



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF2-392
“NELSON-DIXON 138 KV”**

July 2020

1 Introduction

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

2 Preface

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

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

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

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

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

The conduct of light load analysis as required under the PJM planning process is not performed during the Generation Interconnection Feasibility Study phase of the PJM study process. Additional reinforcement

requirements for this Interconnection Request may be defined during the conduct of the light load analysis which shall be performed following execution of the System Impact Study agreement.

3 General

The Interconnection Customer (IC) has proposed a wind generating facility located in Lee County, Illinois. The installed facilities will have a total capability of 200 MW with 35.2 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is September 01, 2024. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-392
Project Name	NELSON-DIXON 138 KV
State	Illinois
County	Lee
Transmission Owner	ComEd
MFO	200
MWE	200
MWC	35.2
Fuel	Wind
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 AF2-392, a 200 MW wind project, proposes to interconnect with the ComEd transmission system by tying into the Nelson- Dixon 138kV line 15507, approximately 4.5 miles from Nelson TSS 155.

5 Cost Summary

The AF2-392 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs (ComEd build)	\$20,000,000
Total System Network Upgrade Costs	\$160,140,000
Total Costs	\$180,140,000

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

The AF2-392 generator lead would interconnect to a new 138kV Interconnection Substation (see details in Direct Connection section below). The required Attachment Facilities are one 138kV line MOD, a dead-end structure and revenue metering as shown in the one-line diagram.

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

Direct Connection Network Upgrades

To accommodate interconnection of AF2-392, a new 138kV interconnection substation would need to be built close to the Nelson-Dixon 138kV line 15507, approximately 4.5 miles from Nelson TSS 155.

The scope of work includes the installation of three 138kV circuit breakers in a “breaker-and-a-half” bus configuration and cutting in the interconnection substation to Nelson-Dixon 138kV line 15507.

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

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

ComEd would design, engineer and construct the tie in of the interconnection substation to the Nelson-Dixon 138kV line 15507.

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

For Option to Build Direct Connection cost estimates:

Scope of Work	Cost Estimate
Installation of a new 138kV substation as described above	N/A
Transmission line tie in work (foundations, structures, conductors)	\$ 2,000,000
ComEd oversight and testing	\$ 1,500,000

Total Cost Estimate (see notes below on cost estimate)	\$ 3,500,000
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For ComEd building the Interconnecting Substation cost estimates:

Scope of Work	Cost Estimate
Installation of a new 138kV substation as described above	\$ 15,000,000
Transmission line tie in work (foundations, structures, conductors)	\$ 2,000,000
Total Cost Estimate (see notes below on cost estimate)	\$ 17,000,000

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

Non-Direct Connection Network Upgrades

The integration of the new 138kV Interconnection Substation would require relay, communications and SCADA upgrades at the Nelson TSS 155 and Electric Junction TSS 111. The ComEd cost is given below:

Scope of Work	Cost Estimate
Relay/communications/SCADA upgrades at Nelson TSS 155	\$ 1,000,000
Relay/communications/SCADA upgrades at Dixon TSS 107	\$ 1,000,000
Total Cost Estimate (see notes below on cost estimate)	\$ 2,000,000

Notes on Cost Estimate:

- 1) These estimates are Order-of-Magnitude estimates of the costs that ComEd would bill to the customer for this interconnection. These estimates are based on a one-line electrical diagram of the project and the information provided by the IC.
- 2) There were no site visits performed for these estimates. There may be costs related to specific site related issues that are not identified in these estimates. The site reviews will be performed during the Facilities Study or during detailed engineering.
- 3) These estimates are not a guarantee of the maximum amount payable by the IC and the actual costs of ComEd's work may differ significantly from these estimates. IC will be responsible for paying actual costs of ComEd's work in accordance with Sections 212.1 and 217 of the PJM Open Access Transmission Tariff.

- 4) The IC is responsible for all engineering, procurement, testing and construction of all equipment on the IC's side of the POI.
- 5) These cost estimates do not include cost of acquiring right-of-way for the transmission line and purchasing any additional land, if needed, for the line terminations. The need and cost of acquiring property and associated legal costs will be investigated during Facilities Study for this project.

7 Schedule

See Sections 6 and 11.5.

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 - Primary POI

The Queue Project AF2-392 was evaluated as a 200.0 MW (Capacity 35.2 MW) injection tapping the Nelson to Dixon 138 kV line in the ComEd area. Project AF2-392 was evaluated for compliance with applicable reliability

planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-392 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)

None

11.2 Multiple Facility Contingency

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

None

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/D C	MW IMPACT
96705999	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT7-8	breaker	1441.0	122.19	123.02	DC	25.66
96705711	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P2-2_111_EJ-345R_3	bus	1479.0	114.55	115.01	DC	15.2
96706078	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P4_120-45-L12002	breaker	1479.0	114.54	115.02	DC	15.67
96705965	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P4_144-45-BT6-8	breaker	1479.0	128.41	129.21	DC	26.24
96706001	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P4_155-45-BT6-7	breaker	1656.0	118.39	121.49	DC	51.35
96706025	271898	LANCASTER; BT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	COMED_P4_006-45-BT3-4	breaker	321.0	117.92	119.91	DC	14.16
96707316	272728	WATERMAN ; B	138.0	CE	272445	SANDWICH ; R	138.0	CE	1	COMED_P7_138-L11106_B-R+_345-L15502_B-R	tower	331.0	129.57	131.36	DC	13.14
96705950	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P4_155-45-BT6-7	breaker	1656.0	128.75	130.68	DC	51.35
95531041	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	AEP_P4_#3128_05EU GENE 345_A2	breaker	1466.0	149.93	149.94	DC	14.79
96705927	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P4_006-45-BT3-4	breaker	1656.0	136.47	137.96	DC	54.5

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 PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC/D C	MW IMPAC T
96706458	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	129.83	130.63	DC	26.2
96706460	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operation	1201.0	115.44	116.17	DC	19.17
96706536	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	operation	1201.0	119.39	119.94	DC	14.52
96706537	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P 2-1_111-L11120__	operation	1479.0	114.5	114.96	DC	15.3
96706466	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	128.4	129.2	DC	26.2
96706468	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	operation	1201.0	118.18	118.9	DC	19.17
96706567	270770	GOODINGS ;4B	345.0	CE	270766	GOODING S;3B	345.0	CE	1	COMED_P 1-2_345-L11613AB-S	operation	1802.0	116.51	116.8	DC	19.75
96706562	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P 1-2_345-L15501__B-R-A	operation	1656.0	115.39	118.73	DC	54.77
96706565	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	105.59	108.48	DC	40.28
96706622	270828	NELSON ; B	345.0	CE	946160	AF1-281 TAP	345.0	CE	1	COMED_P 1-2_345-L15502__B-R-B	operation	1479.0	106.26	110.05	DC	58.98
96706602	271558	GLIDDEN ; B	138.0	CE	271560	GLIDDEN ;BT	138.0	CE	1	COMED_P 2-1_113-L11323__	operation	386.0	113.47	114.93	DC	12.44
96706623	271898	LANCASTER; BT	138.0	CE	271897	LANCASTE R; R	138.0	CE	1	COMED_P 1-2_345-L0627__B-R	operation	321.0	107.08	109.07	DC	14.16
96706656	272002	MCGIRR RD;	138.0	CE	272365	ESS H440 ;RT	138.0	CE	1	Base Case	operation	351.0	102.5	104.59	DC	16.3
96706941	272362	ESS H445 ;3B	138.0	CE	272757	W DEKALB ;7T	138.0	CE	1	COMED_P 2-1_094-L11323__	operation	298.0	134.3	136.15	DC	12.14
96706380	272365	ESS H440 ;RT	138.0	CE	272363	ESS H440 ; R	138.0	CE	1	COMED_P 2-1_186-L16914__	operation	197.0	152.66	155.73	DC	13.41
96706557	272728	WATERMAN ; B	138.0	CE	272445	SANDWIC H; R	138.0	CE	1	COMED_P 1-2_138-L11106__B-R	operation	309.0	115.95	117.56	DC	11.09
96706875	272757	W DEKALB ;7T	138.0	CE	271558	GLIDDEN ; B	138.0	CE	1	COMED_P 2-1_094-L11323__	operation	264.0	144.29	146.37	DC	12.14
96706604	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	113.13	114.65	DC	58.23
96706670	930480	AB1-089 TAP	345.0	CE	270916	WAYNE ; B	345.0	CE	1	COMED_P 1-2_345-L97116__R_FSA	operation	2058.0	103.36	103.99	DC	28.08

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
96706476	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P1-2_345-L15501_B-R-A	operation	1656.0	127.65	128.98	DC	54.77
96706479	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	Base Case	operation	1334.0	113.07	116.03	DC	40.28
96706546	946160	AF1-281 TAP	345.0	CE	274768	LEE CO EC;BP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-B	operation	1479.0	114.81	118.05	DC	58.98
95531320	956820	J1180 TAP	345.0	AMIL	247712	05SULLIVAN	345.0	AEP	1	AEP_P1-2_#286	operation	1466.0	138.24	138.25	DC	15.06
96706422	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	136.53	139.54	DC	40.28
96706423	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P1-2_345-L0627__B-R	operation	1656.0	135.87	137.35	DC	54.5
96706438	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479.0	139.09	139.89	DC	26.2
96706440	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	130.47	131.19	DC	19.17

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
95531041	8	J1180 TAP 345.0 kV - 05SULLIVAN 345.0 kV Ckt 1	AEP AEPI0010a (278) : Reconductor/rebuild 0.82 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 5 Project Type : FAC Cost : \$1,640,000 Time Estimate : 24 - 36 Months AEPI0010b (279) : Reconductor/rebuild 1 miles of ACAR ~ 1024.5 ~ 30/7 ~ RAIL1 conductor section 6 Project Type : FAC Cost : \$2,000,000 Time Estimate : 24 - 36 Months AEPI0010c (280) : Replace two Sullivan 3000A Wavetrap Project Type : FAC Cost : \$400,000 Time Estimate : 12- 18 Months AMIL NonPJMArea (536) : The external (i.e. Non-PJM) Transmission Owner, AMIL, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$4,040,000

ID	Idx	Facility	Upgrade Description	Cost
96705950	7	AF1-012 TAP 345.0 kV - AF2-041 TAP 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_15502 (876) : 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
96706001	4	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
96705999	1	BYRON ; B 345.0 kV - CHERRY VA; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L0621 (852) : ComEd 345kV I0621 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
96707316	6	WATERMAN ; B 138.0 kV - SANDWICH ; R 138.0 kV Ckt 1	<u>ComEd</u> ce-007 (886) : L11301 SLD = 331 MVA& ALDR = 381 MVA. The post contingency flow for this event exceeds the rating therefore upgrades are required. The upgrades will be to re-conductor the line, station conductor upgrades. A preliminary estimate is \$ 13.1 M with an estimated construction time of 30 months. Upon completion the ratings will be 292/321/367/433/498 MVA N1:N6SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$13,100,000 Time Estimate : 30.0 Months	\$13,100,000

ID	Idx	Facility	Upgrade Description	Cost
96705965	3	GARDEN PR; R 345.0 kV - AF2- 349 TAP 345.0 kV Ckt 1	<u>ComEd</u> ce-012a : 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 ce-012 : L15616 SSTE rating is 1568 MVA. The post contingency flow for this event exceeds the rating therefore upgrades are required. Re-conductor 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
96705711,9670 6078	2	ELECT JCT; B 345.0 kV - LOMBARD ; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L11124 (847) : ComEd 345kV L11124 SSTE rating is 1568 MVA. The upgrade will be to re-conductor 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
96706025	5	LANCASTER;BT 138.0 kV - LANCASTER; R 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L11902 (930) : Upgrade is to replace the wave trap on the line at a terminal. A preliminary estimate for this upgrade is \$500K with an estimated construction timeline of 24-30 months. Upon completion of the upgrade the ratings will 314/393/421 MVA (SN/SLTE/SLD). Project Type : FAC Cost : \$500,000 Time Estimate : 24-30 Months	\$500,000

ID	Idx	Facility	Upgrade Description	Cost
96705927	9	AF2-041 TAP 345.0 kV - ELECT JCT; B 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L15502_4 (918) : 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 switches 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
			Total System Network Upgrade Costs	\$160,140,000

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

11.6 Flow Gate Details - Primary POI

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

11.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96705999	270678	BYRON ; B	CE	270694	CHERRY VA; B	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	122.19	123.02	DC	25.66

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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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	EASYR;U1 E	25.5645	Adder	30.08
274860	EASYR;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	22.4311	Adder	49.79
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

11.6.2 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
96706078	270730	ELECT JCT; B	CE	270812	LOMBARD ; B	CE	1	COMED_P4_120-45-L12002_	breaker	1479.0	114.54	115.02	DC	15.67

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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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	6.2999	Adder	13.98
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

11.6.3 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
96705965	270759	GARDEN PR; R	CE	960580	AF2-349 TAP	CE	1	COMED_P4_144-45-BT6-8__	breaker	1479.0	128.41	129.21	DC	26.24

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

Bus #	Bus	Gendoliv MW Impact	Type	Full MW Impact
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	13.2542	Adder	29.42
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

11.6.4 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
96706001	270828	NELSON ; B	CE	943410	AF1-012 TAP	CE	1	COMED_P4_155-45-BT6-7__	breaker	1656.0	118.39	121.49	DC	51.35

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	39.5685	50/50	39.5685
274663	QUAD CITI;2U	39.6435	50/50	39.6435
274699	CORDOVA ;1C	6.9583	50/50	6.9583
274700	CORDOVA ;2C	6.9583	50/50	6.9583
274701	CORDOVA ;1S	7.8280	50/50	7.8280
274715	NELSON EC;1C	10.1204	50/50	10.1204
274716	NELSON EC;1S	7.3843	50/50	7.3843
274717	NELSON EC;2C	10.1986	50/50	10.1986
274718	NELSON EC;2S	7.4505	50/50	7.4505
274848	CAMPGROVE;RU	0.5476	50/50	0.5476
274877	BISHOP HL;1U	0.4062	50/50	0.4062
274878	BISHOP HL;2U	0.4062	50/50	0.4062
276156	O-029 C	0.4620	50/50	0.4620
276157	O-029 C	0.4994	50/50	0.4994
276158	O-029 C	0.9114	50/50	0.9114
276160	W4-084	0.1429	50/50	0.1429
290051	GSG-6; E	5.4542	Adder	6.42

