



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF2-201
“LENA-ECOGROVE 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 combined wind and solar generating facility located in Stephenson County, Illinois. The installed facilities will have a total capability of 199 MW with 51.4 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is May 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-201
Project Name	LENA-ECOGROVE 138 KV
State	Illinois
County	Stephenson
Transmission Owner	ComEd
MFO	199
MWE	199
MWC	51.4
Fuel	Wind; Solar
Basecase Study Year	2023

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

4 Point of Interconnection

Queue Position AF2-201, a 199 MW facility with 170 MW wind farm and 29 MW solar, proposes to interconnect with the ComEd transmission system by tying to 138kV network close to Lena TSS 180.

The Developer has chosen to interconnect to 138kV 'Lena-Eco Grove' transmission line, 0.5 miles from Lena as its primary POI. The 'Lena- Eco Grove' line is generator lead for Eco Grove Wind Farm and is not owned by ComEd. Accordingly, the primary POI is not valid.

The Developer has chosen to interconnect to 138kV Lena TSS 180 as its secondary POI. Lena is a distribution substation and is not configured to add a bus position to interconnect generator lead for AF2-201. Accordingly, secondary POI is not feasible.

The only viable solution is to build a new substation adjacent to Lena to interconnect AF2-201. Under a prior queue position AF1-314, a new substation would be built adjacent to Lena. It is proposed to interconnect AF2-201 generator lead to the interconnection substation to be built for AF1-314.

5 Cost Summary

The AF2-201 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$4,000,000
Total System Network Upgrade Costs	\$123,650,000
Total Costs	\$127,650,000

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 AF2-201 generator lead will interconnect to a new proposed 138 kV substation to be built under PJM queue project AF1-314 (see details in Direct Connection section below). The required Attachment Facilities are one 138 kV line MOD, one dead-end structure and one set of revenue-metering.

Scope of Work	Cost Estimate
Installation of one 138 kV 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

A new 138kV Interconnection Substation, would be built, under an earlier queue position AF1-314 by looping 'Lancaster - Lena' Lines 11902 and 11904. In order to accommodate interconnection of AF2-201, the Interconnection Substation built for AF1-314 would need to be expanded to create a line position.

The scope of work includes installation of one 138kV circuit breaker to create a line position to interconnect AF2-201 generator lead.

It should be noted that if the AF1-314 project drops out, then scope of AF2-201 would change.

The Interconnection Customer ("IC") is responsible for constructing all the facilities on the Interconnection Customer side of the Point of Interconnection (POI).

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

Scope of Work	Cost Estimate
Installation of one 138kV circuit breaker at the Interconnection Substation under earlier queue position AF1-314 as described above	\$3,000,000

Total Cost Estimate (see notes below on cost estimate)	\$3,000,000
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Normally it takes about 24-months to engineer, design, procure material and construct 138kV facilities after ISA/ICSA are signed.

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 Interconnection Customer.
- 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 Interconnection Customer and the actual costs of ComEd's work may differ significantly from these estimates. Interconnection Customer 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 Interconnection Customer is responsible for all engineering, procurement, testing and construction of all equipment on the Interconnection Customer'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 for acquiring property and associated legal costs will be investigation 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 AF2-201 was evaluated as a 199.0 MW (Capacity 51.4 MW) injection tapping the Lena to Ecogrove 138 kV line in the ComEd area. Project AF2-201 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-201 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)

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
96369738	271897	LANCASTE R; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P4_194-38-L19414_	breaker	275.0	97.47	139.28	DC	114.97
96371184	271897	LANCASTE R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	336.0	94.09	152.94	DC	197.71
96371185	271897	LANCASTE R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-A	tower	336.0	94.09	152.94	DC	197.71
96369743	272240	PECATONI C; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	COMED_P4_194-38-L19414_	breaker	275.0	92.63	134.44	DC	114.97

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE T LOADIN G %	POST PROJE T LOADIN G %	AC D C	MW IMPAC T
96369848	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P4_144-45-BT6-8	breaker	1479.0	125.0	126.29	DC	42.3
96369996	270807	LIBERTYVI; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT6-11	breaker	1479.0	107.5	108.07	DC	18.78
96369737	271897	LANCASTE R; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P4_119-38-L19414	breaker	275.0	114.49	186.84	DC	198.98
96369742	272240	PECATONI C; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	COMED_P4_119-38-L19414	breaker	275.0	109.69	182.04	DC	198.98
96371199	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	104.36	105.79	DC	10.46
95350846	960680	AF2-359 TAP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P4_112-65-BT4-5	breaker	971.0	109.82	109.83	DC	19.03
95350847	960680	AF2-359 TAP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P4_112-65-BT3-4	breaker	971.0	109.82	109.83	DC	19.03

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 T LOADIN G %	POST PROJE T LOADIN G %	AC D C	MW IMPAC T
96370341	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	123.02	125.96	DC	43.04
96370343	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operation	1201.0	108.94	111.75	DC	33.39
96370349	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P1-2_345-L0626_B-R-B	operation	1479.0	124.96	126.27	DC	43.04
96370351	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	operation	1201.0	114.89	116.14	DC	33.39
96370450	270770	GOODINGS ;4B	345.0	CE	270766	GOODINGS ;3B	345.0	CE	1	COMED_P1-2_345-L11613AB-S	operation	1802.0	113.74	114.04	DC	20.4
96370448	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	104.17	104.86	DC	21.32

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
96370152	271398	ELEROY ;BT	138.0	CE	271498	FREEPORT ;BT	138.0	CE	1	Base Case	operation	249.0	154.15	234.07	DC	198.98
96370131	271495	FREEPORT ;SR	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 2-1_119-L11904	operation	173.0	181.99	297.01	DC	198.98
96370130	271498	FREEPORT ;BT	138.0	CE	271494	FREEPORT ;2R	138.0	CE	1	COMED_P 2-1_119-L11904	operation	173.0	221.87	336.89	DC	198.98
96370221	271498	FREEPORT ;BT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	Base Case	operation	314.0	109.71	172.89	DC	198.36
96370516	271499	FREEPORT ;RT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	COMED_P 2-1_119-L11904	operation	317.0	66.97	108.91	DC	132.94
96370205	271897	LANCASTER; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P 1-2_138-L19414GR-R	operation	264.0	100.34	144.13	DC	115.6
96370210	271897	LANCASTER; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	Base Case	operation	208.0	87.3	124.31	DC	76.99
96370270	271897	LANCASTER; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 2-1_119-L17121	operation	317.0	84.21	117.51	DC	105.57
96370271	271897	LANCASTER; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 1-2_138-L17121_R-R	operation	317.0	84.21	117.51	DC	105.57
96370268	271914	LENA ; B	138.0	CE	946500	AF1-314 TAP	138.0	CE	1	Base Case	operation	249.0	74.32	154.23	DC	198.98
96370215	272240	PECATONIC; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	COMED_P 1-2_138-L19414GR-R	operation	264.0	95.34	139.13	DC	115.6
96370220	272240	PECATONIC; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	Base Case	operation	208.0	83.02	120.04	DC	76.99
96370265	274750	CRETE EC ;BP	345.0	CE	255112	17STJOHN	345.0	NIPS	1	Base Case	operation	1091.0	153.63	153.7	DC	15.33
96370521	274804	UNIV PK N;RP	345.0	CE	960680	AF2-359 TAP	345.0	CE	1	COMED_P 1-2_695_B2	operation	971.0	106.41	106.43	DC	19.02
96370553	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	99.22	100.13	DC	40.72
96370362	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	Base Case	operation	1334.0	109.7	110.4	DC	21.32
96370149	946500	AF1-314 TAP	138.0	CE	271398	ELEROY ;BT	138.0	CE	1	Base Case	operation	249.0	159.45	239.37	DC	198.98
96370305	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	133.13	133.84	DC	21.32
96370249	959100	AF2-201 TAP	138.0	CE	271914	LENA ; B	138.0	CE	1	Base Case	operation	249.0	84.44	164.36	DC	198.98
96370321	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P 1-2_345-L0626__B-R-B	operation	1479.0	124.94	126.25	DC	43.04
96370323	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	114.86	116.12	DC	33.39

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
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ID	Idx	Facility	Upgrade Description	Cost
96369996	5	LIBERTYVI; R 345.0 kV - P HTS 117; R 345.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L11723 (841) : ComEd 345kV L11723 SSTE rating is 1568 MVA. The upgrade will be to replace station conductor at both terminals and sag mitigation on the line. A preliminary estimate for this upgrade is \$8.2M with an estimated construction timeline of 24 months. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$8,200,000 Time Estimate : Months	\$8,200,000
96369742,9636 9743	3	PECATONIC; B 138.0 kV - WEMPLETOW; R 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_17121 (859) : ComEd 138kV L17121 SLD & ALDR ratings are 275 MVA & 316 MVA. The upgrade will be to reconductor the line. A preliminary estimate for the upgrade is \$6.4M. A preliminary construction timeline is 24 months. Upon completion the ratings will be 351/449/459/498/573 MVA (SN/SSTE/SLTE/SLD/ALDR). Project Type : FAC Cost : \$6,400,000 Time Estimate : 24.0 Months	\$6,400,000
96371185,9637 1184	2	LANCASTER; R 138.0 kV - FREEPORT ;RT 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_L11904_1 (933) : ComEd 138kV L11904 SLD & ALDR ratings are 421 MVA & 484 MVA. The upgrade will be to mitigate sag on the line conductor and upgrade station conductor. A preliminary estimate for the upgrade is \$750K with a preliminary construction timeline of 24 months. Upon completion the ratings will be 351/449/459/498/573 MVA (SN/SLTE/SSTE/SLD/ALDR). Project Type : FAC Cost : \$750,000 Time Estimate : 24.0 Months	\$750,000
96371199	6	WATERMAN ; B 138.0 kV - SANDWICH ; R 138.0 kV Ckt 1	<u>ComEd</u> ce-007 (884) : 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 reconductor 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
96369848	4	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
96369737,9636 9738	1	LANCASTER; R 138.0 kV - PECATONIC; B 138.0 kV Ckt 1	<u>ComEd</u> CE_NUN_17121_1 (854) : ComEd 138kV L17121 ALDR rating is 316 MVA. The upgrade will be to re-conductor the line. A preliminary estimate for the upgrade is \$12.3M with a preliminary construction timeline of 30 months. Upon completion the ratings will be 314/386/393/421 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$12,300,000 Time Estimate : 30.0 Months CE_NUN_17121 (859) : ComEd 138kV L17121 SLD & ALDR ratings are 275 MVA & 316 MVA. The upgrade will be to re-conductor the line. A preliminary estimate for the upgrade is \$6.4M. A preliminary construction timeline is 24 months. Upon completion the ratings will be 351/449/459/498/573 MVA (SN/SSTE/SLTE/SLD/ALDR). Project Type : FAC Cost : \$6,400,000 Time Estimate : 24.0 Months	\$12,300,000

ID	Idx	Facility	Upgrade Description	Cost
95350846,95350847	7	AF2-359 TAP 345.0 kV - 05OLIVE 345.0 kV Ckt 1	<u>AEP</u> n4057 : A Sag Study will be required on the 40.64 miles of ACSR/PE 1414 62/19 conductor to mitigate the overload. The new ratings after sag study will be: S/N: 971 MVA, S/E: 1419 MVA, Depending on the sag study results, the cost for this upgrade is expected to be between \$162,560 (no remediation required, just sag study) and \$81.28 million (complete line Re-conductor/rebuild). Time Estimate: a) Sag Study: 6-12 months b) Rebuild: The standard time required for construction differs from state to state. An approximate construction time would be 24 to 36 months after signing an interconnection agreement. Project Type : FAC Cost : \$162,440 Time Estimate : 6-12 Months <u>ComEd</u> CE_NUN_L97008 : Sag mitigation on a portion of the line. A preliminary estimate for this work is \$4.8M with an estimated construction timeline of 30 months. Upon completion of the upgrade the rating will be 1334/1334/1391/1523 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : \$4,800,000 Time Estimate : 30.0 Months	\$4,800,000
Total System Network Upgrade Costs				\$123,650,000

