



**Generation Interconnection
System Impact Study Report
for
Queue Project AF2-200
NELSON-ELECTRIC JUNCTION 345 KV
120 MW Capacity / 200 MW Energy**

February 2021

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1 Introduction

This System Impact Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 205, as well as the System Impact 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 System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. 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 System Impact Study is performed.

The System Impact 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 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.

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Lee County, Illinois. The installed facilities will have a total capability of 200 MW with 120 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is November 01, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-200
Project Name	NELSON-ELECTRIC JUNCTION 345 KV
State	Illinois
County	Lee
Transmission Owner	ComEd
MFO	200
MWE	200
MWC	120
Fuel	Solar
Basecase Study Year	2023

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

4 Point of Interconnection

AF2-200 will interconnect with the ComEd on transmission system tapping the Nelson to Electric Junction 345 kV line utilizing the same attachment facilities as AF2-041.

5 Cost Summary

The AF2-200 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$ 250,000
Allocation towards System Network Upgrade Costs*	\$ 29,369,100
Total Costs	\$ 29,619,100

*As your project progresses through the study process and other projects modify their request or withdraw, then your cost allocation could change.

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.

Note 1: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. The allocation of costs for a network upgrade will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

Note 2: For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates \$0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently \$0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

6 Transmission Owner Scope of Work

6.1 Attachment Facilities

The addition of a 200 MW solar facility behind the meter will require review and possible upgrade of SCADA, Communication, relays and metering. The estimated cost is \$250,000. ComEd would take approximately 18-months to review and possibly upgrade SCADA, Communication, relays and metering after the 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 IC.
- 2) There were no site visits performed for these estimates. There may be costs related to specific site related issues that are not identified in these estimates. The site reviews will be performed during the Facilities Study or during detailed engineering.
- 3) These estimates are not a guarantee of the maximum amount payable by the IC and the actual costs of ComEd's work may differ significantly from these estimates. The IC will be responsible for paying actual

costs of ComEd's work in accordance with Sections 212.1 and 217 of the PJM Open Access Transmission Tariff.

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

7 Schedule

See Sections 6 and 11.

8 Transmission Owner Analysis

See Sections 6 and 11.

9 Interconnection Customer Requirements

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

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

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

10.2 Meteorological Data Reporting Requirements

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

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

10.3 Interconnected Transmission Owner Requirements

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

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

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 Analysis

The Queue Project AF2-200 was evaluated as a 200.0 MW (Capacity 120.0 MW) injection tapping the Nelson to Electric Junction 345 kV line (specifically into the AF2-041 Tap substation, which is a tap of the AF1-012 Tap - Electric Junction 345 kV line segment) in the ComEd area. Project AF2-200 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-200 was studied with a commercial probability of 100%. Potential network impacts were as follows:

11.1 Generation Deliverability

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

None

11.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
96369450	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P7_345-L13821_R-R+_345-L18502AB-N	tower	1768.0	98.35	100.11	AC	31.57

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
96368025	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT7-8_	breaker	1441.0	124.78	126.06	AC	20.05
96367737	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P2-2_111_EJ-345R_3	bus	1479.0	109.67	111.64	AC	29.56
96368567	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	single	1201.0	103.58	104.96	AC	17.23
157328099	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L15502_B-R-C	single	1479.0	101.1	101.99	AC	15.45

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
96368004	270770	GOODIN GS;4B	345.0	CE	270766	GOODIN GS;3B	345.0	CE	1	COMED_P4_112-45-BT4-5	breaker	1802.0	108.83	109.18	AC	20.52
96368410	274750	CRETE EC;BP	345.0	CE	255112	17STJOHN	345.0	NIPS	1	COMED_P1-2_695_B2	single	1399.0	102.32	102.34	AC	14.88
157328354	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ;B	345.0	CE	1	COMED_P1-2_345-L15502_B-R-C	single	1726.0	106.65	109.34	AC	46.64
96367953	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P4_006-45-BT3-4	breaker	1656.0	131.53	138.65	AC	118.83
96368453	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P1-2_345-L0627_B-R	single	1656.0	106.09	110.35	AC	71.3
96368454	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	single	1334.0	104.03	108.43	AC	65.08

11.4 Steady-State Voltage Requirements

None

11.5 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
96368562	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	operation	1201.0	114.53	116.89	AC	28.72
96368563	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P2-1_111-L11120	operation	1479.0	109.57	111.53	AC	29.62
157328623	270828	NELSON ; B	345.0	CE	946160	AF1-281 TAP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-C	operation	1479.0	101.65	106.91	AC	78.48
96368634	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	Base Case	operation	1334.0	102.94	104.87	AC	29.36
157328345	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	COMED_P1-2_345-L15502_B-R-C	operation	1726.0	119.19	123.09	AC	77.73
157328470	946160	AF1-281 TAP	345.0	CE	274768	LEE CO EC;BP	345.0	CE	1	COMED_P1-2_345-L15502_B-R-C	operation	1479.0	113.55	117.87	AC	78.48
96368448	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	operation	1334.0	128.38	136.29	AC	108.46

