MISO)	16.4808
957751	AF2-069 C	0.4325	50/50	0.4325
957752	AF2-069 E	1.3957	50/50	1.3957
957761	AF2-070 C	0.6094	50/50	0.6094
957762	AF2-070 E	2.9585	50/50	2.9585
958341	AF2-128 C O1	2.7504	50/50	2.7504
958342	AF2-128 E O1	12.8769	50/50	12.8769
961651	AG1-005 C O1	29.4855	50/50	29.4855
961652	AG1-005 E O1	19.6570	50/50	19.6570
962721	AG1-121 C O2	10.2025	50/50	10.2025
962722	AG1-121 E O2	47.7296	50/50	47.7296
965671	AG1-435 C O2	6.9196	50/50	6.9196
965672	AG1-435 E O2	32.3964	50/50	32.3964
966081	AG1-477 C	5.3737	50/50	5.3737
966082	AG1-477 E	1.3519	50/50	1.3519
966093	AG1-478 BAT	0.2675	Merchant Transmission	0.2675
966101	AG1-479 C (Withdrawn : 12/03/2020)	5.3737	50/50	5.3737

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966102	AG1-479 E (Withdrawn : 12/03/2020)	1.3519	50/50	1.3519
LGEE	LGEE	0.0157	Confirmed LTF	0.0157
CPL	CPL	0.0116	Confirmed LTF	0.0116
CBM-W2	CBM-W2	2.0250	Confirmed LTF	2.0250
NY	NY	0.0227	Confirmed LTF	0.0227
TVA	TVA	0.1932	Confirmed LTF	0.1932
O-066	O-066	0.2557	Confirmed LTF	0.2557
SIGE	SIGE	0.0129	Confirmed LTF	0.0129
CBM-S2	CBM-S2	0.3550	Confirmed LTF	0.3550
CBM-S1	CBM-S1	0.0445	Confirmed LTF	0.0445
G-007	G-007	0.0399	Confirmed LTF	0.0399
MEC	MEC	0.6896	Confirmed LTF	0.6896
LAGN	LAGN	0.3378	Confirmed LTF	0.3378
CBM-W1	CBM-W1	0.8552	Confirmed LTF	0.8552

13.5.9 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
162222684	272269	POWERTON	CE	349600	4TOWERLINE	AMIL	1	COMED_P7-1_138-L6101__-S+_138-L98105_R-S-D	tower	214.0	197.8	216.01	DC	38.96

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMP GROVE;RU	1.3211	50/50	1.3211
274849	CRESCENT ;1U	0.3073	50/50	0.3073
274851	PROVIDENCE;RU	0.3166	50/50	0.3166
274877	BISHOP HL;1U	0.6170	50/50	0.6170
274878	BISHOP HL;2U	0.6170	50/50	0.6170
293516	O-009 E1	4.9553	Adder	5.83
293517	O-009 E2	2.5169	Adder	2.96
293518	O-009 E3	2.7718	Adder	3.26
293715	O-029 E	5.2978	Adder	6.23
293716	O-029 E	2.9047	Adder	3.42
293717	O-029 E	2.6697	Adder	3.14
293771	O-035 E	11.5322	50/50	11.5322
294401	BSHIL;1U E	15.6432	50/50	15.6432
294410	BSHIL;2U E	15.6432	50/50	15.6432
916211	Z1-072 E	8.7270	50/50	8.7270
925581	AC1-033 C	2.5533	50/50	2.5533
925582	AC1-033 E	17.0936	50/50	17.0936
926841	AC1-171 C O1	8.1878	50/50	8.1878
926842	AC1-171 E O1	54.6912	50/50	54.6912
927201	AC1-214 C O1	0.5840	50/50	0.5840
927202	AC1-214 E O1	11.7659	50/50	11.7659
934051	AD1-031 C O1	5.2101	50/50	5.2101
934052	AD1-031 E O1	8.5008	50/50	8.5008
946541	AF1-318 C O1	10.2834	50/50	10.2834
946542	AF1-318 E O1	48.1447	50/50	48.1447
957751	AF2-069 C	0.4286	50/50	0.4286
957752	AF2-069 E	1.3831	50/50	1.3831
957761	AF2-070 C	0.6039	50/50	0.6039
957762	AF2-070 E	2.9317	50/50	2.9317
958341	AF2-128 C O1	2.7252	50/50	2.7252
958342	AF2-128 E O1	12.7590	50/50	12.7590
961651	AG1-005 C O1	29.2170	50/50	29.2170
961652	AG1-005 E O1	19.4780	50/50	19.4780
962721	AG1-121 C O2	10.1101	50/50	10.1101
962722	AG1-121 E O2	47.2974	50/50	47.2974
965671	AG1-435 C O2	6.8570	50/50	6.8570
965672	AG1-435 E O2	32.1030	50/50	32.1030
990901	L-005 E	39.9354	50/50	39.9354
WEC	WEC	0.2422	Confirmed LTF	0.2422

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CALDERWOOD	CALDERWOOD	0.0308	Confirmed LTF	0.0308
NY	NY	0.0503	Confirmed LTF	0.0503
PRAIRIE	PRAIRIE	0.2170	Confirmed LTF	0.2170
O-066	O-066	0.6057	Confirmed LTF	0.6057
CHEOAH	CHEOAH	0.0310	Confirmed LTF	0.0310
G-007	G-007	0.0945	Confirmed LTF	0.0945
HAMLET	HAMLET	0.0422	Confirmed LTF	0.0422
MEC	MEC	1.5254	Confirmed LTF	1.5254
GIBSON	GIBSON	0.1016	Confirmed LTF	0.1016
BLUEG	BLUEG	0.2344	Confirmed LTF	0.2344
TRIMBLE	TRIMBLE	0.0746	Confirmed LTF	0.0746
LAGN	LAGN	0.1050	Confirmed LTF	0.1050
CATAWBA	CATAWBA	0.0248	Confirmed LTF	0.0248
CBM-W1	CBM-W1	7.6549	Confirmed LTF	7.6549

13.5.10 Index 10

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
163033543	272607	TOULON ;R	CE	272269	POWERTON ;	CE	1	COMED_P7-1_138-L6101__-S_+_138-L98105_R-S-D	tower	274.0	131.54	145.76	DC	38.96

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	1.3211	50/50	1.3211
274849	CRESCENT ;1U	0.3073	50/50	0.3073
274851	PROVIDENC;RU	0.3166	50/50	0.3166
274877	BISHOP HL;1U	0.6170	50/50	0.6170
274878	BISHOP HL;2U	0.6170	50/50	0.6170
293516	O-009 E1	4.9553	Adder	5.83
293517	O-009 E2	2.5169	Adder	2.96
293518	O-009 E3	2.7718	Adder	3.26
293715	O-029 E	5.2978	Adder	6.23
293716	O-029 E	2.9047	Adder	3.42
293717	O-029 E	2.6697	Adder	3.14
293771	O-035 E	11.5322	50/50	11.5322
294401	BSHIL;1U E	15.6432	50/50	15.6432
294410	BSHIL;2U E	15.6432	50/50	15.6432
916211	Z1-072 E	8.7270	50/50	8.7270
925581	AC1-033 C	2.5533	50/50	2.5533
925582	AC1-033 E	17.0936	50/50	17.0936
927201	AC1-214 C O1	0.5840	50/50	0.5840
927202	AC1-214 E O1	11.7659	50/50	11.7659
934051	AD1-031 C O1	5.2101	50/50	5.2101
934052	AD1-031 E O1	8.5008	50/50	8.5008
946541	AF1-318 C O1	10.2834	50/50	10.2834
946542	AF1-318 E O1	48.1447	50/50	48.1447
957751	AF2-069 C	0.4286	50/50	0.4286
957752	AF2-069 E	1.3831	50/50	1.3831
957761	AF2-070 C	0.6039	50/50	0.6039
957762	AF2-070 E	2.9317	50/50	2.9317
958341	AF2-128 C O1	2.7252	50/50	2.7252
958342	AF2-128 E O1	12.7590	50/50	12.7590
961651	AG1-005 C O1	29.2170	50/50	29.2170
961652	AG1-005 E O1	19.4780	50/50	19.4780
962721	AG1-121 C O2	10.1101	50/50	10.1101
962722	AG1-121 E O2	47.2974	50/50	47.2974
965671	AG1-435 C O2	6.8570	50/50	6.8570
965672	AG1-435 E O2	32.1030	50/50	32.1030
990901	L-005 E	39.9354	50/50	39.9354
WEC	WEC	0.2422	Confirmed LTF	0.2422
CALDERWOOD	CALDERWOOD	0.0308	Confirmed LTF	0.0308
NY	NY	0.0503	Confirmed LTF	0.0503

