



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF2-182
“NELSON-LEE COUNTY 345 KV II”**

July 2020

1 Introduction

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

2 Preface

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

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

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

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

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

3 General

The Interconnection Customer (IC) has proposed a solar generating facility to be located in Lee County, Illinois. The installed facilities will have a total capability of 300 MW with 180 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 01, 2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-182
Project Name	NELSON-LEE COUNTY 345 KV II
State	Illinois
County	Lee
Transmission Owner	ComEd
MFO	300
MWE	300
MWC	180
Fuel	Solar
Basecase Study Year	2023

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

4 Point of Interconnection

Queue Position AF2-182, a 300 MW solar facility, proposes to interconnect with the ComEd transmission system by tying to prior PJM queue projects AF1-280 and AF1-281 and interconnected to a new Interconnection Substation on 345 kV line 15501. The proposed interconnection is behind the Point-OF-Interconnection between ComEd and the prior queue projects.

5 Cost Summary

The AF2-182 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$200,000
Total System Network Upgrade Costs	\$232,140,000
Total Costs	\$232,340,000

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined

that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

6 Transmission Owner Scope of Work

Attachment Facilities

To accommodate interconnection of AF2-182; the relaying, SCADA, communication, and metering between AF1-280 and AF1-281 and the new interconnection substation on 345kV line 15501 would be reviewed and upgraded if needed.

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

Description	Total Cost
The relaying, SCADA, communication, and metering between AF1-280 and AF1-281 and the new Interconnection Substation on 345kV line 15501 would be reviewed and upgraded if needed.	\$200,000
Total Physical Interconnection Costs	\$200,000

Direct Connection Network Upgrades

None

Non-Direct Connection Cost Estimate

None

It should be noted that if the AF1-280 project drops out of the queue the scope of AF2-182 would change.

7 Schedule

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

8 Transmission Owner Analysis

See Section 6.

9 Interconnection Customer Requirements

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

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

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

10.2 Interconnected Transmission Owner Requirements

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

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

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

11 Summer Peak - Load Flow Analysis

The Queue Project AF2-182 was evaluated as a 300.0 MW (Capacity 180.0 MW) injection tapping the Nelson to Lee County 345 kV in the ComEd area. Project AF2-182 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-182 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

11.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96335205	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	COMED_P1-2_345-L15502_B-R-B	single	1726.0	98.94	104.01	DC	87.64
96335027	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P1-2_345-L0627__B-R	single	1656.0	97.92	101.44	DC	61.64

11.2 Multiple Facility Contingency

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

None

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
95332251	255113	17STILLWELL	345.0	NIPS	243219	05DUMONT	345.0	AEP	1	COMED_P1-2_695_B2	single	1409.0	103.46	104.23	DC	24.02
96334599	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	118.53	121.19	DC	82.99
96335062	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	105.79	107.43	DC	29.52
96334311	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P2-2_111-EJ-345R__3	bus	1479.0	108.24	108.92	DC	22.5
96334678	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P4_120-45-L12002__	breaker	1479.0	107.81	108.52	DC	23.31
96335141	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	single	1201.0	103.54	104.59	DC	12.88
96334565	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P4_144-45-BT6-8__	breaker	1479.0	123.71	125.2	DC	49.04
96335069	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	116.3	117.22	DC	29.52
96335072	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479.0	106.73	107.65	DC	29.52
96335073	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	single	1201.0	102.77	103.56	DC	20.77
96334713	270807	LIBERTYVI;	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT6-11__	breaker	1479.0	106.95	107.58	DC	20.69
96334602	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P4_937-45-BT1-2__	breaker	1656.0	109.94	114.36	DC	103.12
96334603	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P4_937-45-BT2-3__	breaker	1656.0	109.74	114.17	DC	103.1
96334604	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P4_937-45-BT1-4__	breaker	1656.0	109.6	114.03	DC	103.13
96334984	274750	CRETE EC ;BP	345.0	CE	255112	17STJOHN	345.0	NIPS	1	COMED_P1-2_695_B2	single	1399.0	104.64	105.3	DC	21.09
96334551	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P4_937-45-BT2-3__	breaker	1656.0	117.99	121.51	DC	103.1
96334552	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P4_937-45-BT1-4__	breaker	1656.0	116.97	121.71	DC	103.13
96334553	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P4_937-45-BT1-2__	breaker	1656.0	117.29	120.95	DC	103.12
95331842	956820	J1180 TAP	345.0	AMIL	247712	05SULLIVAN	345.0	AEP	1	COMED_P4_080-45-BT4-5__	breaker	1466.0	136.61	136.72	DC	17.83
95331843	956820	J1180 TAP	345.0	AMIL	247712	05SULLIVAN	345.0	AEP	1	COMED_P4_080-45-BT7-8__	breaker	1466.0	135.67	135.79	DC	17.42
96334527	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P4_006-45-BT3-4__	breaker	1656.0	118.38	124.58	DC	102.74
96335041	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	116.28	117.19	DC	29.52
96335044	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479.0	106.7	107.6	DC	29.52
96335045	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	single	1201.0	102.75	103.53	DC	20.77

11.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
96334999	270670	BRAIDWOOD; B	345.0	CE	934730	AD1-100 TAP	345.0	CE	1	COMED_P 1-2_765-L11216__S	operation	1341.0	137.03	137.47	DC	17.73
96335058	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P 1-2_345-L0626__B-R-B	operation	1479.0	121.71	123.23	DC	49.21
96335060	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operation	1201.0	107.8	109.12	DC	34.62
96335136	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	operation	1201.0	112.66	113.47	DC	21.47
96335137	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P 2-1_111-L11120__	operation	1479.0	108.17	108.87	DC	22.7
96335066	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P 1-2_345-L0626__B-R-B	operation	1479.0	123.66	125.16	DC	49.21
96335068	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	operation	1201.0	113.76	115.06	DC	34.62
96335167	270770	GOODINGS ;4B	345.0	CE	270766	GOODINGS ;3B	345.0	CE	1	COMED_P 1-2_345-L11613AB-S	operation	1802.0	112.87	113.3	DC	30.07
96335163	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P 1-2_345-L15501__B-R-B	operation	1656.0	109.58	114.0	DC	103.13
96335165	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	100.39	104.78	DC	60.69
96335204	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	COMED_P 1-2_345-L15502__B-R-B	operation	1726.0	105.99	109.81	DC	146.07
96335077	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P 1-2_345-L15501__B-R-B	operation	1656.0	116.93	120.59	DC	103.13
96335079	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	Base Case	operation	1334.0	105.82	110.3	DC	60.69
96335146	946160	AF1-281 TAP	345.0	CE	274768	LEE CO EC;BP	345.0	CE	1	COMED_P 1-2_345-L15502__B-R-B	operation	1479.0	99.86	108.16	DC	147.19
95332121	956820	J1180 TAP	345.0	AMIL	247712	05SULLIVAN	345.0	AEP	1	COMED_P 1-2_345-L8001__S	operation	1466.0	132.28	132.34	DC	17.79
96335022	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	117.08	121.6	DC	60.69
96335023	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P 1-2_345-L0627__B-R	operation	1656.0	117.77	123.98	DC	102.74
96335038	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P 1-2_345-L0626__B-R-B	operation	1479.0	123.64	125.14	DC	49.21

96335040	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	113.74	115.04	DC	34.62
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11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
95331843,95331842	12	J1180 TAP 345.0 kV - 05SULLIVAN 345.0 kV Ckt 1	AEP AEPI0010a (278) : Re-conductor/rebuild 0.82 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 5 Project Type : FAC Cost : \$1,640,000 Time Estimate : 24 - 36 Months AEPI0010b (279) : Re-conductor/rebuild 1 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 6 Project Type : FAC Cost : \$2,000,000 Time Estimate : 24 - 36 Months	\$3,640,000
96334713	8	LIBERTYVI; R 345.0 kV - P HTS 117; R 345.0 kV Ckt 1	ComEd CE_NUN_L11723 (843) : ComEd 345kV L11723 SSTE rating is 1568 MVA. The upgrade will be to replace station conductor at both terminals and sag mitigation on the line. A preliminary estimate for this upgrade is \$8.2M with an estimated construction timeline of 24 months. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$8,200,000 Time Estimate : Months	\$8,200,000
96334551,96334552	11	AF1-012 TAP 345.0 kV - AF2-041 TAP 345.0 kV Ckt 1	ComEd CE_NUN_15502 (856) : ComEd 345kV L15502 SSTE rating is 1837 MVA. The upgrade will be to re-conductor a portion of the line, 1-345kV circuit breaker and associated switches and upgrade of station conductor. A preliminary estimate for the upgrade is \$25.4M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 2293/2293/2293/2436 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$25,400,000 Time Estimate : 30.0 Months	\$25,400,000

96334604,96334603,96334602	9	NELSON ; B 345.0 kV - AF1-012 TAP 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L15502_2 (913) : SSTE is 1837MVA. Replace station conductor at TSS111 Electric Junction, replace MOD. A preliminary estimate for the upgrade is \$1.7M with an estimated construction timeline of 30 months. Upon completion the new ratings will be 1529/1765/2041/2280 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$1,700,000 Time Estimate : 30.0 Months	\$1,700,000
96335044,96335045,96335041	13	AF2-349 TAP 345.0 kV - SILVER LK; R 345.0 kV Ckt 1	<u>ComEd</u> ce-012 (897) : L15616 SSTE rating is 1568 MVA. The post contingency flow for this event exceeds the rating therefore upgrades are required. Reconductor 26.7 miles of 2338 kcmil. Mitigate sag limits. Upgrade relay package. Replace station conductor at both line terminals. Replace 2-345 kV breakers at TSS 138 Silver Lake. A preliminary estimate for the upgrades is \$32.4M with an estimated construction timeline of 36 months. Upon completion of all upgrades the new ratings will be 1461/1656/1909/1912 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$32,400,000 Time Estimate : 36.0 Months	\$78,100,000
96334565,96335069,96335073,96335072	7	GARDEN PR; R 345.0 kV - AF2-349 TAP 345.0 kV Ckt 1	ce-012a (898) : ComEd 345kV L15616 SN rating is 1201 MVA. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line and station bus work. A preliminary estimate for this upgrade is \$45.7M with a estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1248/1441/1667/1982 MVA SN/SLTE/SSTE/SLD. Project Type : FAC Cost : \$45,700,000 Time Estimate : 30.0 Months	
96334599	4	BYRON ; B 345.0 kV - CHERRY VA; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L0621 (856) : ComEd 345kV l0621 SSTE rating is 1585 MVA. The upgrade will be to mitigate sag on the line and replace a 345kV circuit breaker at Cherry Valley. A preliminary estimate for the upgrade is \$12.2 M with an estimated construction timeline of 24 months subject to outage coordination with Station 6 Byron Nuclear Station. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$12,200,000 Time Estimate : 24.0 Months	\$12,200,000

95332251	3	17STILLWELL 345.0 kV - 05DUMONT 345.0 kV Ckt 1	<u>AEP</u> n4790 (514) : PJM Network Upgrade n4790. Replace Dumont substation 2500A wavetrapp. The network project had an projected in-service date of 06/01/2019 and an estimated cost of \$200,000. This Queue Project presently does not receive cost allocation for this upgrade. Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc., this Queue Project could receive cost allocation. Note 2: Although this Queue Project may not have cost responsibility for this upgrade, the project may need this upgrade in-service to be deliverable to the PJM system. If this project comes into service prior to completion of the upgrade, this Queue project will need an interim study. Project Type : FAC Cost : \$0 Time Estimate : N/A Months <u>NIPS</u> NonPJMArea (1667) : The external (i.e. Non-PJM) Transmission Owner, NIPS, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$0
96335027,96334527	2	AF2-041 TAP 345.0 kV - ELECT JCT; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L15502_1 (916) : Replace station conductor at TSS111 Electric Junction. A preliminary estimate for the upgrade is \$1.2M with an estimated construction timeline of 24 months. Upon completion of the upgrade the new ratings 1461/1656/1909/1912 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$1,200,000 Time Estimate : 24.0 Months CE_NUN_L15502_4 (922) : ComEd 345kV L15502 SSTE rating is 1837 MVA. The upgrade is to perform sag mitigation on a portion of the line section along with re-conductoring on a different section, upgrade station conductor at both line terminals, replace both line motor operated disconnect witches and line current transformers, upgrade line relay schemes at both terminals as well. A preliminary estimate for the upgrade is \$10.5M with an estimated construction timeline of 36 months. Upon completion of the upgrades the ratings will be 1683/2068/2367/2564 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$10,500,000 Time Estimate : 36.0 Months	\$10,500,000

96334678,96334311,96335141	6	ELECT JCT; B 345.0 kV - LOMBARD ; B 345.0 kV Ckt 1	CE_NUN_L11124 (851) : ComEd 345kV L11124 SSTE rating is 1568 MVA. The upgrade will be to reconductor the line. A preliminary estimate is \$14.6M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$14,600,000 Time Estimate : 30.0 Months	\$14,600,000
96334984	10	CRETE EC ;BP 345.0 kV - 17STJOHN 345.0 kV Ckt 1	N5253 (869) : L94507 SSTE rating is 1483 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 station conductor and upgrade a relay package. A preliminary cost estimate is \$14.9 M with an estimated construction timeline of 30 months. Upon completion of this upgrade the new ratings will be 1754/2246/2297/2488 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$14,900,000 Time Estimate : 30.0 Months NonPJMArea (1667) : The external (i.e. Non-PJM) Transmission Owner, NIPS, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$14,900,000
96335062	5	CHERRY VA; B 345.0 kV - GARDEN PR; R 345.0 kV Ckt 1	ce-012a (898) : ComEd 345kV L15616 SN rating is 1201 MVA. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line and station bus work. A preliminary estimate for this upgrade is \$45.7M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1248/1441/1667/1982 MVA SN/SLTE/SSTE/SLD. Project Type : FAC Cost : \$45,700,000 Time Estimate : 30.0 Months	\$45,700,000
96335205	1	LEE CO EC;BP 345.0 kV - BYRON ; B 345.0 kV Ckt 1	CE_NUN_L0627 (926) : ComEd 345kV L0627 SSTE rating is 1837 MVA. The upgrade will be to re-conductor the line and upgrade station conductor at Byron Station. A preliminary estimate for the upgrades is \$17.2M. The preliminary construction timeline is 24-30 months contingent upon outage coordination with Byron Nuclear Station. Note that the preliminary cost estimate does not include the potential for new transmission towers. This unknown will add to this estimate if required. Upon completion of the upgrades the new ratings will be 1679/1904/1944/2088 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$17,200,000 Time Estimate : 24-30 Months	\$17,200,000
Total System Network Upgrade Costs				\$232,140,000

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

11.6 Flow Gate Details

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

11.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96335205	274768	LEE CO EC;BP	CE	270678	BYRON ; B	CE	1	COMED_P1-2_345-L15502_B-R-B	single	1726.0	98.94	104.01	DC	87.64

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	43.2174	80/20	43.2174
274663	QUAD CITI;2U	43.3023	80/20	43.3023
274699	CORDOVA ;1C	7.6046	80/20	7.6046
274700	CORDOVA ;2C	7.6046	80/20	7.6046
274701	CORDOVA ;1S	8.5552	80/20	8.5552
274715	NELSON EC;1C	11.2932	80/20	11.2932
274716	NELSON EC;1S	8.2401	80/20	8.2401
274717	NELSON EC;2C	11.3805	80/20	11.3805
274718	NELSON EC;2S	8.3139	80/20	8.3139
274760	LEE CO EC;1U	7.2036	80/20	7.2036
274761	LEE CO EC;2U	7.2036	80/20	7.2036
274762	LEE CO EC;3U	7.1032	80/20	7.1032
274763	LEE CO EC;4U	7.1306	80/20	7.1306
274764	LEE CO EC;5U	7.2219	80/20	7.2219
274765	LEE CO EC;6U	7.2219	80/20	7.2219
274766	LEE CO EC;7U	7.1123	80/20	7.1123
274767	LEE CO EC;8U	7.1123	80/20	7.1123
274848	CAMPGROVE;RU	0.6178	80/20	0.6178
274849	CRESCENT ;1U	0.1851	80/20	0.1851
274850	MENDOTA H;RU	0.0460	80/20	0.0460
274851	PROVIDENC;RU	0.2824	80/20	0.2824