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 gauge the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

11.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96369737	271897	LANCASTER; R	CE	272240	PECATONIC; B	CE	1	COMED_P4_119-38-L19414_	breaker	275.0	114.49	186.84	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O1	51.3949	50/50	51.3949
959102	AF2-201 E O1	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96371185	271897	LANCASTER; R	CE	271499	FREEPORT ;RT	CE	1	COMED_P7_138-L11902GB-R +_138-L17121_R-R-A	tower	336.0	94.09	152.94	DC	197.71

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4275	50/50	3.4275
294763	P-046 E	79.4816	50/50	79.4816
937311	AD2-172 C	20.8639	50/50	20.8639
937312	AD2-172 E	28.8121	50/50	28.8121
940501	AE2-035 C	20.8639	50/50	20.8639
940502	AE2-035 E	28.8121	50/50	28.8121
943921	AF1-060	10.2730	50/50	10.2730
946501	AF1-314 C	37.0702	50/50	37.0702
946502	AF1-314 E	173.5560	50/50	173.5560
959101	AF2-201 C O1	51.0669	50/50	51.0669

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959102	AF2-201 E O1	146.6436	50/50	146.6436
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96369742	272240	PECATONIC; B	CE	272747	WEMPLETOW; R	CE	1	COMED_P4_119-38-L19414_	breaker	275.0	109.69	182.04	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O1	51.3949	50/50	51.3949
959102	AF2-201 E O1	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96369848	270759	GARDEN PR; R	CE	960580	AF2-349 TAP	CE	1	COMED_P4_144-45-BT6-8__	breaker	1479.0	125.0	126.29	DC	42.3

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	1.3809	Adder	1.62
934652	AD1-096 E	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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937311	AD2-172 C	3.7946	Adder	4.46
937312	AD2-172 E	5.2401	Adder	6.16
937531	AD2-214 C	3.8828	Adder	4.57
937532	AD2-214 E	2.5885	Adder	3.05
938861	AE1-114 C O1	5.2127	Adder	6.13
938862	AE1-114 E O1	17.7845	Adder	20.92
939051	AE1-134 1	1.3346	Adder	1.57
939061	AE1-134 2	1.3346	Adder	1.57
940501	AE2-035 C	3.7946	Adder	4.46
940502	AE2-035 E	5.2401	Adder	6.16
941131	AE2-107 C	4.3325	Adder	5.1
941132	AE2-107 E	2.8883	Adder	3.4
943381	AF1-009 C	0.4341	Adder	0.51
943382	AF1-009 E	1.7364	Adder	2.04
943401	AF1-011 C	1.0428	Adder	1.23
943402	AF1-011 E	1.7504	Adder	2.06
943411	AF1-012 C	9.6104	Adder	11.31
943412	AF1-012 E	6.4070	Adder	7.54
943921	AF1-060	1.8684	Adder	2.2
946151	AF1-280 C O1	19.0338	Adder	22.39
946152	AF1-280 E O1	8.7527	Adder	10.3
946161	AF1-281 C	0.4168	Adder	0.49
946162	AF1-281 E	2.3619	Adder	2.78
946321	AF1-296 C O1	3.2866	Adder	3.87
946322	AF1-296 E O1	15.3873	Adder	18.1
946501	AF1-314 C	6.7420	Adder	7.93
946502	AF1-314 E	31.5649	Adder	37.14
946531	AF1-317 C O1	1.8306	Adder	2.15
946671	AF1-331	1.6881	Adder	1.99
950101	J390	83.5450	PJM External (MISO)	83.5450
952431	J760	5.3670	PJM External (MISO)	5.3670
952511	J584 C	1.0629	PJM External (MISO)	1.0629
952512	J584 E	5.7507	PJM External (MISO)	5.7507
953111	J807 C	1.2215	PJM External (MISO)	1.2215
953112	J807 E	6.6085	PJM External (MISO)	6.6085
953681	J818	14.1654	PJM External (MISO)	14.1654
953691	J819 C	1.4959	PJM External (MISO)	1.4959
953692	J819 E	8.0935	PJM External (MISO)	8.0935
953901	J850	21.0400	PJM External (MISO)	21.0400
954001	J864	4.4262	PJM External (MISO)	4.4262
955221	J1000	3.7405	PJM External (MISO)	3.7405
955971	J1084	11.1330	PJM External (MISO)	11.1330
956581	J1154	7.1355	PJM External (MISO)	7.1355
956901	J1188	5.8100	PJM External (MISO)	5.8100
958911	AF2-182	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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960552	AF2-346 E	1.4553	Adder	3.23
960721	AF2-363 C O1	2.1972	Adder	4.88
960722	AF2-363 E O1	1.4648	Adder	3.25
960751	AF2-366 C O1	2.3027	Adder	5.11
960752	AF2-366 E O1	1.5352	Adder	3.41
961011	AF2-392 C O1	2.0808	Adder	4.62
961012	AF2-392 E O1	9.7421	Adder	21.63
961021	AF2-393 O1	3.5469	Adder	7.87
961031	AF2-394 O1	2.3646	Adder	5.25
WEC	WEC	0.5292	Confirmed LTF	0.5292
CBM-W2	CBM-W2	8.7551	Confirmed LTF	8.7551
NY	NY	0.2483	Confirmed LTF	0.2483
CBM-W1	CBM-W1	40.2447	Confirmed LTF	40.2447
TVA	TVA	0.9352	Confirmed LTF	0.9352
O-066	O-066	2.9030	Confirmed LTF	2.9030
CBM-S2	CBM-S2	0.1792	Confirmed LTF	0.1792
CBM-S1	CBM-S1	4.2089	Confirmed LTF	4.2089
TILTON	TILTON	0.1210	Confirmed LTF	0.1210
G-007	G-007	0.4482	Confirmed LTF	0.4482
MADISON	MADISON	11.4993	Confirmed LTF	11.4993
MEC	MEC	9.5086	Confirmed LTF	9.5086
GIBSON	GIBSON	0.0824	Confirmed LTF	0.0824
BLUEG	BLUEG	0.5208	Confirmed LTF	0.5208
TRIMBLE	TRIMBLE	0.1781	Confirmed LTF	0.1781

11.6.5 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
96369996	270807	LIBERTYVI; R	CE	270857	P HTS 117; R	CE	1	COMED_P4_016-45-BT6-11_	breaker	1479.0	107.5	108.07	DC	18.78

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274683	WAUKEGAN ;8U	8.6783	50/50	8.6783
274725	ZION EC ;1P	6.6512	50/50	6.6512
274726	ZION EC ;2P	6.6512	50/50	6.6512
274727	ZION EC ;3P	6.6512	50/50	6.6512
274828	WAUKEGAN ;BP	2.4683	50/50	2.4683
274830	U3-021 1	5.6437	Adder	6.64
274831	U3-021 2	5.6437	Adder	6.64
274859	EASYR;U1 E	5.9764	Adder	7.03
274860	EASYR;U2 E	5.9764	Adder	7.03
276170	Z1-108 E	2.7896	50/50	2.7896
290051	GSG-6; E	3.8377	Adder	4.51
293516	O-009 E1	3.5313	Adder	4.15
293517	O-009 E2	1.7936	Adder	2.11
293518	O-009 E3	1.9753	Adder	2.32
293715	O-029 E	3.7754	Adder	4.44

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
293716	O-029 E	2.0700	Adder	2.44
293717	O-029 E	1.9025	Adder	2.24
294763	P-046 E	6.4178	Adder	7.55
915011	Y3-013 1	7.0107	50/50	7.0107
915021	Y3-013 2	7.0107	50/50	7.0107
915031	Y3-013 3	7.0107	50/50	7.0107
919581	AA2-030	7.8842	Adder	9.28
920272	AA2-123 E	2.1451	Adder	2.52
924471	AB2-096	46.1090	50/50	46.1090
926431	AC1-114	1.8090	Adder	2.13
927511	AC1-113 1	0.9047	Adder	1.06
927521	AC1-113 2	0.9047	Adder	1.06
930481	AB1-089	41.6636	Adder	49.02
932881	AC2-115 1	1.8093	Adder	2.13
932891	AC2-115 2	1.8093	Adder	2.13
932921	AC2-116	0.6331	Adder	0.74
933911	AD1-013 C	0.6727	Adder	0.79
933912	AD1-013 E	1.0746	Adder	1.26
933931	AD1-016 C	0.8151	Adder	0.96
933932	AD1-016 E	1.3299	Adder	1.56
934431	AD1-067 C	0.0482	Adder	0.06
934432	AD1-067 E	0.2026	Adder	0.24
934651	AD1-096 C	0.5775	Adder	0.68
934652	AD1-096 E	0.9422	Adder	1.11
934701	AD1-098 C O1	2.5607	Adder	3.01
934702	AD1-098 E O1	1.8695	Adder	2.2
934971	AD1-129 C	0.7344	Adder	0.86
934972	AD1-129 E	0.4896	Adder	0.58
936791	AD2-102 C	11.0762	Adder	13.03
936792	AD2-102 E	7.3841	Adder	8.69
937001	AD2-134 C	1.0032	Adder	1.18
937002	AD2-134 E	4.1443	Adder	4.88
937311	AD2-172 C	1.6847	Adder	1.98
937312	AD2-172 E	2.3265	Adder	2.74
937531	AD2-214 C	1.9195	Adder	2.26
937532	AD2-214 E	1.2797	Adder	1.51
938861	AE1-114 C O1	2.3366	Adder	2.75
938862	AE1-114 E O1	7.9718	Adder	9.38
939051	AE1-134 1	0.6127	Adder	0.72
939061	AE1-134 2	0.6127	Adder	0.72
940501	AE2-035 C	1.6847	Adder	1.98
940502	AE2-035 E	2.3265	Adder	2.74
942991	AE2-321 C	7.1113	Adder	8.37
942992	AE2-321 E	3.5026	Adder	4.12
943381	AF1-009 C	0.2215	Adder	0.26
943382	AF1-009 E	0.8860	Adder	1.04
943401	AF1-011 C	0.4821	Adder	0.57
943402	AF1-011 E	0.8092	Adder	0.95
943411	AF1-012 C	4.6928	Adder	5.52
943412	AF1-012 E	3.1285	Adder	3.68
943801	AF1-048 C	3.3243	Adder	3.91
943802	AF1-048 E	2.2162	Adder	2.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943921	AF1-060	0.8295	Adder	0.98
944041	AF1-072	1.3737	Adder	1.62
946151	AF1-280 C O1	8.0304	Adder	9.45
946152	AF1-280 E O1	3.6928	Adder	4.34
946161	AF1-281 C	0.1758	Adder	0.21
946162	AF1-281 E	0.9965	Adder	1.17
946321	AF1-296 C O1	1.7144	Adder	2.02
946322	AF1-296 E O1	8.0264	Adder	9.44
946501	AF1-314 C	2.9933	Adder	3.52
946502	AF1-314 E	14.0140	Adder	16.49
946531	AF1-317 C O1	0.8939	Adder	1.05
946661	AF1-330 C	1.7589	Adder	2.07
946662	AF1-330 E	0.3861	Adder	0.45
946671	AF1-331	0.8736	Adder	1.03
950101	J390	64.9490	PJM External (MISO)	64.9490
951391	J505	11.3580	PJM External (MISO)	11.3580
952381	J703	13.4479	PJM External (MISO)	13.4479
952391	J704	5.7371	PJM External (MISO)	5.7371
952431	J760	2.3139	PJM External (MISO)	2.3139
952511	J584 C	0.7661	PJM External (MISO)	0.7661
952512	J584 E	4.1449	PJM External (MISO)	4.1449
953111	J807 C	0.8131	PJM External (MISO)	0.8131
953112	J807 E	4.3988	PJM External (MISO)	4.3988
953151	J831	5.3220	PJM External (MISO)	5.3220
953331	J801	3.7866	PJM External (MISO)	3.7866
953491	J947	30.2260	PJM External (MISO)	30.2260
953681	J818	14.4664	PJM External (MISO)	14.4664
953691	J819 C	1.0459	PJM External (MISO)	1.0459
953692	J819 E	5.6584	PJM External (MISO)	5.6584
953701	J821 C	1.2327	PJM External (MISO)	1.2327
953702	J821 E	6.6694	PJM External (MISO)	6.6694
953891	J849	13.1488	PJM External (MISO)	13.1488
953901	J850	23.6375	PJM External (MISO)	23.6375
954001	J864	3.3697	PJM External (MISO)	3.3697
954141	J878	29.1780	PJM External (MISO)	29.1780
954191	J886	17.0220	PJM External (MISO)	17.0220
954511	J926 C	0.8233	PJM External (MISO)	0.8233
954512	J926 E	4.4544	PJM External (MISO)	4.4544
954691	J732	35.4250	PJM External (MISO)	35.4250
954741	J928 C	1.3126	PJM External (MISO)	1.3126
954742	J928 E	7.1013	PJM External (MISO)	7.1013
955091	J986	12.7640	PJM External (MISO)	12.7640
955241	J1002	9.0882	PJM External (MISO)	9.0882
955251	J1003	5.0285	PJM External (MISO)	5.0285
955301	J1009	70.6280	PJM External (MISO)	70.6280
955311	J1010	60.9480	PJM External (MISO)	60.9480
955321	J1011	60.9480	PJM External (MISO)	60.9480
955581	J1042 C	3.6588	PJM External (MISO)	3.6588
955582	J1042 E	20.7332	PJM External (MISO)	20.7332
955671	J1051	5.8870	PJM External (MISO)	5.8870
955691	J1053	23.8160	PJM External (MISO)	23.8160
955981	J1085 C	3.1791	PJM External (MISO)	3.1791