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
PRAIRIE	PRAIRIE	0.2170	Confirmed LTF	0.2170
O-066	O-066	0.6057	Confirmed LTF	0.6057
CHEOAH	CHEOAH	0.0310	Confirmed LTF	0.0310
G-007	G-007	0.0945	Confirmed LTF	0.0945
HAMLET	HAMLET	0.0422	Confirmed LTF	0.0422
MEC	MEC	1.5254	Confirmed LTF	1.5254
GIBSON	GIBSON	0.1016	Confirmed LTF	0.1016
BLUEG	BLUEG	0.2344	Confirmed LTF	0.2344
TRIMBLE	TRIMBLE	0.0746	Confirmed LTF	0.0746
LAGN	LAGN	0.1050	Confirmed LTF	0.1050
CATAWBA	CATAWBA	0.0248	Confirmed LTF	0.0248
CBM-W1	CBM-W1	7.6549	Confirmed LTF	7.6549

13.5.11 Index 11

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
162222758	348935	4CORBIN	AMIL	936510	AD2-066 TAP	CE	1	COMED_P7-1_138-L6101__S+_138-L7413__R-S-A	tower	223.0	131.44	151.39	DC	44.5

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.3510	50/50	0.3510
274851	PROVIDENC;RU	0.3616	50/50	0.3616
293771	O-035 E	13.1720	50/50	13.1720
294401	BSHIL;1U E	4.2731	Adder	5.03
294410	BSHIL;2U E	4.2731	Adder	5.03
916211	Z1-072 E	9.9680	50/50	9.9680
925581	AC1-033 C	0.6991	Adder	0.82
925582	AC1-033 E	4.6799	Adder	5.51
926821	AC1-168 C O1	1.5890	50/50	1.5890
926822	AC1-168 E O1	10.6631	50/50	10.6631
927201	AC1-214 C O1	0.6671	50/50	0.6671
927202	AC1-214 E O1	13.4390	50/50	13.4390
934051	AD1-031 C O1	1.4222	Adder	1.67
934052	AD1-031 E O1	2.3204	Adder	2.73
946541	AF1-318 C O1	11.7464	50/50	11.7464
946542	AF1-318 E O1	54.9940	50/50	54.9940
953201	J715 C	3.4350	PJM External (MISO)	3.4350
953202	J715 E	18.5840	PJM External (MISO)	18.5840
957751	AF2-069 C	0.4895	50/50	0.4895
957752	AF2-069 E	1.5798	50/50	1.5798
957761	AF2-070 C	0.6897	50/50	0.6897
957762	AF2-070 E	3.3486	50/50	3.3486
958341	AF2-128 C O1	3.1131	50/50	3.1131
958342	AF2-128 E O1	14.5749	50/50	14.5749
961651	AG1-005 C O1	33.3735	50/50	33.3735
961652	AG1-005 E O1	22.2490	50/50	22.2490
962721	AG1-121 C O2	11.5477	50/50	11.5477
962722	AG1-121 E O2	54.0230	50/50	54.0230
965671	AG1-435 C O2	7.8320	50/50	7.8320
965672	AG1-435 E O2	36.6680	50/50	36.6680
966083	AG1-477 BAT	1.4011	50/50	1.4011
966103	AG1-479 BAT (Withdrawn : 12/03/2020)	1.4011	50/50	1.4011
990901	L-005 E	5.8107	Adder	6.84
LGEE	LGEE	0.0591	Confirmed LTF	0.0591
CPLE	CPLE	0.0594	Confirmed LTF	0.0594
G-007A	G-007A	0.0575	Confirmed LTF	0.0575
VFT	VFT	0.1548	Confirmed LTF	0.1548
CBM-W2	CBM-W2	2.9030	Confirmed LTF	2.9030

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TVA	TVA	0.3136	Confirmed LTF	0.3136
SIGE	SIGE	0.0145	Confirmed LTF	0.0145
CBM-S2	CBM-S2	1.1066	Confirmed LTF	1.1066
CBM-S1	CBM-S1	0.0764	Confirmed LTF	0.0764
CBM-N	CBM-N	0.0276	Confirmed LTF	0.0276
MEC	MEC	0.9248	Confirmed LTF	0.9248
LAGN	LAGN	0.5057	Confirmed LTF	0.5057
CBM-W1	CBM-W1	2.2432	Confirmed LTF	2.2432