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293513	O-009 C1	0.8532	50/50	0.8532
293514	O-009 C2	0.4328	50/50	0.4328
293515	O-009 C3	0.4786	50/50	0.4786
293516	O-009 E1	19.7938	50/50	19.7938
293517	O-009 E2	10.0537	50/50	10.0537
293518	O-009 E3	11.0719	50/50	11.0719
293715	O-029 E	21.1618	50/50	21.1618
293716	O-029 E	11.6027	50/50	11.6027
293717	O-029 E	10.6641	50/50	10.6641
293771	O-035 E	4.8987	Adder	5.76
294401	BSHIL;1U E	9.4192	50/50	9.4192
294410	BSHIL;2U E	9.4192	50/50	9.4192
919221	AA1-146	9.4409	50/50	9.4409
919581	AA2-030	54.7318	50/50	54.7318
925581	AC1-033 C	1.5428	50/50	1.5428
925582	AC1-033 E	10.3284	50/50	10.3284
927201	AC1-214 C O1	1.5722	Adder	1.85
927202	AC1-214 E O1	4.9979	Adder	5.88
934051	AD1-031 C O1	3.1335	50/50	3.1335
934052	AD1-031 E O1	5.1125	50/50	5.1125
934431	AD1-067 C	0.0685	Adder	0.08
934432	AD1-067 E	0.2880	Adder	0.34
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5466	Adder	0.64
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.8919	Adder	1.05
934701	AD1-098 C O1	4.0061	Adder	4.71
934702	AD1-098 E O1	2.9248	Adder	3.44
937001	AD2-134 C	1.4258	Adder	1.68
937002	AD2-134 E	5.8900	Adder	6.93
937531	AD2-214 C	10.3069	50/50	10.3069
937532	AD2-214 E	6.8713	50/50	6.8713
938861	AE1-114 C O1	4.6923	50/50	4.6923
938862	AE1-114 E O1	16.0092	50/50	16.0092
939051	AE1-134 1	4.2530	50/50	4.2530
939061	AE1-134 2	4.2530	50/50	4.2530
943381	AF1-009 C	0.3465	Adder	0.41
943382	AF1-009 E	1.3862	Adder	1.63
943401	AF1-011 C	2.7022	50/50	2.7022
943402	AF1-011 E	4.5359	50/50	4.5359
946321	AF1-296 C O1	8.8845	50/50	8.8845
946322	AF1-296 E O1	41.5953	50/50	41.5953
946533	AF1-317 BAT	28.3045	50/50	28.3045
950181	J407 C	3.0540	PJM External (MISO)	3.0540
950182	J407 E	12.2160	PJM External (MISO)	12.2160
950401	J041 C	1.6591	PJM External (MISO)	1.6591
950402	J041 E	6.6362	PJM External (MISO)	6.6362
950471	J438 C	3.3990	PJM External (MISO)	3.3990
950472	J438 E	13.5959	PJM External (MISO)	13.5959
950501	J449 C	3.2789	PJM External (MISO)	3.2789
950502	J449 E	13.1155	PJM External (MISO)	13.1155
950522	J455 E	21.7650	PJM External (MISO)	21.7650
951031	J344 C	3.0711	PJM External (MISO)	3.0711

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
951032	J344 E	9.2132	PJM External (MISO)	9.2132
951221	J475 C	3.7552	PJM External (MISO)	3.7552
951222	J475 E	15.0208	PJM External (MISO)	15.0208
951381	J504	5.8315	PJM External (MISO)	5.8315
951421	J514	3.4866	PJM External (MISO)	3.4866
951441	J523 C	2.2326	PJM External (MISO)	2.2326
951442	J523 E	1.4884	PJM External (MISO)	1.4884
951451	J524 C	4.5432	PJM External (MISO)	4.5432
951452	J524 E	3.0288	PJM External (MISO)	3.0288
951511	J530 C	5.5515	PJM External (MISO)	5.5515
951512	J530 E	22.2060	PJM External (MISO)	22.2060
951541	J534 C	3.5945	PJM External (MISO)	3.5945
951542	J534 E	14.3780	PJM External (MISO)	14.3780
951551	J535 C	3.0538	PJM External (MISO)	3.0538
951552	J535 E	12.2153	PJM External (MISO)	12.2153
951821	J541 C	4.4784	PJM External (MISO)	4.4784
951822	J541 E	24.2296	PJM External (MISO)	24.2296
951841	J555 C	2.0503	PJM External (MISO)	2.0503
951842	J555 E	11.0929	PJM External (MISO)	11.0929
952021	J614 C	0.7591	PJM External (MISO)	0.7591
952022	J614 E	4.1071	PJM External (MISO)	4.1071
952211	J590 C	1.0186	PJM External (MISO)	1.0186
952212	J590 E	5.5109	PJM External (MISO)	5.5109
952231	J598 C (MISO Withdrawn : 1/16/2020)	3.3588	PJM External (MISO)	3.3588
952232	J598 E (MISO Withdrawn : 1/16/2020)	18.1722	PJM External (MISO)	18.1722
953011	J885 C	0.7623	PJM External (MISO)	0.7623
953012	J885 E	4.1241	PJM External (MISO)	4.1241
953082	J836 E	14.4980	PJM External (MISO)	14.4980
953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9707	PJM External (MISO)	1.9707
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.6623	PJM External (MISO)	10.6623
954091	J873 C	3.3287	PJM External (MISO)	3.3287
954092	J873 E	18.0093	PJM External (MISO)	18.0093
954131	J877	18.1375	PJM External (MISO)	18.1375
954301	J898 C	1.1383	PJM External (MISO)	1.1383
954302	J898 E	6.1587	PJM External (MISO)	6.1587
954521	J927 C	1.1322	PJM External (MISO)	1.1322
954522	J927 E	6.1258	PJM External (MISO)	6.1258
954702	J844 E	14.1855	PJM External (MISO)	14.1855
954792	J952 E	6.8510	PJM External (MISO)	6.8510
954861	J959 C	2.3136	PJM External (MISO)	2.3136
954862	J959 E	12.5169	PJM External (MISO)	12.5169
954901	J963	1.4162	PJM External (MISO)	1.4162
954931	J967 C	1.8343	PJM External (MISO)	1.8343
954932	J967 E	9.9242	PJM External (MISO)	9.9242
955051	J981 C	3.8975	PJM External (MISO)	3.8975
955052	J981 E	21.0865	PJM External (MISO)	21.0865
955221	J1000	4.0255	PJM External (MISO)	4.0255
955661	J1050 C	2.7961	PJM External (MISO)	2.7961
955662	J1050 E	15.1274	PJM External (MISO)	15.1274

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
955871	J1072	11.7585	PJM External (MISO)	11.7585
955971	J1084	31.8495	PJM External (MISO)	31.8495
956231	J1110	7.3510	PJM External (MISO)	7.3510
956381	J1128	11.1660	PJM External (MISO)	11.1660
956411	J1131	17.0520	PJM External (MISO)	17.0520
956431	J1135	4.1005	PJM External (MISO)	4.1005
956761	J1174	23.2980	PJM External (MISO)	23.2980
956771	J1175 C	3.6345	PJM External (MISO)	3.6345
956772	J1175 E	19.6635	PJM External (MISO)	19.6635
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8415	PJM External (MISO)	1.8415
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.9630	PJM External (MISO)	9.9630
956831	J1181 C	3.0292	PJM External (MISO)	3.0292
956832	J1181 E	16.3888	PJM External (MISO)	16.3888
957751	AF2-069 C	0.0965	Adder	0.21
957752	AF2-069 E	0.3114	Adder	0.69
957761	AF2-070 C	0.1360	Adder	0.3
957762	AF2-070 E	0.6600	Adder	1.47
961011	AF2-392 C O1	9.0383	50/50	9.0383
961012	AF2-392 E O1	42.3157	50/50	42.3157
961021	AF2-393 O1	15.4062	50/50	15.4062
961031	AF2-394 O1	10.2708	50/50	10.2708
990901	L-005 E	12.6984	50/50	12.6984
LGEE	LGEE	0.1198	Confirmed LTF	0.1198
CPL	CPL	0.3539	Confirmed LTF	0.3539
CBM-W2	CBM-W2	22.6044	Confirmed LTF	22.6044
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.4254	Confirmed LTF	47.4254
TVA	TVA	2.7342	Confirmed LTF	2.7342
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2830	Confirmed LTF	4.2830
CBM-S1	CBM-S1	13.8791	Confirmed LTF	13.8791
G-007	G-007	0.1404	Confirmed LTF	0.1404
MADISON	MADISON	14.5999	Confirmed LTF	14.5999
MEC	MEC	18.4340	Confirmed LTF	18.4340

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
96706025	271898	LANCASTER;BT	CE	271897	LANCASTER; R	CE	1	COMED_P4_006-45-BT3-4_	breaker	321.0	117.92	119.91	DC	14.16

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293516	O-009 E1	3.5425	Adder	4.17
293517	O-009 E2	1.7993	Adder	2.12
293518	O-009 E3	1.9815	Adder	2.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293715	O-029 E	3.7873	Adder	4.46
293716	O-029 E	2.0765	Adder	2.44
293717	O-029 E	1.9086	Adder	2.25
938861	AE1-114 C O1	15.0787	50/50	15.0787
938862	AE1-114 E O1	51.4448	50/50	51.4448
943401	AF1-011 C	0.4836	Adder	0.57
943402	AF1-011 E	0.8118	Adder	0.96
943922	AF1-060 BAT	3.1547	50/50	3.1547
959761	AF2-267 C O1	25.7709	50/50	25.7709
959762	AF2-267 E O1	120.6485	50/50	120.6485
961011	AF2-392 C O1	1.1224	Adder	2.49
961012	AF2-392 E O1	5.2549	Adder	11.66
961021	AF2-393 O1	1.9132	Adder	4.25
961031	AF2-394 O1	1.2755	Adder	2.83
LGEE	LGEE	0.0405	Confirmed LTF	0.0405
CPL	CPL	0.0615	Confirmed LTF	0.0615
G-007A	G-007A	0.0839	Confirmed LTF	0.0839
VFT	VFT	0.2257	Confirmed LTF	0.2257
CBM-W2	CBM-W2	2.4242	Confirmed LTF	2.4242
TVA	TVA	0.3010	Confirmed LTF	0.3010
CBM-S2	CBM-S2	0.6358	Confirmed LTF	0.6358
CBM-S1	CBM-S1	1.6018	Confirmed LTF	1.6018
MADISON	MADISON	0.2460	Confirmed LTF	0.2460
MEC	MEC	1.5270	Confirmed LTF	1.5270

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
96707316	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P7_138-L11106_B-R+_345-L15502_B-R	tower	331.0	129.57	131.36	DC	13.14

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
272364	ESS H440N ;R	1.2190	50/50	1.2190
274850	MENDOTA H;RU	0.2807	50/50	0.2807
274855	GSG-6 ;RU	1.1820	50/50	1.1820
274872	LEE DEKAL;1U	3.1941	50/50	3.1941
290051	GSG-6; E	27.4100	50/50	27.4100
290108	LEEDK;1U E	77.1560	50/50	77.1560
294763	P-046 E	3.5741	Adder	4.2
916221	AB2-191	0.4534	50/50	0.4534
933911	AD1-013 C	4.9916	50/50	4.9916
933912	AD1-013 E	7.9736	50/50	7.9736
934431	AD1-067 C	0.3442	50/50	0.3442
934432	AD1-067 E	1.4472	50/50	1.4472
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.4340	Adder	0.51

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.7081	Adder	0.83
934701	AD1-098 C O1	17.3573	50/50	17.3573
934702	AD1-098 E O1	12.6727	50/50	12.6727
937001	AD2-134 C	7.1654	50/50	7.1654
937002	AD2-134 E	29.6003	50/50	29.6003
937311	AD2-172 C	0.9382	Adder	1.1
937312	AD2-172 E	1.2956	Adder	1.52
938861	AE1-114 C O1	1.8158	Adder	2.14
938862	AE1-114 E O1	6.1950	Adder	7.29
940501	AE2-035 C	0.9382	Adder	1.1
940502	AE2-035 E	1.2956	Adder	1.52
941131	AE2-107 C	23.9826	50/50	23.9826
941132	AE2-107 E	15.9884	50/50	15.9884
943381	AF1-009 C	1.5015	50/50	1.5015
943382	AF1-009 E	6.0060	50/50	6.0060
943921	AF1-060	0.4619	Adder	0.54
946501	AF1-314 C	1.6670	Adder	1.96
946502	AF1-314 E	7.8044	Adder	9.18
946671	AF1-331	6.4826	50/50	6.4826
959101	AF2-201 C O1	1.2171	Adder	2.7
959102	AF2-201 E O1	3.4949	Adder	7.76
959761	AF2-267 C O1	0.8793	Adder	1.95
959762	AF2-267 E O1	4.1164	Adder	9.14
960382	AF2-329 BAT	9.1266	50/50	9.1266
960721	AF2-363 C O1	16.7331	50/50	16.7331
960722	AF2-363 E O1	11.1554	50/50	11.1554
960751	AF2-366 C O1	21.9976	50/50	21.9976
960752	AF2-366 E O1	14.6651	50/50	14.6651
961011	AF2-392 C O1	1.0422	Adder	2.31
961012	AF2-392 E O1	4.8792	Adder	10.83
961021	AF2-393 O1	1.7764	Adder	3.94
961031	AF2-394 O1	1.1843	Adder	2.63
WEC	WEC	0.3663	Confirmed LTF	0.3663
CBM-W2	CBM-W2	2.9894	Confirmed LTF	2.9894
NY	NY	0.0669	Confirmed LTF	0.0669
CBM-W1	CBM-W1	11.9220	Confirmed LTF	11.9220
TVA	TVA	0.3248	Confirmed LTF	0.3248
O-066	O-066	0.7728	Confirmed LTF	0.7728
CBM-S2	CBM-S2	0.1792	Confirmed LTF	0.1792
CBM-S1	CBM-S1	1.5166	Confirmed LTF	1.5166
TILTON	TILTON	0.0031	Confirmed LTF	0.0031
G-007	G-007	0.1196	Confirmed LTF	0.1196
MADISON	MADISON	3.2357	Confirmed LTF	3.2357
MEC	MEC	2.9110	Confirmed LTF	2.9110
GIBSON	GIBSON	0.0082	Confirmed LTF	0.0082
BLUEG	BLUEG	0.1180	Confirmed LTF	0.1180
TRIMBLE	TRIMBLE	0.0417	Confirmed LTF	0.0417

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
96705950	943410	AF1-012 TAP	CE	957470	AF2-041 TAP	CE	1	COMED_P4_155-45-BT6-7__	breaker	1656.0	128.75	130.68	DC	51.35