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
955982	J1085 E	17.1999	PJM External (MISO)	17.1999
956141	J1101	2.2696	PJM External (MISO)	2.2696
956321	J1121	18.0520	PJM External (MISO)	18.0520
956571	J1153	19.2705	PJM External (MISO)	19.2705
956581	J1154	7.2795	PJM External (MISO)	7.2795
956731	J1171	11.3880	PJM External (MISO)	11.3880
956852	J1183 E	0.1420	PJM External (MISO)	0.1420
956901	J1188	4.4180	PJM External (MISO)	4.4180
957331	AF2-027 C	4.6738	50/50	4.6738
957332	AF2-027 E	7.0107	50/50	7.0107
958911	AF2-182	5.5920	Adder	12.41
958921	AF2-183 C	0.9941	Adder	2.21
958922	AF2-183 E	1.4912	Adder	3.31
959101	AF2-201 C O1	2.1854	Adder	4.85
959102	AF2-201 E O1	6.2757	Adder	13.93
959761	AF2-267 C O1	1.5776	Adder	3.5
959762	AF2-267 E O1	7.3857	Adder	16.39
960551	AF2-346 C	1.0659	Adder	2.37
960552	AF2-346 E	0.7106	Adder	1.58
960581	AF2-349 C	24.3576	50/50	24.3576
960582	AF2-349 E	16.2384	50/50	16.2384
960721	AF2-363 C O1	1.1441	Adder	2.54
960722	AF2-363 E O1	0.7628	Adder	1.69
960731	AF2-364 C O1	1.4035	Adder	3.12
960732	AF2-364 E O1	0.9357	Adder	2.08
961011	AF2-392 C O1	0.9559	Adder	2.12
961012	AF2-392 E O1	4.4753	Adder	9.93
961021	AF2-393 O1	1.6294	Adder	3.62
961031	AF2-394 O1	1.0862	Adder	2.41
WEC	WEC	5.5421	Confirmed LTF	5.5421
CBM-W2	CBM-W2	6.9205	Confirmed LTF	6.9205
NY	NY	0.1759	Confirmed LTF	0.1759
CBM-W1	CBM-W1	67.0161	Confirmed LTF	67.0161
TVA	TVA	0.7756	Confirmed LTF	0.7756
O-066	O-066	2.0429	Confirmed LTF	2.0429
CBM-S2	CBM-S2	0.3410	Confirmed LTF	0.3410
CBM-S1	CBM-S1	3.5443	Confirmed LTF	3.5443
TILTON	TILTON	0.1077	Confirmed LTF	0.1077
G-007	G-007	0.3151	Confirmed LTF	0.3151
MADISON	MADISON	12.6988	Confirmed LTF	12.6988
MEC	MEC	7.7210	Confirmed LTF	7.7210
GIBSON	GIBSON	0.0617	Confirmed LTF	0.0617
BLUEG	BLUEG	0.3715	Confirmed LTF	0.3715
TRIMBLE	TRIMBLE	0.1274	Confirmed LTF	0.1274

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
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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
96371199	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P7_138-L11106_B-R+_345-L15502_B-R	tower	331.0	104.36	105.79	DC	10.46

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	0.4340	Adder	0.51
934652	AD1-096 E	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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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
95350847	960680	AF2-359 TAP	CE	243229	05OLIVE	AEP	1	COMED_P4_112-65-BT3-4__	breaker	971.0	109.82	109.83	DC	19.03

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274806	UNIV PK N;2U	1.8438	50/50	1.8438
274808	UNIV PK N;4U	1.8438	50/50	1.8438
274809	UNIV PK N;5U	1.8438	50/50	1.8438
274811	UNIV PK N;7U	1.8438	50/50	1.8438
274812	UNIV PK N;8U	1.8438	50/50	1.8438
274814	UNIV PK N;0U	1.8438	50/50	1.8438
274815	UNIV PK N;XU	1.8438	50/50	1.8438
274830	U3-021 1	4.2437	Adder	4.99
274831	U3-021 2	4.2437	Adder	4.99
274881	PILOT HIL;1E	12.8008	Adder	15.06
275149	KELLYCK ;1E	12.8008	Adder	15.06
276167	Z1-106 E2	0.8815	Adder	1.04
276168	Z1-106 E1	0.8815	Adder	1.04
276169	Z1-107 E	1.8726	Adder	2.2
276170	Z1-108 E	1.7357	Adder	2.04
290021	O50 E	13.4014	Adder	15.77
290051	GSG-6; E	7.3075	Adder	8.6
290108	LEEDK;1U E	16.9235	Adder	19.91
293061	N-015 E	10.8589	Adder	12.78
293644	O22 E1	6.7411	Adder	7.93
293645	O22 E2	13.0857	Adder	15.39
294392	P-010 E	13.7908	Adder	16.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
915011	Y3-013 1	2.6176	Adder	3.08
915021	Y3-013 2	2.6176	Adder	3.08
915031	Y3-013 3	2.6176	Adder	3.08
918052	AA1-018 E OP	12.3182	Adder	14.49
920272	AA2-123 E	1.7022	Adder	2.0
924471	AB2-096	29.4703	Adder	34.67
926311	AC1-109 1	1.3324	Adder	1.57
926321	AC1-109 2	1.3324	Adder	1.57
926331	AC1-110 1	1.3249	Adder	1.56
926341	AC1-110 2	1.3249	Adder	1.56
926351	AC1-111 1	0.5330	Adder	0.63
926361	AC1-111 2	0.5330	Adder	0.63
926371	AC1-111 3	0.5330	Adder	0.63
926381	AC1-111 4	0.5330	Adder	0.63
926391	AC1-111 5	0.5330	Adder	0.63
926401	AC1-111 6	0.5330	Adder	0.63
926431	AC1-114	1.6527	Adder	1.94
927451	AC1-142A 1	2.9727	Adder	3.5
927461	AC1-142A 2	2.9713	Adder	3.5
927511	AC1-113 1	0.8264	Adder	0.97
927521	AC1-113 2	0.8264	Adder	0.97
930481	AB1-089	45.6841	Adder	53.75
930501	AB1-091 O1	49.2044	Adder	57.89
930741	AB1-122 1O1	49.9503	Adder	58.77
930751	AB1-122 2O1	51.4018	Adder	60.47
932881	AC2-115 1	1.6527	Adder	1.94
932891	AC2-115 2	1.6527	Adder	1.94
932921	AC2-116	0.5785	Adder	0.68
932931	AC2-117	8.9559	Adder	10.54
933411	AC2-154 C	1.7374	Adder	2.04
933412	AC2-154 E	2.8347	Adder	3.33
933431	AC2-156 C O1	0.6658	Adder	0.78
933432	AC2-156 E O1	1.0864	Adder	1.28
933911	AD1-013 C	1.2909	Adder	1.52
933912	AD1-013 E	2.0621	Adder	2.43
933931	AD1-016 C	0.6468	Adder	0.76
933932	AD1-016 E	1.0554	Adder	1.24
934101	AD1-039 1	4.8951	Adder	5.76
934111	AD1-039 2	5.0374	Adder	5.93
934431	AD1-067 C	0.0918	Adder	0.11
934432	AD1-067 E	0.3858	Adder	0.45
934651	AD1-096 C	0.6185	Adder	0.73
934652	AD1-096 E	1.0091	Adder	1.19
934701	AD1-098 C O1	4.8064	Adder	5.65
934702	AD1-098 E O1	3.5092	Adder	4.13
934721	AD1-100 C	13.3811	Adder	15.74
934722	AD1-100 E	62.4453	Adder	73.47
934871	AD1-116 C	0.7174	Adder	0.84
934872	AD1-116 E	1.1705	Adder	1.38
934971	AD1-129 C	0.6287	Adder	0.74
934972	AD1-129 E	0.4191	Adder	0.49
936291	AD2-038 C O1	1.6923	Adder	1.99