13.5.12 Index 12

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
162222693	349662	7TAZEWELL	AMIL	930760	AB1-122 TAP1	CE	1	COMED_P7-1_345-L9806_R-S_+345-L19601_B-S	tower	1479.0	181.56	183.99	DC	35.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274677	POWERTON ;5U	59.5206	50/50	59.5206
274678	POWERTON ;6U	59.6905	50/50	59.6905
274848	CAMPGROVE;RU	0.9152	50/50	0.9152
274849	CRESCENT ;1U	0.2821	50/50	0.2821
274851	PROVIDENC;RU	0.2906	50/50	0.2906
274861	TOP CROP ;1U	1.4232	50/50	1.4232
274862	TOP CROP ;2U	2.7150	50/50	2.7150
274877	BISHOP HL;1U	0.6240	50/50	0.6240
274878	BISHOP HL;2U	0.6240	50/50	0.6240
274879	MINONK ;1U	1.6816	50/50	1.6816
274891	OTTER CRK;1U	1.5126	50/50	1.5126
290021	O50 E	42.6336	50/50	42.6336
293516	O-009 E1	6.6143	Adder	7.78
293517	O-009 E2	3.3595	Adder	3.95
293518	O-009 E3	3.6998	Adder	4.35
293644	O22 E1	40.0060	50/50	40.0060
293645	O22 E2	77.6588	50/50	77.6588
293715	O-029 E	7.0714	Adder	8.32
293716	O-029 E	3.8771	Adder	4.56
293717	O-029 E	3.5635	Adder	4.19
293771	O-035 E	10.5850	50/50	10.5850
294401	BSHIL;1U E	15.8216	50/50	15.8216
294410	BSHIL;2U E	15.8216	50/50	15.8216
916211	Z1-072 E	8.0102	50/50	8.0102
918052	AA1-018 E OP	64.1629	50/50	64.1629
925581	AC1-033 C	2.5905	50/50	2.5905
925582	AC1-033 E	17.3427	50/50	17.3427
926821	AC1-168 C O1	1.4831	50/50	1.4831
926822	AC1-168 E O1	9.9526	50/50	9.9526
926841	AC1-171 C O1	3.2766	50/50	3.2766
926842	AC1-171 E O1	21.8867	50/50	21.8867
927201	AC1-214 C O1	0.5360	50/50	0.5360
927202	AC1-214 E O1	10.7995	50/50	10.7995
934051	AD1-031 C O1	5.2580	50/50	5.2580
934052	AD1-031 E O1	8.5789	50/50	8.5789
934871	AD1-116 C	3.7367	50/50	3.7367
934872	AD1-116 E	6.0967	50/50	6.0967
936291	AD2-038 C O1	9.5893	50/50	9.5893
936292	AD2-038 E O1	64.1747	50/50	64.1747
937531	AD2-214 C	2.8566	Adder	3.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937532	AD2-214 E	1.9044	Adder	2.24
938851	AE1-113 C O1	17.5864	50/50	17.5864
938852	AE1-113 E O1	62.3516	50/50	62.3516
939321	AE1-163 C O1	24.0962	50/50	24.0962
939322	AE1-163 E O1	148.0198	50/50	148.0198
942421	AE2-255 C O1	6.6615	50/50	6.6615
942422	AE2-255 E O1	19.9845	50/50	19.9845
942651	AE2-281 C O1	3.4423	50/50	3.4423
942652	AE2-281 E O1	21.1457	50/50	21.1457
946321	AF1-296 C O1	2.9030	Adder	3.42
946322	AF1-296 E O1	13.5913	Adder	15.99
946541	AF1-318 C O1	8.0486	50/50	8.0486
946542	AF1-318 E O1	37.6818	50/50	37.6818
951631	J456 C	4.2649	PJM External (MISO)	4.2649
951632	J456 E	23.0741	PJM External (MISO)	23.0741
951821	J541 C	5.0163	PJM External (MISO)	5.0163
951822	J541 E	27.1397	PJM External (MISO)	27.1397
952651	J756 C	3.9459	PJM External (MISO)	3.9459
952652	J756 E	21.3481	PJM External (MISO)	21.3481
952871	J757 C	5.0341	PJM External (MISO)	5.0341
952872	J757 E	27.2356	PJM External (MISO)	27.2356
953201	J715 C	1.6953	PJM External (MISO)	1.6953
953202	J715 E	9.1717	PJM External (MISO)	9.1717
953951	J859	25.6697	PJM External (MISO)	25.6697
954702	J844 E	29.2603	PJM External (MISO)	29.2603
954792	J952 E	4.6607	PJM External (MISO)	4.6607
954901	J963	0.7217	PJM External (MISO)	0.7217
954981	J974 C	16.6304	PJM External (MISO)	16.6304
954982	J974 E	89.9746	PJM External (MISO)	89.9746
955051	J981 C	2.8476	PJM External (MISO)	2.8476
955052	J981 E	15.4064	PJM External (MISO)	15.4064
955431	J1025 C	4.1638	PJM External (MISO)	4.1638
955432	J1025 E	22.5272	PJM External (MISO)	22.5272
955441	J1026 C	5.0619	PJM External (MISO)	5.0619
955442	J1026 E	27.3861	PJM External (MISO)	27.3861
955711	J1055 C	4.8805	PJM External (MISO)	4.8805
955712	J1055 E	26.4049	PJM External (MISO)	26.4049
956151	J1102	6.9958	PJM External (MISO)	6.9958
956411	J1131	8.7390	PJM External (MISO)	8.7390
956431	J1135	5.4345	PJM External (MISO)	5.4345
956841	J1182	20.8375	PJM External (MISO)	20.8375
957751	AF2-069 C	0.3934	50/50	0.3934
957752	AF2-069 E	1.2695	50/50	1.2695
957761	AF2-070 C	0.5543	50/50	0.5543
957762	AF2-070 E	2.6909	50/50	2.6909
958341	AF2-128 C O1	2.0571	50/50	2.0571
958342	AF2-128 E O1	9.6310	50/50	9.6310
958481	AF2-142 C	44.2503	50/50	44.2503
958482	AF2-142 E	29.5002	50/50	29.5002
958491	AF2-143 C	44.2584	50/50	44.2584
958492	AF2-143 E	29.5056	50/50	29.5056
959351	AF2-226 C	9.8054	50/50	9.8054

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959352	AF2-226 E	14.7081	50/50	14.7081
960281	AF2-319 C	9.8054	50/50	9.8054
960282	AF2-319 E	14.7081	50/50	14.7081
961651	AG1-005 C O1	22.5840	50/50	22.5840
961652	AG1-005 E O1	15.0560	50/50	15.0560
962721	AG1-121 C O2	9.2797	50/50	9.2797
962722	AG1-121 E O2	43.4126	50/50	43.4126
965141	AG1-379 C	36.5583	50/50	36.5583
965142	AG1-379 E	16.7337	50/50	16.7337
965671	AG1-435 C O2	6.2938	50/50	6.2938
965672	AG1-435 E O2	29.4662	50/50	29.4662
965931	AG1-462 C O2	7.6930	Adder	17.08
965932	AG1-462 E O2	5.1287	Adder	11.38
966821	AG1-553 C O2	11.7350	Adder	26.05
966822	AG1-553 E O2	2.9338	Adder	6.51
990901	L-005 E	27.6656	50/50	27.6656
LGEE	LGEE	0.3085	Confirmed LTF	0.3085
CPL	CPL	0.4900	Confirmed LTF	0.4900
CBM-W2	CBM-W2	37.6678	Confirmed LTF	37.6678
NY	NY	0.1427	Confirmed LTF	0.1427
TVA	TVA	3.9606	Confirmed LTF	3.9606
O-066	O-066	1.4941	Confirmed LTF	1.4941
SIGE	SIGE	0.1521	Confirmed LTF	0.1521
CBM-S2	CBM-S2	10.5862	Confirmed LTF	10.5862
CBM-S1	CBM-S1	0.9135	Confirmed LTF	0.9135
G-007	G-007	0.2310	Confirmed LTF	0.2310
MEC	MEC	14.5664	Confirmed LTF	14.5664
LAGN	LAGN	7.0770	Confirmed LTF	7.0770
CBM-W1	CBM-W1	36.4240	Confirmed LTF	36.4240

13.5.13 Index 13

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
174302795	930760	AB1-122 TAP1	CE	270717	DRESDEN ; R	CE	1	COMED_P4_012-45-BT4-5__	breaker	1479.0	187.59	189.73	DC	31.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274677	POWERTON ;5U	51.3373	50/50	51.3373
274678	POWERTON ;6U	51.4598	50/50	51.4598
274848	CAMPGROVE;RU	0.8155	50/50	0.8155
274849	CRESCENT ;1U	0.2490	50/50	0.2490
274851	PROVIDENC;RU	0.2565	50/50	0.2565
274861	TOP CROP ;1U	0.4832	50/50	0.4832
274862	TOP CROP ;2U	0.9217	50/50	0.9217
274877	BISHOP HL;1U	0.5541	50/50	0.5541
274878	BISHOP HL;2U	0.5541	50/50	0.5541
274879	MINONK ;1U	2.6702	50/50	2.6702
274891	OTTER CRK;1U	0.5023	50/50	0.5023
290021	O50 E	67.6976	50/50	67.6976
293516	O-009 E1	5.7168	Adder	6.73
293517	O-009 E2	2.9037	Adder	3.42
293518	O-009 E3	3.1978	Adder	3.76
293644	O22 E1	13.5815	50/50	13.5815
293645	O22 E2	26.3641	50/50	26.3641
293715	O-029 E	6.1119	Adder	7.19
293716	O-029 E	3.3511	Adder	3.94
293717	O-029 E	3.0800	Adder	3.62
293771	O-035 E	9.3429	50/50	9.3429
294401	BSHIL;1U E	14.0496	50/50	14.0496
294410	BSHIL;2U E	14.0496	50/50	14.0496
916211	Z1-072 E	7.0703	50/50	7.0703
918052	AA1-018 E OP	21.3080	50/50	21.3080
925581	AC1-033 C	2.3004	50/50	2.3004
925582	AC1-033 E	15.4001	50/50	15.4001
926821	AC1-168 C O1	1.2990	50/50	1.2990
926822	AC1-168 E O1	8.7171	50/50	8.7171
926841	AC1-171 C O1	2.9434	50/50	2.9434
926842	AC1-171 E O1	19.6610	50/50	19.6610
927201	AC1-214 C O1	0.4731	50/50	0.4731
927202	AC1-214 E O1	9.5323	50/50	9.5323
930761	AB1-122 CT1	371.1510	50/50	371.1510
930771	AB1-122 CT2	243.2653	50/50	243.2653
934051	AD1-031 C O1	4.6691	50/50	4.6691
934052	AD1-031 E O1	7.6180	50/50	7.6180
934101	AD1-039 1	36.3728	50/50	36.3728
934111	AD1-039 2	23.8400	50/50	23.8400
934871	AD1-116 C	1.2409	50/50	1.2409
934872	AD1-116 E	2.0247	50/50	2.0247