274855	GSG-6 ;RU	0.1939	80/20	0.1939
274857	BIG SKY ;U1	2.1912	80/20	2.1912
274858	BIG SKY ;U2	2.1912	80/20	2.1912
274877	BISHOP HL;1U	0.4581	80/20	0.4581
274878	BISHOP HL;2U	0.4581	80/20	0.4581
276156	O-029 C	0.5200	80/20	0.5200
276157	O-029 C	0.5621	80/20	0.5621
276158	O-029 C	1.0259	80/20	1.0259
276160	W4-084	0.1503	80/20	0.1503
293513	O-009 C1	0.9603	80/20	0.9603
293514	O-009 C2	0.4872	80/20	0.4872
293515	O-009 C3	0.5387	80/20	0.5387
919221	AA1-146	10.5350	80/20	10.5350
919581	AA2-030	61.0746	80/20	61.0746
925581	AC1-033 C	1.7399	80/20	1.7399
926821	AC1-168 C O1	0.6720	80/20	0.6720
926841	AC1-171 C O1	0.7114	80/20	0.7114
927201	AC1-214 C O1	2.1018	80/20	2.1018
927531	AC1-185 1	0.5478	80/20	0.5478
927541	AC1-185 2	0.5478	80/20	0.5478
927551	AC1-185 3	0.5478	80/20	0.5478
927561	AC1-185 4	0.5478	80/20	0.5478
927571	AC1-185 5	0.5478	80/20	0.5478
927581	AC1-185 6	0.5478	80/20	0.5478
927591	AC1-185 7	0.5478	80/20	0.5478
927601	AC1-185 8	0.5478	80/20	0.5478
934051	AD1-031 C O1	3.5341	80/20	3.5341
934431	AD1-067 C	0.0565	80/20	0.0565
934701	AD1-098 C O1	3.5512	80/20	3.5512
937001	AD2-134 C	1.1752	80/20	1.1752
937531	AD2-214 C	11.7443	80/20	11.7443
938861	AE1-114 C O1	2.6330	80/20	2.6330
939051	AE1-134 1	4.7459	80/20	4.7459
939061	AE1-134 2	4.7459	80/20	4.7459
943381	AF1-009 C	0.3072	80/20	0.3072
943401	AF1-011 C	3.0417	80/20	3.0417
943411	AF1-012 C	40.8418	80/20	40.8418
946151	AF1-280 C O1	66.7039	80/20	66.7039
946161	AF1-281 C	1.4607	80/20	1.4607
946321	AF1-296 C O1	9.8913	80/20	9.8913
946531	AF1-317 C O1	7.7794	80/20	7.7794
946541	AF1-318 C O1	4.1957	80/20	4.1957
951381	J504	6.4395	PJM External (MISO)	6.4395
951421	J514	3.9054	PJM External (MISO)	3.9054
951511	J530 C	6.4260	PJM External (MISO)	6.4260
954901	J963	1.6344	PJM External (MISO)	1.6344
955051	J981 C	4.5702	PJM External (MISO)	4.5702
955971	J1084	37.1040	PJM External (MISO)	37.1040
956411	J1131	19.9460	PJM External (MISO)	19.9460
957471	AF2-041 C	70.0002	80/20	70.0002
957751	AF2-069 C	0.2434	80/20	0.2434
957761	AF2-070 C	0.3429	80/20	0.3429
958341	AF2-128 C O1	1.0223	80/20	1.0223

958911	AF2-182 C	87.6402	80/20	87.6402
958921	AF2-183 C	15.5805	80/20	15.5805
959081	AF2-199 C	23.3334	80/20	23.3334
959091	AF2-200 C	46.6668	80/20	46.6668
960551	AF2-346 C	17.5036	80/20	17.5036
961011	AF2-392 C O1	10.2478	80/20	10.2478
961021	AF2-393 O1	17.4678	80/20	17.4678
961031	AF2-394 O1	11.6452	80/20	11.6452
LGEE	LGEE	0.1940	Confirmed LTF	0.1940
CPL	CPL	0.4214	Confirmed LTF	0.4214
CBM-W2	CBM-W2	23.0139	Confirmed LTF	23.0139
NY	NY	0.0182	Confirmed LTF	0.0182
CBM-W1	CBM-W1	21.5797	Confirmed LTF	21.5797
TVA	TVA	2.8084	Confirmed LTF	2.8084
CBM-S2	CBM-S2	4.8263	Confirmed LTF	4.8263
CBM-S1	CBM-S1	14.4499	Confirmed LTF	14.4499
MADISON	MADISON	9.9228	Confirmed LTF	9.9228
MEC	MEC	17.6109	Confirmed LTF	17.6109

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
96334527	957470	AF2-041 TAP	CE	270730	ELECT JCT; B	CE	1	COMED_P4_006-45-BT3-4__	breaker	1656.0	118.38	124.58	DC	102.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274715	NELSON EC;1C	9.9439	50/50	9.9439
274716	NELSON EC;1S	7.2555	50/50	7.2555
274717	NELSON EC;2C	10.0207	50/50	10.0207
274718	NELSON EC;2S	7.3205	50/50	7.3205
274761	LEE CO EC;2U	4.6601	50/50	4.6601
274764	LEE CO EC;5U	4.6719	50/50	4.6719
274765	LEE CO EC;6U	4.6719	50/50	4.6719
274859	EASYSR;U1 E	27.9407	Adder	32.87
274860	EASYSR;U2 E	27.9407	Adder	32.87
293516	O-009 E1	17.3066	Adder	20.36
293517	O-009 E2	8.7904	Adder	10.34
293518	O-009 E3	9.6806	Adder	11.39
293715	O-029 E	18.5027	Adder	21.77
293716	O-029 E	10.1447	Adder	11.93
293717	O-029 E	9.3241	Adder	10.97
293771	O-035 E	4.9500	Adder	5.82
294401	BSHIL;1U E	8.1063	Adder	9.54
294410	BSHIL;2U E	8.1063	Adder	9.54
919221	AA1-146	9.2762	50/50	9.2762
919581	AA2-030	53.7772	50/50	53.7772
925581	AC1-033 C	1.3277	Adder	1.56

925582	AC1-033 E	8.8887	Adder	10.46
927201	AC1-214 C O1	1.5887	Adder	1.87
927202	AC1-214 E O1	5.0503	Adder	5.94
934051	AD1-031 C O1	2.6967	Adder	3.17
934052	AD1-031 E O1	4.3999	Adder	5.18
937531	AD2-214 C	9.0986	Adder	10.7
937532	AD2-214 E	6.0658	Adder	7.14
938861	AE1-114 C O1	4.1945	Adder	4.93
938862	AE1-114 E O1	14.3108	Adder	16.84
939051	AE1-134 1	4.1789	50/50	4.1789
939061	AE1-134 2	4.1789	50/50	4.1789
943401	AF1-011 C	2.3627	Adder	2.78
943402	AF1-011 E	3.9659	Adder	4.67
943411	AF1-012 C	44.9977	50/50	44.9977
943412	AF1-012 E	29.9985	50/50	29.9985
946151	AF1-280 C O1	46.9156	50/50	46.9156
946152	AF1-280 E O1	21.5743	50/50	21.5743
946161	AF1-281 C	1.0273	50/50	1.0273
946162	AF1-281 E	5.8216	50/50	5.8216
946321	AF1-296 C O1	7.6962	Adder	9.05
946322	AF1-296 E O1	36.0319	Adder	42.39
946531	AF1-317 C O1	8.5710	50/50	8.5710
950471	J438 C	3.3717	PJM External (MISO)	3.3717
950472	J438 E	13.4869	PJM External (MISO)	13.4869
951381	J504	5.7865	PJM External (MISO)	5.7865
951421	J514	3.4599	PJM External (MISO)	3.4599
951511	J530 C	5.5045	PJM External (MISO)	5.5045
951512	J530 E	22.0180	PJM External (MISO)	22.0180
954091	J873 C	3.3038	PJM External (MISO)	3.3038
954092	J873 E	17.8742	PJM External (MISO)	17.8742
954702	J844 E	14.1620	PJM External (MISO)	14.1620
954792	J952 E	6.7954	PJM External (MISO)	6.7954
954861	J959 C	2.2974	PJM External (MISO)	2.2974
954862	J959 E	12.4296	PJM External (MISO)	12.4296
954901	J963	1.4067	PJM External (MISO)	1.4067
955051	J981 C	3.8638	PJM External (MISO)	3.8638
955052	J981 E	20.9042	PJM External (MISO)	20.9042
955971	J1084	31.5210	PJM External (MISO)	31.5210
956411	J1131	16.9080	PJM External (MISO)	16.9080
956831	J1181 C	3.0077	PJM External (MISO)	3.0077
956832	J1181 E	16.2723	PJM External (MISO)	16.2723
957471	AF2-041 C	107.0010	50/50	107.0010
957472	AF2-041 E	71.3340	50/50	71.3340
957751	AF2-069 C	0.0975	Adder	0.22
957752	AF2-069 E	0.3146	Adder	0.7
957761	AF2-070 C	0.1374	Adder	0.3
957762	AF2-070 E	0.6670	Adder	1.48
958911	AF2-182 C	61.6410	50/50	61.6410
958912	AF2-182 E	41.0940	50/50	41.0940
958921	AF2-183 C	10.9584	50/50	10.9584
958922	AF2-183 E	16.4376	50/50	16.4376
959081	AF2-199 C	35.6670	50/50	35.6670
959082	AF2-199 E	23.7780	50/50	23.7780

959091	AF2-200 C	71.3340	50/50	71.3340
959092	AF2-200 E	47.5560	50/50	47.5560
960551	AF2-346 C	19.2848	50/50	19.2848
960552	AF2-346 E	12.8565	50/50	12.8565
961011	AF2-392 C O1	4.3215	Adder	9.59
961012	AF2-392 E O1	20.2325	Adder	44.91
961021	AF2-393 O1	7.3662	Adder	16.35
961031	AF2-394 O1	4.9108	Adder	10.9
990901	L-005 E	10.9007	Adder	12.82
LGEE	LGEE	0.0434	Confirmed LTF	0.0434
CPL	CPL	0.2633	Confirmed LTF	0.2633
CBM-W2	CBM-W2	21.4005	Confirmed LTF	21.4005
NY	NY	0.1637	Confirmed LTF	0.1637
CBM-W1	CBM-W1	45.5989	Confirmed LTF	45.5989
TVA	TVA	2.5326	Confirmed LTF	2.5326
O-066	O-066	1.8077	Confirmed LTF	1.8077
CBM-S2	CBM-S2	3.4911	Confirmed LTF	3.4911
CBM-S1	CBM-S1	12.6692	Confirmed LTF	12.6692
G-007	G-007	0.2787	Confirmed LTF	0.2787
MADISON	MADISON	14.5414	Confirmed LTF	14.5414
MEC	MEC	18.1019	Confirmed LTF	18.1019
TRIMBLE	TRIMBLE	0.0134	Confirmed LTF	0.0134

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
95332251	255113	17STILLWELL	NIPS	243219	05DUMONT	AEP	1	COMED_P1-2_695_B2	single	1409.0	103.46	104.23	DC	24.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274723	RIVER EC ;12	5.5486	80/20	5.5486
274724	RIVER EC ;11	5.5078	80/20	5.5078
274788	SE CHICAG;5U (Deactivation : 01/06/2020)	7.5182	80/20	7.5182
274789	SE CHICAG;6U (Deactivation : 01/06/2020)	7.5381	80/20	7.5381
274790	SE CHICAG;7U (Deactivation : 01/06/2020)	7.6372	80/20	7.6372
274791	SE CHICAG;8U (Deactivation : 01/06/2020)	7.6372	80/20	7.6372
274792	SE CHICAG;9U (Deactivation : 01/06/2020)	7.5475	80/20	7.5475

274793	SE CHICAG;0U (Deactivation : 01/06/2020)	7.5475	80/20	7.5475
274794	SE CHICAG;1U (Deactivation : 01/06/2020)	7.5475	80/20	7.5475
274795	SE CHICAG;2U (Deactivation : 01/06/2020)	7.5475	80/20	7.5475
274798	UNIV PARK;1U	1.5551	80/20	1.5551
274801	UNIV PARK;4U	1.5435	80/20	1.5435
274826	FISK ;BP	2.9034	80/20	2.9034
274827	FISK ;RP	2.0577	80/20	2.0577
274830	U3-021 1	6.0871	Adder	7.16
274831	U3-021 2	6.0871	Adder	7.16
276164	X3-005 C	0.1075	80/20	0.1075
293540	O-012 C	0.6150	80/20	0.6150
915011	Y3-013 1	3.7444	Adder	4.41
915021	Y3-013 2	3.7444	Adder	4.41
915031	Y3-013 3	3.7444	Adder	4.41
919581	AA2-030	17.5313	Adder	20.63
924041	AB2-047 C O1	3.3636	Adder	3.96
924471	AB2-096	42.2718	Adder	49.73
925581	AC1-033 C	1.4016	Adder	1.65
926311	AC1-109 1	1.9040	Adder	2.24
926321	AC1-109 2	1.9040	Adder	2.24
926331	AC1-110 1	1.8980	Adder	2.23
926341	AC1-110 2	1.8980	Adder	2.23
926351	AC1-111 1	0.7620	Adder	0.9
926361	AC1-111 2	0.7620	Adder	0.9
926371	AC1-111 3	0.7620	Adder	0.9
926381	AC1-111 4	0.7620	Adder	0.9
926391	AC1-111 5	0.7620	Adder	0.9
926401	AC1-111 6	0.7620	Adder	0.9
926431	AC1-114	2.3739	Adder	2.79
926821	AC1-168 C O1	1.1406	Adder	1.34
926841	AC1-171 C O1	1.0368	Adder	1.22
927201	AC1-214 C O1	2.0483	Adder	2.41
927451	AC1-142A 1	4.2157	Adder	4.96
927461	AC1-142A 2	4.2160	Adder	4.96
927511	AC1-113 1	1.1869	Adder	1.4
927521	AC1-113 2	1.1869	Adder	1.4
930481	AB1-089	65.6043	Adder	77.18
930501	AB1-091 O1	76.9692	Adder	90.55
930741	AB1-122 1O1	71.4553	Adder	84.07
930751	AB1-122 2O1	73.8990	Adder	86.94
932881	AC2-115 1	2.3739	Adder	2.79
932891	AC2-115 2	2.3739	Adder	2.79
932921	AC2-116	0.8309	Adder	0.98
932931	AC2-117	5.1330	Adder	6.04
933411	AC2-154 C	2.6404	Adder	3.11
933431	AC2-156 C O1	0.9541	Adder	1.12
933911	AD1-013 C	1.8539	Adder	2.18
933931	AD1-016 C	0.9273	Adder	1.09

934051	AD1-031 C O1	2.8459	Adder	3.35
934101	AD1-039 1	7.0026	Adder	8.24
934111	AD1-039 2	7.2421	Adder	8.52
934431	AD1-067 C	0.1318	Adder	0.16
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.8893	Adder	1.05
934701	AD1-098 C O1	6.9062	Adder	8.12
934721	AD1-100 C	19.5139	Adder	22.96
934871	AD1-116 C	0.9472	Adder	1.11
934971	AD1-129 C	0.9021	Adder	1.06
935001	AD1-133 C O1	20.6718	Adder	24.32
936291	AD2-038 C O1	2.3283	Adder	2.74
936371	AD2-047 C O1	4.7249	Adder	5.56
936461	AD2-060	2.7793	Adder	3.27
936511	AD2-066 C O1	8.3972	Adder	9.88
936791	AD2-102 C	14.1066	Adder	16.6
937001	AD2-134 C	2.7442	Adder	3.23
937311	AD2-172 C	2.4544	Adder	2.89
937401	AD2-194 1	7.7948	Adder	9.17
937411	AD2-194 2	7.7923	Adder	9.17
937531	AD2-214 C	4.3946	Adder	5.17
938511	AE1-070 1	9.1589	Adder	10.78
938521	AE1-070 2	8.3767	Adder	9.85
938851	AE1-113 C	7.9623	Adder	9.37
938861	AE1-114 C O1	3.9206	Adder	4.61
939051	AE1-134 1	1.3623	Adder	1.6
939061	AE1-134 2	1.3623	Adder	1.6
939321	AE1-163 C O1	5.8506	Adder	6.88
939351	AE1-166 C O1	10.2692	Adder	12.08
939401	AE1-172 C O1	5.2573	Adder	6.19
939631	AE1-193 C	9.0290	Adder	10.62
939641	AE1-194 C	9.0290	Adder	10.62
939651	AE1-195 C	9.0290	Adder	10.62
939681	AE1-198 C	26.8091	Adder	31.54
939741	AE1-205 C O1	8.6937	Adder	10.23
940101	AE1-252 C O1	10.5616	Adder	12.43
940501	AE2-035 C	2.4544	Adder	2.89
941131	AE2-107 C	7.3063	Adder	8.6
941551	AE2-152 C O1	11.8491	Adder	13.94
941561	AE2-153 C O1	4.7360	Adder	5.57
941731	AE2-173 O1	5.1748	Adder	6.09
942111	AE2-223 C	2.0182	Adder	2.37
942421	AE2-255 C O1	3.0160	Adder	3.55
942651	AE2-281 C O1	0.8358	Adder	0.98
942991	AE2-321 C	8.1632	Adder	9.6
943121	AE2-341 C	12.7367	Adder	14.98
943381	AF1-009 C	0.5974	Adder	0.7
943401	AF1-011 C	1.2399	Adder	1.46
943411	AF1-012 C	11.9631	Adder	14.07
943591	AF1-030 C O1	8.4700	Adder	9.96
943801	AF1-048 C	3.8160	Adder	4.49
943921	AF1-060	1.2085	Adder	1.42
944041	AF1-072	2.1512	Adder	2.53
944911	AF1-156 C	12.1092	Adder	14.25

945351	AF1-200 FTIR	308.5264	Merchant Transmission	308.5264
946151	AF1-280 C O1	15.5391	Adder	18.28
946161	AF1-281 C	0.3403	Adder	0.4
946321	AF1-296 C O1	3.9241	Adder	4.62
946501	AF1-314 C	4.3608	Adder	5.13
946531	AF1-317 C O1	2.2787	Adder	2.68
946541	AF1-318 C O1	5.7512	Adder	6.77
946661	AF1-330 C	2.0011	Adder	2.35
946671	AF1-331	2.4077	Adder	2.83
951721	J643	27.1460	PJM External (MISO)	27.1460
953871	J847	13.8150	PJM External (MISO)	13.8150
954751	J351	446.6739	PJM External (MISO)	446.6739
955741	J1058	38.3400	PJM External (MISO)	38.3400
957021	AF2-003 C O1	3.4823	Adder	7.73
957331	AF2-027 C	1.3230	Adder	2.94
957371	AF2-031 C O1	1.5768	80/20	1.5768
957401	AF2-034 C	0.7439	Adder	1.65
957471	AF2-041 C	11.2861	Adder	25.05
957751	AF2-069 C	0.1257	Adder	0.28
957761	AF2-070 C	0.1771	Adder	0.39
958011	AF2-095 C O1	10.0173	Adder	22.24
958021	AF2-096 C O1	17.7815	Adder	39.47
958341	AF2-128 C O1	0.8096	Adder	1.8
958481	AF2-142 C	5.9447	Adder	13.2
958491	AF2-143 C	5.6954	Adder	12.64
958911	AF2-182 C	10.8206	Adder	24.02
958921	AF2-183 C	1.9237	Adder	4.27
959081	AF2-199 C	3.7620	Adder	8.35
959091	AF2-200 C	7.5241	Adder	16.7
959101	AF2-201 C O1	3.1839	Adder	7.07
959341	AF2-225 C	3.4557	Adder	7.67
959351	AF2-226 C	1.3489	Adder	2.99
959611	AF2-252 C	0.9462	Adder	2.1
959761	AF2-267 C O1	2.2994	Adder	5.1
960281	AF2-319 C	1.3489	Adder	2.99
960381	AF2-329	3.5027	Adder	7.78
960551	AF2-346 C	2.7173	Adder	6.03
960581	AF2-349 C	11.5496	Adder	25.64
960591	AF2-350 C O1	4.4191	Adder	9.81
960601	AF2-351 C O1	0.5892	Adder	1.31
960611	AF2-352 C	0.9462	Adder	2.1
960721	AF2-363 C O1	3.1543	Adder	7.0
960731	AF2-364 C O1	3.2513	Adder	7.22
960751	AF2-366 C O1	3.6866	Adder	8.18
961011	AF2-392 C O1	2.0976	Adder	4.66
961021	AF2-393 O1	3.5755	Adder	7.94
961031	AF2-394 O1	2.3837	Adder	5.29
961501	AF2-441 C O1	15.1056	80/20	15.1056
WEC	WEC	4.4132	Confirmed LTF	4.4132
CBM-W2	CBM-W2	24.9631	Confirmed LTF	24.9631
NY	NY	1.3416	Confirmed LTF	1.3416
CBM-W1	CBM-W1	79.8013	Confirmed LTF	79.8013
TVA	TVA	1.7262	Confirmed LTF	1.7262