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	39.5685	50/50	39.5685
274663	QUAD CITI;2U	39.6435	50/50	39.6435
274699	CORDOVA ;1C	6.9583	50/50	6.9583
274700	CORDOVA ;2C	6.9583	50/50	6.9583
274701	CORDOVA ;1S	7.8280	50/50	7.8280
274715	NELSON EC;1C	10.1204	50/50	10.1204
274716	NELSON EC;1S	7.3843	50/50	7.3843
274717	NELSON EC;2C	10.1986	50/50	10.1986
274718	NELSON EC;2S	7.4505	50/50	7.4505
276156	O-029 C	0.4620	50/50	0.4620
276157	O-029 C	0.4994	50/50	0.4994
276158	O-029 C	0.9114	50/50	0.9114
290051	GSG-6; E	5.4542	Adder	6.42
293513	O-009 C1	0.8532	50/50	0.8532
293514	O-009 C2	0.4328	50/50	0.4328
293515	O-009 C3	0.4786	50/50	0.4786
293516	O-009 E1	19.7938	50/50	19.7938
293517	O-009 E2	10.0537	50/50	10.0537
293518	O-009 E3	11.0719	50/50	11.0719
293715	O-029 E	21.1618	50/50	21.1618
293716	O-029 E	11.6027	50/50	11.6027
293717	O-029 E	10.6641	50/50	10.6641
293771	O-035 E	4.8987	Adder	5.76
294401	BSHIL;1U E	8.0063	Adder	9.42
294410	BSHIL;2U E	8.0063	Adder	9.42
294763	P-046 E	4.7763	Adder	5.62
919221	AA1-146	9.4409	50/50	9.4409
919581	AA2-030	54.7318	50/50	54.7318
925581	AC1-033 C	1.3114	Adder	1.54
925582	AC1-033 E	8.7792	Adder	10.33
927201	AC1-214 C O1	1.5722	Adder	1.85
927202	AC1-214 E O1	4.9979	Adder	5.88
934051	AD1-031 C O1	2.6635	Adder	3.13
934052	AD1-031 E O1	4.3456	Adder	5.11
934431	AD1-067 C	0.0685	Adder	0.08
934432	AD1-067 E	0.2880	Adder	0.34
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5466	Adder	0.64
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.8919	Adder	1.05
934701	AD1-098 C O1	4.0061	Adder	4.71
934702	AD1-098 E O1	2.9248	Adder	3.44

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937001	AD2-134 C	1.4258	Adder	1.68
937002	AD2-134 E	5.8900	Adder	6.93
937311	AD2-172 C	1.2538	Adder	1.48
937312	AD2-172 E	1.7314	Adder	2.04
937531	AD2-214 C	10.3069	50/50	10.3069
937532	AD2-214 E	6.8713	50/50	6.8713
938861	AE1-114 C O1	3.9885	Adder	4.69
938862	AE1-114 E O1	13.6078	Adder	16.01
939051	AE1-134 1	4.2530	50/50	4.2530
939061	AE1-134 2	4.2530	50/50	4.2530
940501	AE2-035 C	1.2538	Adder	1.48
940502	AE2-035 E	1.7314	Adder	2.04
943381	AF1-009 C	0.3465	Adder	0.41
943382	AF1-009 E	1.3862	Adder	1.63
943401	AF1-011 C	2.2969	Adder	2.7
943402	AF1-011 E	4.5359	50/50	4.5359
943411	AF1-012 C	45.5605	50/50	45.5605
943412	AF1-012 E	30.3737	50/50	30.3737
943921	AF1-060	0.6173	Adder	0.73
946321	AF1-296 C O1	7.5519	Adder	8.88
946322	AF1-296 E O1	35.3560	Adder	41.6
946501	AF1-314 C	2.2277	Adder	2.62
946502	AF1-314 E	10.4296	Adder	12.27
946531	AF1-317 C O1	8.6782	50/50	8.6782
946541	AF1-318 C O1	3.0831	Adder	3.63
946542	AF1-318 E O1	14.4362	Adder	16.98
950181	J407 C	3.0540	PJM External (MISO)	3.0540
950182	J407 E	12.2160	PJM External (MISO)	12.2160
950401	J041 C	1.6591	PJM External (MISO)	1.6591
950402	J041 E	6.6362	PJM External (MISO)	6.6362
950471	J438 C	3.3990	PJM External (MISO)	3.3990
950472	J438 E	13.5959	PJM External (MISO)	13.5959
950501	J449 C	3.2789	PJM External (MISO)	3.2789
950502	J449 E	13.1155	PJM External (MISO)	13.1155
950522	J455 E	21.7650	PJM External (MISO)	21.7650
951031	J344 C	3.0711	PJM External (MISO)	3.0711
951032	J344 E	9.2132	PJM External (MISO)	9.2132
951221	J475 C	3.7552	PJM External (MISO)	3.7552
951222	J475 E	15.0208	PJM External (MISO)	15.0208
951301	J495 C	3.5205	PJM External (MISO)	3.5205
951302	J495 E	10.5615	PJM External (MISO)	10.5615
951381	J504	5.8315	PJM External (MISO)	5.8315
951421	J514	3.4866	PJM External (MISO)	3.4866
951441	J523 C	2.2326	PJM External (MISO)	2.2326
951442	J523 E	1.4884	PJM External (MISO)	1.4884
951451	J524 C	4.5432	PJM External (MISO)	4.5432
951452	J524 E	3.0288	PJM External (MISO)	3.0288
951511	J530 C	5.5515	PJM External (MISO)	5.5515
951512	J530 E	22.2060	PJM External (MISO)	22.2060
951541	J534 C	3.5945	PJM External (MISO)	3.5945
951542	J534 E	14.3780	PJM External (MISO)	14.3780
951551	J535 C	3.0538	PJM External (MISO)	3.0538

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
951552	J535 E	12.2153	PJM External (MISO)	12.2153
951821	J541 C	4.4784	PJM External (MISO)	4.4784
951822	J541 E	24.2296	PJM External (MISO)	24.2296
951841	J555 C	2.0503	PJM External (MISO)	2.0503
951842	J555 E	11.0929	PJM External (MISO)	11.0929
952021	J614 C	0.7591	PJM External (MISO)	0.7591
952022	J614 E	4.1071	PJM External (MISO)	4.1071
952211	J590 C	1.0186	PJM External (MISO)	1.0186
952212	J590 E	5.5109	PJM External (MISO)	5.5109
952231	J598 C (MISO Withdrawn : 1/16/2020)	3.3588	PJM External (MISO)	3.3588
952232	J598 E (MISO Withdrawn : 1/16/2020)	18.1722	PJM External (MISO)	18.1722
953011	J885 C	0.7623	PJM External (MISO)	0.7623
953012	J885 E	4.1241	PJM External (MISO)	4.1241
953082	J836 E	14.4980	PJM External (MISO)	14.4980
953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9707	PJM External (MISO)	1.9707
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.6623	PJM External (MISO)	10.6623
954091	J873 C	3.3287	PJM External (MISO)	3.3287
954092	J873 E	18.0093	PJM External (MISO)	18.0093
954131	J877	18.1375	PJM External (MISO)	18.1375
954301	J898 C	1.1383	PJM External (MISO)	1.1383
954302	J898 E	6.1587	PJM External (MISO)	6.1587
954521	J927 C	1.1322	PJM External (MISO)	1.1322
954522	J927 E	6.1258	PJM External (MISO)	6.1258
954702	J844 E	14.1855	PJM External (MISO)	14.1855
954792	J952 E	6.8510	PJM External (MISO)	6.8510
954861	J959 C	2.3136	PJM External (MISO)	2.3136
954862	J959 E	12.5169	PJM External (MISO)	12.5169
954901	J963	1.4162	PJM External (MISO)	1.4162
954931	J967 C	1.8343	PJM External (MISO)	1.8343
954932	J967 E	9.9242	PJM External (MISO)	9.9242
955051	J981 C	3.8975	PJM External (MISO)	3.8975
955052	J981 E	21.0865	PJM External (MISO)	21.0865
955061	J982 C	0.3020	PJM External (MISO)	0.3020
955062	J982 E	1.6339	PJM External (MISO)	1.6339
955221	J1000	4.0255	PJM External (MISO)	4.0255
955661	J1050 C	2.7961	PJM External (MISO)	2.7961
955662	J1050 E	15.1274	PJM External (MISO)	15.1274
955871	J1072	11.7585	PJM External (MISO)	11.7585
955971	J1084	31.8495	PJM External (MISO)	31.8495
956231	J1110	7.3510	PJM External (MISO)	7.3510
956381	J1128	11.1660	PJM External (MISO)	11.1660
956411	J1131	17.0520	PJM External (MISO)	17.0520
956431	J1135	4.1005	PJM External (MISO)	4.1005
956761	J1174	23.2980	PJM External (MISO)	23.2980
956771	J1175 C	3.6345	PJM External (MISO)	3.6345
956772	J1175 E	19.6635	PJM External (MISO)	19.6635
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8415	PJM External (MISO)	1.8415

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.9630	PJM External (MISO)	9.9630
956831	J1181 C	3.0292	PJM External (MISO)	3.0292
956832	J1181 E	16.3888	PJM External (MISO)	16.3888
957751	AF2-069 C	0.0965	Adder	0.21
957752	AF2-069 E	0.3114	Adder	0.69
957761	AF2-070 C	0.1360	Adder	0.3
957762	AF2-070 E	0.6600	Adder	1.47
959101	AF2-201 C O1	1.6265	Adder	3.61
959102	AF2-201 E O1	4.6705	Adder	10.37
959761	AF2-267 C O1	1.1774	Adder	2.61
959762	AF2-267 E O1	5.5122	Adder	12.24
960551	AF2-346 C	19.5260	50/50	19.5260
960552	AF2-346 E	13.0173	50/50	13.0173
961011	AF2-392 C O1	9.0383	50/50	9.0383
961012	AF2-392 E O1	42.3157	50/50	42.3157
961021	AF2-393 O1	15.4062	50/50	15.4062
961031	AF2-394 O1	10.2708	50/50	10.2708
990901	L-005 E	10.7936	Adder	12.7
LGEE	LGEE	0.1198	Confirmed LTF	0.1198
CPL	CPL	0.3539	Confirmed LTF	0.3539
CBM-W2	CBM-W2	22.6044	Confirmed LTF	22.6044
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.4254	Confirmed LTF	47.4254
TVA	TVA	2.7342	Confirmed LTF	2.7342
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2830	Confirmed LTF	4.2830
CBM-S1	CBM-S1	13.8791	Confirmed LTF	13.8791
G-007	G-007	0.1404	Confirmed LTF	0.1404
MADISON	MADISON	14.5999	Confirmed LTF	14.5999
MEC	MEC	18.4340	Confirmed LTF	18.4340

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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
95531041	956820	J1180 TAP	AMIL	247712	O5SULLIVAN	AEP	1	AEP_P4_#3128_05EUGENE 345_A2	breaker	1466.0	149.93	149.94	DC	14.79

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	16.4201	50/50	16.4201
274651	KINCAID ;2U	16.4134	50/50	16.4134
274830	U3-021 1	2.7006	Adder	3.18
274831	U3-021 2	2.7006	Adder	3.18
274853	TWINGROVE;U1	0.8780	50/50	0.8780
274854	TWINGROVE;U2	0.8780	50/50	0.8780
274859	EASYR;U1 E	5.8205	Adder	6.85
274860	EASYR;U2 E	5.8205	Adder	6.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274880	GENERATOR;	1.1644	50/50	1.1644
274882	W4-005 E	45.2070	50/50	45.2070
274890	CAYUG;1U E	8.8046	Adder	10.36
274891	CAYUG;2U E	8.8046	Adder	10.36
276153	W2-048 E	9.4531	50/50	9.4531
290021	O50 E	9.3106	Adder	10.95
290051	GSG-6; E	4.7900	Adder	5.64
290108	LEEDK;1U E	10.5689	Adder	12.43
290261	S-027 E	20.3607	50/50	20.3607
290265	S-028 E	20.3607	50/50	20.3607
293516	O-009 E1	5.4128	Adder	6.37
293517	O-009 E2	2.7493	Adder	3.23
293518	O-009 E3	3.0277	Adder	3.56
293644	O22 E1	4.2351	Adder	4.98
293645	O22 E2	8.2211	Adder	9.67
293715	O-029 E	5.7868	Adder	6.81
293716	O-029 E	3.1728	Adder	3.73
293717	O-029 E	2.9162	Adder	3.43
293771	O-035 E	4.3577	Adder	5.13
294401	BSHIL;1U E	5.9235	Adder	6.97
294410	BSHIL;2U E	5.9235	Adder	6.97
294763	P-046 E	4.6158	Adder	5.43
909052	X2-022 E	28.4350	50/50	28.4350
917501	Z2-087 C	0.4565	50/50	0.4565
917502	Z2-087 E	17.7115	50/50	17.7115
918052	AA1-018 E OP	6.8407	Adder	8.05
919581	AA2-030	9.9554	Adder	11.71
920272	AA2-123 E	1.0469	Adder	1.23
924041	AB2-047 C O1	3.3082	50/50	3.3082
924042	AB2-047 E O1	22.1393	50/50	22.1393
924261	AB2-070 C O1	3.8212	50/50	3.8212
924262	AB2-070 E O1	24.2207	50/50	24.2207
924471	AB2-096	18.7544	Adder	22.06
925581	AC1-033 C	0.9699	Adder	1.14
925582	AC1-033 E	6.4929	Adder	7.64
925771	AC1-053 C	3.8568	50/50	3.8568
925772	AC1-053 E	25.8112	50/50	25.8112
926431	AC1-114	1.1133	Adder	1.31
926821	AC1-168 C O1	0.7021	Adder	0.83
926822	AC1-168 E O1	4.7116	Adder	5.54
926841	AC1-171 C O1	1.0395	50/50	1.0395
926842	AC1-171 E O1	6.9433	50/50	6.9433
927201	AC1-214 C O1	1.3986	Adder	1.65
927202	AC1-214 E O1	4.4460	Adder	5.23
927511	AC1-113 1	0.5567	Adder	0.65
927521	AC1-113 2	0.5567	Adder	0.65
930481	AB1-089	30.3080	Adder	35.66
930741	AB1-122 1O1	30.2194	Adder	35.55
932881	AC2-115 1	1.1133	Adder	1.31
932891	AC2-115 2	1.1133	Adder	1.31
932921	AC2-116	0.3897	Adder	0.46
933911	AD1-013 C	0.8324	Adder	0.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
933912	AD1-013 E	1.3297	Adder	1.56
933931	AD1-016 C	0.3978	Adder	0.47
933932	AD1-016 E	0.6491	Adder	0.76
934051	AD1-031 C O1	1.9693	Adder	2.32
934052	AD1-031 E O1	3.2131	Adder	3.78
934101	AD1-039 1	2.9615	Adder	3.48
934431	AD1-067 C	0.0601	Adder	0.07
934432	AD1-067 E	0.2529	Adder	0.3
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.4384	Adder	0.52
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.7153	Adder	0.84
934701	AD1-098 C O1	3.1831	Adder	3.74
934702	AD1-098 E O1	2.3240	Adder	2.73
934871	AD1-116 C	0.3984	Adder	0.47
934872	AD1-116 E	0.6500	Adder	0.76
934971	AD1-129 C	0.4056	Adder	0.48
934972	AD1-129 E	0.2704	Adder	0.32
935001	AD1-133 C O1	12.2446	Adder	14.41
935002	AD1-133 E O1	8.1631	Adder	9.6
935141	AD1-148	7.4113	50/50	7.4113
936291	AD2-038 C O1	1.1607	Adder	1.37
936292	AD2-038 E O1	7.7681	Adder	9.14
936511	AD2-066 C O1	4.0625	Adder	4.78
936512	AD2-066 E O1	2.7083	Adder	3.19
936771	AD2-100 C	22.4645	50/50	22.4645
936772	AD2-100 E	14.9764	50/50	14.9764
936791	AD2-102 C	6.7901	Adder	7.99
936792	AD2-102 E	4.5268	Adder	5.33
936971	AD2-131 C	1.4798	50/50	1.4798
936972	AD2-131 E	7.4347	50/50	7.4347
937001	AD2-134 C	1.2522	Adder	1.47
937002	AD2-134 E	5.1728	Adder	6.09
937211	AD2-159 C	4.8853	50/50	4.8853
937212	AD2-159 E	22.8722	50/50	22.8722
937311	AD2-172 C	1.2117	Adder	1.43
937312	AD2-172 E	1.6732	Adder	1.97
937531	AD2-214 C	2.7588	Adder	3.25
937532	AD2-214 E	1.8392	Adder	2.16
938851	AE1-113 C	3.8406	Adder	4.52
938852	AE1-113 E	13.6167	Adder	16.02
938861	AE1-114 C O1	2.0247	Adder	2.38
938862	AE1-114 E O1	6.9079	Adder	8.13
939051	AE1-134 1	0.7736	Adder	0.91
939061	AE1-134 2	0.7736	Adder	0.91
939321	AE1-163 C O1	2.9167	Adder	3.43
939322	AE1-163 E O1	17.9172	Adder	21.08
939401	AE1-172 C O1	2.9603	Adder	3.48
939402	AE1-172 E O1	13.8898	Adder	16.34
939741	AE1-205 C O1	8.5504	50/50	8.5504
939742	AE1-205 E O1	11.8076	50/50	11.8076
940101	AE1-252 C O1	5.9471	Adder	7.0
940102	AE1-252 E O1	3.9647	Adder	4.66