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936291	AD2-038 C O1	4.6898	50/50	4.6898
936292	AD2-038 E O1	31.3853	50/50	31.3853
937531	AD2-214 C	2.4567	Adder	2.89
937532	AD2-214 E	1.6378	Adder	1.93
938851	AE1-113 C O1	27.9253	50/50	27.9253
938852	AE1-113 E O1	99.0077	50/50	99.0077
939321	AE1-163 C O1	11.7845	50/50	11.7845
939322	AE1-163 E O1	72.3905	50/50	72.3905
942421	AE2-255 C O1	10.5778	50/50	10.5778
942422	AE2-255 E O1	31.7333	50/50	31.7333
942651	AE2-281 C O1	1.6835	50/50	1.6835
942652	AE2-281 E O1	10.3415	50/50	10.3415
946321	AF1-296 C O1	2.5153	Adder	2.96
946322	AF1-296 E O1	11.7759	Adder	13.85
946541	AF1-318 C O1	7.0265	50/50	7.0265
946542	AF1-318 E O1	32.8965	50/50	32.8965
951631	J456 C	3.8275	PJM External (MISO)	3.8275
951632	J456 E	20.7080	PJM External (MISO)	20.7080
951821	J541 C	4.4379	PJM External (MISO)	4.4379
951822	J541 E	24.0101	PJM External (MISO)	24.0101
952651	J756 C	3.4542	PJM External (MISO)	3.4542
952652	J756 E	18.6883	PJM External (MISO)	18.6883
952871	J757 C	4.4127	PJM External (MISO)	4.4127
952872	J757 E	23.8737	PJM External (MISO)	23.8737
953201	J715 C	1.4709	PJM External (MISO)	1.4709
953202	J715 E	7.9581	PJM External (MISO)	7.9581
953951	J859	22.9678	PJM External (MISO)	22.9678
954702	J844 E	26.3159	PJM External (MISO)	26.3159
954792	J952 E	4.1218	PJM External (MISO)	4.1218
954901	J963	0.6363	PJM External (MISO)	0.6363
954981	J974 C	15.1059	PJM External (MISO)	15.1059
954982	J974 E	81.7266	PJM External (MISO)	81.7266
955051	J981 C	2.5228	PJM External (MISO)	2.5228
955052	J981 E	13.6492	PJM External (MISO)	13.6492
955431	J1025 C	3.6921	PJM External (MISO)	3.6921
955432	J1025 E	19.9749	PJM External (MISO)	19.9749
955441	J1026 C	4.4834	PJM External (MISO)	4.4834
955442	J1026 E	24.2566	PJM External (MISO)	24.2566
955711	J1055 C	4.3679	PJM External (MISO)	4.3679
955712	J1055 E	23.6315	PJM External (MISO)	23.6315
956151	J1102	6.0340	PJM External (MISO)	6.0340
956411	J1131	7.7170	PJM External (MISO)	7.7170
956431	J1135	4.8350	PJM External (MISO)	4.8350
956841	J1182	18.4525	PJM External (MISO)	18.4525
957751	AF2-069 C	0.3472	50/50	0.3472
957752	AF2-069 E	1.1205	50/50	1.1205
957761	AF2-070 C	0.4892	50/50	0.4892
957762	AF2-070 E	2.3752	50/50	2.3752
958341	AF2-128 C O1	1.7908	50/50	1.7908
958342	AF2-128 E O1	8.3844	50/50	8.3844
958481	AF2-142 C	14.6952	50/50	14.6952
958482	AF2-142 E	9.7968	50/50	9.7968

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958491	AF2-143 C	21.6450	50/50	21.6450
958492	AF2-143 E	14.4300	50/50	14.4300
959351	AF2-226 C	3.3288	50/50	3.3288
959352	AF2-226 E	4.9932	50/50	4.9932
960281	AF2-319 C	3.3288	50/50	3.3288
960282	AF2-319 E	4.9932	50/50	4.9932
961651	AG1-005 C O1	19.6980	50/50	19.6980
961652	AG1-005 E O1	13.1320	50/50	13.1320
962721	AG1-121 C O2	8.1909	50/50	8.1909
962722	AG1-121 E O2	38.3187	50/50	38.3187
965141	AG1-379 C	58.0507	50/50	58.0507
965142	AG1-379 E	26.5713	50/50	26.5713
965671	AG1-435 C O2	5.5553	50/50	5.5553
965672	AG1-435 E O2	26.0087	50/50	26.0087
965931	AG1-462 C O2	6.6810	Adder	14.83
965932	AG1-462 E O2	4.4540	Adder	9.89
966821	AG1-553 C O2	10.2127	Adder	22.67
966822	AG1-553 E O2	2.5532	Adder	5.67
990901	L-005 E	24.6524	50/50	24.6524
LGEE	LGEE	0.2739	Confirmed LTF	0.2739
CPL	CPL	0.4457	Confirmed LTF	0.4457
CBM-W2	CBM-W2	32.6861	Confirmed LTF	32.6861
NY	NY	0.1001	Confirmed LTF	0.1001
TVA	TVA	3.4524	Confirmed LTF	3.4524
O-066	O-066	1.0162	Confirmed LTF	1.0162
SIGE	SIGE	0.1259	Confirmed LTF	0.1259
CBM-S2	CBM-S2	9.4691	Confirmed LTF	9.4691
CBM-S1	CBM-S1	0.7969	Confirmed LTF	0.7969
G-007	G-007	0.1565	Confirmed LTF	0.1565
MEC	MEC	12.7390	Confirmed LTF	12.7390
LAGN	LAGN	6.1688	Confirmed LTF	6.1688
CBM-W1	CBM-W1	31.7833	Confirmed LTF	31.7833

13.5.14 Index 14

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
163033534	936510	AD2-066 TAP	CE	271987	MAZON ; R	CE	1	COMED_P7-1_138-L6101__S+_138-L7413__R-S-A	tower	230.0	159.87	179.22	DC	44.5

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.3510	50/50	0.3510
274851	PROVIDENC;RU	0.3616	50/50	0.3616
293771	O-035 E	13.1720	50/50	13.1720
294401	BSHIL;1U E	4.2731	Adder	5.03
294410	BSHIL;2U E	4.2731	Adder	5.03
916211	Z1-072 E	9.9680	50/50	9.9680
925581	AC1-033 C	0.6991	Adder	0.82
925582	AC1-033 E	4.6799	Adder	5.51
926821	AC1-168 C O1	1.5890	50/50	1.5890
926822	AC1-168 E O1	10.6631	50/50	10.6631
927201	AC1-214 C O1	0.6671	50/50	0.6671
927202	AC1-214 E O1	13.4390	50/50	13.4390
934051	AD1-031 C O1	1.4222	Adder	1.67
934052	AD1-031 E O1	2.3204	Adder	2.73
936511	AD2-066 C O1	44.7653	50/50	44.7653
936512	AD2-066 E O1	29.8436	50/50	29.8436
946541	AF1-318 C O1	11.7464	50/50	11.7464
946542	AF1-318 E O1	54.9940	50/50	54.9940
953201	J715 C	3.4350	PJM External (MISO)	3.4350
953202	J715 E	18.5840	PJM External (MISO)	18.5840
957751	AF2-069 C	0.4895	50/50	0.4895
957752	AF2-069 E	1.5798	50/50	1.5798
957761	AF2-070 C	0.6897	50/50	0.6897
957762	AF2-070 E	3.3486	50/50	3.3486
958341	AF2-128 C O1	3.1131	50/50	3.1131
958342	AF2-128 E O1	14.5749	50/50	14.5749
961651	AG1-005 C O1	33.3735	50/50	33.3735
961652	AG1-005 E O1	22.2490	50/50	22.2490
962721	AG1-121 C O2	11.5477	50/50	11.5477
962722	AG1-121 E O2	54.0230	50/50	54.0230
965671	AG1-435 C O2	7.8320	50/50	7.8320
965672	AG1-435 E O2	36.6680	50/50	36.6680
966083	AG1-477 BAT	1.4011	50/50	1.4011
966103	AG1-479 BAT (Withdrawn : 12/03/2020)	1.4011	50/50	1.4011
990901	L-005 E	5.8107	Adder	6.84
LGEE	LGEE	0.0591	Confirmed LTF	0.0591
CPLE	CPLE	0.0594	Confirmed LTF	0.0594
G-007A	G-007A	0.0575	Confirmed LTF	0.0575