CHEOAH	CHEOAH	0.0065	Confirmed LTF	0.0065
CBM-S1	CBM-S1	7.0972	Confirmed LTF	7.0972
MADISON	MADISON	22.9824	Confirmed LTF	22.9824
MEC	MEC	15.3656	Confirmed LTF	15.3656
BLUEG	BLUEG	1.7030	Confirmed LTF	1.7030
TRIMBLE	TRIMBLE	0.5994	Confirmed LTF	0.5994
CATAWBA	CATAWBA	0.3045	Confirmed LTF	0.3045

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
96334599	270678	BYRON ; B	CE	270694	CHERRY VA; B	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	118.53	121.19	DC	82.99

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274656	BYRON ;1U	100.3722	50/50	100.3722
274760	LEE CO EC;1U	4.2638	50/50	4.2638
274761	LEE CO EC;2U	4.2638	50/50	4.2638
274763	LEE CO EC;4U	4.2206	50/50	4.2206
274764	LEE CO EC;5U	4.2746	50/50	4.2746
274765	LEE CO EC;6U	4.2746	50/50	4.2746
274766	LEE CO EC;7U	4.2098	50/50	4.2098
274767	LEE CO EC;8U	4.2098	50/50	4.2098
274859	EASYSR;U1 E	25.5645	Adder	30.08
274860	EASYSR;U2 E	25.5645	Adder	30.08
276172	Z1-108 BAT	1.7706	Merchant Transmission	1.7706
293516	O-009 E1	8.6909	Adder	10.22
293517	O-009 E2	4.4143	Adder	5.19
293518	O-009 E3	4.8614	Adder	5.72
293715	O-029 E	9.2916	Adder	10.93
293716	O-029 E	5.0944	Adder	5.99
293717	O-029 E	4.6823	Adder	5.51
919581	AA2-030	25.6197	Adder	30.14
920273	AA2-123 BAT	2.9072	Merchant Transmission	2.9072
937531	AD2-214 C	4.6405	Adder	5.46
937532	AD2-214 E	3.0937	Adder	3.64
939051	AE1-134 1	1.9908	Adder	2.34
939061	AE1-134 2	1.9908	Adder	2.34
943401	AF1-011 C	1.1865	Adder	1.4
943402	AF1-011 E	1.9916	Adder	2.34
943411	AF1-012 C	14.3425	Adder	16.87
943412	AF1-012 E	9.5616	Adder	11.25
943803	AF1-048 BAT	7.7961	Merchant Transmission	7.7961
943922	AF1-060 BAT	1.2391	Merchant Transmission	1.2391
946151	AF1-280 C O1	32.2124	Adder	37.9
946152	AF1-280 E O1	14.8130	Adder	17.43
946161	AF1-281 C	0.7054	Adder	0.83
946162	AF1-281 E	3.9972	Adder	4.7

946321	AF1-296 C O1	3.8841	Adder	4.57
946322	AF1-296 E O1	18.1846	Adder	21.39
946531	AF1-317 C O1	2.7319	Adder	3.21
954792	J952 E	4.1796	PJM External (MISO)	4.1796
954901	J963	0.8465	PJM External (MISO)	0.8465
955051	J981 C	2.4139	PJM External (MISO)	2.4139
955052	J981 E	13.0601	PJM External (MISO)	13.0601
955971	J1084	19.5075	PJM External (MISO)	19.5075
956411	J1131	10.5060	PJM External (MISO)	10.5060
957471	AF2-041 C	8.1390	Adder	18.07
957472	AF2-041 E	5.4260	Adder	12.04
958911	AF2-182 C	22.4311	Adder	49.79
958912	AF2-182 E	14.9541	Adder	33.19
958921	AF2-183 C	3.9878	Adder	8.85
958922	AF2-183 E	5.9816	Adder	13.28
959081	AF2-199 C	2.7130	Adder	6.02
959082	AF2-199 E	1.8087	Adder	4.01
959091	AF2-200 C	5.4260	Adder	12.04
959092	AF2-200 E	3.6173	Adder	8.03
960551	AF2-346 C	3.2578	Adder	7.23
960552	AF2-346 E	2.1719	Adder	4.82
961011	AF2-392 C O1	2.0347	Adder	4.52
961012	AF2-392 E O1	9.5260	Adder	21.15
961021	AF2-393 O1	3.4682	Adder	7.7
961031	AF2-394 O1	2.3121	Adder	5.13
CBM-W2	CBM-W2	6.9697	Confirmed LTF	6.9697
NY	NY	0.1803	Confirmed LTF	0.1803
TVA	TVA	0.7098	Confirmed LTF	0.7098
O-066	O-066	2.0966	Confirmed LTF	2.0966
CBM-S2	CBM-S2	0.1734	Confirmed LTF	0.1734
CBM-S1	CBM-S1	3.2632	Confirmed LTF	3.2632
G-007	G-007	0.3234	Confirmed LTF	0.3234
MADISON	MADISON	1.1834	Confirmed LTF	1.1834
MEC	MEC	6.4243	Confirmed LTF	6.4243
GIBSON	GIBSON	0.0202	Confirmed LTF	0.0202
BLUEG	BLUEG	0.3160	Confirmed LTF	0.3160
TRIMBLE	TRIMBLE	0.1107	Confirmed LTF	0.1107

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
96335062	270694	CHERRY VA; B	CE	270759	GARDEN PR; R	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	105.79	107.43	DC	29.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274656	BYRON ;1U	52.1009	80/20	52.1009
274657	BYRON ;2U	50.9601	80/20	50.9601

274717	NELSON EC;2C	3.7417	80/20	3.7417
274760	LEE CO EC;1U	2.4453	80/20	2.4453
274761	LEE CO EC;2U	2.4453	80/20	2.4453
274762	LEE CO EC;3U	2.4112	80/20	2.4112
274763	LEE CO EC;4U	2.4205	80/20	2.4205
274764	LEE CO EC;5U	2.4515	80/20	2.4515
274765	LEE CO EC;6U	2.4515	80/20	2.4515
274766	LEE CO EC;7U	2.4143	80/20	2.4143
274767	LEE CO EC;8U	2.4143	80/20	2.4143
274822	ROCKFORD ;11	4.7001	80/20	4.7001
274823	ROCKFORD ;21	4.8234	80/20	4.8234
274824	ROCKFORD ;12	4.6591	80/20	4.6591
274856	ECOGROVE ;U1	0.7462	80/20	0.7462
274857	BIG SKY ;U1	0.7438	80/20	0.7438
274858	BIG SKY ;U2	0.7438	80/20	0.7438
276160	W4-084	0.0867	80/20	0.0867
276162	X1-087	0.5733	80/20	0.5733
290266	R-018	0.2820	80/20	0.2820
919581	AA2-030	17.0683	Adder	20.08
926431	AC1-114	5.0394	80/20	5.0394
927511	AC1-113 1	2.5195	80/20	2.5195
927521	AC1-113 2	2.5195	80/20	2.5195
927531	AC1-185 1	0.1860	80/20	0.1860
927541	AC1-185 2	0.1860	80/20	0.1860
927551	AC1-185 3	0.1860	80/20	0.1860
927561	AC1-185 4	0.1860	80/20	0.1860
927571	AC1-185 5	0.1860	80/20	0.1860
927581	AC1-185 6	0.1860	80/20	0.1860
927591	AC1-185 7	0.1860	80/20	0.1860
927601	AC1-185 8	0.1860	80/20	0.1860
930481	AB1-089	142.1530	80/20	142.1530
932881	AC2-115 1	5.0390	80/20	5.0390
932891	AC2-115 2	5.0390	80/20	5.0390
932921	AC2-116	1.7638	80/20	1.7638
933911	AD1-013 C	1.2907	Adder	1.52
934431	AD1-067 C	0.0930	Adder	0.11
934651	AD1-096 C (Withdrawn : 07/22/2020)	1.6508	80/20	1.6508
934701	AD1-098 C O1	4.9852	Adder	5.86
934971	AD1-129 C	1.3443	80/20	1.3443
936791	AD2-102 C	28.9284	80/20	28.9284
937001	AD2-134 C	1.9364	Adder	2.28
937311	AD2-172 C	4.5423	80/20	4.5423
937531	AD2-214 C	3.8720	Adder	4.56
938861	AE1-114 C O1	6.2074	80/20	6.2074
939051	AE1-134 1	1.3263	Adder	1.56
939061	AE1-134 2	1.3263	Adder	1.56
940501	AE2-035 C	4.5423	80/20	4.5423
941131	AE2-107 C	4.2743	Adder	5.03
942991	AE2-321 C	4.1124	Adder	4.84
943381	AF1-009 C	0.4312	Adder	0.51
943401	AF1-011 C	1.0393	Adder	1.22
943411	AF1-012 C	9.3588	Adder	11.01
943801	AF1-048 C	1.9224	Adder	2.26

943921	AF1-060	2.2365	80/20	2.2365
946151	AF1-280 C O1	22.4707	80/20	22.4707
946161	AF1-281 C	0.4921	80/20	0.4921
946321	AF1-296 C O1	3.2803	Adder	3.86
946501	AF1-314 C	8.0706	80/20	8.0706
946531	AF1-317 C O1	1.7826	Adder	2.1
946671	AF1-331	1.6762	Adder	1.97
950101	J390	85.9950	PJM External (MISO)	85.9950
952431	J760	5.4783	PJM External (MISO)	5.4783
952511	J584 C	1.0907	PJM External (MISO)	1.0907
953111	J807 C	1.2441	PJM External (MISO)	1.2441
953681	J818	14.6616	PJM External (MISO)	14.6616
953691	J819 C	1.5290	PJM External (MISO)	1.5290
953901	J850	21.8100	PJM External (MISO)	21.8100
954001	J864	4.5297	PJM External (MISO)	4.5297
955221	J1000	3.7890	PJM External (MISO)	3.7890
955251	J1003	3.4655	PJM External (MISO)	3.4655
955971	J1084	10.9800	PJM External (MISO)	10.9800
956581	J1154	7.3845	PJM External (MISO)	7.3845
956901	J1188	5.9740	PJM External (MISO)	5.9740
958911	AF2-182 C	29.5236	80/20	29.5236
958921	AF2-183 C	5.2486	80/20	5.2486
959101	AF2-201 C O1	11.1178	80/20	11.1178
959761	AF2-267 C O1	8.0257	80/20	8.0257
960551	AF2-346 C	2.1258	Adder	4.72
960721	AF2-363 C O1	2.1842	Adder	4.85
960751	AF2-366 C O1	2.2786	Adder	5.06
961011	AF2-392 C O1	4.6116	80/20	4.6116
961021	AF2-393 O1	7.8606	80/20	7.8606
961031	AF2-394 O1	5.2404	80/20	5.2404
WEC	WEC	0.6612	Confirmed LTF	0.6612
CBM-W2	CBM-W2	8.7961	Confirmed LTF	8.7961
NY	NY	0.2555	Confirmed LTF	0.2555
CBM-W1	CBM-W1	41.6583	Confirmed LTF	41.6583
TVA	TVA	0.9352	Confirmed LTF	0.9352
CBM-S2	CBM-S2	0.1387	Confirmed LTF	0.1387
CBM-S1	CBM-S1	4.1918	Confirmed LTF	4.1918
TILTON	TILTON	0.1228	Confirmed LTF	0.1228
MADISON	MADISON	11.7634	Confirmed LTF	11.7634
MEC	MEC	9.5960	Confirmed LTF	9.5960
GIBSON	GIBSON	0.0868	Confirmed LTF	0.0868
BLUEG	BLUEG	0.5382	Confirmed LTF	0.5382
TRIMBLE	TRIMBLE	0.1842	Confirmed LTF	0.1842

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
96334678	270730	ELECT JCT; B	CE	270812	LOMBARD ; B	CE	1	COMED_P4_120-45-L12002_	breaker	1479.0	107.81	108.52	DC	23.31

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274738	AURORA EC;3P	4.4431	50/50	4.4431
274740	AURORA EC;4P	4.4431	50/50	4.4431
274859	EASYR;U1 E	6.1396	Adder	7.22
274860	EASYR;U2 E	6.1396	Adder	7.22
274872	LEE DEKAL;1U	0.8480	50/50	0.8480
276167	Z1-106 E2	1.1201	50/50	1.1201
276168	Z1-106 E1	1.1269	50/50	1.1269
290051	GSG-6; E	7.2025	Adder	8.47
290108	LEEDK;1U E	20.4840	50/50	20.4840
292543	L-013 2	0.5603	50/50	0.5603
293516	O-009 E1	4.7280	Adder	5.56
293517	O-009 E2	2.4014	Adder	2.83
293518	O-009 E3	2.6446	Adder	3.11
293715	O-029 E	5.0547	Adder	5.95
293716	O-029 E	2.7714	Adder	3.26
293717	O-029 E	2.5472	Adder	3.0
294763	P-046 E	4.0535	Adder	4.77
919581	AA2-030	11.1244	Adder	13.09
926311	AC1-109 1	1.0101	Adder	1.19
926321	AC1-109 2	1.0101	Adder	1.19
926331	AC1-110 1	2.5419	50/50	2.5419
926341	AC1-110 2	2.5419	50/50	2.5419
926351	AC1-111 1	0.4794	Adder	0.56
926361	AC1-111 2	0.4794	Adder	0.56
926371	AC1-111 3	0.4794	Adder	0.56
926381	AC1-111 4	0.4794	Adder	0.56
926391	AC1-111 5	0.4794	Adder	0.56
926401	AC1-111 6	0.4794	Adder	0.56
926431	AC1-114	0.9328	Adder	1.1
927511	AC1-113 1	0.4662	Adder	0.55
927521	AC1-113 2	0.4662	Adder	0.55
930481	AB1-089	32.0331	Adder	37.69
932881	AC2-115 1	0.9325	Adder	1.1
932891	AC2-115 2	0.9325	Adder	1.1
932921	AC2-116	0.3265	Adder	0.38
933431	AC2-156 C O1	0.8012	50/50	0.8012
933432	AC2-156 E O1	1.3072	50/50	1.3072
933911	AD1-013 C	1.2826	Adder	1.51
933912	AD1-013 E	2.0488	Adder	2.41
934431	AD1-067 C	0.0904	Adder	0.11
934432	AD1-067 E	0.3803	Adder	0.45
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.4180	Adder	0.49
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.6819	Adder	0.8
934701	AD1-098 C O1	4.6998	Adder	5.53
934702	AD1-098 E O1	3.4313	Adder	4.04
934971	AD1-129 C	0.3299	Adder	0.39
934972	AD1-129 E	0.2199	Adder	0.26
937001	AD2-134 C	1.8828	Adder	2.22

937002	AD2-134 E	7.7781	Adder	9.15
937311	AD2-172 C	1.0640	Adder	1.25
937312	AD2-172 E	1.4694	Adder	1.73
937531	AD2-214 C	2.3475	Adder	2.76
937532	AD2-214 E	1.5650	Adder	1.84
938861	AE1-114 C O1	1.9363	Adder	2.28
938862	AE1-114 E O1	6.6062	Adder	7.77
939051	AE1-134 1	0.8644	Adder	1.02
939061	AE1-134 2	0.8644	Adder	1.02
940501	AE2-035 C	1.0640	Adder	1.25
940502	AE2-035 E	1.4694	Adder	1.73
941131	AE2-107 C	6.2100	50/50	6.2100
941132	AE2-107 E	4.1400	50/50	4.1400
943121	AE2-341 C	10.5831	50/50	10.5831
943122	AE2-341 E	5.1969	50/50	5.1969
943381	AF1-009 C	0.4066	Adder	0.48
943382	AF1-009 E	1.6262	Adder	1.91
943401	AF1-011 C	0.6455	Adder	0.76
943402	AF1-011 E	1.0834	Adder	1.27
943411	AF1-012 C	11.1258	50/50	11.1258
943412	AF1-012 E	7.4172	50/50	7.4172
943591	AF1-030 C O1	7.0379	50/50	7.0379
943592	AF1-030 E O1	3.4821	50/50	3.4821
943921	AF1-060	0.5239	Adder	0.62
944041	AF1-072	0.9553	Adder	1.12
945351	AF1-200 FTIR	171.5912	Merchant Transmission	171.5912
946151	AF1-280 C O1	9.0470	Adder	10.64
946152	AF1-280 E O1	4.1603	Adder	4.89
946161	AF1-281 C	0.1981	Adder	0.23
946162	AF1-281 E	1.1226	Adder	1.32
946321	AF1-296 C O1	1.9473	Adder	2.29
946322	AF1-296 E O1	9.1168	Adder	10.73
946501	AF1-314 C	1.8905	Adder	2.22
946502	AF1-314 E	8.8512	Adder	10.41
946531	AF1-317 C O1	2.1192	50/50	2.1192
946671	AF1-331	1.6657	Adder	1.96
955971	J1084	8.2515	PJM External (MISO)	8.2515
957333	AF2-027 BAT	1.4951	Merchant Transmission	1.4951
957471	AF2-041 C	26.9190	50/50	26.9190
957472	AF2-041 E	17.9460	50/50	17.9460
958911	AF2-182 C	6.2999	Adder	13.98
958912	AF2-182 E	4.1999	Adder	9.32
958921	AF2-183 C	1.1200	Adder	2.49
958922	AF2-183 E	1.6800	Adder	3.73
959081	AF2-199 C	8.9730	50/50	8.9730
959082	AF2-199 E	5.9820	50/50	5.9820
959091	AF2-200 C	17.9460	50/50	17.9460
959092	AF2-200 E	11.9640	50/50	11.9640
959101	AF2-201 C O1	1.3803	Adder	3.06
959102	AF2-201 E O1	3.9637	Adder	8.8
959761	AF2-267 C O1	0.9972	Adder	2.21
959762	AF2-267 E O1	4.6683	Adder	10.36
960381	AF2-329	5.4914	50/50	5.4914