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936292	AD2-038 E O1	11.3254	Adder	13.32
936371	AD2-047 C O1	3.1091	Adder	3.66
936372	AD2-047 E O1	15.1795	Adder	17.86
936461	AD2-060	1.8289	Adder	2.15
936511	AD2-066 C O1	5.8799	Adder	6.92
936512	AD2-066 E O1	3.9199	Adder	4.61
936791	AD2-102 C	9.8165	Adder	11.55
936792	AD2-102 E	6.5443	Adder	7.7
937001	AD2-134 C	1.9103	Adder	2.25
937002	AD2-134 E	7.8914	Adder	9.28
937401	AD2-194 1	5.4743	Adder	6.44
937411	AD2-194 2	5.4784	Adder	6.45
938511	AE1-070 1	6.4323	Adder	7.57
938521	AE1-070 2	5.8893	Adder	6.93
938851	AE1-113 C	5.5281	Adder	6.5
938852	AE1-113 E	19.5996	Adder	23.06
939321	AE1-163 C O1	4.2525	Adder	5.0
939322	AE1-163 E O1	26.1223	Adder	30.73
939351	AE1-166 C O1	7.1186	Adder	8.37
939352	AE1-166 E O1	6.5710	Adder	7.73
940752	AE2-062 E	0.0901	Adder	0.11
941131	AE2-107 C	5.0908	Adder	5.99
941132	AE2-107 E	3.3939	Adder	3.99
941551	AE2-152 C O1	8.2138	Adder	9.66
941552	AE2-152 E O1	5.4759	Adder	6.44
941561	AE2-153 C O1	3.2939	Adder	3.88
941562	AE2-153 E O1	15.4214	Adder	18.14
942421	AE2-255 C O1	2.0940	Adder	2.46
942422	AE2-255 E O1	6.2819	Adder	7.39
942651	AE2-281 C O1	0.6075	Adder	0.71
942652	AE2-281 E O1	3.7318	Adder	4.39
942991	AE2-321 C	5.6939	Adder	6.7
942992	AE2-321 E	2.8044	Adder	3.3
943121	AE2-341 C	8.8930	Adder	10.46
943122	AE2-341 E	4.3670	Adder	5.14
943381	AF1-009 C	0.4158	Adder	0.49
943382	AF1-009 E	1.6631	Adder	1.96
943591	AF1-030 C O1	5.9140	Adder	6.96
943592	AF1-030 E O1	2.9260	Adder	3.44
943801	AF1-048 C	2.6617	Adder	3.13
943802	AF1-048 E	1.7744	Adder	2.09
944041	AF1-072	1.5025	Adder	1.77
944911	AF1-156 C	8.4219	Adder	9.91
944912	AF1-156 E	5.6146	Adder	6.61
945351	AF1-200 FTIR	215.3640	Merchant Transmission	215.3640
946661	AF1-330 C	1.3958	Adder	1.64
946662	AF1-330 E	0.3064	Adder	0.36
946671	AF1-331	1.6765	Adder	1.97
957021	AF2-003 C O1	2.3049	Adder	5.12
957022	AF2-003 E O1	10.7911	Adder	23.95
957331	AF2-027 C	0.9249	Adder	2.05
957332	AF2-027 E	1.3873	Adder	3.08

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957471	AF2-041 C	7.8455	Adder	17.42
957472	AF2-041 E	5.2303	Adder	11.61
958011	AF2-095 C O1	6.5900	Adder	14.63
958012	AF2-095 E O1	3.1012	Adder	6.88
958021	AF2-096 C O1	12.8794	Adder	28.59
958022	AF2-096 E O1	6.0906	Adder	13.52
958481	AF2-142 C	4.5025	Adder	9.99
958482	AF2-142 E	3.0017	Adder	6.66
958491	AF2-143 C	4.1396	Adder	9.19
958492	AF2-143 E	2.7598	Adder	6.13
959081	AF2-199 C	2.6152	Adder	5.81
959082	AF2-199 E	1.7434	Adder	3.87
959091	AF2-200 C	5.2303	Adder	11.61
959092	AF2-200 E	3.4869	Adder	7.74
959101	AF2-201 C O1	0.0380	Adder	0.08
959102	AF2-201 E O1	0.1091	Adder	0.24
959351	AF2-226 C	0.8757	Adder	1.94
959352	AF2-226 E	1.3135	Adder	2.92
960281	AF2-319 C	0.8757	Adder	1.94
960282	AF2-319 E	1.3135	Adder	2.92
960381	AF2-329	2.4457	Adder	5.43
960581	AF2-349 C	8.0530	Adder	17.88
960582	AF2-349 E	5.3687	Adder	11.92
960591	AF2-350 C O1	2.9076	Adder	6.45
960592	AF2-350 E O1	1.9384	Adder	4.3
960601	AF2-351 C O1	0.3877	Adder	0.86
960602	AF2-351 E O1	0.5815	Adder	1.29
960681	AF2-359 C	65.7540	50/50	65.7540
960682	AF2-359 E	43.8360	50/50	43.8360
960721	AF2-363 C O1	2.1980	Adder	4.88
960722	AF2-363 E O1	1.4654	Adder	3.25
960731	AF2-364 C O1	2.2713	Adder	5.04
960732	AF2-364 E O1	1.5142	Adder	3.36
960751	AF2-366 C O1	2.5693	Adder	5.7
960752	AF2-366 E O1	1.7128	Adder	3.8
WEC	WEC	3.0757	Confirmed LTF	3.0757
CALDERWOOD	CALDERWOOD	0.0691	Confirmed LTF	0.0691
CBM-W2	CBM-W2	14.5536	Confirmed LTF	14.5536
NY	NY	0.9241	Confirmed LTF	0.9241
CBM-W1	CBM-W1	47.1877	Confirmed LTF	47.1877
TVA	TVA	0.9016	Confirmed LTF	0.9016
O-066	O-066	10.9133	Confirmed LTF	10.9133
CHEOAH	CHEOAH	0.0776	Confirmed LTF	0.0776
CBM-S1	CBM-S1	3.0246	Confirmed LTF	3.0246
G-007	G-007	1.6869	Confirmed LTF	1.6869
MADISON	MADISON	15.8659	Confirmed LTF	15.8659
MEC	MEC	10.4429	Confirmed LTF	10.4429
GIBSON	GIBSON	0.1338	Confirmed LTF	0.1338
BLUEG	BLUEG	1.6666	Confirmed LTF	1.6666
TRIMBLE	TRIMBLE	0.5654	Confirmed LTF	0.5654
CATAWBA	CATAWBA	0.2394	Confirmed LTF	0.2394

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
AA2-030	Nelson	Active
AA2-123	Marengo 34kV	In Service
AB1-089	Byron-Wayne 345kV #1	Active
AB1-091	Davis Creek 345kV	Active
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Active
AB2-096	Silver Lake-Cherry Valley	Active
AB2-191	Mendota Hills	In Service
AC1-109	Aurora 345kV	Active
AC1-110	Aurora 138kV	Active
AC1-111	Aurora 138kV	Active
AC1-113	Rockford	Active
AC1-114	Rockford II	Active
AC1-142A	Joliet	Active
AC2-115	Rockford	Active
AC2-116	Rockford II	Active
AC2-117	University Park North	Engineering and Procurement
AC2-154	Davis Creek 138kV	Active
AC2-156	Sandwich 34.5kV	Active
AD1-013	Twombly Road 138kV	Active
AD1-016	Marengo	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-067	Mendota Hills	Active
AD1-096	Stillman Valley 34 kV	Active
AD1-098	Dixon-McGirr	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD1-116	Nevada 345 kV	Active
AD1-129	Belvidere 34 kV	Active
AD2-038	Powerton	Active
AD2-047	Davis Creek 138 kV	Active
AD2-060	Davis Creek 138kV	Active
AD2-066	Mazon-Crescent Ridge	Active
AD2-102	Wempletown 345 kV	Active
AD2-134	Shady Oaks	Active
AD2-172	Lena 138kV	Active
AD2-194	Elwood	Active
AD2-214	Rock Falls-Garden Plains	Active
AE1-070	Elwood 345 kV	Active
AE1-113	Mole Creek 345 kV	Active
AE1-114	Maryland-Lancaster 138 kV	Active
AE1-134	Nelson 345 kV	Active

Queue Number	Project Name	Status
AE1-163	Powerton-Nevada 345 kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-035	Lena 138 kV	Active
AE2-062	Normantown	Active
AE2-107	Haumesser Road 138 kV	Active
AE2-152	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-153	Braidwood-Davis Creek	Active
AE2-255	Molecreek 345 kV	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
AF1-156	Braidwood-Davis Creek	Active
AF1-200	Plano 345 kV	Active
AF1-280	Nelson-Lee County	Active
AF1-281	Nelson-Lee County	Active
AF1-296	Garden Plain 138 kV	Active
AF1-314	Lena 138 kV	Active
AF1-317	Electric Jct-Nelson	Active
AF1-330	Marengo	Active
AF1-331	Twombly Road	Active
AF2-003	Powerton-Mole Creek	Active
AF2-027	Zion Energy Center 345 kV	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-095	Wilmington-Davis Creek	Active
AF2-096	Braidwood-East Frankfort 345 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
AF2-226	Katydid Road 345 kV	Active
AF2-267	Lancaster 138 kV	Active
AF2-319	Katydid Road 345 kV	Active
AF2-329	Sandwich-Plano 138 kV	Active
AF2-346	Electric Junction-Nelson 345 kV	Active
AF2-349	Garden Prairie-Silver Lake 345 kV	Active
AF2-350	Kensington 138 kV	Active
AF2-351	Kensington 138 kV	Active
AF2-359	Olive-University Park 345 kV	Active
AF2-363	Glidden 138 kV	Active
AF2-364	Wayne Red 138 kV	Active
AF2-366	Glidden-Waterman 345 kV	Active
AF2-392	Nelson-Dixon 138 kV	Active

Queue Number	Project Name	Status
AF2-393	Nelson-Dixon 138 kV	Active
AF2-394	Nelson-Dixon 138 kV	Active
U3-021	Silver Lake-Cherry Valley	Active
Y3-013	Zion Energy Center	Active
Z1-106	West Chicago 34kV	In Service
Z1-107	Joliet 34kV	In Service
Z1-108	McHenry 34kV	In Service
J1000	MISO	MISO
J1002	MISO	MISO
J1003	MISO	MISO
J1009	MISO	MISO
J1010	MISO	MISO
J1011	MISO	MISO
J1042	MISO	MISO
J1051	MISO	MISO
J1053	MISO	MISO
J1084	MISO	MISO
J1085	MISO	MISO
J1101	MISO	MISO
J1121	MISO	MISO
J1153	MISO	MISO
J1154	MISO	MISO
J1171	MISO	MISO
J1183	MISO	MISO
J1188	MISO	MISO
J390	MISO	MISO
J505	MISO	MISO
J584	MISO	MISO
J703	MISO	MISO
J704	MISO	MISO
J732	MISO	MISO
J760	MISO	MISO
J801	MISO	MISO
J807	MISO	MISO
J818	MISO	MISO
J819	MISO	MISO
J821	MISO	MISO
J831	MISO	MISO
J849	MISO	MISO
J850	MISO	MISO
J864	MISO	MISO
J878	MISO	MISO
J886	MISO	MISO
J926	MISO	MISO
J928	MISO	MISO
J947	MISO	MISO
J986	MISO	MISO

11.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
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_138-L17121_R-R	CONTINGENCY 'COMED_P1-2_138-L17121_R-R' TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 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
COMED_P4_144-45-BT6-8__	CONTINGENCY 'COMED_P4_144-45-BT6-8__' TRIP BRANCH FROM BUS 930480 TO BUS 270916 CKT 1 / AB1-089 TAP 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270730 TO BUS 270916 CKT 1 / ELEC JUNC; B 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270916 TO BUS 270917 CKT 1 / WAYNE ; B 345 WAYNE ; R 345 END
COMED_P4_016-45-BT6-11__	CONTINGENCY 'COMED_P4_016-45-BT6-11__' TRIP BRANCH FROM BUS 270914 TO BUS 270830 CKT 1 / WAUKEGAN ; B 345 NBROOK159; B 345 TRIP BRANCH FROM BUS 270915 TO BUS 270914 CKT 1 / WAUKEGAN ; R 345 WAUKEGAN ; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 270830 CKT 1 / NBROOK159;2M 138 NBROOK159; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 272120 CKT 1 / NBROOK159;2M 138 NBROOK159; B 138 TRIP BRANCH FROM BUS 275206 TO BUS 275306 CKT 1 / NBROOK159;2M 138 NBROOK159;2C 34.5 CLOSE BRANCH FROM BUS 272120 TO BUS 272121 CKT 1 / NBROOK159; B 138 NBROOK159; R 138 TRIP BRANCH FROM BUS 270942 TO BUS 270915 CKT 1 / ZION STA ;0B 345 WAUKEGAN ; R 345 END

Contingency Name	Contingency Definition
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_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_695_B2	CONTINGENCY 'COMED_P1-2_695_B2' OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTO; 765 1 END
COMED_P2-1_119-L11904__	CONTINGENCY 'COMED_P2-1_119-L11904__' TRIP BRANCH FROM BUS 271897 TO BUS 271498 CKT 1 / LANCASTER; R 138 FREEPORT ;BT END