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
VFT	VFT	0.1548	Confirmed LTF	0.1548
CBM-W2	CBM-W2	2.9030	Confirmed LTF	2.9030
TVA	TVA	0.3136	Confirmed LTF	0.3136
SIGE	SIGE	0.0145	Confirmed LTF	0.0145
CBM-S2	CBM-S2	1.1066	Confirmed LTF	1.1066
CBM-S1	CBM-S1	0.0764	Confirmed LTF	0.0764
CBM-N	CBM-N	0.0276	Confirmed LTF	0.0276
MEC	MEC	0.9248	Confirmed LTF	0.9248
LAGN	LAGN	0.5057	Confirmed LTF	0.5057
CBM-W1	CBM-W1	2.2432	Confirmed LTF	2.2432

13.5.15 Index 15

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
171061567	946150	AF1-280 TAP	CE	274768	LEE CO EC;BP	CE	1	COMED_P7-1_138-L11106_B-R+_345-L15502_B-R	tower	1768.0	113.51	114.68	DC	20.83

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	37.4294	50/50	37.4294
274663	QUAD CITI;2U	37.5404	50/50	37.5404
274699	CORDOVA ;1C	6.6018	50/50	6.6018
274700	CORDOVA ;2C	6.6018	50/50	6.6018
274701	CORDOVA ;1S	7.4271	50/50	7.4271
274715	NELSON EC;1C	10.2222	50/50	10.2222
274716	NELSON EC;1S	7.4586	50/50	7.4586
274717	NELSON EC;2C	10.3012	50/50	10.3012
274718	NELSON EC;2S	7.5254	50/50	7.5254
274848	CAMPGROVE;RU	0.4525	50/50	0.4525
274849	CRESCENT ;1U	0.1643	50/50	0.1643
274851	PROVIDENC;RU	0.1692	50/50	0.1692
274877	BISHOP HL;1U	0.3944	50/50	0.3944
274878	BISHOP HL;2U	0.3944	50/50	0.3944
276156	O-029 C	0.4685	50/50	0.4685
276157	O-029 C	0.5065	50/50	0.5065
276158	O-029 C	0.9244	50/50	0.9244
293513	O-009 C1	0.8653	50/50	0.8653
293514	O-009 C2	0.4390	50/50	0.4390
293515	O-009 C3	0.4854	50/50	0.4854
293516	O-009 E1	21.9498	50/50	21.9498
293517	O-009 E2	11.1488	50/50	11.1488
293518	O-009 E3	12.2779	50/50	12.2779
293715	O-029 E	23.4668	50/50	23.4668
293716	O-029 E	12.8665	50/50	12.8665
293717	O-029 E	11.8257	50/50	11.8257
293771	O-035 E	6.1657	50/50	6.1657
294401	BSHIL;1U E	9.9984	50/50	9.9984
294410	BSHIL;2U E	9.9984	50/50	9.9984
295110	SUBLETTE C	0.1193	50/50	0.1193
295111	SUBLETTE E	5.3890	50/50	5.3890
916211	Z1-072 E	4.6659	50/50	4.6659
919221	AA1-146	9.5359	50/50	9.5359
919581	AA2-030 C	60.4419	50/50	60.4419
920273	AA2-123 BAT	2.3106	50/50	2.3106
925581	AC1-033 C	1.6375	50/50	1.6375
925582	AC1-033 E	10.9625	50/50	10.9625
927201	AC1-214 C O1	0.3122	50/50	0.3122
927202	AC1-214 E O1	6.2907	50/50	6.2907
934051	AD1-031 C O1	3.3261	50/50	3.3261

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934052	AD1-031 E O1	5.4267	50/50	5.4267
937531	AD2-214 C	11.3759	50/50	11.3759
937532	AD2-214 E	7.5839	50/50	7.5839
939051	AE1-134 1	4.6968	50/50	4.6968
939061	AE1-134 2	4.6968	50/50	4.6968
943411	AF1-012 C	40.4197	50/50	40.4197
943412	AF1-012 E	26.9465	50/50	26.9465
943803	AF1-048 BAT	5.9649	50/50	5.9649
946151	AF1-280 C O1	66.6341	50/50	66.6341
946152	AF1-280 E O1	30.6419	50/50	30.6419
946161	AF1-281 C O1	1.4591	50/50	1.4591
946162	AF1-281 E O1	8.2685	50/50	8.2685
946321	AF1-296 C O1	9.4072	50/50	9.4072
946322	AF1-296 E O1	44.0420	50/50	44.0420
951381	J504	5.2940	PJM External (MISO)	5.2940
951421	J514	3.3000	PJM External (MISO)	3.3000
951511	J530 C	5.6565	PJM External (MISO)	5.6565
951512	J530 E	22.6260	PJM External (MISO)	22.6260
954702	J844 E	16.1362	PJM External (MISO)	16.1362
954792	J952 E	7.3040	PJM External (MISO)	7.3040
954901	J963	1.3110	PJM External (MISO)	1.3110
955051	J981 C	4.0782	PJM External (MISO)	4.0782
955052	J981 E	22.0638	PJM External (MISO)	22.0638
955971	J1084	34.4835	PJM External (MISO)	34.4835
956411	J1131	18.0800	PJM External (MISO)	18.0800
957471	AF2-041 C	69.2820	50/50	69.2820
957472	AF2-041 E	34.6410	50/50	34.6410
957751	AF2-069 C	0.2291	50/50	0.2291
957752	AF2-069 E	0.7395	50/50	0.7395
957761	AF2-070 C	0.3229	50/50	0.3229
957762	AF2-070 E	1.5675	50/50	1.5675
958911	AF2-182 C	87.5484	50/50	87.5484
958912	AF2-182 E	58.3656	50/50	58.3656
958921	AF2-183 C	15.5642	50/50	15.5642
958922	AF2-183 E	23.3462	50/50	23.3462
959081	AF2-199 C	23.0940	50/50	23.0940
959082	AF2-199 E	11.5470	50/50	11.5470
959091	AF2-200 C O1	46.1880	50/50	46.1880
959092	AF2-200 E O1	23.0940	50/50	23.0940
960551	AF2-346 C	17.3228	50/50	17.3228
960552	AF2-346 E	11.5485	50/50	11.5485
961011	AF2-392 C O1	10.1996	50/50	10.1996
961012	AF2-392 E O1	47.7524	50/50	47.7524
961021	AF2-393 O1	17.3856	50/50	17.3856
961031	AF2-394 O1	11.5904	50/50	11.5904
962012	AG1-044 E	0.1737	50/50	0.1737
962721	AG1-121 C O2	5.4054	50/50	5.4054
962722	AG1-121 E O2	25.2876	50/50	25.2876
964462	AG1-309 NFTW	514.7730	50/50	514.7730
965061	AG1-371	11.5470	50/50	11.5470
965071	AG1-372	7.6980	50/50	7.6980
965081	AG1-373	3.8490	50/50	3.8490