Bus #	Bus	Gendoliv MW Impact	Type	Full MW Impact
940501	AE2-035 C	1.2117	Adder	1.43
940502	AE2-035 E	1.6732	Adder	1.97
941131	AE2-107 C	3.1503	Adder	3.71
941132	AE2-107 E	2.1002	Adder	2.47
941343	AE2-130 BAT	31.8120	50/50	31.8120
941731	AE2-173 O1	5.0895	50/50	5.0895
942111	AE2-223 C	1.9849	50/50	1.9849
942112	AE2-223 E	13.2836	50/50	13.2836
942421	AE2-255 C O1	1.4548	Adder	1.71
942422	AE2-255 E O1	4.3643	Adder	5.13
942481	AE2-261 C	31.0577	50/50	31.0577
942482	AE2-261 E	20.7052	50/50	20.7052
942602	AE2-276 BAT	14.0105	50/50	14.0105
942651	AE2-281 C O1	0.4167	Adder	0.49
942652	AE2-281 E O1	2.5596	Adder	3.01
942991	AE2-321 C	3.5189	Adder	4.14
942992	AE2-321 E	1.7332	Adder	2.04
943381	AF1-009 C	0.2754	Adder	0.32
943382	AF1-009 E	1.1014	Adder	1.3
943401	AF1-011 C	0.7389	Adder	0.87
943402	AF1-011 E	1.2404	Adder	1.46
943411	AF1-012 C	6.4046	Adder	7.53
943412	AF1-012 E	4.2697	Adder	5.02
943801	AF1-048 C	1.6450	Adder	1.94
943802	AF1-048 E	1.0966	Adder	1.29
943921	AF1-060	0.5966	Adder	0.7
944202	AF1-088 FTWR	280.2100	50/50	280.2100
944221	AF1-090 C O1	6.8094	50/50	6.8094
944222	AF1-090 E O1	31.8806	50/50	31.8806
945871	AF1-252 O1	12.0713	50/50	12.0713
945881	AF1-253 O1	8.3570	50/50	8.3570
946151	AF1-280 C O1	8.4217	Adder	9.91
946152	AF1-280 E O1	3.8727	Adder	4.56
946161	AF1-281 C	0.1844	Adder	0.22
946162	AF1-281 E	1.0450	Adder	1.23
946321	AF1-296 C O1	2.6152	Adder	3.08
946322	AF1-296 E O1	12.2439	Adder	14.4
946501	AF1-314 C	2.1528	Adder	2.53
946502	AF1-314 E	10.0791	Adder	11.86
946531	AF1-317 C O1	1.2199	Adder	1.44
946541	AF1-318 C O1	3.8549	Adder	4.54
946542	AF1-318 E O1	18.0499	Adder	21.24
946661	AF1-330 C	0.8584	Adder	1.01
946662	AF1-330 E	0.1884	Adder	0.22
946671	AF1-331	1.0810	Adder	1.27
955131	J991	25.9737	PJM External (MISO)	25.9737
957021	AF2-003 C O1	1.5955	Adder	3.54
957022	AF2-003 E O1	7.4696	Adder	16.58
957381	AF2-032 C	2.3285	50/50	2.3285
957382	AF2-032 E	1.0957	50/50	1.0957
957471	AF2-041 C	5.3746	Adder	11.93
957472	AF2-041 E	3.5831	Adder	7.95

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957751	AF2-069 C	0.0858	Adder	0.19
957752	AF2-069 E	0.2770	Adder	0.61
957761	AF2-070 C	0.1209	Adder	0.27
957762	AF2-070 E	0.5872	Adder	1.3
958341	AF2-128 C O1	0.5406	Adder	1.2
958342	AF2-128 E O1	2.5309	Adder	5.62
958481	AF2-142 C	2.5004	Adder	5.55
958482	AF2-142 E	1.6669	Adder	3.7
958491	AF2-143 C	2.8394	Adder	6.3
958492	AF2-143 E	1.8929	Adder	4.2
958911	AF2-182	5.8644	Adder	13.02
958921	AF2-183 C	1.0426	Adder	2.31
958922	AF2-183 E	1.5638	Adder	3.47
959081	AF2-199 C	1.7915	Adder	3.98
959082	AF2-199 E	1.1944	Adder	2.65
959091	AF2-200 C	3.5831	Adder	7.95
959092	AF2-200 E	2.3887	Adder	5.3
959101	AF2-201 C O1	1.5718	Adder	3.49
959102	AF2-201 E O1	4.5136	Adder	10.02
959341	AF2-225 C	6.4128	50/50	6.4128
959342	AF2-225 E	8.8557	50/50	8.8557
959351	AF2-226 C	0.5502	Adder	1.22
959352	AF2-226 E	0.8252	Adder	1.83
959611	AF2-252 C	2.5708	50/50	2.5708
959612	AF2-252 E	3.8562	50/50	3.8562
959761	AF2-267 C O1	1.1351	Adder	2.52
959762	AF2-267 E O1	5.3142	Adder	11.8
960141	AF2-305	1.3521	50/50	1.3521
960261	AF2-317	2.3716	50/50	2.3716
960281	AF2-319 C	0.5502	Adder	1.22
960282	AF2-319 E	0.8252	Adder	1.83
960551	AF2-346 C	1.4548	Adder	3.23
960552	AF2-346 E	0.9698	Adder	2.15
960581	AF2-349 C	5.0843	Adder	11.29
960582	AF2-349 E	3.3896	Adder	7.52
960611	AF2-352 C	2.5708	50/50	2.5708
960612	AF2-352 E	3.8562	50/50	3.8562
960623	AF2-353 BAT	31.8120	50/50	31.8120
960721	AF2-363 C O1	1.3562	Adder	3.01
960722	AF2-363 E O1	0.9042	Adder	2.01
960751	AF2-366 C O1	1.5712	Adder	3.49
960752	AF2-366 E O1	1.0474	Adder	2.32
961011	AF2-392 C O1	1.1727	Adder	2.6
961012	AF2-392 E O1	5.4902	Adder	12.19
961021	AF2-393 O1	1.9989	Adder	4.44
961031	AF2-394 O1	1.3326	Adder	2.96
990901	L-005 E	9.1810	Adder	10.8
WEC	WEC	2.0201	Confirmed LTF	2.0201
CPL	CPL	0.5953	Confirmed LTF	0.5953
CBM-W2	CBM-W2	70.4668	Confirmed LTF	70.4668
NY	NY	0.4468	Confirmed LTF	0.4468
CBM-W1	CBM-W1	61.5742	Confirmed LTF	61.5742

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TVA	TVA	7.7938	Confirmed LTF	7.7938
O-066	O-066	4.9930	Confirmed LTF	4.9930
CBM-S2	CBM-S2	8.6238	Confirmed LTF	8.6238
CBM-S1	CBM-S1	36.9257	Confirmed LTF	36.9257
G-007	G-007	0.7706	Confirmed LTF	0.7706
MADISON	MADISON	25.0367	Confirmed LTF	25.0367
MEC	MEC	15.7613	Confirmed LTF	15.7613
BLUEG	BLUEG	2.7151	Confirmed LTF	2.7151
TRIMBLE	TRIMBLE	1.0039	Confirmed LTF	1.0039

11.6.9 Index 9

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
96705927	957470	AF2-041 TAP	CE	270730	ELECT JCT; B	CE	1	COMED_P4_006-45-BT3-4__	breaker	1656.0	136.47	137.96	DC	54.5

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	EASYR;U1 E	27.9407	Adder	32.87
274860	EASYR;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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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	61.6410	50/50	61.6410
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

11.7 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
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Active
AB2-047	Brokaw-Pontiac Midpoint	Engineering and Procurement
AB2-070	Brokaw-Lanesville	Active
AB2-096	Silver Lake-Cherry Valley	Active
AB2-191	Mendota Hills	In Service
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
AC1-168	Kewanee-Streator	Active
AC1-171	Powerton	Active
AC1-214	Crescent Ridge	Engineering and Procurement
AC2-115	Rockford	Active
AC2-116	Rockford II	Active
AC2-156	Sandwich 34.5kV	Active
AD1-013	Twombly Road 138kV	Active

Queue Number	Project Name	Status
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
AD1-116	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
AD2-066	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
AD2-214	Rock Falls-Garden Plains	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
AE1-172	Loretto-Wilton Center	Active
AE1-205	McLean 345 kV	Active
AE1-252	Loretto-Wilton Center	Active
AE2-035	Lena 138 kV	Active
AE2-107	Haumesser Road 138 kV	Active
AE2-130	Rockport 765 kV	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
AF1-200	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

Queue Number	Project Name	Status
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
AF2-032	Kincaid	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-069	Crescent Ridge 138 kV	Active
AF2-070	Crescent Ridge 138 kV	Active
AF2-128	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
AF2-352	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
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
X2-022	Brokaw-Lanesville	In Service
Z1-106	West Chicago 34kV	In Service
Z1-108	McHenry 34kV	In Service
Z2-087	Pontiac MidPoint-Brokaw 345kV	In Service
J041	MISO	MISO
J1000	MISO	MISO
J1050	MISO	MISO
J1072	MISO	MISO
J1084	MISO	MISO
J1110	MISO	MISO
J1128	MISO	MISO

Queue Number	Project Name	Status
J1131	MISO	MISO
J1135	MISO	MISO
J1154	MISO	MISO
J1174	MISO	MISO
J1175	MISO	MISO
J1176	MISO	MISO
J1181	MISO	MISO
J1188	MISO	MISO
J344	MISO	MISO
J390	MISO	MISO
J407	MISO	MISO
J438	MISO	MISO
J447	MISO	MISO
J449	MISO	MISO
J455	MISO	MISO
J475	MISO	MISO
J495	MISO	MISO
J504	MISO	MISO
J514	MISO	MISO
J523	MISO	MISO
J524	MISO	MISO
J530	MISO	MISO
J534	MISO	MISO
J535	MISO	MISO
J541	MISO	MISO
J555	MISO	MISO
J584	MISO	MISO
J590	MISO	MISO
J598	MISO	MISO
J614	MISO	MISO
J760	MISO	MISO
J807	MISO	MISO
J818	MISO	MISO
J819	MISO	MISO
J836	MISO	MISO
J844	MISO	MISO
J850	MISO	MISO
J864	MISO	MISO
J873	MISO	MISO
J877	MISO	MISO
J885	MISO	MISO
J898	MISO	MISO
J927	MISO	MISO
J952	MISO	MISO
J959	MISO	MISO
J963	MISO	MISO
J967	MISO	MISO
J981	MISO	MISO
J982	MISO	MISO
J991	MISO	MISO

11.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
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_P4_155-45-BT6-7__	CONTINGENCY 'COMED_P4_155-45-BT6-7__' TRIP BRANCH FROM BUS 275204 TO BUS 270828 CKT 1 / NELSO;4M 138 NELSO; B 345 TRIP BRANCH FROM BUS 275204 TO BUS 272094 CKT 1 / NELSO;4M 138 NELSO; B 138 TRIP BRANCH FROM BUS 275204 TO BUS 275304 CKT 1 / NELSO;4M 138 NELSO;4C 34.5 TRIP BRANCH FROM BUS 270828 TO BUS 946160 CKT 1 / NELSO; B 345 AF1-281 TAP 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;0T 345 END
COMED_P2-1_094-L11323__	CONTINGENCY 'COMED_P2-1_094-L11323__' TRIP BRANCH FROM BUS 271680 TO BUS 272756 CKT 1 / HAUME; B 138 W DEK;3T 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-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_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

Contingency Name	Contingency Definition
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_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
AEP_P4_#3128_05EUGENE 345_A2	CONTINGENCY 'AEP_P4_#3128_05EUGENE 345_A2' OPEN BRANCH FROM BUS 243221 TO BUS 249504 CKT 1 / 243221 05EUGENE 345 249504 08CAYSUB 345 1 OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END
COMED_P7_138-L11106_B-R_+_345-L15502_B-R	CONTINGENCY 'COMED_P7_138-L11106_B-R_+_345-L15502_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 TRIP BRANCH FROM BUS 270828 TO BUS 943410 CKT 1 / NELSON ; B 345 AF1-012 END
COMED_P1-2_345-L97116__R_FSA	CONTINGENCY 'COMED_P1-2_345-L97116__R_FSA' TRIP BRANCH FROM BUS 960580 TO BUS 270883 CKT 1 / U3-021 SILVE; R 345 END
COMED_P2-1_113-L11323__	CONTINGENCY 'COMED_P2-1_113-L11323__' TRIP BRANCH FROM BUS 272730 TO BUS 272728 CKT 1 / WATER;3B 138 WATER; B 138 END

Contingency Name	Contingency Definition
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_P2-1_186-L16914__	CONTINGENCY 'COMED_P2-1_186-L16914__' TRIP BRANCH FROM BUS 272365 TO BUS 272516 CKT 1 / H440 ;RT 138 STEWA; B 138 END
COMED_P1-2_138-L11106_B-R	CONTINGENCY 'COMED_P1-2_138-L11106_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 END
Base Case	
COMED_P1-2_345-L15501_B-R-A	CONTINGENCY 'COMED_P1-2_345-L15501_B-R-A' TRIP BRANCH FROM BUS 270828 TO BUS 946160 CKT 1 / NELSO; B 345 AF1-281 TAP 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

Contingency Name	Contingency Definition
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
AEP_P1-2_#286	CONTINGENCY 'AEP_P1-2_#286' OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END

12 Short Circuit Analysis - Primary POI

The following breakers are overdutied:

None

12.1 System Reinforcements - Short Circuit

None

13 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AF2-392 was evaluated as a 200.0 MW (Capacity 35.2 MW) injection at the Nelson 138 kV substation in the ComEd area. Project AF2-392 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-392 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