Contingency Name	Contingency Definition
COMED_P4_194-38-L19414_	CONTINGENCY 'COMED_P4_194-38-L19414_' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272433 TO BUS 272432 / SABROOKE ; R 138 SABROOKE ; B 138 DISCONNECT BUS 272433 / SABROOKE ; R 138 END
COMED_P2-1_119-L17121__	CONTINGENCY 'COMED_P2-1_119-L17121__' TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 END

Contingency Name	Contingency Definition
COMED_P1-2_138-L19414GR-R	CONTINGENCY 'COMED_P1-2_138-L19414GR-R' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 END
Base Case	
COMED_P4_112-65-BT3-4__	CONTINGENCY 'COMED_P4_112-65-BT3-4__' TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTO; 765 05DUMONT 765 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1 / WILTO;3M 345 WILTO; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1 / WILTO;3M 345 WILTO; B 345 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1 / WILTO;3M 345 WILTO;3C 33 END

Contingency Name	Contingency Definition
COMED_P7_138-L11902GB-R+_138-L17121_R-R-A	CONTINGENCY 'COMED_P7_138-L11902GB-R+_138-L17121_R-R-A' TRIP BRANCH FROM BUS 271399 TO BUS 271397 CKT 1 / ELEROY ;RT 138 ELEROY ; R 138 TRIP BRANCH FROM BUS 271399 TO BUS 271915 CKT 1 / ELEROY ;RT 138 LENA ; R 138 TRIP BRANCH FROM BUS 271898 TO BUS 271399 CKT 1 / LANCASTER;BT 138 ELEROY ;RT 138 TRIP BRANCH FROM BUS 271898 TO BUS 271897 CKT 1 / LANCASTER;BT 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 271978 TO BUS 938860 CKT 1 / MARYLAND ; B 138 AE1-114 TAP 138 TRIP BRANCH FROM BUS 272598 TO BUS 271898 CKT 1 / ESS B427 ;1T 138 LANCASTER;BT 138 TRIP BRANCH FROM BUS 272598 TO BUS 272596 CKT 1 / ESS B427 ;1T 138 ESS B427 ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271397 TO BUS 271396 / ELEROY ; R 138 ELEROY ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271915 TO BUS 271914 / LENA ; R 138 LENA ; B 138 TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 138 END
COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	CONTINGENCY 'COMED_P7_138-L11902GB-R+_138-L17121_R-R-B' TRIP BRANCH FROM BUS 271399 TO BUS 271397 CKT 1 / ELEROY ;RT 138 ELEROY ; R 138 TRIP BRANCH FROM BUS 271399 TO BUS 271915 CKT 1 / ELEROY ;RT 138 LENA ; R 138 TRIP BRANCH FROM BUS 271898 TO BUS 271399 CKT 1 / LANCASTER;BT 138 ELEROY ;RT 138 TRIP BRANCH FROM BUS 271898 TO BUS 271897 CKT 1 / LANCASTER;BT 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 938860 TO BUS 272598 CKT 1 / AE1-114 TAP 138 ESS B427 ;1T 138 TRIP BRANCH FROM BUS 272598 TO BUS 271898 CKT 1 / ESS B427 ;1T 138 LANCASTER;BT 138 TRIP BRANCH FROM BUS 272598 TO BUS 272596 CKT 1 / ESS B427 ;1T 138 ESS B427 ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271397 TO BUS 271396 / ELEROY ; R 138 ELEROY ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271915 TO BUS 271914 / LENA ; R 138 LENA ; B 138 TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 138 END

Contingency Name	Contingency Definition
COMED_P4_112-65-BT4-5__	CONTINGENCY 'COMED_P4_112-65-BT4-5__' TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTO; 765 05DUMONT 765 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1 / WILTO;4M 345 WILTO; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1 / WILTO;4M 345 WILTO; R 345 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1 / WILTO;4M 345 WILTO;4C 33 END
COMED_P4_119-38-L19414_	CONTINGENCY 'COMED_P4_119-38-L19414_' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 TRIP BRANCH FROM BUS 271897 TO BUS 271898 CKT 1 / LANCASTER; R 138 LANCASTER;BT 138 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 AF2-201 was evaluated as a 199.0 MW (Capacity 51.4 MW) injection at the Lena 138 kV substation in the ComEd area. Project AF2-201 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-201 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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
96371339	271499	FREEPORT ;RT	138.0	CE	272599	ESS B427 ;4T	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-A	tower	498.0	60.23	100.19	DC	198.98
96371340	271499	FREEPORT ;RT	138.0	CE	272599	ESS B427 ;4T	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	498.0	60.69	100.65	DC	198.98
96369738	271897	LANCASTE R; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P4_194-38-L19414_	breaker	275.0	97.47	139.28	DC	114.97
96371184	271897	LANCASTE R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	336.0	98.5	157.34	DC	197.71
96371185	271897	LANCASTE R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-A	tower	336.0	97.81	156.66	DC	197.71
96369743	272240	PECATONIC; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	COMED_P4_194-38-L19414_	breaker	275.0	92.63	134.44	DC	114.97
96371345	272247	PIERPONT ;RT	138.0	CE	272433	SABROOKE ; R	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	445.0	56.9	100.23	DC	192.79
96371343	272599	ESS B427 ;4T	138.0	CE	272491	S PECATON; R	138.0	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	498.0	60.49	100.45	DC	198.98

13.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC DC	MW IMPACT
96369996	270807	LIBERTYV I; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT6-11_	break er	1479.0	107.51	108.08	DC	18.78
96369737	271897	LANCAST ER; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P4_119-38-L19414_	break er	275.0	114.49	186.84	DC	198.98
96369742	272240	PECATONIC; B	138.0	CE	272747	WEMPLETOW; R	138.0	CE	1	COMED_P4_119-38-L19414_	break er	275.0	109.69	182.04	DC	198.98
96371199	272728	WATERMAN; B	138.0	CE	272445	SANDWICH; R	138.0	CE	1	COMED_P7_138-L11106_B-R_+ 345-L15502_B-R	towe r	331.0	104.36	105.79	DC	10.46
144186537	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	AEP_P4_#2978_05DUMONT_FSA	break er	971.0	106.85	106.88	DC	18.9
144186538	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	AEP_P4_#2978_05DUMONT_NON_FSA	break er	971.0	106.85	106.88	DC	18.9
144186539	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P4_023-65-BT2-3_	break er	971.0	106.53	106.55	DC	19.05
144186540	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P4_112-65-BT4-5_	break er	971.0	106.44	106.51	DC	19.03
144186541	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P4_112-65-BT3-4_	break er	971.0	106.44	106.51	DC	19.03

13.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC DC	MW IMPACT
96370341	270694	CHERRYVA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operatio n	1479.0	122.79	125.73	DC	43.04
96370343	270694	CHERRYVA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operatio n	1201.0	108.94	111.74	DC	33.39
96370349	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operatio n	1479.0	124.96	126.27	DC	43.04
96370351	270759	GARDEN PR; R	345.0	CE	960580	AF2-349 TAP	345.0	CE	1	Base Case	operatio n	1201.0	114.89	116.14	DC	33.39
96370450	270770	GOODINGS; 4B	345.0	CE	270766	GOODINGS; 3B	345.0	CE	1	COMED_P1-2_345-L11613AB-S	operatio n	1802.0	111.09	111.35	DC	20.4

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
96370448	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	104.17	104.86	DC	21.32
96370152	271398	ELEROY ;BT	138.0	CE	271498	FREEPORT ;BT	138.0	CE	1	Base Case	operation	249.0	154.15	234.07	DC	198.98
96370131	271495	FREEPORT ;5R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 2-1_119-L11904__	operation	173.0	181.99	297.01	DC	198.98
96370130	271498	FREEPORT ;BT	138.0	CE	271494	FREEPORT ;2R	138.0	CE	1	COMED_P 2-1_119-L11904__	operation	173.0	221.87	336.89	DC	198.98
96370221	271498	FREEPORT ;BT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	Base Case	operation	314.0	109.71	172.89	DC	198.36
96370516	271499	FREEPORT ;RT	138.0	CE	271897	LANCASTER; R	138.0	CE	1	COMED_P 2-1_119-L11904__	operation	317.0	66.97	108.91	DC	132.94
96370205	271897	LANCASTER; R; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	COMED_P 1-2_138-L19414GR-R	operation	264.0	100.34	144.13	DC	115.6
96370210	271897	LANCASTER; R; R	138.0	CE	272240	PECATONIC; B	138.0	CE	1	Base Case	operation	208.0	87.3	124.31	DC	76.99
96370270	271897	LANCASTER; R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 2-1_119-L17121__	operation	317.0	84.21	117.51	DC	105.57
96370271	271897	LANCASTER; R; R	138.0	CE	271499	FREEPORT ;RT	138.0	CE	1	COMED_P 1-2_138-L17121_R-R	operation	317.0	84.21	117.51	DC	105.57
96370268	271914	LENA ; B	138.0	CE	946500	AF1-314 TAP	138.0	CE	1	Base Case	operation	249.0	74.32	154.23	DC	198.98
96370215	272240	PECATONIC; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	COMED_P 1-2_138-L19414GR-R	operation	264.0	95.34	139.13	DC	115.6
96370220	272240	PECATONIC; B	138.0	CE	272747	WEMPLETO W; R	138.0	CE	1	Base Case	operation	208.0	83.02	120.04	DC	76.99
96370265	274750	CRETE EC ;BP	345.0	CE	255112	17STJOHN	345.0	NIPS	1	Base Case	operation	1091.0	154.13	154.22	DC	15.33
144186969	274804	UNIV PK N;RP	345.0	CE	243229	05OLIVE	345.0	AEP	1	COMED_P 1-2_695_B2	operation	971.0	106.39	106.41	DC	19.02
96370553	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	99.23	100.13	DC	40.72
96370362	943410	AF1-012 TAP	345.0	CE	957470	AF2-041 TAP	345.0	CE	1	Base Case	operation	1334.0	109.7	110.4	DC	21.32
96370149	946500	AF1-314 TAP	138.0	CE	271398	ELEROY ;BT	138.0	CE	1	Base Case	operation	249.0	159.45	239.37	DC	198.98
96370305	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	133.13	133.84	DC	21.32
96370321	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P 1-2_345-L0626__B-R-B	operation	1479.0	124.94	126.25	DC	43.04
96370323	960580	AF2-349 TAP	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	114.86	116.12	DC	33.39

13.5 Flow Gate Details - Secondary POI

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

13.5.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96371340	271499	FREEPORT ;RT	CE	272599	ESS B427 ;4T	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	498.0	60.69	100.65	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O2	51.3949	50/50	51.3949
959102	AF2-201 E O2	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96369737	271897	LANCASTER; R	CE	272240	PECATONIC; B	CE	1	COMED_P4_119-38-L19414_	breaker	275.0	114.49	186.84	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O2	51.3949	50/50	51.3949
959102	AF2-201 E O2	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
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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
96371184	271897	LANCASTER; R	CE	271499	FREEPORT ;RT	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	336.0	98.5	157.34	DC	197.71

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4275	50/50	3.4275
294763	P-046 E	79.4816	50/50	79.4816
937311	AD2-172 C	20.8639	50/50	20.8639
937312	AD2-172 E	28.8121	50/50	28.8121
940501	AE2-035 C	20.8639	50/50	20.8639
940502	AE2-035 E	28.8121	50/50	28.8121
943921	AF1-060	10.2730	50/50	10.2730
946501	AF1-314 C	37.0702	50/50	37.0702
946502	AF1-314 E	173.5560	50/50	173.5560
959101	AF2-201 C O2	51.0669	50/50	51.0669
959102	AF2-201 E O2	146.6436	50/50	146.6436
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96369742	272240	PECATONIC; B	CE	272747	WEMPLETOW; R	CE	1	COMED_P4_119-38-L19414_	breaker	275.0	109.69	182.04	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O2	51.3949	50/50	51.3949
959102	AF2-201 E O2	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96371345	272247	PIERPONT ;RT	CE	272433	SABROOKE ; R	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	445.0	56.9	100.23	DC	192.79