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965671	AG1-435 C O2	3.6661	50/50	3.6661
965672	AG1-435 E O2	17.1639	50/50	17.1639
965931	AG1-462 C O2	49.0140	50/50	49.0140
965932	AG1-462 E O2	32.6760	50/50	32.6760
966521	AG1-521 C O2	16.9064	50/50	16.9064
966522	AG1-521 E O2	4.2266	50/50	4.2266
966821	AG1-553 C O2	69.6432	50/50	69.6432
966822	AG1-553 E O2	17.4108	50/50	17.4108
990901	L-005 E	13.6772	50/50	13.6772
LGEE	LGEE	0.3902	Confirmed LTF	0.3902
CPL	CPL	0.6074	Confirmed LTF	0.6074
G-007A	G-007A	0.7960	Confirmed LTF	0.7960
VFT	VFT	2.1350	Confirmed LTF	2.1350
CBM-W2	CBM-W2	24.4339	Confirmed LTF	24.4339
TVA	TVA	3.0114	Confirmed LTF	3.0114
SIGE	SIGE	0.0646	Confirmed LTF	0.0646
CBM-S2	CBM-S2	11.1604	Confirmed LTF	11.1604
CBM-S1	CBM-S1	0.7117	Confirmed LTF	0.7117
CBM-N	CBM-N	0.3960	Confirmed LTF	0.3960
MEC	MEC	15.7629	Confirmed LTF	15.7629
LAGN	LAGN	5.4600	Confirmed LTF	5.4600
CBM-W1	CBM-W1	27.2409	Confirmed LTF	27.2409

13.5.16 Index 16

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
171061174	958340	AF2-128 TAP	CE	348935	4CORBIN	AMIL	1	COMED_P2-2_074_KE-138__2	bus	179.0	410.11	452.13	DC	75.21

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274849	CRESCENT ;1U	0.5933	50/50	0.5933
274851	PROVIDENC;RU	0.6111	50/50	0.6111
293771	O-035 E	22.2622	50/50	22.2622
916211	Z1-072 E	16.8470	50/50	16.8470
925581	AC1-033 C	1.8086	50/50	1.8086
925582	AC1-033 E	12.1079	50/50	12.1079
927201	AC1-214 C O1	1.1274	50/50	1.1274
927202	AC1-214 E O1	22.7134	50/50	22.7134
946541	AF1-318 C O1	37.4021	50/50	37.4021
946542	AF1-318 E O1	175.1087	50/50	175.1087
957751	AF2-069 C	0.8273	50/50	0.8273
957752	AF2-069 E	2.6700	50/50	2.6700
957761	AF2-070 C	1.1658	50/50	1.1658
957762	AF2-070 E	5.6596	50/50	5.6596
958341	AF2-128 C O1	10.8709	50/50	10.8709
958342	AF2-128 E O1	50.8958	50/50	50.8958
961651	AG1-005 C O1	109.8345	50/50	109.8345
961652	AG1-005 E O1	73.2230	50/50	73.2230
962721	AG1-121 C O2	19.5170	50/50	19.5170
962722	AG1-121 E O2	91.3049	50/50	91.3049
965671	AG1-435 C O2	13.2370	50/50	13.2370
965672	AG1-435 E O2	61.9730	50/50	61.9730
WEC	WEC	0.1121	Confirmed LTF	0.1121
CBM-W2	CBM-W2	0.9677	Confirmed LTF	0.9677
NY	NY	0.0199	Confirmed LTF	0.0199
TVA	TVA	0.1092	Confirmed LTF	0.1092
O-066	O-066	0.2355	Confirmed LTF	0.2355
SIGE	SIGE	0.0003	Confirmed LTF	0.0003
CBM-S2	CBM-S2	0.1044	Confirmed LTF	0.1044
CBM-S1	CBM-S1	0.0217	Confirmed LTF	0.0217
G-007	G-007	0.0367	Confirmed LTF	0.0367
MEC	MEC	1.1600	Confirmed LTF	1.1600
GIBSON	GIBSON	0.0251	Confirmed LTF	0.0251
BLUEG	BLUEG	0.0694	Confirmed LTF	0.0694
TRIMBLE	TRIMBLE	0.0234	Confirmed LTF	0.0234
LAGN	LAGN	0.2782	Confirmed LTF	0.2782
CBM-W1	CBM-W1	4.7808	Confirmed LTF	4.7808

13.5.17 Index 17

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
162678464	961650	AG1-005 TAP	CE	958340	AF2-128 TAP	CE	1	EXT_P21:138:AMIL::EKEWANEE:PRINCETON TAP	single	179.0	146.31	153.08	DC	12.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274848	CAMPGROVE;RU	0.3385	80/20	0.3385
274849	CRESCENT ;1U	0.5434	80/20	0.5434
274851	PROVIDENC;RU	0.5597	80/20	0.5597
274877	BISHOP HL;1U	0.3091	80/20	0.3091
274878	BISHOP HL;2U	0.3091	80/20	0.3091
925581	AC1-033 C	1.2910	80/20	1.2910
927201	AC1-214 C O1	1.0325	80/20	1.0325
934051	AD1-031 C O1	2.5932	80/20	2.5932
946541	AF1-318 C O1	36.3087	80/20	36.3087
957751	AF2-069 C	0.7577	80/20	0.7577
957761	AF2-070 C	1.0676	80/20	1.0676
961651	AG1-005 C O1	106.8465	80/20	106.8465
962721	AG1-121 C O2	17.8744	80/20	17.8744
965671	AG1-435 C O2	12.1229	80/20	12.1229
WEC	WEC	0.1099	Confirmed LTF	0.1099
CBM-W2	CBM-W2	0.9766	Confirmed LTF	0.9766
NY	NY	0.0210	Confirmed LTF	0.0210
TVA	TVA	0.1078	Confirmed LTF	0.1078
SIGE	SIGE	0.0008	Confirmed LTF	0.0008
CBM-S2	CBM-S2	0.0940	Confirmed LTF	0.0940
CBM-S1	CBM-S1	0.0217	Confirmed LTF	0.0217
MEC	MEC	1.0932	Confirmed LTF	1.0932
GIBSON	GIBSON	0.0224	Confirmed LTF	0.0224
BLUEG	BLUEG	0.0660	Confirmed LTF	0.0660
TRIMBLE	TRIMBLE	0.0223	Confirmed LTF	0.0223
LAGN	LAGN	0.2713	Confirmed LTF	0.2713
CBM-W1	CBM-W1	4.5565	Confirmed LTF	4.5565