960551	AF2-346 C	4.7682	50/50	4.7682
960552	AF2-346 E	3.1788	50/50	3.1788
960721	AF2-363 C O1	4.9201	50/50	4.9201
960722	AF2-363 E O1	3.2801	50/50	3.2801
960731	AF2-364 C O1	1.9076	Adder	4.23
960732	AF2-364 E O1	1.2717	Adder	2.82
960751	AF2-366 C O1	5.8830	50/50	5.8830
960752	AF2-366 E O1	3.9220	50/50	3.9220
961011	AF2-392 C O1	1.2421	Adder	2.76
961012	AF2-392 E O1	5.8154	Adder	12.91
961021	AF2-393 O1	2.1173	Adder	4.7
961031	AF2-394 O1	1.4115	Adder	3.13
CBM-W2	CBM-W2	4.3243	Confirmed LTF	4.3243
NY	NY	0.1156	Confirmed LTF	0.1156
CBM-W1	CBM-W1	4.5662	Confirmed LTF	4.5662
TVA	TVA	0.4522	Confirmed LTF	0.4522
O-066	O-066	1.3440	Confirmed LTF	1.3440
CBM-S2	CBM-S2	0.1272	Confirmed LTF	0.1272
CBM-S1	CBM-S1	2.0618	Confirmed LTF	2.0618
TILTON	TILTON	0.0101	Confirmed LTF	0.0101
G-007	G-007	0.2080	Confirmed LTF	0.2080
MADISON	MADISON	3.4615	Confirmed LTF	3.4615
MEC	MEC	4.2553	Confirmed LTF	4.2553
GIBSON	GIBSON	0.0289	Confirmed LTF	0.0289
BLUEG	BLUEG	0.2205	Confirmed LTF	0.2205
TRIMBLE	TRIMBLE	0.0762	Confirmed LTF	0.0762

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
96334565	270759	GARDEN PR; R	CE	960580	AF2-349 TAP	CE	1	COMED_P4_144-45-BT6-8__	breaker	1479.0	123.71	125.2	DC	49.04

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274830	U3-021 1	20.9976	Adder	24.7
274831	U3-021 2	24.7031	50/50	24.7031
274859	EASYR;U1 E	14.5664	Adder	17.14
274860	EASYR;U2 E	14.5664	Adder	17.14
276172	Z1-108 BAT	2.0808	Merchant Transmission	2.0808
290051	GSG-6; E	7.4601	Adder	8.78
290108	LEEDK;1U E	14.8614	Adder	17.48
293516	O-009 E1	7.6387	Adder	8.99
293517	O-009 E2	3.8799	Adder	4.56
293518	O-009 E3	4.2728	Adder	5.03
293715	O-029 E	8.1666	Adder	9.61
293716	O-029 E	4.4776	Adder	5.27
293717	O-029 E	4.1154	Adder	4.84

294763	P-046 E	14.4554	Adder	17.01
919581	AA2-030	17.1750	Adder	20.21
924471	AB2-096	171.5490	50/50	171.5490
926431	AC1-114	4.1929	Adder	4.93
927511	AC1-113 1	2.0964	Adder	2.47
927521	AC1-113 2	2.0964	Adder	2.47
930481	AB1-089	118.8946	Adder	139.88
932881	AC2-115 1	4.1927	Adder	4.93
932891	AC2-115 2	4.1927	Adder	4.93
932921	AC2-116	1.4675	Adder	1.73
933911	AD1-013 C	1.2998	Adder	1.53
933912	AD1-013 E	2.0764	Adder	2.44
934431	AD1-067 C	0.0937	Adder	0.11
934432	AD1-067 E	0.3939	Adder	0.46
934651	AD1-096 C (Withdrawn : 07/22/2020)	1.3809	Adder	1.62
934652	AD1-096 E (Withdrawn : 07/22/2020)	2.2530	Adder	2.65
934701	AD1-098 C O1	5.0181	Adder	5.9
934702	AD1-098 E O1	3.6638	Adder	4.31
934971	AD1-129 C	1.0978	Adder	1.29
934972	AD1-129 E	0.7318	Adder	0.86
936791	AD2-102 C	24.1128	Adder	28.37
936792	AD2-102 E	16.0752	Adder	18.91
937001	AD2-134 C	1.9502	Adder	2.29
937002	AD2-134 E	8.0563	Adder	9.48
937311	AD2-172 C	3.7946	Adder	4.46
937312	AD2-172 E	5.2401	Adder	6.16
937531	AD2-214 C	3.8828	Adder	4.57
937532	AD2-214 E	2.5885	Adder	3.05
938861	AE1-114 C O1	5.2127	Adder	6.13
938862	AE1-114 E O1	17.7845	Adder	20.92
939051	AE1-134 1	1.3346	Adder	1.57
939061	AE1-134 2	1.3346	Adder	1.57
940501	AE2-035 C	3.7946	Adder	4.46
940502	AE2-035 E	5.2401	Adder	6.16
941131	AE2-107 C	4.3325	Adder	5.1
941132	AE2-107 E	2.8883	Adder	3.4
943381	AF1-009 C	0.4341	Adder	0.51
943382	AF1-009 E	1.7364	Adder	2.04
943401	AF1-011 C	1.0428	Adder	1.23
943402	AF1-011 E	1.7504	Adder	2.06
943411	AF1-012 C	9.6104	Adder	11.31
943412	AF1-012 E	6.4070	Adder	7.54
943921	AF1-060	1.8684	Adder	2.2
946151	AF1-280 C O1	19.0338	Adder	22.39
946152	AF1-280 E O1	8.7527	Adder	10.3
946161	AF1-281 C	0.4168	Adder	0.49
946162	AF1-281 E	2.3619	Adder	2.78
946321	AF1-296 C O1	3.2866	Adder	3.87
946322	AF1-296 E O1	15.3873	Adder	18.1
946501	AF1-314 C	6.7420	Adder	7.93
946502	AF1-314 E	31.5649	Adder	37.14
946531	AF1-317 C O1	1.8306	Adder	2.15

946671	AF1-331	1.6881	Adder	1.99
950101	J390	83.5450	PJM External (MISO)	83.5450
952431	J760	5.3670	PJM External (MISO)	5.3670
952511	J584 C	1.0629	PJM External (MISO)	1.0629
952512	J584 E	5.7507	PJM External (MISO)	5.7507
953111	J807 C	1.2215	PJM External (MISO)	1.2215
953112	J807 E	6.6085	PJM External (MISO)	6.6085
953681	J818	14.1654	PJM External (MISO)	14.1654
953691	J819 C	1.4959	PJM External (MISO)	1.4959
953692	J819 E	8.0935	PJM External (MISO)	8.0935
953901	J850	21.0400	PJM External (MISO)	21.0400
954001	J864	4.4262	PJM External (MISO)	4.4262
955221	J1000	3.7405	PJM External (MISO)	3.7405
955971	J1084	11.1330	PJM External (MISO)	11.1330
956581	J1154	7.1355	PJM External (MISO)	7.1355
956901	J1188	5.8100	PJM External (MISO)	5.8100
958911	AF2-182 C	13.2542	Adder	29.42
958912	AF2-182 E	8.8361	Adder	19.61
958921	AF2-183 C	2.3563	Adder	5.23
958922	AF2-183 E	3.5344	Adder	7.85
959101	AF2-201 C O1	4.9224	Adder	10.93
959102	AF2-201 E O1	14.1353	Adder	31.38
959761	AF2-267 C O1	3.5535	Adder	7.89
959762	AF2-267 E O1	16.6362	Adder	36.93
960551	AF2-346 C	2.1829	Adder	4.85
960552	AF2-346 E	1.4553	Adder	3.23
960721	AF2-363 C O1	2.1972	Adder	4.88
960722	AF2-363 E O1	1.4648	Adder	3.25
960751	AF2-366 C O1	2.3027	Adder	5.11
960752	AF2-366 E O1	1.5352	Adder	3.41
961011	AF2-392 C O1	2.0808	Adder	4.62
961012	AF2-392 E O1	9.7421	Adder	21.63
961021	AF2-393 O1	3.5469	Adder	7.87
961031	AF2-394 O1	2.3646	Adder	5.25
WEC	WEC	0.5292	Confirmed LTF	0.5292
CBM-W2	CBM-W2	8.7551	Confirmed LTF	8.7551
NY	NY	0.2483	Confirmed LTF	0.2483
CBM-W1	CBM-W1	40.2447	Confirmed LTF	40.2447
TVA	TVA	0.9352	Confirmed LTF	0.9352
O-066	O-066	2.9030	Confirmed LTF	2.9030
CBM-S2	CBM-S2	0.1792	Confirmed LTF	0.1792
CBM-S1	CBM-S1	4.2089	Confirmed LTF	4.2089
TILTON	TILTON	0.1210	Confirmed LTF	0.1210
G-007	G-007	0.4482	Confirmed LTF	0.4482
MADISON	MADISON	11.4993	Confirmed LTF	11.4993
MEC	MEC	9.5086	Confirmed LTF	9.5086
GIBSON	GIBSON	0.0824	Confirmed LTF	0.0824
BLUEG	BLUEG	0.5208	Confirmed LTF	0.5208
TRIMBLE	TRIMBLE	0.1781	Confirmed LTF	0.1781

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
96334713	270807	LIBERTYVI; R	CE	270857	P HTS 117; R	CE	1	COMED_P4_016-45-BT6-11_	breaker	1479.0	106.95	107.58	DC	20.69

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274683	WAUKEGAN ;8U	8.6783	50/50	8.6783
274725	ZION EC ;1P	6.6512	50/50	6.6512
274726	ZION EC ;2P	6.6512	50/50	6.6512
274727	ZION EC ;3P	6.6512	50/50	6.6512
274828	WAUKEGAN ;BP	2.4683	50/50	2.4683
274830	U3-021 1	5.6437	Adder	6.64
274831	U3-021 2	5.6437	Adder	6.64
274859	EASYSR;U1 E	5.9764	Adder	7.03
274860	EASYSR;U2 E	5.9764	Adder	7.03
276170	Z1-108 E	2.7896	50/50	2.7896
290051	GSG-6; E	3.8377	Adder	4.51
293516	O-009 E1	3.5313	Adder	4.15
293517	O-009 E2	1.7936	Adder	2.11
293518	O-009 E3	1.9753	Adder	2.32
293715	O-029 E	3.7754	Adder	4.44
293716	O-029 E	2.0700	Adder	2.44
293717	O-029 E	1.9025	Adder	2.24
294763	P-046 E	6.4178	Adder	7.55
915011	Y3-013 1	7.0107	50/50	7.0107
915021	Y3-013 2	7.0107	50/50	7.0107
915031	Y3-013 3	7.0107	50/50	7.0107
919581	AA2-030	7.8842	Adder	9.28
920272	AA2-123 E	2.1451	Adder	2.52
924471	AB2-096	46.1090	50/50	46.1090
926431	AC1-114	1.8090	Adder	2.13
927511	AC1-113 1	0.9047	Adder	1.06
927521	AC1-113 2	0.9047	Adder	1.06
930481	AB1-089	41.6636	Adder	49.02
932881	AC2-115 1	1.8093	Adder	2.13
932891	AC2-115 2	1.8093	Adder	2.13
932921	AC2-116	0.6331	Adder	0.74
933911	AD1-013 C	0.6727	Adder	0.79
933912	AD1-013 E	1.0746	Adder	1.26
933931	AD1-016 C	0.8151	Adder	0.96
933932	AD1-016 E	1.3299	Adder	1.56
934431	AD1-067 C	0.0482	Adder	0.06
934432	AD1-067 E	0.2026	Adder	0.24
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5775	Adder	0.68
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.9422	Adder	1.11
934701	AD1-098 C O1	2.5607	Adder	3.01

934702	AD1-098 E O1	1.8695	Adder	2.2
934971	AD1-129 C	0.7344	Adder	0.86
934972	AD1-129 E	0.4896	Adder	0.58
936791	AD2-102 C	11.0762	Adder	13.03
936792	AD2-102 E	7.3841	Adder	8.69
937001	AD2-134 C	1.0032	Adder	1.18
937002	AD2-134 E	4.1443	Adder	4.88
937311	AD2-172 C	1.6847	Adder	1.98
937312	AD2-172 E	2.3265	Adder	2.74
937531	AD2-214 C	1.9195	Adder	2.26
937532	AD2-214 E	1.2797	Adder	1.51
938861	AE1-114 C O1	2.3366	Adder	2.75
938862	AE1-114 E O1	7.9718	Adder	9.38
939051	AE1-134 1	0.6127	Adder	0.72
939061	AE1-134 2	0.6127	Adder	0.72
940501	AE2-035 C	1.6847	Adder	1.98
940502	AE2-035 E	2.3265	Adder	2.74
942991	AE2-321 C	7.1113	Adder	8.37
942992	AE2-321 E	3.5026	Adder	4.12
943381	AF1-009 C	0.2215	Adder	0.26
943382	AF1-009 E	0.8860	Adder	1.04
943401	AF1-011 C	0.4821	Adder	0.57
943402	AF1-011 E	0.8092	Adder	0.95
943411	AF1-012 C	4.6928	Adder	5.52
943412	AF1-012 E	3.1285	Adder	3.68
943801	AF1-048 C	3.3243	Adder	3.91
943802	AF1-048 E	2.2162	Adder	2.61
943921	AF1-060	0.8295	Adder	0.98
944041	AF1-072	1.3737	Adder	1.62
946151	AF1-280 C O1	8.0304	Adder	9.45
946152	AF1-280 E O1	3.6928	Adder	4.34
946161	AF1-281 C	0.1758	Adder	0.21
946162	AF1-281 E	0.9965	Adder	1.17
946321	AF1-296 C O1	1.7144	Adder	2.02
946322	AF1-296 E O1	8.0264	Adder	9.44
946501	AF1-314 C	2.9933	Adder	3.52
946502	AF1-314 E	14.0140	Adder	16.49
946531	AF1-317 C O1	0.8939	Adder	1.05
946661	AF1-330 C	1.7589	Adder	2.07
946662	AF1-330 E	0.3861	Adder	0.45
946671	AF1-331	0.8736	Adder	1.03
950101	J390	64.9490	PJM External (MISO)	64.9490
951391	J505	11.3580	PJM External (MISO)	11.3580
952381	J703	13.4479	PJM External (MISO)	13.4479
952391	J704	5.7371	PJM External (MISO)	5.7371
952431	J760	2.3139	PJM External (MISO)	2.3139
952511	J584 C	0.7661	PJM External (MISO)	0.7661
952512	J584 E	4.1449	PJM External (MISO)	4.1449
953111	J807 C	0.8131	PJM External (MISO)	0.8131
953112	J807 E	4.3988	PJM External (MISO)	4.3988
953151	J831	5.3220	PJM External (MISO)	5.3220
953331	J801	3.7866	PJM External (MISO)	3.7866
953491	J947	30.2260	PJM External (MISO)	30.2260