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.3422	50/50	3.3422
294763	P-046 E	77.5032	50/50	77.5032
937311	AD2-172 C	20.3446	50/50	20.3446
937312	AD2-172 E	28.0949	50/50	28.0949
940501	AE2-035 C	20.3446	50/50	20.3446
940502	AE2-035 E	28.0949	50/50	28.0949
943921	AF1-060	10.0173	50/50	10.0173
946501	AF1-314 C	36.1475	50/50	36.1475
946502	AF1-314 E	169.2360	50/50	169.2360
959101	AF2-201 C O2	49.7958	50/50	49.7958
959102	AF2-201 E O2	142.9934	50/50	142.9934
NEWTON	NEWTON	0.0086	Confirmed LTF	0.0086
FARMERCITY	FARMERCITY	0.0004	Confirmed LTF	0.0004
CALDERWOOD	CALDERWOOD	0.0040	Confirmed LTF	0.0040
NY	NY	0.0050	Confirmed LTF	0.0050
PRAIRIE	PRAIRIE	0.0207	Confirmed LTF	0.0207
O-066	O-066	0.0538	Confirmed LTF	0.0538
CHEOAH	CHEOAH	0.0040	Confirmed LTF	0.0040

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
EDWARDS	EDWARDS	0.0032	Confirmed LTF	0.0032
TILTON	TILTON	0.0050	Confirmed LTF	0.0050
G-007	G-007	0.0083	Confirmed LTF	0.0083
MADISON	MADISON	0.0020	Confirmed LTF	0.0020
GIBSON	GIBSON	0.0044	Confirmed LTF	0.0044
BLUEG	BLUEG	0.0139	Confirmed LTF	0.0139
TRIMBLE	TRIMBLE	0.0045	Confirmed LTF	0.0045
CATAWBA	CATAWBA	0.0028	Confirmed LTF	0.0028

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
96371343	272599	ESS B427 ;4T	CE	272491	S PECATON; R	CE	1	COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	tower	498.0	60.49	100.45	DC	198.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274856	ECOGROVE ;U1	3.4495	50/50	3.4495
294763	P-046 E	79.9920	50/50	79.9920
937311	AD2-172 C	20.9979	50/50	20.9979
937312	AD2-172 E	28.9971	50/50	28.9971
940501	AE2-035 C	20.9979	50/50	20.9979
940502	AE2-035 E	28.9971	50/50	28.9971
943921	AF1-060	10.3390	50/50	10.3390
946501	AF1-314 C	37.3083	50/50	37.3083
946502	AF1-314 E	174.6705	50/50	174.6705
959101	AF2-201 C O2	51.3949	50/50	51.3949
959102	AF2-201 E O2	147.5852	50/50	147.5852
NEWTON	NEWTON	0.0107	Confirmed LTF	0.0107
FARMERCITY	FARMERCITY	0.0006	Confirmed LTF	0.0006
CALDERWOOD	CALDERWOOD	0.0050	Confirmed LTF	0.0050
NY	NY	0.0055	Confirmed LTF	0.0055
PRAIRIE	PRAIRIE	0.0258	Confirmed LTF	0.0258
O-066	O-066	0.0672	Confirmed LTF	0.0672
CHEOAH	CHEOAH	0.0050	Confirmed LTF	0.0050
EDWARDS	EDWARDS	0.0035	Confirmed LTF	0.0035
TILTON	TILTON	0.0063	Confirmed LTF	0.0063
G-007	G-007	0.0104	Confirmed LTF	0.0104
GIBSON	GIBSON	0.0055	Confirmed LTF	0.0055
BLUEG	BLUEG	0.0174	Confirmed LTF	0.0174
TRIMBLE	TRIMBLE	0.0056	Confirmed LTF	0.0056
CATAWBA	CATAWBA	0.0035	Confirmed LTF	0.0035

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
96369996	270807	LIBERTYVI; R	CE	270857	P HTS 117; R	CE	1	COMED_P4_016-45-BT6-11_	breaker	1479.0	107.51	108.08	DC	18.78

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274683	WAUKEGAN ;8U	8.6783	50/50	8.6783
274725	ZION EC ;1P	6.6512	50/50	6.6512
274726	ZION EC ;2P	6.6512	50/50	6.6512
274727	ZION EC ;3P	6.6512	50/50	6.6512
274828	WAUKEGAN ;BP	2.4683	50/50	2.4683
274830	U3-021 1	5.6437	Adder	6.64
274831	U3-021 2	5.6437	Adder	6.64
274859	EASYSR;U1 E	5.9764	Adder	7.03
274860	EASYSR;U2 E	5.9764	Adder	7.03
276170	Z1-108 E	2.7896	50/50	2.7896
290051	GSG-6; E	3.8377	Adder	4.51
293516	O-009 E1	3.5313	Adder	4.15
293517	O-009 E2	1.7936	Adder	2.11
293518	O-009 E3	1.9753	Adder	2.32
293715	O-029 E	3.7754	Adder	4.44
293716	O-029 E	2.0700	Adder	2.44
293717	O-029 E	1.9025	Adder	2.24
294763	P-046 E	6.4178	Adder	7.55
915011	Y3-013 1	7.0107	50/50	7.0107
915021	Y3-013 2	7.0107	50/50	7.0107
915031	Y3-013 3	7.0107	50/50	7.0107
919581	AA2-030	7.8842	Adder	9.28
920272	AA2-123 E	2.1451	Adder	2.52
924471	AB2-096	46.1090	50/50	46.1090
926431	AC1-114	1.8090	Adder	2.13
927511	AC1-113 1	0.9047	Adder	1.06
927521	AC1-113 2	0.9047	Adder	1.06
930481	AB1-089	41.6636	Adder	49.02
932881	AC2-115 1	1.8093	Adder	2.13
932891	AC2-115 2	1.8093	Adder	2.13
932921	AC2-116	0.6331	Adder	0.74
933911	AD1-013 C	0.6727	Adder	0.79
933912	AD1-013 E	1.0746	Adder	1.26
933931	AD1-016 C	0.8151	Adder	0.96
933932	AD1-016 E	1.3299	Adder	1.56
934431	AD1-067 C	0.0482	Adder	0.06
934432	AD1-067 E	0.2026	Adder	0.24
934651	AD1-096 C	0.5775	Adder	0.68
934652	AD1-096 E	0.9422	Adder	1.11
934701	AD1-098 C O1	2.5607	Adder	3.01
934702	AD1-098 E O1	1.8695	Adder	2.2
934971	AD1-129 C	0.7344	Adder	0.86
934972	AD1-129 E	0.4896	Adder	0.58
936791	AD2-102 C	11.0762	Adder	13.03
936792	AD2-102 E	7.3841	Adder	8.69
937001	AD2-134 C	1.0032	Adder	1.18

Bus #	Bus	Gendoliv MW Impact	Type	Full MW Impact
937002	AD2-134 E	4.1443	Adder	4.88
937311	AD2-172 C	1.6847	Adder	1.98
937312	AD2-172 E	2.3265	Adder	2.74
937531	AD2-214 C	1.9195	Adder	2.26
937532	AD2-214 E	1.2797	Adder	1.51
938861	AE1-114 C O1	2.3366	Adder	2.75
938862	AE1-114 E O1	7.9718	Adder	9.38
939051	AE1-134 1	0.6127	Adder	0.72
939061	AE1-134 2	0.6127	Adder	0.72
940501	AE2-035 C	1.6847	Adder	1.98
940502	AE2-035 E	2.3265	Adder	2.74
942991	AE2-321 C	7.1113	Adder	8.37
942992	AE2-321 E	3.5026	Adder	4.12
943381	AF1-009 C	0.2215	Adder	0.26
943382	AF1-009 E	0.8860	Adder	1.04
943401	AF1-011 C	0.4821	Adder	0.57
943402	AF1-011 E	0.8092	Adder	0.95
943411	AF1-012 C	4.6928	Adder	5.52
943412	AF1-012 E	3.1285	Adder	3.68
943801	AF1-048 C	3.3243	Adder	3.91
943802	AF1-048 E	2.2162	Adder	2.61
943921	AF1-060	0.8295	Adder	0.98
944041	AF1-072	1.3737	Adder	1.62
946151	AF1-280 C O1	8.0304	Adder	9.45
946152	AF1-280 E O1	3.6928	Adder	4.34
946161	AF1-281 C	0.1758	Adder	0.21
946162	AF1-281 E	0.9965	Adder	1.17
946321	AF1-296 C O1	1.7144	Adder	2.02
946322	AF1-296 E O1	8.0264	Adder	9.44
946501	AF1-314 C	2.9933	Adder	3.52
946502	AF1-314 E	14.0140	Adder	16.49
946531	AF1-317 C O1	0.8939	Adder	1.05
946661	AF1-330 C	1.7589	Adder	2.07
946662	AF1-330 E	0.3861	Adder	0.45
946671	AF1-331	0.8736	Adder	1.03
950101	J390	64.9490	PJM External (MISO)	64.9490
951391	J505	11.3580	PJM External (MISO)	11.3580
952381	J703	13.4479	PJM External (MISO)	13.4479
952391	J704	5.7371	PJM External (MISO)	5.7371
952431	J760	2.3139	PJM External (MISO)	2.3139
952511	J584 C	0.7661	PJM External (MISO)	0.7661
952512	J584 E	4.1449	PJM External (MISO)	4.1449
953111	J807 C	0.8131	PJM External (MISO)	0.8131
953112	J807 E	4.3988	PJM External (MISO)	4.3988
953151	J831	5.3220	PJM External (MISO)	5.3220
953331	J801	3.7866	PJM External (MISO)	3.7866
953491	J947	30.2260	PJM External (MISO)	30.2260
953681	J818	14.4664	PJM External (MISO)	14.4664
953691	J819 C	1.0459	PJM External (MISO)	1.0459
953692	J819 E	5.6584	PJM External (MISO)	5.6584
953701	J821 C	1.2327	PJM External (MISO)	1.2327
953702	J821 E	6.6694	PJM External (MISO)	6.6694