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
COMED_P1-2_138-L7413__R-S	CONTINGENCY 'COMED_P1-2_138-L7413__R-S' / 931 OPEN BRANCH FROM BUS 271241 TO BUS 271836 CKT 1 / 271241 CRESCENT ; R 138 271836 KEWANEE ;11 138 1 END
EXT_P12:138:AMIL::HENNEPIN:EKE WANEE:1552	CONTINGENCY 'EXT_P12:138:AMIL::HENNEPIN:EKE WANEE:1552' / 10421 OPEN BRANCH FROM BUS 348919 TO BUS 348921 CKT 1 / 348919 4LTV STL NTP 138 348921 4BUREAU 138 1 OPEN BRANCH FROM BUS 348921 TO BUS 348922 CKT 1 / 348921 4BUREAU 138 348922 4PRINCETON 138 1 OPEN BRANCH FROM BUS 348921 TO BUS 348923 CKT 1 / 348921 4BUREAU 138 348923 4KEWANEE N 138 1 OPEN BRANCH FROM BUS 348918 TO BUS 348919 CKT 1 / 348918 4HENNEPIN S 138 348919 4LTV STL NTP 138 1 OPEN BRANCH FROM BUS 348919 TO BUS 349448 CKT 1 / 348919 4LTV STL NTP 138 349448 1LTV STL 13.8 1 OPEN BRANCH FROM BUS 349531 TO BUS 348922 CKT 1 / 349531 1PRINCTN 34.5 348922 4PRINCETON 138 1 END
COMED_P1-2_138-L98105_R-S-D	CONTINGENCY 'COMED_P1-2_138-L98105_R-S-D' / 1146 OPEN BRANCH FROM BUS 348935 TO BUS 958340 CKT 1 / 348935 4CORBIN 138 958340 AF2-128 TAP 138 1 END
COMED_P1-2_138-L98105_R-S-C	CONTINGENCY 'COMED_P1-2_138-L98105_R-S-C' / CONTINGENCY # 576 TRIP BRANCH FROM BUS 961650 TO BUS 958340 CKT 1 / AG1-005 TAP ; AF2-128 TAP 138 END
COMED_P7-1_345-L0301__B-S+_345-L0303__R-S-B	CONTINGENCY 'COMED_P7-1_345-L0301__B-S+_345-L0303__R-S-B' / CONTINGENCY # 4 TRIP BRANCH FROM BUS 270854 TO BUS 270790 CKT 1 / POWERTON ; B 345 KATYDID ; B 345 TRIP BRANCH FROM BUS 936290 TO BUS 270827 CKT 1 / AD2-038 TAP 345 NEVADA ; 345 REMOVE SWSHUNT FROM BUS 270827 / NEVADA ; 345 END
COMED_P4_012-45-BT4-5__	CONTINGENCY 'COMED_P4_012-45-BT4-5__' / 809 OPEN BRANCH FROM BUS 270716 TO BUS 930770 CKT 1 / 270716 DRESDEN ; B 345 930770 AB1-122 TAP2 345 1 OPEN BRANCH FROM BUS 270716 TO BUS 270736 CKT 1 / 270716 DRESDEN ; B 345 270736 ELWOOD ; B 345 1 OPEN BRANCH FROM BUS 270736 TO BUS 270737 CKT 1 / 270736 ELWOOD ; B 345 270737 ELWOOD ; R 345 1 END

Contingency Name	Contingency Definition
COMED_P1-2_345-L15502_B-R-D	CONTINGENCY 'COMED_P1-2_345-L15502_B-R-D' / 1387 OPEN BRANCH FROM BUS 270730 TO BUS 957470 CKT 1 / 270730 ELECT JCT; B 345 957470 AF2-041 TAP 345 1 END
COMED_P2-2_074_KE-138__2	CONTINGENCY 'COMED_P2-2_074_KE-138__2' / CONTINGENCY # 56 DISCONNECT BUS 271835 / KEWANEE ;23 138 DISCONNECT BUS 271839 / KEWANEE ;22 138 DISCONNECT BUS 271845 / KEWANEE ;21 138 END
COMED_P2-2_074_KE-138__1	CONTINGENCY 'COMED_P2-2_074_KE-138__1' / CONTINGENCY # 55 DISCONNECT BUS 271836 / KEWANEE ;11 138 DISCONNECT BUS 271837 / KEWANEE ;12 138 DISCONNECT BUS 271838 / KEWANEE ;13 138 END
COMED_P2-2_116_GG-345R__2	CONTINGENCY 'COMED_P2-2_116_GG-345R__2' / CONTINGENCY # 118 DISCONNECT BUS 270769 / GOODINGS ;2R 345 END
COMED_P1-2_138-L98105_R-S-B	CONTINGENCY 'COMED_P1-2_138-L98105_R-S-B' / 910 OPEN BRANCH FROM BUS 946540 TO BUS 961650 CKT 1 / 946540 AF1-318 TAP 138 961650 AG1-005 TAP 138 1 END
COMED_P7-1_345-L15502_B-R+_345-L16703_R-S-A	CONTINGENCY 'COMED_P7-1_345-L15502_B-R+_345-L16703_R-S-A' / CONTINGENCY # 136 TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELECT JCT; B 345 TRIP BRANCH FROM BUS 270846 TO BUS 270847 CKT 1 / PLANO ; B 345 PLANO ; R 345 TRIP BRANCH FROM BUS 270847 TO BUS 270733 CKT 1 / PLANO ; R 345 ELECT JCT;3R 345 END

Contingency Name	Contingency Definition
COMED_P4_187-38-BT5-6__	CONTINGENCY 'COMED_P4_187-38-BT5-6__' / 1330 OPEN BRANCH FROM BUS 271836 TO BUS 272110 CKT 1 / 271836 KEWANEE ;11 138 272110 NORMANDY ; B 138 1 OPEN BRANCH FROM BUS 272110 TO BUS 272505 CKT 1 / 272110 NORMANDY ; B 138 272505 SCHAUFF R; R 138 1 OPEN BRANCH FROM BUS 272505 TO BUS 272719 CKT 1 / 272505 SCHAUFF R; R 138 272719 WALNUT RG; 138 1 OPEN BRANCH FROM BUS 272719 TO BUS 274399 CKT 1 / 272719 WALNUT RG; 138 274399 WALNUT RG; 34.5 1 OPEN BRANCH FROM BUS 274399 TO BUS 293513 CKT 1 / 274399 WALNUT RG; 34.5 293513 O-009 C1 0.69 1 OPEN BRANCH FROM BUS 274399 TO BUS 293514 CKT 1 / 274399 WALNUT RG; 34.5 293514 O-009 C2 0.60 1 OPEN BRANCH FROM BUS 274399 TO BUS 293515 CKT 1 / 274399 WALNUT RG; 34.5 293515 O-009 C3 0.57 1 OPEN BRANCH FROM BUS 293513 TO BUS 293516 CKT 1 / 293513 O-009 C1 0.69 293516 O-009 E1 0.69 1 OPEN BRANCH FROM BUS 293514 TO BUS 293517 CKT 1 / 293514 O-009 C2 0.60 293517 O-009 E2 0.60 1 OPEN BRANCH FROM BUS 293515 TO BUS 293518 CKT 1 / 293515 O-009 C3 0.57 293518 O-009 E3 0.57 1 MOVE 100.00 PERCENT LOAD FROM BUS 272110 TO BUS 272111 / FROM 272110 NORMANDY ; B 138 TO 272111 NORMANDY ; R 138 . LOAD=6.53 REMOVE MACHINE W1 FROM BUS 293513 /* 293513 O-009 C1 0.69 DEFAULT DISPATCH REMOVE MACHINE W1 FROM BUS 293514 /* 293514 O-009 C2 0.60 DEFAULT DISPATCH REMOVE MACHINE W1 FROM BUS 293515 /* 293515 O-009 C3 0.57 DEFAULT DISPATCH END
COMED_P4_074-38-L7413__	CONTINGENCY 'COMED_P4_074-38-L7413__' / CONTINGENCY # 251 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 DISCONNECT BUS 271836 / KEWANEE ;11 138 DISCONNECT BUS 271837 / KEWANEE ;12 138 DISCONNECT BUS 271838 / KEWANEE ;13 138 END