13.1 Generation Deliverability

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

None

13.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
96706088	271331	DIXON ;8R	138.0	CE	271333	DIXON ; R	138.0	CE	1	COMED_P4_155-38-TR84__	breaker	421.0	87.35	102.38	DC	63.28

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
96706099	272097	NELSON ;RT	138.0	CE	271331	DIXON ;8R	138.0	CE	1	COMED_P4_155-38-L15511_	breaker	485.0	94.74	105.82	DC	53.7
96706100	272097	NELSON ;RT	138.0	CE	271331	DIXON ;8R	138.0	CE	1	COMED_P4_155-38-TR84_	breaker	440.0	87.85	102.23	DC	63.28

13.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
96705999	270678	BYRON ;B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT7-8_	breaker	1441.0	122.19	122.99	DC	24.85
96706001	270828	NELSON ;B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P4_155-45-BT6-7_	breaker	1656.0	118.39	121.51	DC	51.52
96706087	271331	DIXON ;8R	138.0	CE	271333	DIXON ;R	138.0	CE	1	COMED_P4_155-38-TR81_	breaker	421.0	104.85	117.6	DC	53.7
96706025	271898	LANCASTER; BT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	COMED_P4_006-45-BT3-4_	breaker	321.0	117.92	119.77	DC	13.17
96706098	272097	NELSON ;RT	138.0	CE	271331	DIXON ;8R	138.0	CE	1	COMED_P4_155-38-TR81_	breaker	440.0	104.62	116.82	DC	53.7
96707316	272728	WATERMAN ;B	138.0	CE	272445	SANDWICH ; R	138.0	CE	1	COMED_P7_138-L11106-B-R_+ 345-L15502-B-R	tower	331.0	127.21	128.95	DC	12.74
96705950	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P4_155-45-BT6-7_	breaker	1656.0	128.75	130.7	DC	51.52
95531041	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	AEP_P4_#3128_05EU GENE 345_A2	breaker	1466.0	149.93	149.94	DC	14.94
96705927	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P4_006-45-BT3-4_	breaker	1656.0	136.48	137.91	DC	52.62

13.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
96706458	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479.0	129.74	130.51	DC	25.18

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
96706460	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operation	1201.0	116.05	116.75	DC	18.42
96706536	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	operation	1201.0	119.39	119.92	DC	14.04
96706537	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P 2-1_111-L11120	operation	1479.0	114.49	114.94	DC	14.8
96706466	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	128.55	129.31	DC	25.18
96706468	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	operation	1201.0	118.32	119.02	DC	18.42
96706567	270770	GOODINGS ;4B	345.0	CE	270766	GOODING S;3B	345.0	CE	1	COMED_P 1-2_345-L11613AB-S	operation	1802.0	113.45	113.7	DC	19.7
96706562	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P 1-2_345-L15501_B-R-A	operation	1656.0	116.27	119.49	DC	52.88
96706565	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	105.59	108.37	DC	38.85
96706622	270828	NELSON ; B	345.0	CE	946160	AF1-281 TAP	345.0	CE	1	COMED_P 1-2_345-L15502_B-R-B	operation	1479.0	106.25	109.92	DC	57.06
96706602	271558	GLIDDEN ; B	138.0	CE	271560	GLIDDEN ;BT	138.0	CE	1	COMED_P 2-1_113-L11323__	operation	386.0	111.45	112.86	DC	12.06
96706284	271836	KEWANEE ;11	138.0	CE	271837	KEWANEE ;12	138.0	CE	1	Base Case	operation	190.0	98.08	100.51	DC	10.24
96706623	271898	LANCASTER; BT	138.0	CE	271897	LANCASTE R; R	138.0	CE	1	COMED_P 1-2_345-L0627__B-R	operation	321.0	107.08	108.93	DC	13.17
96706656	272002	MCGIRR RD;	138.0	CE	272365	ESS H440 ;RT	138.0	CE	1	Base Case	operation	351.0	102.5	104.54	DC	15.88
96706380	272365	ESS H440 ;RT	138.0	CE	272363	ESS H440 ; R	138.0	CE	1	COMED_P 2-1_186-L16914	operation	197.0	152.66	155.65	DC	13.06
96706557	272728	WATERMAN ; B	138.0	CE	272445	SANDWIC H ; R	138.0	CE	1	COMED_P 1-2_138-L11106_B-R	operation	309.0	113.41	114.98	DC	10.76
96706604	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	113.13	114.6	DC	56.31
96706670	930480	AB1-089 TAP	345.0	CE	270916	WAYNE ; B	345.0	CE	1	COMED_P 1-2_345-L97116__R_FSA	operation	2058.0	103.45	104.06	DC	26.98
96706672	930480	AB1-089 TAP	345.0	CE	270916	WAYNE ; B	345.0	CE	1	Base Case	operation	1679.0	99.42	100.01	DC	21.32
96706476	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	COMED_P 1-2_345-L15501_B-R-A	operation	1656.0	127.62	128.86	DC	52.88
96706479	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	Base Case	operation	1334.0	113.06	115.93	DC	38.85
96706546	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	114.78	117.92	DC	57.06
95531320	956820	J1180 TAP	345.0	AMIL	247712	OSSULLIVAN	345.0	AEP	1	AEP_P1-2_#286	operation	1466.0	138.24	138.25	DC	15.2

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
96706422	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	136.53	139.43	DC	38.85
96706423	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P1-2_345-L0627__B-R	operation	1656.0	135.87	137.3	DC	52.62
96706438	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R	operation	1479.0	139.24	140.0	DC	25.18
96706440	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	130.61	131.3	DC	18.42

13.5 Flow Gate Details - Secondary POI

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

13.5.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
96706087	271331	DIXON ;8R	CE	271333	DIXON ; R	CE	1	COMED_P4_155-38-TR81__	breaker	421.0	104.85	117.6	DC	53.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
276156	O-029 C	0.3192	50/50	0.3192
276157	O-029 C	0.3451	50/50	0.3451
276158	O-029 C	0.6297	50/50	0.6297
293513	O-009 C1	0.5895	50/50	0.5895
293514	O-009 C2	0.2990	50/50	0.2990
293515	O-009 C3	0.3307	50/50	0.3307
293516	O-009 E1	13.6761	50/50	13.6761
293517	O-009 E2	6.9464	50/50	6.9464

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293518	O-009 E3	7.6499	50/50	7.6499
293715	O-029 E	14.6213	50/50	14.6213
293716	O-029 E	8.0166	50/50	8.0166
293717	O-029 E	7.3681	50/50	7.3681
293771	O-035 E	2.8068	Adder	3.3
294401	BSHIL;1U E	4.5247	Adder	5.32
294410	BSHIL;2U E	4.5247	Adder	5.32
925581	AC1-033 C	0.7411	Adder	0.87
925582	AC1-033 E	4.9617	Adder	5.84
927201	AC1-214 C O1	0.9008	Adder	1.06
927202	AC1-214 E O1	2.8637	Adder	3.37
934051	AD1-031 C O1	1.5063	Adder	1.77
934052	AD1-031 E O1	2.4576	Adder	2.89
937531	AD2-214 C	4.2306	50/50	4.2306
937532	AD2-214 E	2.8204	50/50	2.8204
943383	AF1-009 BAT	6.8187	50/50	6.8187
943401	AF1-011 C	1.8670	50/50	1.8670
943402	AF1-011 E	3.1340	50/50	3.1340
943922	AF1-060 BAT	2.0096	50/50	2.0096
946321	AF1-296 C O1	2.3738	Adder	2.79
946322	AF1-296 E O1	11.1134	Adder	13.07
957751	AF2-069 C	0.0553	Adder	0.12
957752	AF2-069 E	0.1784	Adder	0.4
957761	AF2-070 C	0.0779	Adder	0.17
957762	AF2-070 E	0.3782	Adder	0.84
961011	AF2-392 C O2	9.4508	50/50	9.4508
961012	AF2-392 E O2	44.2472	50/50	44.2472
961021	AF2-393 O2	16.1094	50/50	16.1094
961031	AF2-394 O2	10.7396	50/50	10.7396
990901	L-005 E	5.9435	Adder	6.99
LGEE	LGEE	0.0593	Confirmed LTF	0.0593
CPLE	CPLE	0.0926	Confirmed LTF	0.0926
G-007A	G-007A	0.0863	Confirmed LTF	0.0863
VFT	VFT	0.2322	Confirmed LTF	0.2322
CBM-W2	CBM-W2	4.2179	Confirmed LTF	4.2179
CBM-W1	CBM-W1	2.5020	Confirmed LTF	2.5020
TVA	TVA	0.5026	Confirmed LTF	0.5026
CBM-S2	CBM-S2	0.9942	Confirmed LTF	0.9942
CBM-S1	CBM-S1	2.6582	Confirmed LTF	2.6582
MADISON	MADISON	1.3810	Confirmed LTF	1.3810
MEC	MEC	2.5742	Confirmed LTF	2.5742

13.5.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96706098	272097	NELSON ;RT	CE	271331	DIXON ;8R	CE	1	COMED_P4_155-38-TR81_	breaker	440.0	104.62	116.82	DC	53.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
276156	O-029 C	0.3192	50/50	0.3192
276157	O-029 C	0.3451	50/50	0.3451
276158	O-029 C	0.6297	50/50	0.6297
293513	O-009 C1	0.5895	50/50	0.5895
293514	O-009 C2	0.2990	50/50	0.2990
293515	O-009 C3	0.3307	50/50	0.3307
293516	O-009 E1	13.6761	50/50	13.6761
293517	O-009 E2	6.9464	50/50	6.9464
293518	O-009 E3	7.6499	50/50	7.6499
293715	O-029 E	14.6213	50/50	14.6213
293716	O-029 E	8.0166	50/50	8.0166
293717	O-029 E	7.3681	50/50	7.3681
293771	O-035 E	2.8068	Adder	3.3
294401	BSHIL;1U E	4.5247	Adder	5.32
294410	BSHIL;2U E	4.5247	Adder	5.32
925581	AC1-033 C	0.7411	Adder	0.87
925582	AC1-033 E	4.9617	Adder	5.84
927201	AC1-214 C O1	0.9008	Adder	1.06
927202	AC1-214 E O1	2.8637	Adder	3.37
934051	AD1-031 C O1	1.5063	Adder	1.77
934052	AD1-031 E O1	2.4576	Adder	2.89
937531	AD2-214 C	4.2306	50/50	4.2306
937532	AD2-214 E	2.8204	50/50	2.8204
943383	AF1-009 BAT	6.8187	50/50	6.8187
943401	AF1-011 C	1.8670	50/50	1.8670
943402	AF1-011 E	3.1340	50/50	3.1340
943922	AF1-060 BAT	2.0096	50/50	2.0096
946321	AF1-296 C O1	2.3738	Adder	2.79
946322	AF1-296 E O1	11.1134	Adder	13.07
957751	AF2-069 C	0.0553	Adder	0.12
957752	AF2-069 E	0.1784	Adder	0.4
957761	AF2-070 C	0.0779	Adder	0.17
957762	AF2-070 E	0.3782	Adder	0.84
961011	AF2-392 C O2	9.4508	50/50	9.4508
961012	AF2-392 E O2	44.2472	50/50	44.2472
961021	AF2-393 O2	16.1094	50/50	16.1094
961031	AF2-394 O2	10.7396	50/50	10.7396
990901	L-005 E	5.9435	Adder	6.99
LGEE	LGEE	0.0593	Confirmed LTF	0.0593
CPL	CPL	0.0926	Confirmed LTF	0.0926
G-007A	G-007A	0.0863	Confirmed LTF	0.0863
VFT	VFT	0.2322	Confirmed LTF	0.2322
CBM-W2	CBM-W2	4.2179	Confirmed LTF	4.2179
CBM-W1	CBM-W1	2.5020	Confirmed LTF	2.5020
TVA	TVA	0.5026	Confirmed LTF	0.5026
CBM-S2	CBM-S2	0.9942	Confirmed LTF	0.9942
CBM-S1	CBM-S1	2.6582	Confirmed LTF	2.6582
MADISON	MADISON	1.3810	Confirmed LTF	1.3810
MEC	MEC	2.5742	Confirmed LTF	2.5742

13.5.3 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96705999	270678	BYRON ; B	CE	270694	CHERRY VA; B	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	122.19	122.99	DC	24.85

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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957471	AF2-041 C	8.1390	Adder	18.07
957472	AF2-041 E	5.4260	Adder	12.04
958911	AF2-182	22.4311	Adder	49.79
958921	AF2-183 C	3.9878	Adder	8.85
958922	AF2-183 E	5.9816	Adder	13.28
959081	AF2-199 C O2	2.7130	Adder	6.02
959082	AF2-199 E O2	1.8087	Adder	4.01
959091	AF2-200 C O2	5.4260	Adder	12.04
959092	AF2-200 E O2	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 O2	1.9706	Adder	4.37
961012	AF2-392 E O2	9.2261	Adder	20.48
961021	AF2-393 O2	3.3590	Adder	7.46
961031	AF2-394 O2	2.2393	Adder	4.97
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

13.5.4 Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96706001	270828	NELSON ; B	CE	943410	AF1-012 TAP	CE	1	COMED_P4_155-45-BT6-7__	breaker	1656.0	118.39	121.51	DC	51.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	39.5685	50/50	39.5685
274663	QUAD CITI;2U	39.6435	50/50	39.6435
274699	CORDOVA ;1C	6.9583	50/50	6.9583
274700	CORDOVA ;2C	6.9583	50/50	6.9583
274701	CORDOVA ;1S	7.8280	50/50	7.8280
274715	NELSON EC;1C	10.1204	50/50	10.1204
274716	NELSON EC;1S	7.3843	50/50	7.3843
274717	NELSON EC;2C	10.1986	50/50	10.1986
274718	NELSON EC;2S	7.4505	50/50	7.4505
274848	CAMPGROVE;RU	0.5476	50/50	0.5476
274877	BISHOP HL;1U	0.4062	50/50	0.4062