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
953891	J849	13.1488	PJM External (MISO)	13.1488
953901	J850	23.6375	PJM External (MISO)	23.6375
954001	J864	3.3697	PJM External (MISO)	3.3697
954141	J878	29.1780	PJM External (MISO)	29.1780
954191	J886	17.0220	PJM External (MISO)	17.0220
954511	J926 C	0.8233	PJM External (MISO)	0.8233
954512	J926 E	4.4544	PJM External (MISO)	4.4544
954691	J732	35.4250	PJM External (MISO)	35.4250
954741	J928 C	1.3126	PJM External (MISO)	1.3126
954742	J928 E	7.1013	PJM External (MISO)	7.1013
955091	J986	12.7640	PJM External (MISO)	12.7640
955241	J1002	9.0882	PJM External (MISO)	9.0882
955251	J1003	5.0285	PJM External (MISO)	5.0285
955301	J1009	70.6280	PJM External (MISO)	70.6280
955311	J1010	60.9480	PJM External (MISO)	60.9480
955321	J1011	60.9480	PJM External (MISO)	60.9480
955581	J1042 C	3.6588	PJM External (MISO)	3.6588
955582	J1042 E	20.7332	PJM External (MISO)	20.7332
955671	J1051	5.8870	PJM External (MISO)	5.8870
955691	J1053	23.8160	PJM External (MISO)	23.8160
955981	J1085 C	3.1791	PJM External (MISO)	3.1791
955982	J1085 E	17.1999	PJM External (MISO)	17.1999
956141	J1101	2.2696	PJM External (MISO)	2.2696
956321	J1121	18.0520	PJM External (MISO)	18.0520
956571	J1153	19.2705	PJM External (MISO)	19.2705
956581	J1154	7.2795	PJM External (MISO)	7.2795
956731	J1171	11.3880	PJM External (MISO)	11.3880
956852	J1183 E	0.1420	PJM External (MISO)	0.1420
956901	J1188	4.4180	PJM External (MISO)	4.4180
957331	AF2-027 C	4.6738	50/50	4.6738
957332	AF2-027 E	7.0107	50/50	7.0107
958911	AF2-182	5.5920	Adder	12.41
958921	AF2-183 C	0.9941	Adder	2.21
958922	AF2-183 E	1.4912	Adder	3.31
959101	AF2-201 C O2	2.1854	Adder	4.85
959102	AF2-201 E O2	6.2757	Adder	13.93
959761	AF2-267 C O2	1.5776	Adder	3.5
959762	AF2-267 E O2	7.3857	Adder	16.39
960551	AF2-346 C	1.0659	Adder	2.37
960552	AF2-346 E	0.7106	Adder	1.58
960581	AF2-349 C	24.3576	50/50	24.3576
960582	AF2-349 E	16.2384	50/50	16.2384
960721	AF2-363 C O2	1.5650	Adder	3.47
960722	AF2-363 E O2	1.0434	Adder	2.32
960731	AF2-364 C O2	1.4161	Adder	3.14
960732	AF2-364 E O2	0.9441	Adder	2.1
961011	AF2-392 C O2	0.9182	Adder	2.04
961012	AF2-392 E O2	4.2986	Adder	9.54
961021	AF2-393 O2	1.5650	Adder	3.47
961031	AF2-394 O2	1.0434	Adder	2.32
WEC	WEC	5.5421	Confirmed LTF	5.5421
CBM-W2	CBM-W2	6.9205	Confirmed LTF	6.9205

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
NY	NY	0.1759	Confirmed LTF	0.1759
CBM-W1	CBM-W1	67.0161	Confirmed LTF	67.0161
TVA	TVA	0.7756	Confirmed LTF	0.7756
O-066	O-066	2.0429	Confirmed LTF	2.0429
CBM-S2	CBM-S2	0.3410	Confirmed LTF	0.3410
CBM-S1	CBM-S1	3.5443	Confirmed LTF	3.5443
TILTON	TILTON	0.1077	Confirmed LTF	0.1077
G-007	G-007	0.3151	Confirmed LTF	0.3151
MADISON	MADISON	12.6988	Confirmed LTF	12.6988
MEC	MEC	7.7210	Confirmed LTF	7.7210
GIBSON	GIBSON	0.0617	Confirmed LTF	0.0617
BLUEG	BLUEG	0.3715	Confirmed LTF	0.3715
TRIMBLE	TRIMBLE	0.1274	Confirmed LTF	0.1274

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ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96371199	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P7_138-L11106_B-R+_345-L15502_B-R	tower	331.0	104.36	105.79	DC	10.46

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	0.4340	Adder	0.51
934652	AD1-096 E	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

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

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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
144186541	274804	UNIV PK N;RP	CE	243229	05OLIVE	AEP	1	COMED_P4_112-65-BT3-4__	breaker	971.0	106.44	106.51	DC	19.03

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274806	UNIV PK N;2U	1.8438	50/50	1.8438
274808	UNIV PK N;4U	1.8438	50/50	1.8438

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274809	UNIV PK N;5U	1.8438	50/50	1.8438
274811	UNIV PK N;7U	1.8438	50/50	1.8438
274812	UNIV PK N;8U	1.8438	50/50	1.8438
274814	UNIV PK N;0U	1.8438	50/50	1.8438
274815	UNIV PK N;XU	1.8438	50/50	1.8438
274830	U3-021 1	4.2437	Adder	4.99
274831	U3-021 2	4.2437	Adder	4.99
274881	PILOT HIL;1E	12.8008	Adder	15.06
275149	KELLYCK ;1E	12.8008	Adder	15.06
276167	Z1-106 E2	0.8815	Adder	1.04
276168	Z1-106 E1	0.8815	Adder	1.04
276169	Z1-107 E	1.8726	Adder	2.2
276170	Z1-108 E	1.7357	Adder	2.04
290021	O50 E	13.4014	Adder	15.77
290051	GSG-6; E	7.3075	Adder	8.6
290108	LEEDK;1U E	16.9235	Adder	19.91
293061	N-015 E	10.8589	Adder	12.78
293644	O22 E1	6.7411	Adder	7.93
293645	O22 E2	13.0857	Adder	15.39
294392	P-010 E	13.7908	Adder	16.22
915011	Y3-013 1	2.6176	Adder	3.08
915021	Y3-013 2	2.6176	Adder	3.08
915031	Y3-013 3	2.6176	Adder	3.08
918052	AA1-018 E OP	12.3182	Adder	14.49
920272	AA2-123 E	1.7022	Adder	2.0
924471	AB2-096	29.4703	Adder	34.67
926311	AC1-109 1	1.3324	Adder	1.57
926321	AC1-109 2	1.3324	Adder	1.57
926331	AC1-110 1	1.3249	Adder	1.56
926341	AC1-110 2	1.3249	Adder	1.56
926351	AC1-111 1	0.5330	Adder	0.63
926361	AC1-111 2	0.5330	Adder	0.63
926371	AC1-111 3	0.5330	Adder	0.63
926381	AC1-111 4	0.5330	Adder	0.63
926391	AC1-111 5	0.5330	Adder	0.63
926401	AC1-111 6	0.5330	Adder	0.63
926431	AC1-114	1.6527	Adder	1.94
927451	AC1-142A 1	2.9727	Adder	3.5
927461	AC1-142A 2	2.9713	Adder	3.5
927511	AC1-113 1	0.8264	Adder	0.97
927521	AC1-113 2	0.8264	Adder	0.97
930481	AB1-089	45.6841	Adder	53.75
930501	AB1-091 O1	49.2044	Adder	57.89
930741	AB1-122 1O1	49.9503	Adder	58.77
930751	AB1-122 2O1	51.4018	Adder	60.47
932881	AC2-115 1	1.6527	Adder	1.94
932891	AC2-115 2	1.6527	Adder	1.94
932921	AC2-116	0.5785	Adder	0.68
932931	AC2-117	8.9559	Adder	10.54
933411	AC2-154 C	1.7374	Adder	2.04
933412	AC2-154 E	2.8347	Adder	3.33
933431	AC2-156 C O1	0.6658	Adder	0.78

Bus #	Bus	Gendoliv MW Impact	Type	Full MW Impact
933432	AC2-156 E O1	1.0864	Adder	1.28
933911	AD1-013 C	1.2909	Adder	1.52
933912	AD1-013 E	2.0621	Adder	2.43
933931	AD1-016 C	0.6468	Adder	0.76
933932	AD1-016 E	1.0554	Adder	1.24
934101	AD1-039 1	4.8951	Adder	5.76
934111	AD1-039 2	5.0374	Adder	5.93
934431	AD1-067 C	0.0918	Adder	0.11
934432	AD1-067 E	0.3858	Adder	0.45
934651	AD1-096 C	0.6185	Adder	0.73
934652	AD1-096 E	1.0091	Adder	1.19
934701	AD1-098 C O1	4.8064	Adder	5.65
934702	AD1-098 E O1	3.5092	Adder	4.13
934721	AD1-100 C	13.3811	Adder	15.74
934722	AD1-100 E	62.4453	Adder	73.47
934871	AD1-116 C	0.7174	Adder	0.84
934872	AD1-116 E	1.1705	Adder	1.38
934971	AD1-129 C	0.6287	Adder	0.74
934972	AD1-129 E	0.4191	Adder	0.49
936291	AD2-038 C O1	1.6923	Adder	1.99
936292	AD2-038 E O1	11.3254	Adder	13.32
936371	AD2-047 C O1	3.1091	Adder	3.66
936372	AD2-047 E O1	15.1795	Adder	17.86
936461	AD2-060	1.8289	Adder	2.15
936511	AD2-066 C O1	5.8799	Adder	6.92
936512	AD2-066 E O1	3.9199	Adder	4.61
936791	AD2-102 C	9.8165	Adder	11.55
936792	AD2-102 E	6.5443	Adder	7.7
937001	AD2-134 C	1.9103	Adder	2.25
937002	AD2-134 E	7.8914	Adder	9.28
937401	AD2-194 1	5.4743	Adder	6.44
937411	AD2-194 2	5.4784	Adder	6.45
938511	AE1-070 1	6.4323	Adder	7.57
938521	AE1-070 2	5.8893	Adder	6.93
938851	AE1-113 C	5.5281	Adder	6.5
938852	AE1-113 E	19.5996	Adder	23.06
939321	AE1-163 C O1	4.2525	Adder	5.0
939322	AE1-163 E O1	26.1223	Adder	30.73
939351	AE1-166 C O1	7.1186	Adder	8.37
939352	AE1-166 E O1	6.5710	Adder	7.73
940752	AE2-062 E	0.0901	Adder	0.11
941131	AE2-107 C	5.0908	Adder	5.99
941132	AE2-107 E	3.3939	Adder	3.99
941551	AE2-152 C O1	8.2138	Adder	9.66
941552	AE2-152 E O1	5.4759	Adder	6.44
941561	AE2-153 C O1	3.2939	Adder	3.88
941562	AE2-153 E O1	15.4214	Adder	18.14
942421	AE2-255 C O1	2.0940	Adder	2.46
942422	AE2-255 E O1	6.2819	Adder	7.39
942651	AE2-281 C O1	0.6075	Adder	0.71
942652	AE2-281 E O1	3.7318	Adder	4.39
942991	AE2-321 C	5.6939	Adder	6.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942992	AE2-321 E	2.8044	Adder	3.3
943121	AE2-341 C	8.8930	Adder	10.46
943122	AE2-341 E	4.3670	Adder	5.14
943381	AF1-009 C	0.4158	Adder	0.49
943382	AF1-009 E	1.6631	Adder	1.96
943591	AF1-030 C O1	5.9140	Adder	6.96
943592	AF1-030 E O1	2.9260	Adder	3.44
943801	AF1-048 C	2.6617	Adder	3.13
943802	AF1-048 E	1.7744	Adder	2.09
944041	AF1-072	1.5025	Adder	1.77
944911	AF1-156 C	8.4219	Adder	9.91
944912	AF1-156 E	5.6146	Adder	6.61
945351	AF1-200 FTIR	215.3640	Merchant Transmission	215.3640
946501	AF1-314 C	0.6209	Adder	0.73
946502	AF1-314 E	2.9068	Adder	3.42
946661	AF1-330 C	1.3958	Adder	1.64
946662	AF1-330 E	0.3064	Adder	0.36
946671	AF1-331	1.6765	Adder	1.97
957021	AF2-003 C O2	2.3515	Adder	5.22
957022	AF2-003 E O2	11.0093	Adder	24.44
957331	AF2-027 C	0.9249	Adder	2.05
957332	AF2-027 E	1.3873	Adder	3.08
957471	AF2-041 C	7.8455	Adder	17.42
957472	AF2-041 E	5.2303	Adder	11.61
958011	AF2-095 C O2	6.5832	Adder	14.61
958012	AF2-095 E O2	3.0980	Adder	6.88
958021	AF2-096 C O2	12.6419	Adder	28.06
958022	AF2-096 E O2	5.9784	Adder	13.27
958481	AF2-142 C	4.5025	Adder	9.99
958482	AF2-142 E	3.0017	Adder	6.66
958491	AF2-143 C	4.1396	Adder	9.19
958492	AF2-143 E	2.7598	Adder	6.13
959081	AF2-199 C O2	2.6152	Adder	5.81
959082	AF2-199 E O2	1.7434	Adder	3.87
959091	AF2-200 C O2	5.2303	Adder	11.61
959092	AF2-200 E O2	3.4869	Adder	7.74
959101	AF2-201 C O2	2.2144	Adder	4.92
959102	AF2-201 E O2	6.3588	Adder	14.11
959351	AF2-226 C	0.8757	Adder	1.94
959352	AF2-226 E	1.3135	Adder	2.92
960281	AF2-319 C	0.8757	Adder	1.94
960282	AF2-319 E	1.3135	Adder	2.92
960381	AF2-329	2.4457	Adder	5.43
960581	AF2-349 C	8.0530	Adder	17.88
960582	AF2-349 E	5.3687	Adder	11.92
960591	AF2-350 C O2	2.9076	Adder	6.45
960592	AF2-350 E O2	1.9384	Adder	4.3
960601	AF2-351 C O2	0.3877	Adder	0.86
960602	AF2-351 E O2	0.5815	Adder	1.29
960721	AF2-363 C O2	2.1796	Adder	4.84
960722	AF2-363 E O2	1.4530	Adder	3.23
960731	AF2-364 C O2	2.2698	Adder	5.04