Contingency Name	Contingency Definition
COMED_P7-1_138-L11106_B-R+_345-L15502_B-R	CONTINGENCY 'COMED_P7-1_138-L11106_B-R+_345-L15502_B-R' / CONTINGENCY # 58 TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT JCT; B 138 ESS W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDDEN ;BT 138 WATERMAN ; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / ESS W541 ; B 138 N AURORA ; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AURORA ; B 138 SUGAR GRV; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 962690 CKT 1 / SUGAR GRV; B 138 AG1- 118 TAP 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / ESS W541 ; B 138 ESS W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR GRV; B 138 SUGAR GRV; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AURORA ; B 138 N AURORA ; R 138 TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELECT JCT; B 345 END
EXT_P21:138:AMIL::EKEWANEE:PRINCETONTAP	CONTINGENCY 'EXT_P21:138:AMIL::EKEWANEE:PRINCETONTAP' / 10430 OPEN BRANCH FROM BUS 348921 TO BUS 348923 CKT 1 / 348921 4BUREAU 138 348923 4KEWANEE N 138 1 END
COMED_P7-1_138-L6101___-S+_138-L98105_R-S-B	CONTINGENCY 'COMED_P7-1_138-L6101___-S+_138-L98105_R-S-B' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 271835 CKT 1 / HENNEEPIN; T 138 KEWANEE ;23 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 272521 TO BUS 926820 CKT 1 / STREATOR ; 138 AC1-168 TAP 138 TRIP BRANCH FROM BUS 958340 TO BUS 348935 CKT 1 / AF2-128 TAP 138 4OGLESBY MN 138 END
COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D	CONTINGENCY 'COMED_P7-1_138-L6101___-S+_138-L98105_R-S-D' / CONTINGENCY # 208 TRIP BRANCH FROM BUS 271655 TO BUS 271835 CKT 1 / HENNEEPIN; T 138 KEWANEE ;23 138 TRIP BRANCH FROM BUS 271655 TO BUS 348918 CKT 1 / HENNEEPIN; T 138 4HENNEPIN S 138 TRIP BRANCH FROM BUS 926820 TO BUS 271655 CKT 1 / AC1-168 TAP ; 138 HENNEEPIN; T 138 TRIP BRANCH FROM BUS 958340 TO BUS 348935 CKT 1 / AF2-128 TAP 138 4OGLESBY MN 138 END

Contingency Name	Contingency Definition
COMED_P1-2_345-L1202__B-S	CONTINGENCY 'COMED_P1-2_345-L1202__B-S' / 1065 OPEN BRANCH FROM BUS 270716 TO BUS 930770 CKT 1 / 270716 DRESDEN ; B 345 930770 AB1-122 TAP2 345 1 END
Base Case	
COMED_P7-1_138-L7411__R-S_+_138-L7405__R-S	CONTINGENCY 'COMED_P7-1_138-L7411__R-S_+_138-L7405__R-S' / CONTINGENCY # 219 TRIP BRANCH FROM BUS 271835 TO BUS 348962 CKT 1 / KEWANEE ;23 138 4KEEMIN 138 TRIP BRANCH FROM BUS 271836 TO BUS 272110 CKT 1 / KEWANEE ;11 138 NORMANDY ; B 138 TRIP BRANCH FROM BUS 272110 TO BUS 272505 CKT 1 / NORMANDY ; B 138 SCHAUFF R; R 138 MOVE 100 PERCENT LOAD FROM BUS 272110 TO BUS 272111 / NORMANDY ; B 138 NORMANDY ; R 138 END
EXT_P21:138:AMIL::MCLEANCO:ELPASOTAP	CONTINGENCY 'EXT_P21:138:AMIL::MCLEANCO:ELPASOTAP' / 74 OPEN BRANCH FROM BUS 348854 TO BUS 348880 CKT 1 / 348854 4MCLEAN CO 138 348880 4EL PASO 138 1 END
COMED_P7-1_345-L9806__R-S_+_345-L19601__B-S	CONTINGENCY 'COMED_P7-1_345-L9806__R-S_+_345-L19601__B-S' / CONTINGENCY # 238 TRIP BRANCH FROM BUS 270827 TO BUS 270769 CKT 1 / NEVADA ; 345 GOODINGS ;2R 345 TRIP BRANCH FROM BUS 270790 TO BUS 270770 CKT 1 / KATYDID ; B 345 GOODINGS ;4B 345 END
COMED_P7-1_138-L6101__S_+_138-L7413__R-S-A	CONTINGENCY 'COMED_P7-1_138-L6101__S_+_138-L7413__R-S-A' / CONTINGENCY # 207 TRIP BRANCH FROM BUS 272521 TO BUS 926820 CKT 1 / STREATOR ; 138 AC1-168 TAP 138 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 END
COMED_P7-1_138-L6101__S_+_138-L7413__R-S-B	CONTINGENCY 'COMED_P7-1_138-L6101__S_+_138-L7413__R-S-B' / CONTINGENCY # 207 TRIP BRANCH FROM BUS 271655 TO BUS 271835 CKT 1 / HENNEEPIN; T 138 KEWANEE ;23 138 TRIP BRANCH FROM BUS 271836 TO BUS 271241 CKT 1 / KEWANEE ;11 138 CRESCENT ; R 138 END

Contingency Name	Contingency Definition
COMED_P1-3_TR81_LASCO_B-S	CONTINGENCY 'COMED_P1-3_TR81_LASCO_B-S' / CONTINGENCY # 591 TRIP BRANCH FROM BUS 270802 TO BUS 270803 CKT 1 / LASCO STA; B 345 LASCO STA; R 345 TRIP BRANCH FROM BUS 270802 TO BUS 271908 CKT 1 / LASCO STA; B 345 LASCO STA; B 138 END
COMED_P2-2_111_EJ-345B__1	CONTINGENCY 'COMED_P2-2_111_EJ-345B__1' / CONTINGENCY # 101 TRIP BRANCH FROM BUS 270730 TO BUS 270812 CKT 1 / ELECT JCT; B 345 LOMBARD ; B 345 TRIP BRANCH FROM BUS 270730 TO BUS 957470 CKT 1 / ELECT JCT; B 345 AF2-041 TAP 345 DISCONNECT BUS 275182 / ELECT JCT;1M 138 END
COMED_P4_074-38-L15508_	CONTINGENCY 'COMED_P4_074-38-L15508_' / 655 OPEN BRANCH FROM BUS 271331 TO BUS 271333 CKT 1 / 271331 DIXON ;8R 138 271333 DIXON ; R 138 1 OPEN BRANCH FROM BUS 271331 TO BUS 272097 CKT 1 / 271331 DIXON ;8R 138 272097 NELSON ;RT 138 1 OPEN BRANCH FROM BUS 272095 TO BUS 272097 CKT 1 / 272095 NELSON ; R 138 272097 NELSON ;RT 138 1 OPEN BRANCH FROM BUS 272097 TO BUS 272505 CKT 1 / 272097 NELSON ;RT 138 272505 SCHAUFF R; R 138 1 OPEN BRANCH FROM BUS 271241 TO BUS 271836 CKT 1 / 271241 CRESCENT ; R 138 271836 KEWANEE ;11 138 1 OPEN BRANCH FROM BUS 271836 TO BUS 271837 CKT 1 / 271836 KEWANEE ;11 138 271837 KEWANEE ;12 138 1 OPEN BRANCH FROM BUS 271836 TO BUS 272110 CKT 1 / 271836 KEWANEE ;11 138 272110 NORMANDY ; B 138 1 OPEN BRANCH FROM BUS 271837 TO BUS 271838 CKT 1 / 271837 KEWANEE ;12 138 271838 KEWANEE ;13 138 1 OPEN BRANCH FROM BUS 271837 TO BUS 349637 CKT 1 / 271837 KEWANEE ;12 138 349637 4EDWARDS3 138 1 OPEN BRANCH FROM BUS 271837 TO BUS 925581 CKT 1 / 271837 KEWANEE ;12 138 925581 AC1-033 C 138 1 OPEN BRANCH FROM BUS 271838 TO BUS 271845 CKT 1 / 271838 KEWANEE ;13 138 271845 KEWANEE ;21 138 1 OPEN BRANCH FROM BUS 271838 TO BUS 348923 CKT 1 / 271838 KEWANEE ;13 138 348923 4KEWANEE N 138 1 MOVE 100.00 PERCENT LOAD FROM BUS 271331 TO BUS 271330 / FROM 271331 DIXON ;8R 138 TO 271330 DIXON ;7B 138 . LOAD=16.71 END

14 Affected Systems

14.1 MISO

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

Attachment 1: One Line Diagram