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
96368449	957470	AF2-041 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	COMED_P1-2_345-L0627__B-R	operation	1656.0	130.51	137.58	AC	118.83

11.6 System Reinforcements

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-200	Upgrade Number																												
96368410	6	CRETE EC ;BP 345.0 kV - 17STJOHN 345.0 kV Ckt 1	ComEd end: The applicable rating is the SSTE rating which is 1483 MVA. No upgrade required. MISO/NIPSCO end: The SE rating is 1508 MVA. No upgrade required.	\$0	\$0	N/A																												
157328099	4	GARDEN PR; R 345.0 kV - SILVER LK; R 345.0 kV Ckt 1	The applicable rating to apply is the SSTE rating which is 1568 MVA and is sufficient. No upgrade required.	\$0	\$0	N/A																												
96368004	5	GOODINGS ;4B 345.0 kV - GOODINGS ;3B 345.0 kV Ckt 1	The applicable rating is the SSTE rating which is 2083 MVA and is sufficient. No upgrade required.	\$0	\$0	N/A																												
96368025	3	BYRON ; B 345.0 kV - CHERRY VA; B 345.0 kV Ckt 1	The upgrade will be to mitigate sag on the line and replace a 345kV circuit breaker at Cherry Valley. Cost: \$12,200,000. Time Estimate: 24 Months. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). The cost allocation is: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>\$ cost (\$ 12.2 M)</th></tr><tr><td>AF1-280</td><td>55.12</td><td>23.32%</td><td>\$2.84</td></tr><tr><td>AF1-296</td><td>25.97</td><td>10.99%</td><td>\$1.34</td></tr><tr><td>AF2-041</td><td>30.1</td><td>12.73%</td><td>\$1.55</td></tr><tr><td>AF2-182</td><td>83.0</td><td>35.11%</td><td>\$4.28</td></tr><tr><td>AF2-183</td><td>22.1</td><td>9.35%</td><td>\$1.14</td></tr><tr><td>AF2-200</td><td>20.1</td><td>8.50%</td><td>\$1.04</td></tr></table> It should be evaluated during the Facilities Study whether a circuit breaker can be added to the Byron Blue ring bus to eliminate this stuck breaker contingency causing the overload.	Queue	MW contribution	Percentage of Cost	\$ cost (\$ 12.2 M)	AF1-280	55.12	23.32%	\$2.84	AF1-296	25.97	10.99%	\$1.34	AF2-041	30.1	12.73%	\$1.55	AF2-182	83.0	35.11%	\$4.28	AF2-183	22.1	9.35%	\$1.14	AF2-200	20.1	8.50%	\$1.04	\$12.2 M	\$1.04 M	N6824
Queue	MW contribution	Percentage of Cost	\$ cost (\$ 12.2 M)																															
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96368454,96367953,96368453	8	AF2-041 TAP 345.0 kV - ELECT JCT; B 345.0 kV Ckt 1	The ComEd SSTE rating is 1837 MVA. Replace station conductor at TSS111 EJ, replace MOD. Relay upgrades, re-conductor part of the line. Cost : \$ 22,300,000. Time Estimate : 36 Months New ratings will be 1683/2068/2172/2308 (SN/SLTE/SSTE/SLD). The cost allocation is: <table><thead><tr><th>Queue</th><th>MW Contribution</th><th>Percentage of Cost</th><th>Cost (\$22.3M)</th></tr></thead><tbody><tr><td>AE1-114</td><td>20.9</td><td>2.55%</td><td>\$0.57</td></tr><tr><td>J981</td><td>24.8</td><td>3.02%</td><td>\$0.67</td></tr><tr><td>J982</td><td>20.8</td><td>2.53%</td><td>\$0.57</td></tr><tr><td>J1084</td><td>31.7</td><td>3.86%</td><td>\$0.86</td></tr><tr><td>J1181</td><td>19.2</td><td>2.34%</td><td>\$0.52</td></tr><tr><td>AF1-012</td><td>75.21</td><td>9.17%</td><td>\$2.04</td></tr><tr><td>AF1-280</td><td>68.73</td><td>8.38%</td><td>\$1.87</td></tr><tr><td>AF1-296</td><td>51.7</td><td>6.30%</td><td>\$1.41</td></tr><tr><td>AF1-318</td><td>21.09</td><td>2.57%</td><td>\$0.57</td></tr><tr><td>AF2-041</td><td>178.2</td><td>21.72%</td><td>\$4.84</td></tr><tr><td>AF2-182</td><td>102.6</td><td>12.50%</td><td>\$2.79</td></tr><tr><td>AF2-183</td><td>27.4</td><td>3.34%</td><td>\$0.74</td></tr><tr><td>AF2-199</td><td>59.4</td><td>7.24%</td><td>\$1.61</td></tr><tr><td>AF2-200</td><td>118.8</td><td>14.48%</td><td>\$3.23</td></tr></tbody></table> Additional