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960732	AF2-364 E O2	1.5132	Adder	3.36
960751	AF2-366 C O2	2.5700	Adder	5.7
960752	AF2-366 E O2	1.7133	Adder	3.8
WEC	WEC	3.0757	Confirmed LTF	3.0757
CALDERWOOD	CALDERWOOD	0.0691	Confirmed LTF	0.0691
CBM-W2	CBM-W2	14.5536	Confirmed LTF	14.5536
NY	NY	0.9241	Confirmed LTF	0.9241
CBM-W1	CBM-W1	47.1877	Confirmed LTF	47.1877
TVA	TVA	0.9016	Confirmed LTF	0.9016
O-066	O-066	10.9133	Confirmed LTF	10.9133
CHEOAH	CHEOAH	0.0776	Confirmed LTF	0.0776
CBM-S1	CBM-S1	3.0246	Confirmed LTF	3.0246
G-007	G-007	1.6869	Confirmed LTF	1.6869
MADISON	MADISON	15.8659	Confirmed LTF	15.8659
MEC	MEC	10.4429	Confirmed LTF	10.4429
GIBSON	GIBSON	0.1338	Confirmed LTF	0.1338
BLUEG	BLUEG	1.6666	Confirmed LTF	1.6666
TRIMBLE	TRIMBLE	0.5654	Confirmed LTF	0.5654
CATAWBA	CATAWBA	0.2394	Confirmed LTF	0.2394

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
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_138-L17121_R-R	CONTINGENCY 'COMED_P1-2_138-L17121_R-R' TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 138 END
COMED_P4_112-65-BT3-4__	CONTINGENCY 'COMED_P4_112-65-BT3-4__' TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTO; 765 05DUMONT 765 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1 / WILTO;3M 345 WILTO; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1 / WILTO;3M 345 WILTO; B 345 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1 / WILTO;3M 345 WILTO;3C 33 END

Contingency Name	Contingency Definition
AEP_P4_#2978_05DUMONT_NON_FSA	CONTINGENCY 'AEP_P4_#2978_05DUMONT_NON_FSA' OPEN BRANCH FROM BUS 243206 TO BUS 907040 CKT 1 / 243206 05DUMONT 765 X1-020 OPEN BRANCH FROM BUS 243207 TO BUS 907040 CKT 1 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTON ; 765 1 END
COMED_P4_016-45-BT6-11_	CONTINGENCY 'COMED_P4_016-45-BT6-11_' TRIP BRANCH FROM BUS 270914 TO BUS 270830 CKT 1 / WAUKEGAN ; B 345 NBROOK159; B 345 TRIP BRANCH FROM BUS 270915 TO BUS 270914 CKT 1 / WAUKEGAN ; R 345 WAUKEGAN ; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 270830 CKT 1 / NBROOK159;2M 138 NBROOK159; B 345 TRIP BRANCH FROM BUS 275206 TO BUS 272120 CKT 1 / NBROOK159;2M 138 NBROOK159; B 138 TRIP BRANCH FROM BUS 275206 TO BUS 275306 CKT 1 / NBROOK159;2M 138 NBROOK159;2C 34.5 CLOSE BRANCH FROM BUS 272120 TO BUS 272121 CKT 1 / NBROOK159; B 138 NBROOK159; R 138 TRIP BRANCH FROM BUS 270942 TO BUS 270915 CKT 1 / ZION STA ;OB 345 WAUKEGAN ; R 345 END
AEP_P4_#2978_05DUMONT_FSA	CONTINGENCY 'AEP_P4_#2978_05DUMONT_FSA' OPEN BRANCH FROM BUS 243206 TO BUS 907040 CKT 1 / 243206 05DUMONT 765 X1-020 OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTON ; 765 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

Contingency Name	Contingency Definition
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_695_B2	CONTINGENCY 'COMED_P1-2_695_B2' OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTO; 765 1 END
COMED_P2-1_119-L11904__	CONTINGENCY 'COMED_P2-1_119-L11904__' TRIP BRANCH FROM BUS 271897 TO BUS 271498 CKT 1 / LANCASTER; R 138 FREEPORT ;BT 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

Contingency Name	Contingency Definition
OMED_P4_194-38-L19414_	CONTINGENCY 'COMED_P4_194-38-L19414_' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272433 TO BUS 272432 / SABROOKE ; R 138 SABROOKE ; B 138 DISCONNECT BUS 272433 / SABROOKE ; R 138 END
COMED_P2-1_119-L17121__	CONTINGENCY 'COMED_P2-1_119-L17121__' TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 END

Contingency Name	Contingency Definition
COMED_P1-2_138-L19414GR-R	CONTINGENCY 'COMED_P1-2_138-L19414GR-R' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 END
Base Case	
COMED_P4_023-65-BT2-3__	CONTINGENCY 'COMED_P4_023-65-BT2-3__' TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTO; 765 05DUMONT 765 TRIP BRANCH FROM BUS 270607 TO BUS 270630 CKT 1 / COLLI; 765 PLANO; 765 END

Contingency Name	Contingency Definition
COMED_P7_138-L11902GB-R+_138-L17121_R-R-A	CONTINGENCY 'COMED_P7_138-L11902GB-R+_138-L17121_R-R-A' TRIP BRANCH FROM BUS 959760 TO BUS 271915 CKT 1 / AF2-267 TAP 138 LENA ; R 138 TRIP BRANCH FROM BUS 271898 TO BUS 271897 CKT 1 / LANCASTER;BT 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 938860 TO BUS 272598 CKT 1 / AE1-114 TAP 138 ESS B427 ;1T 138 TRIP BRANCH FROM BUS 272598 TO BUS 271898 CKT 1 / ESS B427 ;1T 138 LANCASTER;BT 138 TRIP BRANCH FROM BUS 272598 TO BUS 272596 CKT 1 / ESS B427 ;1T 138 ESS B427 ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271915 TO BUS 271914 / LENA ; R 138 LENA ; B 138 TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 138 END
COMED_P7_138-L11902GB-R+_138-L17121_R-R-B	CONTINGENCY 'COMED_P7_138-L11902GB-R+_138-L17121_R-R-B' TRIP BRANCH FROM BUS 271399 TO BUS 271397 CKT 1 / ELEROY ;RT 138 ELEROY ; R 138 TRIP BRANCH FROM BUS 271399 TO BUS 959760 CKT 1 / ELEROY ;RT 138 AF2-267 TAP 138 TRIP BRANCH FROM BUS 271898 TO BUS 271399 CKT 1 / LANCASTER;BT 138 ELEROY ;RT 138 TRIP BRANCH FROM BUS 271898 TO BUS 271897 CKT 1 / LANCASTER;BT 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 938860 TO BUS 272598 CKT 1 / AE1-114 TAP 138 ESS B427 ;1T 138 TRIP BRANCH FROM BUS 272598 TO BUS 271898 CKT 1 / ESS B427 ;1T 138 LANCASTER;BT 138 TRIP BRANCH FROM BUS 272598 TO BUS 272596 CKT 1 / ESS B427 ;1T 138 ESS B427 ; B 138 MOVE 100 PERCENT LOAD FROM BUS 271397 TO BUS 271396 / ELEROY ; R 138 ELEROY ; B 138 TRIP BRANCH FROM BUS 272240 TO BUS 271897 CKT 1 / PECAT; B 138 LANCA; R 138 TRIP BRANCH FROM BUS 272747 TO BUS 272240 CKT 1 / WEMPL; R 138 PECAT; B 138 MOVE 100 PERCENT LOAD FROM BUS 272240 TO BUS 272746 / PECAT; B 138 WEMPL; B 138 END
COMED_P4_112-65-BT4-5__	CONTINGENCY 'COMED_P4_112-65-BT4-5__' TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTO; 765 05DUMONT 765 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1 / WILTO;4M 345 WILTO; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1 / WILTO;4M 345 WILTO; R 345 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1 / WILTO;4M 345 WILTO;4C 33 END

Contingency Name	Contingency Definition
COMED_P4_119-38-L19414_	CONTINGENCY 'COMED_P4_119-38-L19414_' TRIP BRANCH FROM BUS 271483 TO BUS 273154 CKT 1 / FORDAM ; R 138 FORDHAM ; R 12.5 TRIP BRANCH FROM BUS 271495 TO BUS 274184 CKT 6 / FREEPORT ;5R 138 FREEPORT; 34.5 TRIP BRANCH FROM BUS 271499 TO BUS 271495 CKT 1 / FREEPORT ;5T 138 FREEPORT ;5R 138 TRIP BRANCH FROM BUS 271499 TO BUS 271897 CKT 1 / FREEPORT ;5T 138 LANCASTER; R 138 TRIP BRANCH FROM BUS 272245 TO BUS 271483 CKT 1 / PIERPONT ; R 138 FORDAM ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272245 CKT 1 / PIERPONT ;RT 138 PIERPONT ; R 138 TRIP BRANCH FROM BUS 272247 TO BUS 272491 CKT 1 / PIERPONT ;RT 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272433 TO BUS 272247 CKT 1 / SABROOKE ; R 138 PIERPONT ;RT 138 TRIP BRANCH FROM BUS 272599 TO BUS 271499 CKT 1 / ESS B427 ;4T 138 FREEPORT ;5T 138 TRIP BRANCH FROM BUS 272599 TO BUS 272491 CKT 1 / ESS B427 ;4T 138 S PECATON; R 138 TRIP BRANCH FROM BUS 272599 TO BUS 272597 CKT 1 / ESS B427 ;4T 138 ESS B427 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 271495 TO BUS 271494 / FREEPORT ;5R 138 FREEPORT ;2R 138 MOVE 100 PERCENT LOAD FROM BUS 272245 TO BUS 272244 / PIERPONT ; R 138 PIERPONT ; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272240 / S PECATON; R 138 PECATONIC; B 138 MOVE 50 PERCENT LOAD FROM BUS 272491 TO BUS 272244 / S PECATON; R 138 PIERPONT ; B 138 CLOSE BRANCH FROM BUS 272596 TO BUS 272597 CKT 1 / ESS B427 ; B 138 ESS B427 ; R 138 TRIP BRANCH FROM BUS 271897 TO BUS 271898 CKT 1 / LANCASTER; R 138 LANCASTER;BT 138 END

14 Affected Systems

14.1 MISO

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