953681	J818	14.4664	PJM External (MISO)	14.4664
953691	J819 C	1.0459	PJM External (MISO)	1.0459
953692	J819 E	5.6584	PJM External (MISO)	5.6584
953701	J821 C	1.2327	PJM External (MISO)	1.2327
953702	J821 E	6.6694	PJM External (MISO)	6.6694
953891	J849	13.1488	PJM External (MISO)	13.1488
953901	J850	23.6375	PJM External (MISO)	23.6375
954001	J864	3.3697	PJM External (MISO)	3.3697
954141	J878	29.1780	PJM External (MISO)	29.1780
954191	J886	17.0220	PJM External (MISO)	17.0220
954511	J926 C	0.8233	PJM External (MISO)	0.8233
954512	J926 E	4.4544	PJM External (MISO)	4.4544
954691	J732	35.4250	PJM External (MISO)	35.4250
954741	J928 C	1.3126	PJM External (MISO)	1.3126
954742	J928 E	7.1013	PJM External (MISO)	7.1013
955091	J986	12.7640	PJM External (MISO)	12.7640
955241	J1002	9.0882	PJM External (MISO)	9.0882
955251	J1003	5.0285	PJM External (MISO)	5.0285
955301	J1009	70.6280	PJM External (MISO)	70.6280
955311	J1010	60.9480	PJM External (MISO)	60.9480
955321	J1011	60.9480	PJM External (MISO)	60.9480
955581	J1042 C	3.6588	PJM External (MISO)	3.6588
955582	J1042 E	20.7332	PJM External (MISO)	20.7332
955671	J1051	5.8870	PJM External (MISO)	5.8870
955691	J1053	23.8160	PJM External (MISO)	23.8160
955981	J1085 C	3.1791	PJM External (MISO)	3.1791
955982	J1085 E	17.1999	PJM External (MISO)	17.1999
956141	J1101	2.2696	PJM External (MISO)	2.2696
956321	J1121	18.0520	PJM External (MISO)	18.0520
956571	J1153	19.2705	PJM External (MISO)	19.2705
956581	J1154	7.2795	PJM External (MISO)	7.2795
956731	J1171	11.3880	PJM External (MISO)	11.3880
956852	J1183 E	0.1420	PJM External (MISO)	0.1420
956901	J1188	4.4180	PJM External (MISO)	4.4180
957331	AF2-027 C	4.6738	50/50	4.6738
957332	AF2-027 E	7.0107	50/50	7.0107
958911	AF2-182 C	5.5920	Adder	12.41
958912	AF2-182 E	3.7280	Adder	8.28
958921	AF2-183 C	0.9941	Adder	2.21
958922	AF2-183 E	1.4912	Adder	3.31
959101	AF2-201 C O1	2.1854	Adder	4.85
959102	AF2-201 E O1	6.2757	Adder	13.93
959761	AF2-267 C O1	1.5776	Adder	3.5
959762	AF2-267 E O1	7.3857	Adder	16.39
960551	AF2-346 C	1.0659	Adder	2.37
960552	AF2-346 E	0.7106	Adder	1.58
960581	AF2-349 C	24.3576	50/50	24.3576
960582	AF2-349 E	16.2384	50/50	16.2384
960721	AF2-363 C O1	1.1441	Adder	2.54
960722	AF2-363 E O1	0.7628	Adder	1.69
960731	AF2-364 C O1	1.4035	Adder	3.12
960732	AF2-364 E O1	0.9357	Adder	2.08
961011	AF2-392 C O1	0.9559	Adder	2.12

961012	AF2-392 E O1	4.4753	Adder	9.93
961021	AF2-393 O1	1.6294	Adder	3.62
961031	AF2-394 O1	1.0862	Adder	2.41
WEC	WEC	5.5421	Confirmed LTF	5.5421
CBM-W2	CBM-W2	6.9205	Confirmed LTF	6.9205
NY	NY	0.1759	Confirmed LTF	0.1759
CBM-W1	CBM-W1	67.0161	Confirmed LTF	67.0161
TVA	TVA	0.7756	Confirmed LTF	0.7756
O-066	O-066	2.0429	Confirmed LTF	2.0429
CBM-S2	CBM-S2	0.3410	Confirmed LTF	0.3410
CBM-S1	CBM-S1	3.5443	Confirmed LTF	3.5443
TILTON	TILTON	0.1077	Confirmed LTF	0.1077
G-007	G-007	0.3151	Confirmed LTF	0.3151
MADISON	MADISON	12.6988	Confirmed LTF	12.6988
MEC	MEC	7.7210	Confirmed LTF	7.7210
GIBSON	GIBSON	0.0617	Confirmed LTF	0.0617
BLUEG	BLUEG	0.3715	Confirmed LTF	0.3715
TRIMBLE	TRIMBLE	0.1274	Confirmed LTF	0.1274

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96334604	270828	NELSON ; B	CE	943410	AF1-012 TAP	CE	1	COMED_P4_937-45-BT1-4__	breaker	1656.0	109.6	114.03	DC	103.13

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274663	QUAD CITI;2U	39.2456	50/50	39.2456
274699	CORDOVA ;1C	6.8876	50/50	6.8876
274700	CORDOVA ;2C	6.8876	50/50	6.8876
274701	CORDOVA ;1S	7.7486	50/50	7.7486
274715	NELSON EC;1C	9.9825	50/50	9.9825
274716	NELSON EC;1S	7.2837	50/50	7.2837
274717	NELSON EC;2C	10.0596	50/50	10.0596
274718	NELSON EC;2S	7.3490	50/50	7.3490
276156	O-029 C	0.4777	50/50	0.4777
276157	O-029 C	0.5164	50/50	0.5164
276158	O-029 C	0.9425	50/50	0.9425
290051	GSG-6; E	5.8488	Adder	6.88
293513	O-009 C1	0.8823	50/50	0.8823
293514	O-009 C2	0.4476	50/50	0.4476
293515	O-009 C3	0.4949	50/50	0.4949
293516	O-009 E1	20.4690	50/50	20.4690
293517	O-009 E2	10.3967	50/50	10.3967
293518	O-009 E3	11.4496	50/50	11.4496
293715	O-029 E	21.8836	50/50	21.8836
293716	O-029 E	11.9985	50/50	11.9985
293717	O-029 E	11.0279	50/50	11.0279

293771	O-035 E	5.0169	Adder	5.9
294401	BSHIL;1U E	8.1967	Adder	9.64
294410	BSHIL;2U E	8.1967	Adder	9.64
919221	AA1-146	9.3122	50/50	9.3122
919581	AA2-030	53.9860	50/50	53.9860
925581	AC1-033 C	1.3424	Adder	1.58
925582	AC1-033 E	8.9871	Adder	10.57
927201	AC1-214 C O1	1.6102	Adder	1.89
927202	AC1-214 E O1	5.1186	Adder	6.02
934051	AD1-031 C O1	2.7268	Adder	3.21
934052	AD1-031 E O1	4.4489	Adder	5.23
934431	AD1-067 C	0.0734	Adder	0.09
934432	AD1-067 E	0.3088	Adder	0.36
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5813	Adder	0.68
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.9485	Adder	1.12
934701	AD1-098 C O1	4.2827	Adder	5.04
934702	AD1-098 E O1	3.1268	Adder	3.68
937001	AD2-134 C	1.5290	Adder	1.8
937002	AD2-134 E	6.3162	Adder	7.43
937531	AD2-214 C	10.7581	50/50	10.7581
937532	AD2-214 E	7.1721	50/50	7.1721
938861	AE1-114 C O1	4.2330	Adder	4.98
938862	AE1-114 E O1	14.4419	Adder	16.99
939051	AE1-134 1	4.1951	50/50	4.1951
939061	AE1-134 2	4.1951	50/50	4.1951
943381	AF1-009 C	0.3705	Adder	0.44
943382	AF1-009 E	1.4819	Adder	1.74
943401	AF1-011 C	2.7944	50/50	2.7944
943402	AF1-011 E	4.6906	50/50	4.6906
946151	AF1-280 C O1	47.0965	50/50	47.0965
946152	AF1-280 E O1	21.6575	50/50	21.6575
946161	AF1-281 C	1.0313	50/50	1.0313
946162	AF1-281 E	5.8441	50/50	5.8441
946321	AF1-296 C O1	7.7384	Adder	9.1
946322	AF1-296 E O1	36.2295	Adder	42.62
946533	AF1-317 BAT	28.5065	50/50	28.5065
950401	J041 C	1.6466	PJM External (MISO)	1.6466
950402	J041 E	6.5866	PJM External (MISO)	6.5866
950471	J438 C	3.3717	PJM External (MISO)	3.3717
950472	J438 E	13.4869	PJM External (MISO)	13.4869
950501	J449 C	3.2575	PJM External (MISO)	3.2575
950502	J449 E	13.0298	PJM External (MISO)	13.0298
951031	J344 C	3.0467	PJM External (MISO)	3.0467
951032	J344 E	9.1402	PJM External (MISO)	9.1402
951221	J475 C	3.7244	PJM External (MISO)	3.7244
951222	J475 E	14.8976	PJM External (MISO)	14.8976
951381	J504	5.7865	PJM External (MISO)	5.7865
951421	J514	3.4599	PJM External (MISO)	3.4599
951511	J530 C	5.5045	PJM External (MISO)	5.5045
951512	J530 E	22.0180	PJM External (MISO)	22.0180
951841	J555 C	2.0335	PJM External (MISO)	2.0335
951842	J555 E	11.0019	PJM External (MISO)	11.0019

953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9569	PJM External (MISO)	1.9569
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.5876	PJM External (MISO)	10.5876
954091	J873 C	3.3038	PJM External (MISO)	3.3038
954092	J873 E	17.8742	PJM External (MISO)	17.8742
954702	J844 E	14.1620	PJM External (MISO)	14.1620
954792	J952 E	6.7954	PJM External (MISO)	6.7954
954861	J959 C	2.2974	PJM External (MISO)	2.2974
954862	J959 E	12.4296	PJM External (MISO)	12.4296
954901	J963	1.4067	PJM External (MISO)	1.4067
954931	J967 C	1.8224	PJM External (MISO)	1.8224
954932	J967 E	9.8596	PJM External (MISO)	9.8596
955051	J981 C	3.8638	PJM External (MISO)	3.8638
955052	J981 E	20.9042	PJM External (MISO)	20.9042
955221	J1000	4.0110	PJM External (MISO)	4.0110
955661	J1050 C	2.7750	PJM External (MISO)	2.7750
955662	J1050 E	15.0135	PJM External (MISO)	15.0135
955871	J1072	11.6820	PJM External (MISO)	11.6820
955971	J1084	31.5210	PJM External (MISO)	31.5210
956411	J1131	16.9080	PJM External (MISO)	16.9080
956431	J1135	4.0700	PJM External (MISO)	4.0700
956761	J1174	23.1360	PJM External (MISO)	23.1360
956771	J1175 C	3.6092	PJM External (MISO)	3.6092
956772	J1175 E	19.5268	PJM External (MISO)	19.5268
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8288	PJM External (MISO)	1.8288
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.8944	PJM External (MISO)	9.8944
956831	J1181 C	3.0077	PJM External (MISO)	3.0077
956832	J1181 E	16.2723	PJM External (MISO)	16.2723
957751	AF2-069 C	0.0988	Adder	0.22
957752	AF2-069 E	0.3189	Adder	0.71
957761	AF2-070 C	0.1392	Adder	0.31
957762	AF2-070 E	0.6760	Adder	1.5
958911	AF2-182 C	61.8786	50/50	61.8786
958912	AF2-182 E	41.2524	50/50	41.2524
958921	AF2-183 C	11.0006	50/50	11.0006
958922	AF2-183 E	16.5010	50/50	16.5010
961011	AF2-392 C O1	9.6395	50/50	9.6395
961012	AF2-392 E O1	45.1305	50/50	45.1305
961021	AF2-393 O1	16.4310	50/50	16.4310
961031	AF2-394 O1	10.9540	50/50	10.9540
990901	L-005 E	11.0364	Adder	12.98
LGEE	LGEE	0.1192	Confirmed LTF	0.1192
CPL	CPL	0.3513	Confirmed LTF	0.3513
CBM-W2	CBM-W2	22.4897	Confirmed LTF	22.4897
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.2628	Confirmed LTF	47.2628
TVA	TVA	2.7188	Confirmed LTF	2.7188
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2599	Confirmed LTF	4.2599
CBM-S1	CBM-S1	13.8024	Confirmed LTF	13.8024
G-007	G-007	0.1404	Confirmed LTF	0.1404

MADISON	MADISON	14.5414	Confirmed LTF	14.5414
MEC	MEC	18.3132	Confirmed LTF	18.3132

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96334984	274750	CRETE EC ;BP	CE	255112	17STJOHN	NIPS	1	COMED_P1-2_695_B2	single	1399.0	104.64	105.3	DC	21.09

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274654	BRAIDWOOD;1U	29.7621	80/20	29.7621
274655	BRAIDWOOD;2U	28.9549	80/20	28.9549
274660	LASCO STA;1U	27.3606	80/20	27.3606
274661	LASCO STA;2U	27.4620	80/20	27.4620
274675	JOLIET 29;7U	12.4789	80/20	12.4789
274676	JOLIET 29;8U	12.4869	80/20	12.4869
274687	WILL CNTY;4U	12.5606	80/20	12.5606
274704	KENDALL ;1C	4.4134	80/20	4.4134
274705	KENDALL ;1S	2.9511	80/20	2.9511
274706	KENDALL ;2C	4.4134	80/20	4.4134
274707	KENDALL ;2S	2.9511	80/20	2.9511
274734	ELWOOD EC;8P	3.5779	80/20	3.5779
274736	ELWOOD EC;9P	3.5779	80/20	3.5779
274751	CRETE EC ;1U	6.4740	80/20	6.4740
274752	CRETE EC ;2U	6.4740	80/20	6.4740
274753	CRETE EC ;3U	6.4740	80/20	6.4740
274754	CRETE EC ;4U	6.4740	80/20	6.4740
274830	U3-021 1	5.3666	Adder	6.31
274831	U3-021 2	5.3666	Adder	6.31
274861	TOP CROP ;1U	0.5273	80/20	0.5273
274862	TOP CROP ;2U	1.0236	80/20	1.0236
915011	Y3-013 1	3.3163	Adder	3.9
915021	Y3-013 2	3.3163	Adder	3.9
915031	Y3-013 3	3.3163	Adder	3.9
919581	AA2-030	15.3774	Adder	18.09
924041	AB2-047 C O1	2.8144	Adder	3.31
924471	AB2-096	37.2678	Adder	43.84
925581	AC1-033 C	1.2237	Adder	1.44
926311	AC1-109 1	1.6759	Adder	1.97
926321	AC1-109 2	1.6759	Adder	1.97
926331	AC1-110 1	1.6717	Adder	1.97
926341	AC1-110 2	1.6717	Adder	1.97
926351	AC1-111 1	0.6691	Adder	0.79
926361	AC1-111 2	0.6691	Adder	0.79
926371	AC1-111 3	0.6691	Adder	0.79
926381	AC1-111 4	0.6691	Adder	0.79
926391	AC1-111 5	0.6691	Adder	0.79
926401	AC1-111 6	0.6691	Adder	0.79

926431	AC1-114	2.0900	Adder	2.46
926821	AC1-168 C O1	1.0020	Adder	1.18
926841	AC1-171 C O1	0.8988	Adder	1.06
927091	AC1-204 1	13.3085	80/20	13.3085
927201	AC1-214 C O1	1.7868	Adder	2.1
927451	AC1-142A 1	4.4691	80/20	4.4691
927461	AC1-142A 2	4.4720	80/20	4.4720
927511	AC1-113 1	1.0450	Adder	1.23
927521	AC1-113 2	1.0450	Adder	1.23
930481	AB1-089	57.7783	Adder	67.97
930501	AB1-091 O1	56.3898	Adder	66.34
930741	AB1-122 1O1	62.4378	Adder	73.46
930751	AB1-122 2O1	66.7535	Adder	78.53
932881	AC2-115 1	2.0900	Adder	2.46
932891	AC2-115 2	2.0900	Adder	2.46
932921	AC2-116	0.7315	Adder	0.86
932931	AC2-117	3.9968	Adder	4.7
933411	AC2-154 C	1.9419	Adder	2.28
933431	AC2-156 C O1	0.8355	Adder	0.98
933911	AD1-013 C	1.6276	Adder	1.91
933931	AD1-016 C	0.8180	Adder	0.96
934051	AD1-031 C O1	2.4848	Adder	2.92
934101	AD1-039 1	6.1189	Adder	7.2
934111	AD1-039 2	6.5418	Adder	7.7
934431	AD1-067 C	0.1157	Adder	0.14
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.7821	Adder	0.92
934701	AD1-098 C O1	6.0622	Adder	7.13
934721	AD1-100 C	16.6897	Adder	19.63
934871	AD1-116 C	0.7820	Adder	0.92
934971	AD1-129 C	0.7950	Adder	0.94
935001	AD1-133 C O1	17.7404	Adder	20.87
936291	AD2-038 C O1	1.9968	Adder	2.35
936371	AD2-047 C O1	3.4749	Adder	4.09
936461	AD2-060	2.0441	Adder	2.4
936511	AD2-066 C O1	7.2962	Adder	8.58
936791	AD2-102 C	12.4175	Adder	14.61
937001	AD2-134 C	2.4090	Adder	2.83
937311	AD2-172 C	2.1588	Adder	2.54
937401	AD2-194 1	7.0523	Adder	8.3
937411	AD2-194 2	7.0395	Adder	8.28
937531	AD2-214 C	3.8446	Adder	4.52
938511	AE1-070 1	8.2864	Adder	9.75
938521	AE1-070 2	7.5675	Adder	8.9
938851	AE1-113 C	7.1494	Adder	8.41
938861	AE1-114 C O1	3.4449	Adder	4.05
939051	AE1-134 1	1.1949	Adder	1.41
939061	AE1-134 2	1.1949	Adder	1.41
939321	AE1-163 C O1	5.0176	Adder	5.9
939351	AE1-166 C O1	8.9319	Adder	10.51
939401	AE1-172 C O1	4.4112	Adder	5.19
939631	AE1-193 C	32.4408	80/20	32.4408
939641	AE1-194 C	32.4408	80/20	32.4408
939651	AE1-195 C	32.4408	80/20	32.4408