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274878	BISHOP HL;2U	0.4062	50/50	0.4062
276156	O-029 C	0.4620	50/50	0.4620
276157	O-029 C	0.4994	50/50	0.4994
276158	O-029 C	0.9114	50/50	0.9114
276160	W4-084	0.1429	50/50	0.1429
290051	GSG-6; E	5.4542	Adder	6.42
293513	O-009 C1	0.8532	50/50	0.8532
293514	O-009 C2	0.4328	50/50	0.4328
293515	O-009 C3	0.4786	50/50	0.4786
293516	O-009 E1	19.7938	50/50	19.7938
293517	O-009 E2	10.0537	50/50	10.0537
293518	O-009 E3	11.0719	50/50	11.0719
293715	O-029 E	21.1618	50/50	21.1618
293716	O-029 E	11.6027	50/50	11.6027
293717	O-029 E	10.6641	50/50	10.6641
293771	O-035 E	4.8987	Adder	5.76
294401	BSHIL;1U E	9.4192	50/50	9.4192
294410	BSHIL;2U E	9.4192	50/50	9.4192
919221	AA1-146	9.4409	50/50	9.4409
919581	AA2-030	54.7318	50/50	54.7318
925581	AC1-033 C	1.5428	50/50	1.5428
925582	AC1-033 E	10.3284	50/50	10.3284
927201	AC1-214 C O1	1.5722	Adder	1.85
927202	AC1-214 E O1	4.9979	Adder	5.88
934051	AD1-031 C O1	3.1335	50/50	3.1335
934052	AD1-031 E O1	5.1125	50/50	5.1125
934431	AD1-067 C	0.0685	Adder	0.08
934432	AD1-067 E	0.2880	Adder	0.34
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5466	Adder	0.64
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.8919	Adder	1.05
934701	AD1-098 C O1	4.0061	Adder	4.71
934702	AD1-098 E O1	2.9248	Adder	3.44
937001	AD2-134 C	1.4258	Adder	1.68
937002	AD2-134 E	5.8900	Adder	6.93
937531	AD2-214 C	10.3069	50/50	10.3069
937532	AD2-214 E	6.8713	50/50	6.8713
938861	AE1-114 C O1	4.6923	50/50	4.6923
938862	AE1-114 E O1	16.0092	50/50	16.0092
939051	AE1-134 1	4.2530	50/50	4.2530
939061	AE1-134 2	4.2530	50/50	4.2530
943381	AF1-009 C	0.3465	Adder	0.41
943382	AF1-009 E	1.3862	Adder	1.63
943401	AF1-011 C	2.7022	50/50	2.7022
943402	AF1-011 E	4.5359	50/50	4.5359
946321	AF1-296 C O1	8.8845	50/50	8.8845
946322	AF1-296 E O1	41.5953	50/50	41.5953
946533	AF1-317 BAT	28.3045	50/50	28.3045
950181	J407 C	3.0540	PJM External (MISO)	3.0540
950182	J407 E	12.2160	PJM External (MISO)	12.2160
950401	J041 C	1.6591	PJM External (MISO)	1.6591
950402	J041 E	6.6362	PJM External (MISO)	6.6362

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
950471	J438 C	3.3990	PJM External (MISO)	3.3990
950472	J438 E	13.5959	PJM External (MISO)	13.5959
950501	J449 C	3.2789	PJM External (MISO)	3.2789
950502	J449 E	13.1155	PJM External (MISO)	13.1155
950522	J455 E	21.7650	PJM External (MISO)	21.7650
951031	J344 C	3.0711	PJM External (MISO)	3.0711
951032	J344 E	9.2132	PJM External (MISO)	9.2132
951221	J475 C	3.7552	PJM External (MISO)	3.7552
951222	J475 E	15.0208	PJM External (MISO)	15.0208
951381	J504	5.8315	PJM External (MISO)	5.8315
951421	J514	3.4866	PJM External (MISO)	3.4866
951441	J523 C	2.2326	PJM External (MISO)	2.2326
951442	J523 E	1.4884	PJM External (MISO)	1.4884
951451	J524 C	4.5432	PJM External (MISO)	4.5432
951452	J524 E	3.0288	PJM External (MISO)	3.0288
951511	J530 C	5.5515	PJM External (MISO)	5.5515
951512	J530 E	22.2060	PJM External (MISO)	22.2060
951541	J534 C	3.5945	PJM External (MISO)	3.5945
951542	J534 E	14.3780	PJM External (MISO)	14.3780
951551	J535 C	3.0538	PJM External (MISO)	3.0538
951552	J535 E	12.2153	PJM External (MISO)	12.2153
951821	J541 C	4.4784	PJM External (MISO)	4.4784
951822	J541 E	24.2296	PJM External (MISO)	24.2296
951841	J555 C	2.0503	PJM External (MISO)	2.0503
951842	J555 E	11.0929	PJM External (MISO)	11.0929
952021	J614 C	0.7591	PJM External (MISO)	0.7591
952022	J614 E	4.1071	PJM External (MISO)	4.1071
952211	J590 C	1.0186	PJM External (MISO)	1.0186
952212	J590 E	5.5109	PJM External (MISO)	5.5109
952231	J598 C (MISO Withdrawn : 1/16/2020)	3.3588	PJM External (MISO)	3.3588
952232	J598 E (MISO Withdrawn : 1/16/2020)	18.1722	PJM External (MISO)	18.1722
953011	J885 C	0.7623	PJM External (MISO)	0.7623
953012	J885 E	4.1241	PJM External (MISO)	4.1241
953082	J836 E	14.4980	PJM External (MISO)	14.4980
953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9707	PJM External (MISO)	1.9707
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.6623	PJM External (MISO)	10.6623
954091	J873 C	3.3287	PJM External (MISO)	3.3287
954092	J873 E	18.0093	PJM External (MISO)	18.0093
954131	J877	18.1375	PJM External (MISO)	18.1375
954301	J898 C	1.1383	PJM External (MISO)	1.1383
954302	J898 E	6.1587	PJM External (MISO)	6.1587
954521	J927 C	1.1322	PJM External (MISO)	1.1322
954522	J927 E	6.1258	PJM External (MISO)	6.1258
954702	J844 E	14.1855	PJM External (MISO)	14.1855
954792	J952 E	6.8510	PJM External (MISO)	6.8510
954861	J959 C	2.3136	PJM External (MISO)	2.3136
954862	J959 E	12.5169	PJM External (MISO)	12.5169
954901	J963	1.4162	PJM External (MISO)	1.4162
954931	J967 C	1.8343	PJM External (MISO)	1.8343

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
954932	J967 E	9.9242	PJM External (MISO)	9.9242
955051	J981 C	3.8975	PJM External (MISO)	3.8975
955052	J981 E	21.0865	PJM External (MISO)	21.0865
955221	J1000	4.0255	PJM External (MISO)	4.0255
955661	J1050 C	2.7961	PJM External (MISO)	2.7961
955662	J1050 E	15.1274	PJM External (MISO)	15.1274
955871	J1072	11.7585	PJM External (MISO)	11.7585
955971	J1084	31.8495	PJM External (MISO)	31.8495
956231	J1110	7.3510	PJM External (MISO)	7.3510
956381	J1128	11.1660	PJM External (MISO)	11.1660
956411	J1131	17.0520	PJM External (MISO)	17.0520
956431	J1135	4.1005	PJM External (MISO)	4.1005
956761	J1174	23.2980	PJM External (MISO)	23.2980
956771	J1175 C	3.6345	PJM External (MISO)	3.6345
956772	J1175 E	19.6635	PJM External (MISO)	19.6635
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8415	PJM External (MISO)	1.8415
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.9630	PJM External (MISO)	9.9630
956831	J1181 C	3.0292	PJM External (MISO)	3.0292
956832	J1181 E	16.3888	PJM External (MISO)	16.3888
957751	AF2-069 C	0.0965	Adder	0.21
957752	AF2-069 E	0.3114	Adder	0.69
957761	AF2-070 C	0.1360	Adder	0.3
957762	AF2-070 E	0.6600	Adder	1.47
961011	AF2-392 C O2	9.0679	50/50	9.0679
961012	AF2-392 E O2	42.4541	50/50	42.4541
961021	AF2-393 O2	15.4566	50/50	15.4566
961031	AF2-394 O2	10.3044	50/50	10.3044
990901	L-005 E	12.6984	50/50	12.6984
LGEE	LGEE	0.1198	Confirmed LTF	0.1198
CPL	CPL	0.3539	Confirmed LTF	0.3539
CBM-W2	CBM-W2	22.6044	Confirmed LTF	22.6044
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.4254	Confirmed LTF	47.4254
TVA	TVA	2.7342	Confirmed LTF	2.7342
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2830	Confirmed LTF	4.2830
CBM-S1	CBM-S1	13.8791	Confirmed LTF	13.8791
G-007	G-007	0.1404	Confirmed LTF	0.1404
MADISON	MADISON	14.5999	Confirmed LTF	14.5999
MEC	MEC	18.4340	Confirmed LTF	18.4340

13.5.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96706025	271898	LANCASTER;BT	CE	271897	LANCASTER;R	CE	1	COMED_P4_006-45-BT3-4_	breaker	321.0	117.92	119.77	DC	13.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293516	O-009 E1	3.5425	Adder	4.17
293517	O-009 E2	1.7993	Adder	2.12
293518	O-009 E3	1.9815	Adder	2.33
293715	O-029 E	3.7873	Adder	4.46
293716	O-029 E	2.0765	Adder	2.44
293717	O-029 E	1.9086	Adder	2.25
938861	AE1-114 C O1	15.0787	50/50	15.0787
938862	AE1-114 E O1	51.4448	50/50	51.4448
943401	AF1-011 C	0.4836	Adder	0.57
943402	AF1-011 E	0.8118	Adder	0.96
943922	AF1-060 BAT	3.1547	50/50	3.1547
959761	AF2-267 C O2	25.7709	50/50	25.7709
959762	AF2-267 E O2	120.6485	50/50	120.6485
961011	AF2-392 C O2	1.0441	Adder	2.32
961012	AF2-392 E O2	4.8881	Adder	10.85
961021	AF2-393 O2	1.7797	Adder	3.95
961031	AF2-394 O2	1.1864	Adder	2.63
LGEE	LGEE	0.0405	Confirmed LTF	0.0405
CPL	CPL	0.0615	Confirmed LTF	0.0615
G-007A	G-007A	0.0839	Confirmed LTF	0.0839
VFT	VFT	0.2257	Confirmed LTF	0.2257
CBM-W2	CBM-W2	2.4242	Confirmed LTF	2.4242
TVA	TVA	0.3010	Confirmed LTF	0.3010
CBM-S2	CBM-S2	0.6358	Confirmed LTF	0.6358
CBM-S1	CBM-S1	1.6018	Confirmed LTF	1.6018
MADISON	MADISON	0.2460	Confirmed LTF	0.2460
MEC	MEC	1.5270	Confirmed LTF	1.5270

13.5.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96707316	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P7_138-L11106_B-R +_345-L15502_B-R	tower	331.0	127.21	128.95	DC	12.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
272364	ESS H440N ;R	1.2190	50/50	1.2190
274850	MENDOTA H;RU	0.2807	50/50	0.2807
274855	GSG-6 ;RU	1.1820	50/50	1.1820
274872	LEE DEKAL;1U	3.1941	50/50	3.1941
290051	GSG-6; E	27.4100	50/50	27.4100
290108	LEEDK;1U E	77.1560	50/50	77.1560
294763	P-046 E	3.5741	Adder	4.2
916221	AB2-191	0.4534	50/50	0.4534

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
933911	AD1-013 C	4.9916	50/50	4.9916
933912	AD1-013 E	7.9736	50/50	7.9736
934431	AD1-067 C	0.3442	50/50	0.3442
934432	AD1-067 E	1.4472	50/50	1.4472
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.4340	Adder	0.51
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.7081	Adder	0.83
934701	AD1-098 C O1	17.3573	50/50	17.3573
934702	AD1-098 E O1	12.6727	50/50	12.6727
937001	AD2-134 C	7.1654	50/50	7.1654
937002	AD2-134 E	29.6003	50/50	29.6003
937311	AD2-172 C	0.9382	Adder	1.1
937312	AD2-172 E	1.2956	Adder	1.52
938861	AE1-114 C O1	1.8158	Adder	2.14
938862	AE1-114 E O1	6.1950	Adder	7.29
940501	AE2-035 C	0.9382	Adder	1.1
940502	AE2-035 E	1.2956	Adder	1.52
941131	AE2-107 C	23.9826	50/50	23.9826
941132	AE2-107 E	15.9884	50/50	15.9884
943381	AF1-009 C	1.5015	50/50	1.5015
943382	AF1-009 E	6.0060	50/50	6.0060
943921	AF1-060	0.4619	Adder	0.54
946501	AF1-314 C	1.6670	Adder	1.96
946502	AF1-314 E	7.8044	Adder	9.18
946671	AF1-331	6.4826	50/50	6.4826
959101	AF2-201 C O2	1.2171	Adder	2.7
959102	AF2-201 E O2	3.4949	Adder	7.76
959761	AF2-267 C O2	0.8793	Adder	1.95
959762	AF2-267 E O2	4.1164	Adder	9.14
960382	AF2-329 BAT	9.1266	50/50	9.1266
960721	AF2-363 C O2	11.7216	50/50	11.7216
960722	AF2-363 E O2	7.8144	50/50	7.8144
960751	AF2-366 C O2	22.3182	50/50	22.3182
960752	AF2-366 E O2	14.8788	50/50	14.8788
961011	AF2-392 C O2	1.0101	Adder	2.24
961012	AF2-392 E O2	4.7292	Adder	10.5
961021	AF2-393 O2	1.7218	Adder	3.82
961031	AF2-394 O2	1.1479	Adder	2.55
WEC	WEC	0.3663	Confirmed LTF	0.3663
CBM-W2	CBM-W2	2.9894	Confirmed LTF	2.9894
NY	NY	0.0669	Confirmed LTF	0.0669
CBM-W1	CBM-W1	11.9220	Confirmed LTF	11.9220
TVA	TVA	0.3248	Confirmed LTF	0.3248
O-066	O-066	0.7728	Confirmed LTF	0.7728
CBM-S2	CBM-S2	0.1792	Confirmed LTF	0.1792
CBM-S1	CBM-S1	1.5166	Confirmed LTF	1.5166
TILTON	TILTON	0.0031	Confirmed LTF	0.0031
G-007	G-007	0.1196	Confirmed LTF	0.1196
MADISON	MADISON	3.2357	Confirmed LTF	3.2357
MEC	MEC	2.9110	Confirmed LTF	2.9110
GIBSON	GIBSON	0.0082	Confirmed LTF	0.0082
BLUEG	BLUEG	0.1180	Confirmed LTF	0.1180

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.0417	Confirmed LTF	0.0417

13.5.7 Index 7

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96705950	943410	AF1-012 TAP	CE	957470	AF2-041 TAP	CE	1	COMED_P4_155-45-BT6-7__	breaker	1656.0	128.75	130.7	DC	51.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	39.5685	50/50	39.5685
274663	QUAD CITI;2U	39.6435	50/50	39.6435
274699	CORDOVA ;1C	6.9583	50/50	6.9583
274700	CORDOVA ;2C	6.9583	50/50	6.9583
274701	CORDOVA ;1S	7.8280	50/50	7.8280
274715	NELSON EC;1C	10.1204	50/50	10.1204
274716	NELSON EC;1S	7.3843	50/50	7.3843
274717	NELSON EC;2C	10.1986	50/50	10.1986
274718	NELSON EC;2S	7.4505	50/50	7.4505
276156	O-029 C	0.4620	50/50	0.4620
276157	O-029 C	0.4994	50/50	0.4994
276158	O-029 C	0.9114	50/50	0.9114
290051	GSG-6; E	5.4542	Adder	6.42
293513	O-009 C1	0.8532	50/50	0.8532
293514	O-009 C2	0.4328	50/50	0.4328
293515	O-009 C3	0.4786	50/50	0.4786
293516	O-009 E1	19.7938	50/50	19.7938
293517	O-009 E2	10.0537	50/50	10.0537
293518	O-009 E3	11.0719	50/50	11.0719
293715	O-029 E	21.1618	50/50	21.1618
293716	O-029 E	11.6027	50/50	11.6027
293717	O-029 E	10.6641	50/50	10.6641
293771	O-035 E	4.8987	Adder	5.76
294401	BSHIL;1U E	8.0063	Adder	9.42
294410	BSHIL;2U E	8.0063	Adder	9.42
294763	P-046 E	4.7763	Adder	5.62
919221	AA1-146	9.4409	50/50	9.4409
919581	AA2-030	54.7318	50/50	54.7318
925581	AC1-033 C	1.3114	Adder	1.54
925582	AC1-033 E	8.7792	Adder	10.33
927201	AC1-214 C O1	1.5722	Adder	1.85
927202	AC1-214 E O1	4.9979	Adder	5.88
934051	AD1-031 C O1	2.6635	Adder	3.13
934052	AD1-031 E O1	4.3456	Adder	5.11
934431	AD1-067 C	0.0685	Adder	0.08
934432	AD1-067 E	0.2880	Adder	0.34

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.5466	Adder	0.64
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.8919	Adder	1.05
934701	AD1-098 C O1	4.0061	Adder	4.71
934702	AD1-098 E O1	2.9248	Adder	3.44
937001	AD2-134 C	1.4258	Adder	1.68
937002	AD2-134 E	5.8900	Adder	6.93
937311	AD2-172 C	1.2538	Adder	1.48
937312	AD2-172 E	1.7314	Adder	2.04
937531	AD2-214 C	10.3069	50/50	10.3069
937532	AD2-214 E	6.8713	50/50	6.8713
938861	AE1-114 C O1	3.9885	Adder	4.69
938862	AE1-114 E O1	13.6078	Adder	16.01
939051	AE1-134 1	4.2530	50/50	4.2530
939061	AE1-134 2	4.2530	50/50	4.2530
940501	AE2-035 C	1.2538	Adder	1.48
940502	AE2-035 E	1.7314	Adder	2.04
943381	AF1-009 C	0.3465	Adder	0.41
943382	AF1-009 E	1.3862	Adder	1.63
943401	AF1-011 C	2.2969	Adder	2.7
943402	AF1-011 E	4.5359	50/50	4.5359
943411	AF1-012 C	45.5605	50/50	45.5605
943412	AF1-012 E	30.3737	50/50	30.3737
943921	AF1-060	0.6173	Adder	0.73
946321	AF1-296 C O1	7.5519	Adder	8.88
946322	AF1-296 E O1	35.3560	Adder	41.6
946501	AF1-314 C	2.2277	Adder	2.62
946502	AF1-314 E	10.4296	Adder	12.27
946531	AF1-317 C O1	8.6782	50/50	8.6782
946541	AF1-318 C O1	3.0831	Adder	3.63
946542	AF1-318 E O1	14.4362	Adder	16.98
950181	J407 C	3.0540	PJM External (MISO)	3.0540
950182	J407 E	12.2160	PJM External (MISO)	12.2160
950401	J041 C	1.6591	PJM External (MISO)	1.6591
950402	J041 E	6.6362	PJM External (MISO)	6.6362
950471	J438 C	3.3990	PJM External (MISO)	3.3990
950472	J438 E	13.5959	PJM External (MISO)	13.5959
950501	J449 C	3.2789	PJM External (MISO)	3.2789
950502	J449 E	13.1155	PJM External (MISO)	13.1155
950522	J455 E	21.7650	PJM External (MISO)	21.7650
951031	J344 C	3.0711	PJM External (MISO)	3.0711
951032	J344 E	9.2132	PJM External (MISO)	9.2132
951221	J475 C	3.7552	PJM External (MISO)	3.7552
951222	J475 E	15.0208	PJM External (MISO)	15.0208
951301	J495 C	3.5205	PJM External (MISO)	3.5205
951302	J495 E	10.5615	PJM External (MISO)	10.5615
951381	J504	5.8315	PJM External (MISO)	5.8315
951421	J514	3.4866	PJM External (MISO)	3.4866
951441	J523 C	2.2326	PJM External (MISO)	2.2326
951442	J523 E	1.4884	PJM External (MISO)	1.4884
951451	J524 C	4.5432	PJM External (MISO)	4.5432
951452	J524 E	3.0288	PJM External (MISO)	3.0288

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
951511	J530 C	5.5515	PJM External (MISO)	5.5515
951512	J530 E	22.2060	PJM External (MISO)	22.2060
951541	J534 C	3.5945	PJM External (MISO)	3.5945
951542	J534 E	14.3780	PJM External (MISO)	14.3780
951551	J535 C	3.0538	PJM External (MISO)	3.0538
951552	J535 E	12.2153	PJM External (MISO)	12.2153
951821	J541 C	4.4784	PJM External (MISO)	4.4784
951822	J541 E	24.2296	PJM External (MISO)	24.2296
951841	J555 C	2.0503	PJM External (MISO)	2.0503
951842	J555 E	11.0929	PJM External (MISO)	11.0929
952021	J614 C	0.7591	PJM External (MISO)	0.7591
952022	J614 E	4.1071	PJM External (MISO)	4.1071
952211	J590 C	1.0186	PJM External (MISO)	1.0186
952212	J590 E	5.5109	PJM External (MISO)	5.5109
952231	J598 C (MISO Withdrawn : 1/16/2020)	3.3588	PJM External (MISO)	3.3588
952232	J598 E (MISO Withdrawn : 1/16/2020)	18.1722	PJM External (MISO)	18.1722
953011	J885 C	0.7623	PJM External (MISO)	0.7623
953012	J885 E	4.1241	PJM External (MISO)	4.1241
953082	J836 E	14.4980	PJM External (MISO)	14.4980
953231	J447 C (MISO Withdrawn : 10/24/2019)	1.9707	PJM External (MISO)	1.9707
953232	J447 E (MISO Withdrawn : 10/24/2019)	10.6623	PJM External (MISO)	10.6623
954091	J873 C	3.3287	PJM External (MISO)	3.3287
954092	J873 E	18.0093	PJM External (MISO)	18.0093
954131	J877	18.1375	PJM External (MISO)	18.1375
954301	J898 C	1.1383	PJM External (MISO)	1.1383
954302	J898 E	6.1587	PJM External (MISO)	6.1587
954521	J927 C	1.1322	PJM External (MISO)	1.1322
954522	J927 E	6.1258	PJM External (MISO)	6.1258
954702	J844 E	14.1855	PJM External (MISO)	14.1855
954792	J952 E	6.8510	PJM External (MISO)	6.8510
954861	J959 C	2.3136	PJM External (MISO)	2.3136
954862	J959 E	12.5169	PJM External (MISO)	12.5169
954901	J963	1.4162	PJM External (MISO)	1.4162
954931	J967 C	1.8343	PJM External (MISO)	1.8343
954932	J967 E	9.9242	PJM External (MISO)	9.9242
955051	J981 C	3.8975	PJM External (MISO)	3.8975
955052	J981 E	21.0865	PJM External (MISO)	21.0865
955061	J982 C	0.3020	PJM External (MISO)	0.3020
955062	J982 E	1.6339	PJM External (MISO)	1.6339
955221	J1000	4.0255	PJM External (MISO)	4.0255
955661	J1050 C	2.7961	PJM External (MISO)	2.7961
955662	J1050 E	15.1274	PJM External (MISO)	15.1274
955871	J1072	11.7585	PJM External (MISO)	11.7585
955971	J1084	31.8495	PJM External (MISO)	31.8495
956231	J1110	7.3510	PJM External (MISO)	7.3510
956381	J1128	11.1660	PJM External (MISO)	11.1660
956411	J1131	17.0520	PJM External (MISO)	17.0520
956431	J1135	4.1005	PJM External (MISO)	4.1005
956761	J1174	23.2980	PJM External (MISO)	23.2980

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
956771	J1175 C	3.6345	PJM External (MISO)	3.6345
956772	J1175 E	19.6635	PJM External (MISO)	19.6635
956781	J1176 C (MISO Withdrawn : 8/15/2019)	1.8415	PJM External (MISO)	1.8415
956782	J1176 E (MISO Withdrawn : 8/15/2019)	9.9630	PJM External (MISO)	9.9630
956831	J1181 C	3.0292	PJM External (MISO)	3.0292
956832	J1181 E	16.3888	PJM External (MISO)	16.3888
957751	AF2-069 C	0.0965	Adder	0.21
957752	AF2-069 E	0.3114	Adder	0.69
957761	AF2-070 C	0.1360	Adder	0.3
957762	AF2-070 E	0.6600	Adder	1.47
959101	AF2-201 C O2	1.6265	Adder	3.61
959102	AF2-201 E O2	4.6705	Adder	10.37
959761	AF2-267 C O2	1.1774	Adder	2.61
959762	AF2-267 E O2	5.5122	Adder	12.24
960551	AF2-346 C	19.5260	50/50	19.5260
960552	AF2-346 E	13.0173	50/50	13.0173
961011	AF2-392 C O2	9.0679	50/50	9.0679
961012	AF2-392 E O2	42.4541	50/50	42.4541
961021	AF2-393 O2	15.4566	50/50	15.4566
961031	AF2-394 O2	10.3044	50/50	10.3044
990901	L-005 E	10.7936	Adder	12.7
LGEE	LGEE	0.1198	Confirmed LTF	0.1198
CPL	CPL	0.3539	Confirmed LTF	0.3539
CBM-W2	CBM-W2	22.6044	Confirmed LTF	22.6044
NY	NY	0.0896	Confirmed LTF	0.0896
CBM-W1	CBM-W1	47.4254	Confirmed LTF	47.4254
TVA	TVA	2.7342	Confirmed LTF	2.7342
O-066	O-066	0.9139	Confirmed LTF	0.9139
CBM-S2	CBM-S2	4.2830	Confirmed LTF	4.2830
CBM-S1	CBM-S1	13.8791	Confirmed LTF	13.8791
G-007	G-007	0.1404	Confirmed LTF	0.1404
MADISON	MADISON	14.5999	Confirmed LTF	14.5999
MEC	MEC	18.4340	Confirmed LTF	18.4340

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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
95531041	956820	J1180 TAP	AMIL	247712	OSSULLIVAN	AEP	1	AEP_P4_#3128_05EUGENE 345_A2	breaker	1466.0	149.93	149.94	DC	14.94

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274650	KINCAID ;1U	16.4201	50/50	16.4201
274651	KINCAID ;2U	16.4134	50/50	16.4134
274830	U3-021 1	2.7006	Adder	3.18
274831	U3-021 2	2.7006	Adder	3.18

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274853	TWINGROVE;U1	0.8780	50/50	0.8780
274854	TWINGROVE;U2	0.8780	50/50	0.8780
274859	EASYR;U1 E	5.8205	Adder	6.85
274860	EASYR;U2 E	5.8205	Adder	6.85
274880	GENERATOR;	1.1644	50/50	1.1644
274882	W4-005 E	45.2070	50/50	45.2070
274890	CAYUG;1U E	8.8046	Adder	10.36
274891	CAYUG;2U E	8.8046	Adder	10.36
276153	W2-048 E	9.4531	50/50	9.4531
290021	O50 E	9.3106	Adder	10.95
290051	GSG-6; E	4.7900	Adder	5.64
290108	LEEDK;1U E	10.5689	Adder	12.43
290261	S-027 E	20.3607	50/50	20.3607
290265	S-028 E	20.3607	50/50	20.3607
293516	O-009 E1	5.4128	Adder	6.37
293517	O-009 E2	2.7493	Adder	3.23
293518	O-009 E3	3.0277	Adder	3.56
293644	O22 E1	4.2351	Adder	4.98
293645	O22 E2	8.2211	Adder	9.67
293715	O-029 E	5.7868	Adder	6.81
293716	O-029 E	3.1728	Adder	3.73
293717	O-029 E	2.9162	Adder	3.43
293771	O-035 E	4.3577	Adder	5.13
294401	BSHIL;1U E	5.9235	Adder	6.97
294410	BSHIL;2U E	5.9235	Adder	6.97
294763	P-046 E	4.6158	Adder	5.43
909052	X2-022 E	28.4350	50/50	28.4350
917501	Z2-087 C	0.4565	50/50	0.4565
917502	Z2-087 E	17.7115	50/50	17.7115
918052	AA1-018 E OP	6.8407	Adder	8.05
919581	AA2-030	9.9554	Adder	11.71
920272	AA2-123 E	1.0469	Adder	1.23
924041	AB2-047 C O1	3.3082	50/50	3.3082
924042	AB2-047 E O1	22.1393	50/50	22.1393
924261	AB2-070 C O1	3.8212	50/50	3.8212
924262	AB2-070 E O1	24.2207	50/50	24.2207
924471	AB2-096	18.7544	Adder	22.06
925581	AC1-033 C	0.9699	Adder	1.14
925582	AC1-033 E	6.4929	Adder	7.64
925771	AC1-053 C	3.8568	50/50	3.8568
925772	AC1-053 E	25.8112	50/50	25.8112
926431	AC1-114	1.1133	Adder	1.31
926821	AC1-168 C O1	0.7021	Adder	0.83
926822	AC1-168 E O1	4.7116	Adder	5.54
926841	AC1-171 C O1	1.0395	50/50	1.0395
926842	AC1-171 E O1	6.9433	50/50	6.9433
927201	AC1-214 C O1	1.3986	Adder	1.65
927202	AC1-214 E O1	4.4460	Adder	5.23
927511	AC1-113 1	0.5567	Adder	0.65
927521	AC1-113 2	0.5567	Adder	0.65
930481	AB1-089	30.3080	Adder	35.66
930741	AB1-122 1O1	30.2194	Adder	35.55