939681	AE1-198 C	96.3244	80/20	96.3244
939741	AE1-205 C O1	7.2742	Adder	8.56
940101	AE1-252 C O1	8.8618	Adder	10.43
940501	AE2-035 C	2.1588	Adder	2.54
941131	AE2-107 C	6.4143	Adder	7.55
941551	AE2-152 C O1	10.3061	Adder	12.12
941561	AE2-153 C O1	4.0993	Adder	4.82
941731	AE2-173 O1	4.3299	Adder	5.09
942111	AE2-223 C	1.6887	Adder	1.99
942421	AE2-255 C O1	2.7081	Adder	3.19
942651	AE2-281 C O1	0.7168	Adder	0.84
942991	AE2-321 C	7.1996	Adder	8.47
943121	AE2-341 C	11.1437	Adder	13.11
943381	AF1-009 C	0.5244	Adder	0.62
943401	AF1-011 C	1.0862	Adder	1.28
943411	AF1-012 C	10.5083	Adder	12.36
943591	AF1-030 C O1	7.4106	Adder	8.72
943801	AF1-048 C	3.3656	Adder	3.96
943921	AF1-060	1.0629	Adder	1.25
944041	AF1-072	1.8993	Adder	2.23
944911	AF1-156 C	10.4813	Adder	12.33
945351	AF1-200 FTIR	270.8585	Merchant Transmission	270.8585
946151	AF1-280 C O1	13.6433	Adder	16.05
946161	AF1-281 C	0.2988	Adder	0.35
946321	AF1-296 C O1	3.4272	Adder	4.03
946501	AF1-314 C	3.8356	Adder	4.51
946531	AF1-317 C O1	2.0016	Adder	2.35
946541	AF1-318 C O1	5.0108	Adder	5.9
946661	AF1-330 C	1.7651	Adder	2.08
946671	AF1-331	2.1138	Adder	2.49
957021	AF2-003 C O1	7.4969	80/20	7.4969
957331	AF2-027 C	1.1718	Adder	2.6
957401	AF2-034 C	1.5158	80/20	1.5158
957471	AF2-041 C	9.9416	Adder	22.07
957751	AF2-069 C	0.1097	Adder	0.24
957761	AF2-070 C	0.1545	Adder	0.34
958011	AF2-095 C O1	7.3663	Adder	16.35
958021	AF2-096 C O1	37.1334	80/20	37.1334
958341	AF2-128 C O1	0.7052	Adder	1.57
958481	AF2-142 C	4.9084	Adder	10.9
958491	AF2-143 C	4.8845	Adder	10.84
958911	AF2-182 C	9.5005	Adder	21.09
958921	AF2-183 C	1.6890	Adder	3.75
959081	AF2-199 C	3.3139	Adder	7.36
959091	AF2-200 C	6.6278	Adder	14.71
959101	AF2-201 C O1	2.8005	Adder	6.22
959341	AF2-225 C	2.8915	Adder	6.42
959351	AF2-226 C	2.9970	80/20	2.9970
959761	AF2-267 C O1	2.0224	Adder	4.49
960281	AF2-319 C	2.9970	80/20	2.9970
960381	AF2-329	3.0646	Adder	6.8
960551	AF2-346 C	2.3869	Adder	5.3
960581	AF2-349 C	10.1841	Adder	22.61

960591	AF2-350 C O1	3.2501	Adder	7.21
960601	AF2-351 C O1	0.4333	Adder	0.96
960721	AF2-363 C O1	2.7701	Adder	6.15
960731	AF2-364 C O1	2.8678	Adder	6.37
960751	AF2-366 C O1	3.2370	Adder	7.19
961011	AF2-392 C O1	1.8398	Adder	4.08
961021	AF2-393 O1	3.1360	Adder	6.96
961031	AF2-394 O1	2.0907	Adder	4.64
WEC	WEC	3.8956	Confirmed LTF	3.8956
CALDERWOOD	CALDERWOOD	0.1238	Confirmed LTF	0.1238
CBM-W2	CBM-W2	17.6003	Confirmed LTF	17.6003
NY	NY	1.1890	Confirmed LTF	1.1890
CBM-W1	CBM-W1	53.7805	Confirmed LTF	53.7805
TVA	TVA	1.0276	Confirmed LTF	1.0276
CHEOAH	CHEOAH	0.1346	Confirmed LTF	0.1346
CBM-S1	CBM-S1	3.0928	Confirmed LTF	3.0928
MADISON	MADISON	20.2023	Confirmed LTF	20.2023
MEC	MEC	13.1744	Confirmed LTF	13.1744
GIBSON	GIBSON	0.2550	Confirmed LTF	0.2550
BLUEG	BLUEG	2.3002	Confirmed LTF	2.3002
TRIMBLE	TRIMBLE	0.7763	Confirmed LTF	0.7763
CATAWBA	CATAWBA	0.3241	Confirmed LTF	0.3241

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96334552	943410	AF1-012 TAP	CE	957470	AF2-041 TAP	CE	1	COMED_P4_937-45-BT1-4__	breaker	1656.0	116.97	121.71	DC	103.13

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274663	QUAD CITI;2U	39.2456	50/50	39.2456
274699	CORDOVA ;1C	6.8876	50/50	6.8876
274700	CORDOVA ;2C	6.8876	50/50	6.8876
274701	CORDOVA ;1S	7.7486	50/50	7.7486
274715	NELSON EC;1C	9.9825	50/50	9.9825
274716	NELSON EC;1S	7.2837	50/50	7.2837
274717	NELSON EC;2C	10.0596	50/50	10.0596
274718	NELSON EC;2S	7.3490	50/50	7.3490
276156	O-029 C	0.4777	50/50	0.4777
276157	O-029 C	0.5164	50/50	0.5164
276158	O-029 C	0.9425	50/50	0.9425
290051	GSG-6; E	5.8488	Adder	6.88
293513	O-009 C1	0.8823	50/50	0.8823
293514	O-009 C2	0.4476	50/50	0.4476
293515	O-009 C3	0.4949	50/50	0.4949
293516	O-009 E1	20.4690	50/50	20.4690
293517	O-009 E2	10.3967	50/50	10.3967

293518	O-009 E3	11.4496	50/50	11.4496
293715	O-029 E	21.8836	50/50	21.8836
293716	O-029 E	11.9985	50/50	11.9985
293717	O-029 E	11.0279	50/50	11.0279
293771	O-035 E	5.0169	Adder	5.9
294401	BSHIL;1U E	8.1967	Adder	9.64
294410	BSHIL;2U E	8.1967	Adder	9.64
294763	P-046 E	5.1204	Adder	6.02
919221	AA1-146	9.3122	50/50	9.3122
919581	AA2-030	53.9860	50/50	53.9860
925581	AC1-033 C	1.3424	Adder	1.58
925582	AC1-033 E	8.9871	Adder	10.57
927201	AC1-214 C O1	1.6102	Adder	1.89
927202	AC1-214 E O1	5.1186	Adder	6.02
934051	AD1-031 C O1	2.7268	Adder	3.21
934052	AD1-031 E O1	4.4489	Adder	5.23
934431	AD1-067 C	0.0734	Adder	0.09
934432	AD1-067 E	0.3088	Adder	0.36
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5813	Adder	0.68
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.9485	Adder	1.12
934701	AD1-098 C O1	4.2827	Adder	5.04
934702	AD1-098 E O1	3.1268	Adder	3.68
937001	AD2-134 C	1.5290	Adder	1.8
937002	AD2-134 E	6.3162	Adder	7.43
937311	AD2-172 C	1.3441	Adder	1.58
937312	AD2-172 E	1.8561	Adder	2.18
937531	AD2-214 C	10.7581	50/50	10.7581
937532	AD2-214 E	7.1721	50/50	7.1721
938861	AE1-114 C O1	4.2330	Adder	4.98
938862	AE1-114 E O1	14.4419	Adder	16.99
939051	AE1-134 1	4.1951	50/50	4.1951
939061	AE1-134 2	4.1951	50/50	4.1951
940501	AE2-035 C	1.3441	Adder	1.58
940502	AE2-035 E	1.8561	Adder	2.18
943381	AF1-009 C	0.3705	Adder	0.44
943382	AF1-009 E	1.4819	Adder	1.74
943401	AF1-011 C	2.3752	Adder	2.79
943402	AF1-011 E	4.6906	50/50	4.6906
943411	AF1-012 C	45.1363	50/50	45.1363
943412	AF1-012 E	30.0909	50/50	30.0909
943921	AF1-060	0.6618	Adder	0.78
946151	AF1-280 C O1	47.0965	50/50	47.0965
946152	AF1-280 E O1	21.6575	50/50	21.6575
946161	AF1-281 C	1.0313	50/50	1.0313
946162	AF1-281 E	5.8441	50/50	5.8441
946321	AF1-296 C O1	7.7384	Adder	9.1
946322	AF1-296 E O1	36.2295	Adder	42.62
946501	AF1-314 C	2.3882	Adder	2.81
946502	AF1-314 E	11.1809	Adder	13.15
946531	AF1-317 C O1	8.5974	50/50	8.5974
950181	J407 C	3.0336	PJM External (MISO)	3.0336
950182	J407 E	12.1344	PJM External (MISO)	12.1344

950401	J041 C	1.6466	PJM External (MISO)	1.6466
950402	J041 E	6.5866	PJM External (MISO)	6.5866
950471	J438 C	3.3717	PJM External (MISO)	3.3717
950472	J438 E	13.4869	PJM External (MISO)	13.4869
950501	J449 C	3.2575	PJM External (MISO)	3.2575
950502	J449 E	13.0298	PJM External (MISO)	13.0298
951031	J344 C	3.0467	PJM External (MISO)	3.0467
951032	J344 E	9.1402	PJM External (MISO)	9.1402
951221	J475 C	3.7244	PJM External (MISO)	3.7244
951222	J475 E	14.8976	PJM External (MISO)	14.8976
951381	J504	5.7865	PJM External (MISO)	5.7865
951421	J514	3.4599	PJM External (MISO)	3.4599
951441	J523 C	2.2185	PJM External (MISO)	2.2185
951442	J523 E	1.4790	PJM External (MISO)	1.4790
951451	J524 C	4.5102	PJM External (MISO)	4.5102
951452	J524 E	3.0068	PJM External (MISO)	3.0068
951511	J530 C	5.5045	PJM External (MISO)	5.5045
951512	J530 E	22.0180	PJM External (MISO)	22.0180
951841	J555 C	2.0335	PJM External (MISO)	2.0335
951842	J555 E	11.0019	PJM External (MISO)	11.0019
953011	J885 C	0.7572	PJM External (MISO)	0.7572
953012	J885 E	4.0966	PJM External (MISO)	4.0966
953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9569	PJM External (MISO)	1.9569
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.5876	PJM External (MISO)	10.5876
954091	J873 C	3.3038	PJM External (MISO)	3.3038
954092	J873 E	17.8742	PJM External (MISO)	17.8742
954702	J844 E	14.1620	PJM External (MISO)	14.1620
954792	J952 E	6.7954	PJM External (MISO)	6.7954
954861	J959 C	2.2974	PJM External (MISO)	2.2974
954862	J959 E	12.4296	PJM External (MISO)	12.4296
954901	J963	1.4067	PJM External (MISO)	1.4067
954931	J967 C	1.8224	PJM External (MISO)	1.8224
954932	J967 E	9.8596	PJM External (MISO)	9.8596
955051	J981 C	3.8638	PJM External (MISO)	3.8638
955052	J981 E	20.9042	PJM External (MISO)	20.9042
955221	J1000	4.0110	PJM External (MISO)	4.0110
955661	J1050 C	2.7750	PJM External (MISO)	2.7750
955662	J1050 E	15.0135	PJM External (MISO)	15.0135
955871	J1072	11.6820	PJM External (MISO)	11.6820
955971	J1084	31.5210	PJM External (MISO)	31.5210
956381	J1128	11.0940	PJM External (MISO)	11.0940
956411	J1131	16.9080	PJM External (MISO)	16.9080
956431	J1135	4.0700	PJM External (MISO)	4.0700
956761	J1174	23.1360	PJM External (MISO)	23.1360
956771	J1175 C	3.6092	PJM External (MISO)	3.6092
956772	J1175 E	19.5268	PJM External (MISO)	19.5268
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8288	PJM External (MISO)	1.8288
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.8944	PJM External (MISO)	9.8944
956831	J1181 C	3.0077	PJM External (MISO)	3.0077
956832	J1181 E	16.2723	PJM External (MISO)	16.2723

957751	AF2-069 C	0.0988	Adder	0.22
957752	AF2-069 E	0.3189	Adder	0.71
957761	AF2-070 C	0.1392	Adder	0.31
957762	AF2-070 E	0.6760	Adder	1.5
958911	AF2-182 C	61.8786	50/50	61.8786
958912	AF2-182 E	41.2524	50/50	41.2524
958921	AF2-183 C	11.0006	50/50	11.0006
958922	AF2-183 E	16.5010	50/50	16.5010
959101	AF2-201 C O1	1.7436	Adder	3.87
959102	AF2-201 E O1	5.0070	Adder	11.11
959761	AF2-267 C O1	1.2624	Adder	2.8
959762	AF2-267 E O1	5.9100	Adder	13.12
960551	AF2-346 C	19.3442	50/50	19.3442
960552	AF2-346 E	12.8961	50/50	12.8961
961011	AF2-392 C O1	9.6395	50/50	9.6395
961012	AF2-392 E O1	45.1305	50/50	45.1305
961021	AF2-393 O1	16.4310	50/50	16.4310
961031	AF2-394 O1	10.9540	50/50	10.9540
990901	L-005 E	11.0364	Adder	12.98
LGEE	LGEE	0.1192	Confirmed LTF	0.1192
CPL	CPL	0.3513	Confirmed LTF	0.3513
CBM-W2	CBM-W2	22.4897	Confirmed LTF	22.4897
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.2628	Confirmed LTF	47.2628
TVA	TVA	2.7188	Confirmed LTF	2.7188
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2599	Confirmed LTF	4.2599
CBM-S1	CBM-S1	13.8024	Confirmed LTF	13.8024
G-007	G-007	0.1404	Confirmed LTF	0.1404
MADISON	MADISON	14.5414	Confirmed LTF	14.5414
MEC	MEC	18.3132	Confirmed LTF	18.3132

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
95331842	956820	J1180 TAP	AMIL	247712	O5SULLIVAN	AEP	1	COMED_P4_080-45-BT4-5__	breaker	1466.0	136.61	136.72	DC	17.83

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	14.7734	50/50	14.7734
274651	KINCAID ;2U	14.7696	50/50	14.7696
274830	U3-021 1	2.1574	Adder	2.54
274831	U3-021 2	2.1574	Adder	2.54
274853	TWINGROVE;U1	0.9714	50/50	0.9714
274854	TWINGROVE;U2	0.9714	50/50	0.9714
274859	EASYSR;U1 E	4.7695	Adder	5.61
274860	EASYSR;U2 E	4.7695	Adder	5.61
274880	GENERATOR;	1.1187	50/50	1.1187

274882	W4-005 E	43.4297	50/50	43.4297
276153	W2-048 E	8.0700	50/50	8.0700
290021	O50 E	7.5045	Adder	8.83
290051	GSG-6; E	3.8339	Adder	4.51
290261	S-027 E	22.5261	50/50	22.5261
290265	S-028 E	22.5261	50/50	22.5261
293516	O-009 E1	4.4713	Adder	5.26
293517	O-009 E2	2.2711	Adder	2.67
293518	O-009 E3	2.5011	Adder	2.94
293715	O-029 E	4.7804	Adder	5.62
293716	O-029 E	2.6210	Adder	3.08
293717	O-029 E	2.4090	Adder	2.83
293771	O-035 E	3.5853	Adder	4.22
294401	BSHIL;1U E	4.9096	Adder	5.78
294410	BSHIL;2U E	4.9096	Adder	5.78
294763	P-046 E	3.7448	Adder	4.41
909052	X2-022 E	24.2746	50/50	24.2746
917502	Z2-087 E	12.9753	Adder	15.27
919581	AA2-030	8.2245	Adder	9.68
924041	AB2-047 C O1	2.4235	Adder	2.85
924042	AB2-047 E O1	16.2191	Adder	19.08
924261	AB2-070 C O1	3.2144	50/50	3.2144
924262	AB2-070 E O1	20.3742	50/50	20.3742
924471	AB2-096	14.9821	Adder	17.63
925581	AC1-033 C	0.8039	Adder	0.95
925582	AC1-033 E	5.3821	Adder	6.33
925771	AC1-053 C	3.2601	50/50	3.2601
925772	AC1-053 E	21.8179	50/50	21.8179
926431	AC1-114	0.8971	Adder	1.06
926821	AC1-168 C O1	0.5663	Adder	0.67
926822	AC1-168 E O1	3.8005	Adder	4.47
926841	AC1-171 C O1	0.7437	Adder	0.87
926842	AC1-171 E O1	4.9679	Adder	5.84
927201	AC1-214 C O1	1.1507	Adder	1.35
927202	AC1-214 E O1	3.6580	Adder	4.3
927511	AC1-113 1	0.4485	Adder	0.53
927521	AC1-113 2	0.4485	Adder	0.53
930481	AB1-089	24.3614	Adder	28.66
932881	AC2-115 1	0.8971	Adder	1.06
932891	AC2-115 2	0.8971	Adder	1.06
932921	AC2-116	0.3140	Adder	0.37
933911	AD1-013 C	0.6647	Adder	0.78
933912	AD1-013 E	1.0618	Adder	1.25
934051	AD1-031 C O1	1.6324	Adder	1.92
934052	AD1-031 E O1	2.6635	Adder	3.13
934431	AD1-067 C	0.0481	Adder	0.06
934432	AD1-067 E	0.2024	Adder	0.24
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.3555	Adder	0.42
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.5800	Adder	0.68
934701	AD1-098 C O1	2.5523	Adder	3.0
934702	AD1-098 E O1	1.8634	Adder	2.19
934971	AD1-129 C	0.3246	Adder	0.38