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
932881	AC2-115 1	1.1133	Adder	1.31
932891	AC2-115 2	1.1133	Adder	1.31
932921	AC2-116	0.3897	Adder	0.46
933911	AD1-013 C	0.8324	Adder	0.98
933912	AD1-013 E	1.3297	Adder	1.56
933931	AD1-016 C	0.3978	Adder	0.47
933932	AD1-016 E	0.6491	Adder	0.76
934051	AD1-031 C O1	1.9693	Adder	2.32
934052	AD1-031 E O1	3.2131	Adder	3.78
934101	AD1-039 1	2.9615	Adder	3.48
934431	AD1-067 C	0.0601	Adder	0.07
934432	AD1-067 E	0.2529	Adder	0.3
934651	AD1-096 C (Withdrawn : 07/22/2020)	0.4384	Adder	0.52
934652	AD1-096 E (Withdrawn : 07/22/2020)	0.7153	Adder	0.84
934701	AD1-098 C O1	3.1831	Adder	3.74
934702	AD1-098 E O1	2.3240	Adder	2.73
934871	AD1-116 C	0.3984	Adder	0.47
934872	AD1-116 E	0.6500	Adder	0.76
934971	AD1-129 C	0.4055	Adder	0.48
934972	AD1-129 E	0.2703	Adder	0.32
935001	AD1-133 C O1	12.2446	Adder	14.41
935002	AD1-133 E O1	8.1631	Adder	9.6
935141	AD1-148	7.4113	50/50	7.4113
936291	AD2-038 C O1	1.1607	Adder	1.37
936292	AD2-038 E O1	7.7681	Adder	9.14
936511	AD2-066 C O1	4.0625	Adder	4.78
936512	AD2-066 E O1	2.7083	Adder	3.19
936771	AD2-100 C	22.4645	50/50	22.4645
936772	AD2-100 E	14.9764	50/50	14.9764
936791	AD2-102 C	6.7901	Adder	7.99
936792	AD2-102 E	4.5268	Adder	5.33
936971	AD2-131 C	1.4798	50/50	1.4798
936972	AD2-131 E	7.4347	50/50	7.4347
937001	AD2-134 C	1.2522	Adder	1.47
937002	AD2-134 E	5.1728	Adder	6.09
937211	AD2-159 C	4.8853	50/50	4.8853
937212	AD2-159 E	22.8722	50/50	22.8722
937311	AD2-172 C	1.2117	Adder	1.43
937312	AD2-172 E	1.6732	Adder	1.97
937531	AD2-214 C	2.7588	Adder	3.25
937532	AD2-214 E	1.8392	Adder	2.16
938851	AE1-113 C	3.8406	Adder	4.52
938852	AE1-113 E	13.6167	Adder	16.02
938861	AE1-114 C O1	2.0247	Adder	2.38
938862	AE1-114 E O1	6.9079	Adder	8.13
939051	AE1-134 1	0.7736	Adder	0.91
939061	AE1-134 2	0.7736	Adder	0.91
939321	AE1-163 C O1	2.9167	Adder	3.43
939322	AE1-163 E O1	17.9172	Adder	21.08
939401	AE1-172 C O1	2.9603	Adder	3.48
939402	AE1-172 E O1	13.8898	Adder	16.34

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939741	AE1-205 C O1	8.5504	50/50	8.5504
939742	AE1-205 E O1	11.8076	50/50	11.8076
940101	AE1-252 C O1	5.9471	Adder	7.0
940102	AE1-252 E O1	3.9647	Adder	4.66
940501	AE2-035 C	1.2117	Adder	1.43
940502	AE2-035 E	1.6732	Adder	1.97
941131	AE2-107 C	3.1503	Adder	3.71
941132	AE2-107 E	2.1002	Adder	2.47
941343	AE2-130 BAT	31.8120	50/50	31.8120
941731	AE2-173 O1	5.0895	50/50	5.0895
942111	AE2-223 C	1.9849	50/50	1.9849
942112	AE2-223 E	13.2836	50/50	13.2836
942421	AE2-255 C O1	1.4548	Adder	1.71
942422	AE2-255 E O1	4.3643	Adder	5.13
942481	AE2-261 C	31.0577	50/50	31.0577
942482	AE2-261 E	20.7052	50/50	20.7052
942602	AE2-276 BAT	14.0105	50/50	14.0105
942651	AE2-281 C O1	0.4167	Adder	0.49
942652	AE2-281 E O1	2.5596	Adder	3.01
942991	AE2-321 C	3.5189	Adder	4.14
942992	AE2-321 E	1.7332	Adder	2.04
943381	AF1-009 C	0.2754	Adder	0.32
943382	AF1-009 E	1.1014	Adder	1.3
943401	AF1-011 C	0.7389	Adder	0.87
943402	AF1-011 E	1.2404	Adder	1.46
943411	AF1-012 C	6.4046	Adder	7.53
943412	AF1-012 E	4.2697	Adder	5.02
943801	AF1-048 C	1.6450	Adder	1.94
943802	AF1-048 E	1.0966	Adder	1.29
943921	AF1-060	0.5966	Adder	0.7
944202	AF1-088 FTWR	280.2100	50/50	280.2100
944221	AF1-090 C O1	6.8094	50/50	6.8094
944222	AF1-090 E O1	31.8806	50/50	31.8806
945871	AF1-252 O1	12.0713	50/50	12.0713
945881	AF1-253 O1	8.3570	50/50	8.3570
946151	AF1-280 C O1	8.4217	Adder	9.91
946152	AF1-280 E O1	3.8727	Adder	4.56
946161	AF1-281 C	0.1844	Adder	0.22
946162	AF1-281 E	1.0450	Adder	1.23
946321	AF1-296 C O1	2.6152	Adder	3.08
946322	AF1-296 E O1	12.2439	Adder	14.4
946501	AF1-314 C	2.1528	Adder	2.53
946502	AF1-314 E	10.0791	Adder	11.86
946531	AF1-317 C O1	1.2199	Adder	1.44
946541	AF1-318 C O1	3.8549	Adder	4.54
946542	AF1-318 E O1	18.0499	Adder	21.24
946661	AF1-330 C	0.8584	Adder	1.01
946662	AF1-330 E	0.1884	Adder	0.22
946671	AF1-331	1.0810	Adder	1.27
955131	J991	25.9737	PJM External (MISO)	25.9737
957021	AF2-003 C O2	1.6896	Adder	3.75
957022	AF2-003 E O2	7.9105	Adder	17.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957381	AF2-032 C	2.3285	50/50	2.3285
957382	AF2-032 E	1.0957	50/50	1.0957
957471	AF2-041 C	5.3746	Adder	11.93
957472	AF2-041 E	3.5831	Adder	7.95
957751	AF2-069 C	0.0858	Adder	0.19
957752	AF2-069 E	0.2770	Adder	0.61
957761	AF2-070 C	0.1209	Adder	0.27
957762	AF2-070 E	0.5872	Adder	1.3
958341	AF2-128 C O2	0.5403	Adder	1.2
958342	AF2-128 E O2	2.5297	Adder	5.62
958481	AF2-142 C	2.5004	Adder	5.55
958482	AF2-142 E	1.6669	Adder	3.7
958491	AF2-143 C	2.8394	Adder	6.3
958492	AF2-143 E	1.8929	Adder	4.2
958911	AF2-182	5.8644	Adder	13.02
958921	AF2-183 C	1.0426	Adder	2.31
958922	AF2-183 E	1.5638	Adder	3.47
959081	AF2-199 C O2	1.7915	Adder	3.98
959082	AF2-199 E O2	1.1944	Adder	2.65
959091	AF2-200 C O2	3.5831	Adder	7.95
959092	AF2-200 E O2	2.3887	Adder	5.3
959101	AF2-201 C O2	1.5718	Adder	3.49
959102	AF2-201 E O2	4.5136	Adder	10.02
959341	AF2-225 C	6.4128	50/50	6.4128
959342	AF2-225 E	8.8557	50/50	8.8557
959351	AF2-226 C	0.5502	Adder	1.22
959352	AF2-226 E	0.8252	Adder	1.83
959611	AF2-252 C	2.5708	50/50	2.5708
959612	AF2-252 E	3.8562	50/50	3.8562
959761	AF2-267 C O2	1.1351	Adder	2.52
959762	AF2-267 E O2	5.3142	Adder	11.8
960141	AF2-305	1.3521	50/50	1.3521
960261	AF2-317	2.3716	50/50	2.3716
960281	AF2-319 C	0.5502	Adder	1.22
960282	AF2-319 E	0.8252	Adder	1.83
960551	AF2-346 C	1.4548	Adder	3.23
960552	AF2-346 E	0.9698	Adder	2.15
960581	AF2-349 C	5.0843	Adder	11.29
960582	AF2-349 E	3.3896	Adder	7.52
960611	AF2-352 C	2.5708	50/50	2.5708
960612	AF2-352 E	3.8562	50/50	3.8562
960623	AF2-353 BAT	31.8120	50/50	31.8120
960721	AF2-363 C O2	1.3831	Adder	3.07
960722	AF2-363 E O2	0.9220	Adder	2.05
960751	AF2-366 C O2	1.5699	Adder	3.48
960752	AF2-366 E O2	1.0466	Adder	2.32
961011	AF2-392 C O2	1.1842	Adder	2.63
961012	AF2-392 E O2	5.5444	Adder	12.31
961021	AF2-393 O2	2.0186	Adder	4.48
961031	AF2-394 O2	1.3457	Adder	2.99
990901	L-005 E	9.1810	Adder	10.8
WEC	WEC	2.0201	Confirmed LTF	2.0201

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CPL	CPL	0.5953	Confirmed LTF	0.5953
CBM-W2	CBM-W2	70.4668	Confirmed LTF	70.4668
NY	NY	0.4468	Confirmed LTF	0.4468
CBM-W1	CBM-W1	61.5742	Confirmed LTF	61.5742
TVA	TVA	7.7938	Confirmed LTF	7.7938
O-066	O-066	4.9930	Confirmed LTF	4.9930
CBM-S2	CBM-S2	8.6238	Confirmed LTF	8.6238
CBM-S1	CBM-S1	36.9257	Confirmed LTF	36.9257
G-007	G-007	0.7706	Confirmed LTF	0.7706
MADISON	MADISON	25.0367	Confirmed LTF	25.0367
MEC	MEC	15.7613	Confirmed LTF	15.7613
BLUEG	BLUEG	2.7151	Confirmed LTF	2.7151
TRIMBLE	TRIMBLE	1.0039	Confirmed LTF	1.0039

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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
96705927	957470	AF2-041 TAP	CE	270730	ELECT JCT; B	CE	1	COMED_P4_006-45-BT3-4__	breaker	1656.0	136.48	137.91	DC	52.62

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	EASR;U1 E	27.9407	Adder	32.87
274860	EASR;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	BSHL;1U E	8.1063	Adder	9.54
294410	BSHL;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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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	61.6410	50/50	61.6410
958921	AF2-183 C	10.9584	50/50	10.9584
958922	AF2-183 E	16.4376	50/50	16.4376
959081	AF2-199 C O2	35.6670	50/50	35.6670
959082	AF2-199 E O2	23.7780	50/50	23.7780
959091	AF2-200 C O2	71.3340	50/50	71.3340
959092	AF2-200 E O2	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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961011	AF2-392 C O2	4.1721	Adder	9.26
961012	AF2-392 E O2	19.5332	Adder	43.36
961021	AF2-393 O2	7.1116	Adder	15.79
961031	AF2-394 O2	4.7411	Adder	10.52
990901	L-005 E	10.9007	Adder	12.82
LGEE	LGEE	0.0434	Confirmed LTF	0.0434
CPLE	CPLE	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

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
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_P4_155-45-BT6-7__	CONTINGENCY 'COMED_P4_155-45-BT6-7__' TRIP BRANCH FROM BUS 275204 TO BUS 270828 CKT 1 / NELSO;4M 138 NELSO; B 345 TRIP BRANCH FROM BUS 275204 TO BUS 272094 CKT 1 / NELSO;4M 138 NELSO; B 138 TRIP BRANCH FROM BUS 275204 TO BUS 275304 CKT 1 / NELSO;4M 138 NELSO;4C 34.5 TRIP BRANCH FROM BUS 270828 TO BUS 946160 CKT 1 / NELSO; B 345 AF1-281 TAP 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

Contingency Name	Contingency Definition
COMED_P4_155-38-L15511_	CONTINGENCY 'COMED_P4_155-38-L15511_' TRIP BRANCH FROM BUS 272094 TO BUS 272508 CKT 1 / NELSO; B 138 STERL; B 138 CLOSE BRANCH FROM BUS 271328 TO BUS 271332 CKT 1 / DIXON;BT 138 DIXON; B 138 TRIP BRANCH FROM BUS 272094 TO BUS 271330 CKT 1 / NELSO; B 138 DIXON;7B 138 TRIP BRANCH FROM BUS 272094 TO BUS 272366 CKT 1 / NELSO; B 138 R FAL; B 138 TRIP BRANCH FROM BUS 272094 TO BUS 275204 CKT 1 / NELSO; B 138 NELSO;4M 138 END
COMED_P4_155-38-TR84__	CONTINGENCY 'COMED_P4_155-38-TR84__' TRIP BRANCH FROM BUS 275204 TO BUS 270828 CKT 1 / NELSO;4M 138 NELSO; B 345 TRIP BRANCH FROM BUS 275204 TO BUS 272094 CKT 1 / NELSO;4M 138 NELSO; B 138 TRIP BRANCH FROM BUS 275204 TO BUS 275304 CKT 1 / NELSO;4M 138 NELSO;4C 34.5 TRIP BRANCH FROM BUS 272094 TO BUS 271330 CKT 1 / NELSO; B 138 DIXON;7B 138 TRIP BRANCH FROM BUS 272094 TO BUS 272366 CKT 1 / NELSO; B 138 R FAL; B 138 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_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
AEP_P4_#3128_05EUGENE 345_A2	CONTINGENCY 'AEP_P4_#3128_05EUGENE 345_A2' OPEN BRANCH FROM BUS 243221 TO BUS 249504 CKT 1 / 243221 05EUGENE 345 249504 08CAYSUB 345 1 OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END

Contingency Name	Contingency Definition
COMED_P7_138-L11106_B-R+_345-L15502_B-R	CONTINGENCY 'COMED_P7_138-L11106_B-R+_345-L15502_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 TRIP BRANCH FROM BUS 270828 TO BUS 943410 CKT 1 / NELSON ; B 345 AF1-012 END
COMED_P1-2_345-L97116__-R_FSA	CONTINGENCY 'COMED_P1-2_345-L97116__-R_FSA' TRIP BRANCH FROM BUS 960580 TO BUS 270883 CKT 1 / U3-021 SILVE; R 345 END
COMED_P1-2_138-L11106_B-R	CONTINGENCY 'COMED_P1-2_138-L11106_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 END
COMED_P2-1_113-L11323__	CONTINGENCY 'COMED_P2-1_113-L11323__' TRIP BRANCH FROM BUS 272730 TO BUS 272728 CKT 1 / WATER;3B 138 WATER; B 138 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

Contingency Name	Contingency Definition
COMED_P2-1_186-L16914__	CONTINGENCY 'COMED_P2-1_186-L16914__' TRIP BRANCH FROM BUS 272365 TO BUS 272516 CKT 1 / H440 ;RT 138 STEWA; B 138 END
COMED_P1-2_345-L15501_B-R-A	CONTINGENCY 'COMED_P1-2_345-L15501_B-R-A' TRIP BRANCH FROM BUS 270828 TO BUS 946160 CKT 1 / NELSO; B 345 AF1-281 TAP 345 END
Base Case	
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_P4_155-38-TR81__	CONTINGENCY 'COMED_P4_155-38-TR81__' TRIP BRANCH FROM BUS 270828 TO BUS 272094 TO BUS 275341 CKT 1 / NELSO; B 345 NELSO; B 138 NELSO;1C 34.5 TRIP BRANCH FROM BUS 272094 TO BUS 271330 CKT 1 / NELSO; B 138 DIXON;7B 138 TRIP BRANCH FROM BUS 272094 TO BUS 272366 CKT 1 / NELSO; B 138 R FAL; B 138 TRIP BRANCH FROM BUS 272094 TO BUS 275204 CKT 1 / NELSO; B 138 NELSO;4M 138 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
AEP_P1-2_#286	CONTINGENCY 'AEP_P1-2_#286' OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END

14 Affected Systems

14.1 MISO

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