934972	AD1-129 E	0.2164	Adder	0.25
935001	AD1-133 C O1	10.2219	Adder	12.03
935002	AD1-133 E O1	6.8146	Adder	8.02
935141	AD1-148	6.3269	50/50	6.3269
936291	AD2-038 C O1	0.9395	Adder	1.11
936292	AD2-038 E O1	6.2872	Adder	7.4
936511	AD2-066 C O1	3.2011	Adder	3.77
936512	AD2-066 E O1	2.1341	Adder	2.51
936771	AD2-100 C	20.2457	50/50	20.2457
936772	AD2-100 E	13.4971	50/50	13.4971
936791	AD2-102 C	5.4947	Adder	6.46
936792	AD2-102 E	3.6632	Adder	4.31
936971	AD2-131 C	1.3336	50/50	1.3336
936972	AD2-131 E	6.7004	50/50	6.7004
937001	AD2-134 C	1.0023	Adder	1.18
937002	AD2-134 E	4.1403	Adder	4.87
937211	AD2-159 C	4.6933	50/50	4.6933
937212	AD2-159 E	21.9730	50/50	21.9730
937311	AD2-172 C	0.9830	Adder	1.16
937312	AD2-172 E	1.3575	Adder	1.6
937531	AD2-214 C	2.3055	Adder	2.71
937532	AD2-214 E	1.5370	Adder	1.81
938851	AE1-113 C	3.0956	Adder	3.64
938852	AE1-113 E	10.9753	Adder	12.91
938861	AE1-114 C O1	1.6519	Adder	1.94
938862	AE1-114 E O1	5.6360	Adder	6.63
939051	AE1-134 1	0.6391	Adder	0.75
939061	AE1-134 2	0.6391	Adder	0.75
939321	AE1-163 C O1	2.3607	Adder	2.78
939322	AE1-163 E O1	14.5016	Adder	17.06
939741	AE1-205 C O1	6.2639	Adder	7.37
939742	AE1-205 E O1	8.6502	Adder	10.18
940501	AE2-035 C	0.9830	Adder	1.16
940502	AE2-035 E	1.3575	Adder	1.6
941343	AE2-130 BAT	28.4620	50/50	28.4620
941731	AE2-173 O1	3.7285	Adder	4.39
942111	AE2-223 C	1.4541	Adder	1.71
942112	AE2-223 E	9.7315	Adder	11.45
942421	AE2-255 C O1	1.1726	Adder	1.38
942422	AE2-255 E O1	3.5177	Adder	4.14
942481	AE2-261 C	27.9559	50/50	27.9559
942482	AE2-261 E	18.6373	50/50	18.6373
942602	AE2-276 BAT	12.6470	50/50	12.6470
942651	AE2-281 C O1	0.3372	Adder	0.4
942652	AE2-281 E O1	2.0717	Adder	2.44
943381	AF1-009 C	0.2208	Adder	0.26
943382	AF1-009 E	0.8832	Adder	1.04
943401	AF1-011 C	0.6104	Adder	0.72
943402	AF1-011 E	1.0246	Adder	1.21
943411	AF1-012 C	5.2515	Adder	6.18
943412	AF1-012 E	3.5010	Adder	4.12
943921	AF1-060	0.4840	Adder	0.57
944202	AF1-088 FTWR	252.9400	50/50	252.9400

944221	AF1-090 C O1	6.1561	50/50	6.1561
944222	AF1-090 E O1	28.8219	50/50	28.8219
945871	AF1-252 O1	10.9131	50/50	10.9131
945881	AF1-253 O1	7.5552	50/50	7.5552
946151	AF1-280 C O1	6.9195	Adder	8.14
946152	AF1-280 E O1	3.1819	Adder	3.74
946161	AF1-281 C	0.1515	Adder	0.18
946162	AF1-281 E	0.8586	Adder	1.01
946321	AF1-296 C O1	2.2011	Adder	2.59
946322	AF1-296 E O1	10.3052	Adder	12.12
946501	AF1-314 C	1.7466	Adder	2.05
946502	AF1-314 E	8.1771	Adder	9.62
946531	AF1-317 C O1	1.0003	Adder	1.18
946541	AF1-318 C O1	3.1379	Adder	3.69
946542	AF1-318 E O1	14.6925	Adder	17.29
946671	AF1-331	0.8633	Adder	1.02
953401	J811	17.1864	PJM External (MISO)	17.1864
953641	J813	38.8950	PJM External (MISO)	38.8950
953651	J815	29.5200	PJM External (MISO)	29.5200
953881	J848 C	4.8083	PJM External (MISO)	4.8083
953882	J848 E	26.0142	PJM External (MISO)	26.0142
954411	J912	13.2010	PJM External (MISO)	13.2010
954681	J949 C	27.9888	PJM External (MISO)	27.9888
954761	J468 C	3.4793	PJM External (MISO)	3.4793
954762	J468 E	19.7163	PJM External (MISO)	19.7163
954821	J955	72.9135	PJM External (MISO)	72.9135
955031	J979 C	3.8466	PJM External (MISO)	3.8466
955032	J979 E	20.8114	PJM External (MISO)	20.8114
955131	J991	40.4580	PJM External (MISO)	40.4580
957021	AF2-003 C O1	1.2798	Adder	2.84
957022	AF2-003 E O1	5.9917	Adder	13.3
957381	AF2-032 C	2.0949	50/50	2.0949
957382	AF2-032 E	0.9859	50/50	0.9859
957471	AF2-041 C	4.3359	Adder	9.62
957472	AF2-041 E	2.8906	Adder	6.42
957751	AF2-069 C	0.0706	Adder	0.16
957752	AF2-069 E	0.2279	Adder	0.51
957761	AF2-070 C	0.0995	Adder	0.22
957762	AF2-070 E	0.4831	Adder	1.07
958341	AF2-128 C O1	0.4391	Adder	0.97
958342	AF2-128 E O1	2.0558	Adder	4.56
958491	AF2-143 C	2.2981	Adder	5.1
958492	AF2-143 E	1.5321	Adder	3.4
958911	AF2-182 C	4.8184	Adder	10.7
958912	AF2-182 E	3.2122	Adder	7.13
958921	AF2-183 C	0.8566	Adder	1.9
958922	AF2-183 E	1.2849	Adder	2.85
959081	AF2-199 C	1.4453	Adder	3.21
959082	AF2-199 E	0.9635	Adder	2.14
959091	AF2-200 C	2.8906	Adder	6.42
959092	AF2-200 E	1.9271	Adder	4.28
959101	AF2-201 C O1	1.2752	Adder	2.83
959102	AF2-201 E O1	3.6618	Adder	8.13

959341	AF2-225 C	2.4899	Adder	5.53
959342	AF2-225 E	3.4384	Adder	7.63
959611	AF2-252 C	2.8442	50/50	2.8442
959612	AF2-252 E	4.2663	50/50	4.2663
959761	AF2-267 C O1	0.9209	Adder	2.04
959762	AF2-267 E O1	4.3113	Adder	9.57
960141	AF2-305	1.1374	50/50	1.1374
960261	AF2-317	2.0246	50/50	2.0246
960551	AF2-346 C	1.1928	Adder	2.65
960552	AF2-346 E	0.7952	Adder	1.77
960611	AF2-352 C	2.8442	50/50	2.8442
960612	AF2-352 E	4.2663	50/50	4.2663
960623	AF2-353 BAT	28.4620	50/50	28.4620
961011	AF2-392 C O1	0.9657	Adder	2.14
961012	AF2-392 E O1	4.5214	Adder	10.04
961021	AF2-393 O1	1.6461	Adder	3.65
961031	AF2-394 O1	1.0974	Adder	2.44
990901	L-005 E	7.6388	Adder	8.99
WEC	WEC	1.6257	Confirmed LTF	1.6257
CPL	CPL	0.6132	Confirmed LTF	0.6132
CBM-W2	CBM-W2	62.6125	Confirmed LTF	62.6125
NY	NY	0.3362	Confirmed LTF	0.3362
CBM-W1	CBM-W1	53.3551	Confirmed LTF	53.3551
TVA	TVA	7.2198	Confirmed LTF	7.2198
O-066	O-066	3.7027	Confirmed LTF	3.7027
CBM-S2	CBM-S2	8.4446	Confirmed LTF	8.4446
CBM-S1	CBM-S1	34.0289	Confirmed LTF	34.0289
G-007	G-007	0.5710	Confirmed LTF	0.5710
MADISON	MADISON	22.0792	Confirmed LTF	22.0792
MEC	MEC	13.8434	Confirmed LTF	13.8434
GIBSON	GIBSON	0.3200	Confirmed LTF	0.3200
BLUEG	BLUEG	2.6821	Confirmed LTF	2.6821
TRIMBLE	TRIMBLE	0.9689	Confirmed LTF	0.9689

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
96335041	960580	AF2-349 TAP	CE	270883	SILVER LK; R	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	116.28	117.19	DC	29.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274656	BYRON ;1U	52.1009	80/20	52.1009
274657	BYRON ;2U	50.9601	80/20	50.9601
274822	ROCKFORD ;11	4.7001	80/20	4.7001
274823	ROCKFORD ;21	4.8234	80/20	4.8234
274830	U3-021 1	25.1410	80/20	25.1410
274831	U3-021 2	25.1410	80/20	25.1410

290266	R-018	0.2820	80/20	0.2820
919581	AA2-030	17.0683	Adder	20.08
924471	AB2-096	174.5905	80/20	174.5905
926431	AC1-114	5.0394	80/20	5.0394
927511	AC1-113 1	2.1416	Adder	2.52
927521	AC1-113 2	2.1416	Adder	2.52
930481	AB1-089	142.1530	80/20	142.1530
932881	AC2-115 1	4.2831	Adder	5.04
932891	AC2-115 2	4.2831	Adder	5.04
932921	AC2-116	1.7638	80/20	1.7638
933911	AD1-013 C	1.2907	Adder	1.52
934431	AD1-067 C	0.0930	Adder	0.11
934651	AD1-096 C (Withdrawn : 07/22/2020)	1.4032	Adder	1.65
934701	AD1-098 C O1	4.9852	Adder	5.86
934971	AD1-129 C	1.1427	Adder	1.34
936791	AD2-102 C	24.5891	Adder	28.93
937001	AD2-134 C	1.9364	Adder	2.28
937311	AD2-172 C	3.8610	Adder	4.54
937531	AD2-214 C	3.8720	Adder	4.56
938861	AE1-114 C O1	5.2763	Adder	6.21
939051	AE1-134 1	1.3263	Adder	1.56
939061	AE1-134 2	1.3263	Adder	1.56
940501	AE2-035 C	3.8610	Adder	4.54
941131	AE2-107 C	4.2743	Adder	5.03
942991	AE2-321 C	4.1124	Adder	4.84
943381	AF1-009 C	0.4312	Adder	0.51
943401	AF1-011 C	1.0393	Adder	1.22
943411	AF1-012 C	9.3588	Adder	11.01
943801	AF1-048 C	1.9224	Adder	2.26
943921	AF1-060	1.9011	Adder	2.24
946151	AF1-280 C O1	19.1001	Adder	22.47
946161	AF1-281 C	0.4183	Adder	0.49
946321	AF1-296 C O1	3.2803	Adder	3.86
946501	AF1-314 C	6.8600	Adder	8.07
946531	AF1-317 C O1	1.7826	Adder	2.1
946671	AF1-331	1.6762	Adder	1.97
950101	J390	85.9950	PJM External (MISO)	85.9950
952431	J760	5.4783	PJM External (MISO)	5.4783
952511	J584 C	1.0907	PJM External (MISO)	1.0907
953111	J807 C	1.2441	PJM External (MISO)	1.2441
953681	J818	14.6616	PJM External (MISO)	14.6616
953691	J819 C	1.5290	PJM External (MISO)	1.5290
953901	J850	21.8100	PJM External (MISO)	21.8100
954001	J864	4.5297	PJM External (MISO)	4.5297
955221	J1000	3.7890	PJM External (MISO)	3.7890
955971	J1084	10.9800	PJM External (MISO)	10.9800
956581	J1154	7.3845	PJM External (MISO)	7.3845
956901	J1188	5.9740	PJM External (MISO)	5.9740
958911	AF2-182 C	13.3004	Adder	29.52
958921	AF2-183 C	2.3645	Adder	5.25
959101	AF2-201 C O1	5.0086	Adder	11.12
959761	AF2-267 C O1	3.6156	Adder	8.03
960551	AF2-346 C	2.1258	Adder	4.72

960581	AF2-349 C	95.0292	80/20	95.0292
960721	AF2-363 C O1	2.1842	Adder	4.85
960751	AF2-366 C O1	2.2786	Adder	5.06
961011	AF2-392 C O1	2.0775	Adder	4.61
961021	AF2-393 O1	3.5412	Adder	7.86
961031	AF2-394 O1	2.3608	Adder	5.24
WEC	WEC	0.6612	Confirmed LTF	0.6612
CBM-W2	CBM-W2	8.7961	Confirmed LTF	8.7961
NY	NY	0.2555	Confirmed LTF	0.2555
CBM-W1	CBM-W1	41.6583	Confirmed LTF	41.6583
TVA	TVA	0.9352	Confirmed LTF	0.9352
CBM-S2	CBM-S2	0.1387	Confirmed LTF	0.1387
CBM-S1	CBM-S1	4.1918	Confirmed LTF	4.1918
TILTON	TILTON	0.1228	Confirmed LTF	0.1228
MADISON	MADISON	11.7634	Confirmed LTF	11.7634
MEC	MEC	9.5960	Confirmed LTF	9.5960
GIBSON	GIBSON	0.0868	Confirmed LTF	0.0868
BLUEG	BLUEG	0.5382	Confirmed LTF	0.5382
TRIMBLE	TRIMBLE	0.1842	Confirmed LTF	0.1842

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
AB1-089	Byron-Wayne 345kV #1	Active
AB1-091	Davis Creek 345kV	Active
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Active
AB2-047	Brokaw-Pontiac Midpoint	Under Construction
AB2-070	Brokaw-Lanesville	Active
AB2-096	Silver Lake-Cherry Valley	Active
AC1-033	Kewanee	Active
AC1-053	Lanesville-Brokaw	Active
AC1-109	Aurora 345kV	Active
AC1-110	Aurora 138kV	Active
AC1-111	Aurora 138kV	Active
AC1-113	Rockford	Active
AC1-114	Rockford II	Active
AC1-142A	Joliet	Active

AC1-168	Kewanee-Streator	Active
AC1-171	Powerton	Active
AC1-185	Lee County	Under Construction
AC1-204	Elwood	Under Construction
AC1-214	Crescent Ridge	Under Construction
AC2-115	Rockford	Active
AC2-116	Rockford II	Active
AC2-117	University Park North	Engineering and Procurement
AC2-154	Davis Creek 138kV	Active
AC2-156	Sandwich 34.5kV	Active
AD1-013	Twombly Road 138kV	Active
AD1-016	Marengo	Active
AD1-031	Kewanee 138 kV	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-067	Mendota Hills	Active
AD1-096	Stillman Valley 34 kV	Withdrawn
AD1-098	Dixon-McGirr	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD1-116	Nevada 345 kV	Active
AD1-129	Belvidere 34 kV	Active
AD1-133	Pontiac MidPoint-Dresden	Active
AD1-148	Brokaw-Lanesville	Active
AD2-038	Powerton	Active
AD2-047	Davis Creek 138 kV	Active
AD2-060	Davis Creek 138kV	Active
AD2-066	Mazon-Crescent Ridge	Active
AD2-100	Kincaid-Pana	Active
AD2-102	Wempletown 345 kV	Active
AD2-131	Latham Kincaid	Active
AD2-134	Shady Oaks	Active
AD2-159	Chestnut 345kV	Active
AD2-172	Lena 138kV	Active
AD2-194	Elwood	Active
AD2-214	Rock Falls-Garden Plains	Active
AE1-070	Elwood 345 kV	Active
AE1-113	Mole Creek 345 kV	Active
AE1-114	Maryland-Lancaster 138 kV	Active
AE1-134	Nelson 345 kV	Active
AE1-163	Powerton-Nevada 345 kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE1-172	Loretto-Wilton Center	Active
AE1-193	Crete 345 kV	Active
AE1-194	Crete 345 kV	Active
AE1-195	Crete 345 kV	Active
AE1-198	Crete 345 kV	Active
AE1-205	McLean 345 kV	Active
AE1-252	Loretto-Wilton Center	Active
AE2-035	Lena 138 kV	Active
AE2-062	Normantown	Active
AE2-107	Haumesser Road 138 kV	Active
AE2-130	Rockport 765 kV	Active
AE2-152	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-153	Braidwood-Davis Creek	Active

AE2-173	McLean 345 kV	Active
AE2-223	McLean 345 kV	Active
AE2-255	Molecreek 345 kV	Active
AE2-261	Kincaid-Pana	Active
AE2-276	Sullivan 345kV	Active
AE2-281	Powerton-Nevada 345 kV	Active
AE2-321	Belvidere-Marengo 138 kV	Active
AE2-341	Sandwich-Plano	Active
AF1-009	Dixon-McGirr	Active
AF1-011	Schauff Road	Active
AF1-012	Electric Junc-Nelson	Active
AF1-030	Plano-R 138 kV	Active
AF1-048	Belvidere-Marengo	Active
AF1-060	Lena 138 kV	Active
AF1-072	Rocky Road	Active
AF1-088	Sullivan 345 kV	Active
AF1-090	Kincaid-Pana	Active
AF1-156	Braidwood-Davis Creek	Active
AF1-200	Plano 345 kV	Active
AF1-252	Kincaid-Pana	Active
AF1-253	Kincaid-Pana	Active
AF1-280	Nelson-Lee County	Active
AF1-281	Nelson-Lee County	Active
AF1-296	Garden Plain 138 kV	Active
AF1-314	Lena 138 kV	Active
AF1-317	Electric Jct-Nelson	Active
AF1-318	Crescent Ridge-Corbin	Active
AF1-330	Marengo	Active
AF1-331	Twombly Road	Active
AF2-003	Powerton-Mole Creek	Active
AF2-027	Zion Energy Center 345 kV	Active
AF2-031	River E.C.	Active
AF2-032	Kincaid	Active
AF2-034	Kendall	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-069	Crescent Ridge 138 kV	Active
AF2-070	Crescent Ridge 138 kV	Active
AF2-095	Wilmington-Davis Creek	Active
AF2-096	Braidwood-East Frankfort 345 kV	Active
AF2-128	Crescent Ridge-Corbin 138 kV	Active
AF2-142	Nevada 345 kV	Active
AF2-143	Powerton-Nevada 345 kV	Active
AF2-182	Nelson-Lee County 345 kV II	Active
AF2-183	Nelson-Lee County 345 kV	Active
AF2-199	Nelson-Electric Junction 345 kV	Active
AF2-200	Nelson-Electric Junction 345 kV	Active
AF2-201	Lena-Ecogrove 138 kV	Active
AF2-225	McLean 345 kV	Active
AF2-226	Katydid Road 345 kV	Active
AF2-252	Blue Mound 345 kV	Active
AF2-267	Lancaster 138 kV	Active
AF2-305	Brokaw-Lanesville 345 kV	Active
AF2-317	Hill Topper 345 kV	Active

AF2-319	Katydid Road 345 kV	Active
AF2-329	Sandwich-Plano 138 kV	Active
AF2-346	Electric Junction-Nelson 345 kV	Active
AF2-349	Garden Prairie-Silver Lake 345 kV	Active
AF2-350	Kensington 138 kV	Active
AF2-351	Kensington 138 kV	Active
AF2-352	Blue Mound 34.5 kV	Active
AF2-353	Rockport 765 kV	Active
AF2-363	Glidden 138 kV	Active
AF2-364	Wayne Red 138 kV	Active
AF2-366	Glidden-Waterman 138 kV	Active
AF2-392	Nelson-Dixon 138 kV	Active
AF2-393	Nelson-Dixon 138 kV	Active
AF2-394	Nelson-Dixon 138 kV	Active
AF2-441	Burnham 138kV	Active
U3-021	Silver Lake-Cherry Valley	Active
W2-048	Brokaw-Lanesville	In Service
W4-005	Blue Mound-Latham	Partially in Service - Under Construction
W4-084	Dixon 12kV	Deactivated
X1-087	Stillman Valley	In Service
X2-022	Brokaw-Lanesville	In Service
X3-005	Wildwood 12kV	In Service
Y3-013	Zion Energy Center	Active
Z1-106	West Chicago 34kV	In Service
Z1-107	Joliet 34kV	In Service
Z1-108	McHenry 34kV	In Service
Z2-081	Streator 34.5kV	In Service
Z2-087	Pontiac MidPoint-Brokaw 345kV	In Service
J041	MISO	MISO
J1000	MISO	MISO
J1002	MISO	MISO
J1003	MISO	MISO
J1009	MISO	MISO
J1010	MISO	MISO
J1011	MISO	MISO
J1042	MISO	MISO
J1050	MISO	MISO
J1051	MISO	MISO
J1053	MISO	MISO
J1058	MISO	MISO
J1072	MISO	MISO
J1084	MISO	MISO
J1085	MISO	MISO
J1101	MISO	MISO
J1121	MISO	MISO
J1128	MISO	MISO
J1131	MISO	MISO
J1135	MISO	MISO
J1153	MISO	MISO
J1154	MISO	MISO
J1171	MISO	MISO
J1174	MISO	MISO
J1175	MISO	MISO

J1176	MISO	MISO
J1181	MISO	MISO
J1183	MISO	MISO
J1188	MISO	MISO
J344	MISO	MISO
J351	MISO	MISO
J390	MISO	MISO
J407	MISO	MISO
J438	MISO	MISO
J447	MISO	MISO
J449	MISO	MISO
J468	MISO	MISO
J475	MISO	MISO
J504	MISO	MISO
J505	MISO	MISO
J514	MISO	MISO
J523	MISO	MISO
J524	MISO	MISO
J530	MISO	MISO
J555	MISO	MISO
J584	MISO	MISO
J643	MISO	MISO
J703	MISO	MISO
J704	MISO	MISO
J732	MISO	MISO
J760	MISO	MISO
J801	MISO	MISO
J807	MISO	MISO
J811	MISO	MISO
J813	MISO	MISO
J815	MISO	MISO
J818	MISO	MISO
J819	MISO	MISO
J821	MISO	MISO
J831	MISO	MISO
J844	MISO	MISO
J847	MISO	MISO
J848	MISO	MISO
J849	MISO	MISO
J850	MISO	MISO
J864	MISO	MISO
J873	MISO	MISO
J878	MISO	MISO
J885	MISO	MISO
J886	MISO	MISO
J912	MISO	MISO
J926	MISO	MISO
J928	MISO	MISO
J947	MISO	MISO
J949	MISO	MISO
J952	MISO	MISO
J955	MISO	MISO
J959	MISO	MISO

J963	MISO	MISO
J967	MISO	MISO
J974	MISO	MISO
J979	MISO	MISO
J981	MISO	MISO
J986	MISO	MISO
J991	MISO	MISO

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
COMED_P4_080-45-BT4-5__	CONTINGENCY 'COMED_P4_080-45-BT4-5__' TRIP BRANCH FROM BUS 270852 TO BUS 270668 CKT 1 / PONTI; B 345 BLUEM; B 345 TRIP BRANCH FROM BUS 270852 TO BUS 270704 CKT 1 / PONTI; B 345 LORET; B 345 END
COMED_P4_116-45-L9801__FSA	CONTINGENCY 'COMED_P4_116-45-L9801__FSA' TRIP BRANCH FROM BUS 918050 TO BUS 270769 CKT 1 / AA1-018 GOODINGS ;2R 345 DISCONNECT BUS 270769 / GOODI;2R 345 END
COMED_P4_016-45-BT6-11__	CONTINGENCY 'COMED_P4_016-45-BT6-11__' TRIP BRANCH FROM BUS 270914 TO BUS 270830 CKT 1 / WAUKEGAN ; B 345 NBROOK159; B 345 TRIP BRANCH FROM BUS 270915 TO BUS 270914 CKT 1 / WAUKEGAN ; R 345 WAUKEGAN ; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 270830 CKT 1 / NBROOK159;2M 138 NBROOK159; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 272120 CKT 1 / NBROOK159;2M 138 NBROOK159; B 138 TRIP BRANCH FROM BUS 275206 TO BUS 275306 CKT 1 / NBROOK159;2M 138 NBROOK159;2C 34.5 CLOSE BRANCH FROM BUS 272120 TO BUS 272121 CKT 1 / NBROOK159; B 138 NBROOK159; R 138 TRIP BRANCH FROM BUS 270942 TO BUS 270915 CKT 1 / ZION STA ;0B 345 WAUKEGAN ; R 345 END
COMED_P1-2_695_B2	CONTINGENCY 'COMED_P1-2_695_B2' OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTO; 765 1 END

COMED_P4_080-45-BT7-8__	CONTINGENCY 'COMED_P4_080-45-BT7-8__' TRIP BRANCH FROM BUS 270853 TO BUS 917500 CKT 1 / PONTIAC ; R 345 Z2-087 TAP 345 TRIP BRANCH FROM BUS 270853 TO BUS 935000 CKT 1 / PONTIAC ; R 345 AD1-133 TAP 345 END
COMED_P1-2_345-L8001__-S	CONTINGENCY 'COMED_P1-2_345-L8001__-S' TRIP BRANCH FROM BUS 270853 TO BUS 917500 CKT 1 / PONTI; R 345 Z2-087 TAP 345 END
COMED_P4_116-45-TR82__	CONTINGENCY 'COMED_P4_116-45-TR82__' TRIP BRANCH FROM BUS 270769 TO BUS 271565 TO BUS 275324 CKT 1 / GOODINGS ;2R 345 GOODINGS ; R 138 GOODINGS ;2C 34.5 DISCONNECT BUS 270769 / GOODINGS ;2R 345 END
COMED_P4_144-45-BT6-8__	CONTINGENCY 'COMED_P4_144-45-BT6-8__' TRIP BRANCH FROM BUS 930480 TO BUS 270916 CKT 1 / AB1-089 TAP 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270730 TO BUS 270916 CKT 1 / ELEC JUNC; B 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270916 TO BUS 270917 CKT 1 / WAYNE ; B 345 WAYNE ; R 345 END
COMED_P1-2_345-L0626__B-R-A	CONTINGENCY 'COMED_P1-2_345-L0626__B-R-A' TRIP BRANCH FROM BUS 270678 TO BUS 930480 CKT 1 / BYRON ; B 345 AB1-089 TAP 345 END
COMED_P1-2_345-L15502__B-R-B	CONTINGENCY 'COMED_P1-2_345-L15502__B-R-B' TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF1-012 TAP 345 ELEC JUNC; B 345 END
COMED_P2-1_111-L11120__	CONTINGENCY 'COMED_P2-1_111-L11120__' TRIP BRANCH FROM BUS 270733 TO BUS 270747 CKT 1 / ELECT;3R 345 W407K;OT 345 END

COMED_P4_120-45-L12002__	CONTINGENCY 'COMED_P4_120-45-L12002__' TRIP BRANCH FROM BUS 270813 TO BUS 270781 CKT 1 / LOMBA; R 345 ITASC; R 345 TRIP BRANCH FROM BUS 275191 TO BUS 270781 CKT 1 / ITASC;2M 138 ITASC; R 345 TRIP BRANCH FROM BUS 275191 TO BUS 271735 CKT 1 / ITASC;2M 138 ITASC; R 138 TRIP BRANCH FROM BUS 275191 TO BUS 275291 CKT 1 / ITASC;2M 138 ITASC;2C 34.5 CLOSE BRANCH FROM BUS 271734 TO BUS 271735 CKT 1 / ITASC; B 138 ITASC; R 138 TRIP BRANCH FROM BUS 270813 TO BUS 270753 CKT 1 / LOMBA; R 345 W407M;OT 345 TRIP BRANCH FROM BUS 270813 TO BUS 270809 CKT 1 / LOMBA; R 345 LISLE; R 345 DISCONNECT BUS 275198 / LOMBA;2M 138 END
COMED_P4_006-45-BT3-4__	CONTINGENCY 'COMED_P4_006-45-BT3-4__' TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 REMOVE UNIT 1 FROM BUS 274656 / BYRON;1U 25 END
COMED_P1-2_345-L0626__B-R-B	CONTINGENCY 'COMED_P1-2_345-L0626__B-R-B' TRIP BRANCH FROM BUS 930480 TO BUS 270916 CKT 1 / AB1-089 TAP 345 WAYNE ; B 345 END
COMED_P4_006-45-BT7-8__	CONTINGENCY 'COMED_P4_006-45-BT7-8__' TRIP BRANCH FROM BUS 270678 TO BUS 930480 CKT 1 / BYRON ; B 345 AB1-089 TAP 345 TRIP BRANCH FROM BUS 270678 TO BUS 270679 CKT 1 / BYRON ; B 345 BYRON ; R 345 END
COMED_P1-2_345-L15501_B-R-B	CONTINGENCY 'COMED_P1-2_345-L15501_B-R-B' TRIP BRANCH FROM BUS 946160 TO BUS 274768 CKT 1 / AF1-281 TAP 345 LEECO;BP 345 END
COMED_P2-2_116_GG-345R__2	CONTINGENCY 'COMED_P2-2_116_GG-345R__2' DISCONNECT BUS 270769 / GOODI;2R 345 END

COMED_P4_167-45-BT8-12_	CONTINGENCY 'COMED_P4_167-45-BT8-12_' TRIP BRANCH FROM BUS 275207 TO BUS 270630 CKT 1 / PLANO ;3M 345 PLANO ; 765 TRIP BRANCH FROM BUS 275207 TO BUS 270846 CKT 1 / PLANO ;3M 345 PLANO ; B 345 TRIP BRANCH FROM BUS 275207 TO BUS 275307 CKT 1 / PLANO ;3M 345 PLANO ;3C 33 TRIP BRANCH FROM BUS 270846 TO BUS 270730 CKT 1 / PLANO ; B 345 ELEC JUNC; B 345 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 1 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 2 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 270846 TO BUS 272278 TO BUS 275354 CKT 1 / PLANO ; B 345 PLANO;1I 138 PLANO;1C 34.5 END
COMED_P4_112-45-BT4-5_	CONTINGENCY 'COMED_P4_112-45-BT4-5_' TRIP BRANCH FROM BUS 270666 TO BUS 270664 CKT 1 / B ISL;BT 345 B ISL; B 345 TRIP BRANCH FROM BUS 270666 TO BUS 270926 CKT 1 / B ISL;BT 345 WILTO; B 345 TRIP BRANCH FROM BUS 270770 TO BUS 270666 CKT 1 / GOODI;4B 345 B ISL;BT 345 TRIP BRANCH FROM BUS 270852 TO BUS 270704 CKT 1 / PONTI; B 345 LORET; B 345 END
COMED_P1-2_345-L0627__B-R	CONTINGENCY 'COMED_P1-2_345-L0627__B-R' TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 END
COMED_P4_937-45-BT2-3_	CONTINGENCY 'COMED_P4_937-45-BT2-3_' TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 TRIP BRANCH FROM BUS 274768 TO BUS 274759 CKT 1 / LEECO;BP 345 DELI 345 TRIP BRANCH FROM BUS 274759 TO BUS 274760 TO BUS 274761 CKT 1 / DELI 345 LEECO;G1 13.8 LEECO;G2 13.8 TRIP BRANCH FROM BUS 274759 TO BUS 274762 TO BUS 274763 CKT 1 / DELI 345 LEECO;G3 13.8 LEECO;G4 13.8 TRIP BRANCH FROM BUS 274759 TO BUS 274764 TO BUS 274765 CKT 1 / DELI 345 LEECO;G5 13.8 LEECO;G6 13.8 TRIP BRANCH FROM BUS 274759 TO BUS 274766 TO BUS 274767 CKT 1 / DELI 345 LEECO;G7 13.8 LEECO;G8 13.8 REMOVE UNIT 1 FROM BUS 274760 / LEECO;G1 13.8 REMOVE UNIT 2 FROM BUS 274761 / LEECO;G2 13.8 REMOVE UNIT 3 FROM BUS 274762 / LEECO;G3 13.8 REMOVE UNIT 4 FROM BUS 274763 / LEECO;G4 13.8 REMOVE UNIT 5 FROM BUS 274764 / LEECO;G5 13.8 REMOVE UNIT 6 FROM BUS 274765 / LEECO;G6 13.8 REMOVE UNIT 7 FROM BUS 274766 / LEECO;G7 13.8 REMOVE UNIT 8 FROM BUS 274767 / LEECO;G8 13.8 END

COMED_P2-2_111_EJ-345R__3	CONTINGENCY 'COMED_P2-2_111_EJ-345R__3' DISCONNECT BUS 270733 / ELEC JUNC;3R 345 DISCONNECT BUS 275183 / ELEC JUNC;3M 138 END
COMED_P4_937-45-BT1-2__	CONTINGENCY 'COMED_P4_937-45-BT1-2__' TRIP BRANCH FROM BUS 946160 TO BUS 274768 CKT 1 / AF1-281 TAP 345 LEECO;BP 345 TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 END
COMED_P4_116-45-L11614_	CONTINGENCY 'COMED_P4_116-45-L11614_' TRIP BRANCH FROM BUS 270667 TO BUS 270665 CKT 1 / B ISL;RT 345 B ISL; R 345 TRIP BRANCH FROM BUS 270667 TO BUS 270927 CKT 1 / B ISL;RT 345 WILTO; R 345 TRIP BRANCH FROM BUS 270769 TO BUS 270667 CKT 1 / GOODI;2R 345 B ISL;RT 345 DISCONNECT BUS 270769 / GOODI;2R 345 END
Base Case	
COMED_P1-2_765-L11216__-S	CONTINGENCY 'COMED_P1-2_765-L11216__-S' TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1 / WILTO; 765 COLLI; 765 END
COMED_P4_023-65-BT3-4__	CONTINGENCY 'COMED_P4_023-65-BT3-4__' TRIP BRANCH FROM BUS 270607 TO BUS 270630 CKT 1 / COLLI; 765 PLANO; 765 TRIP BRANCH FROM BUS 275168 TO BUS 270607 CKT 1 / COLLI;2M 345 COLLI; 765 TRIP BRANCH FROM BUS 275168 TO BUS 270697 CKT 1 / COLLI;2M 345 COLLI; R 345 TRIP BRANCH FROM BUS 275168 TO BUS 275268 CKT 1 / COLLI;2M 345 COLLI;2C 33 END
COMED_P1-2_345-L11613AB-S	CONTINGENCY 'COMED_P1-2_345-L11613AB-S' TRIP BRANCH FROM BUS 270666 TO BUS 270664 CKT 1 / B ISL;BT 345 B ISL; B 345 TRIP BRANCH FROM BUS 270666 TO BUS 270926 CKT 1 / B ISL;BT 345 WILTO; B 345 TRIP BRANCH FROM BUS 270770 TO BUS 270666 CKT 1 / GOODI;4B 345 B ISL;BT 345 END

COMED_P4_937-45-BT1-4__	CONTINGENCY 'COMED_P4_937-45-BT1-4__'	
	TRIP BRANCH FROM BUS 946160 TO BUS 274768 CKT 1	/ AF1-281 TAP 345 LEECO;BP
	345	
	TRIP BRANCH FROM BUS 271421 TO BUS 274450 CKT 1	/ EASYR; B 138 EASYR;1 34.5
	TRIP BRANCH FROM BUS 271421 TO BUS 274451 CKT 1	/ EASYR; B 138 EASYR;2 34.5
	TRIP BRANCH FROM BUS 272528 TO BUS 271421 CKT 1	/ S DIX; B 138 EASYR; B 138
	TRIP BRANCH FROM BUS 274420 TO BUS 274857 CKT 1	/ EASYR;1H 34.5 EASYR;U1
	0.69	
	TRIP BRANCH FROM BUS 274421 TO BUS 274858 CKT 1	/ EASYR;2H 34.5 EASYR;U2
	0.69	
	TRIP BRANCH FROM BUS 274450 TO BUS 274420 CKT 1	/ EASYR;1 34.5 EASYR;1H
	34.5	
	TRIP BRANCH FROM BUS 274451 TO BUS 274421 CKT 1	/ EASYR;2 34.5 EASYR;2H
	34.5	
	TRIP BRANCH FROM BUS 274768 TO BUS 272528 CKT 1	/ LEECO;BP 345 S DIX; B 138
	REMOVE UNIT W1 FROM BUS 274857	/ EASYR;U1 0.69
	REMOVE UNIT W2 FROM BUS 274858	/ EASYR;U2 0.69
	END	

12 Short Circuit Analysis

The following breakers are overdutied:

None

12.1 System Reinforcements - Short Circuit

None

13 Affected Systems

13.1 MISO

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