upgrade required: The upgrade is to perform sag mitigation on a portion of the line section along with re-conductoring on a different section, upgrade station conductor at both line terminals, replace both line motor operated disconnect witches and line current transformers, upgrade line relay schemes at both terminals as well. A preliminary estimate for the upgrade is \$10.5 M with an estimated construction timeline of 36 months. Upon completion of the upgrades the ratings will be 1683/2068/2367/2564 MVA (SN/SLTE/SSTE/SLD). The cost allocation is: <table><thead><tr><th>Queue</th><th>MW Contribution</th><th>Percentage of Cost</th><th>Cost (\$10.5 M)</th></tr></thead><tbody><tr><td>AF2-199</td><td>59.4</td><td>33.33%</td><td>\$3.50</td></tr><tr><td>AF2-200</td><td>118.8</td><td>66.67%</td><td>\$7.00</td></tr></tbody></table> It should be evaluated during the Facilities Study whether a circuit breaker can be added to the Byron Blue ring bus to eliminate the stuck breaker	Queue	MW Contribution	Percentage of Cost	Cost (\$22.3M)	AE1-114	20.9	2.55%	\$0.57	J981	24.8	3.02%	\$0.67	J982	20.8	2.53%	\$0.57	J1084	31.7	3.86%	\$0.86	J1181	19.2	2.34%	\$0.52	AF1-012	75.21	9.17%	\$2.04	AF1-280	68.73	8.38%	\$1.87	AF1-296	51.7	6.30%	\$1.41	AF1-318	21.09	2.57%	\$0.57	AF2-041	178.2	21.72%	\$4.84	AF2-182	102.6	12.50%	\$2.79	AF2-183	27.4	3.34%	\$0.74	AF2-199	59.4	7.24%	\$1.61	AF2-200	118.8	14.48%	\$3.23	Queue	MW Contribution	Percentage of Cost	Cost (\$10.5 M)	AF2-199	59.4	33.33%	\$3.50	AF2-200	118.8	66.67%	\$7.00	\$22.3 M + \$8 M	\$3.23 M + \$7 M	N6639.1 N6639.2
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ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-200	Upgrade Number																
			contingency causing one of the overload. Presently, however there is an N-0/Basecase overload violating the normal rating as well.																			
96368568,96369450,96367737,96368567	1	ELECT JCT; B 345.0 kV - LOMBARD ; B 345.0 kV Ckt 1	The upgrade will be to reconductor the line. A preliminary estimate is \$14.6M with an estimated construction timeline of 30 months. In addition, to increase the normal rating, the upgrade will be to replace 2-345kV Circuit Breakers and station conductor. A preliminary estimate is \$7M with an estimated construction timeline of 30 months. Upon completion of the upgrades the ratings will be 1461/1656/1837/1912 MVA (SN/SLTE/SSTE/SLD). The cost allocation is: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>\$ cost (\$21.6 M)</th></tr><tr><td>AF2-041</td><td>44.3</td><td>45.95%</td><td>9.9261</td></tr><tr><td>AF2-182</td><td>22.5</td><td>23.34%</td><td>5.0415</td></tr><tr><td>AF2-200</td><td>29.6</td><td>30.71%</td><td>6.6324</td></tr></table>	Queue	MW contribution	Percentage of Cost	\$ cost (\$21.6 M)	AF2-041	44.3	45.95%	9.9261	AF2-182	22.5	23.34%	5.0415	AF2-200	29.6	30.71%	6.6324	\$14.6 M + \$7 M	\$6.6324 M	N7023.1 N7023.2
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AF2-182	22.5	23.34%	5.0415																			
AF2-200	29.6	30.71%	6.6324																			
157328354	7	LEE CO EC;BP 345.0 kV - BYRON ; B 345.0 kV Ckt 1	The upgarde will be to re-conductor the line and upgrade station conductor at Byron Station. A preliminary estimate for the upgardes is \$17.2M. The preliminary construction timeline is 24-30 months contingenct upon outage coordination with Byron Nuclear Station. Note that the preliminary cost estimate does not include the potential for new transmissin towers. This unknown will add to this estimate if required. Upon completion of the upgrades the new raings will be 1679/1904/1944/2088 MVA (SN/SLTE/SSTE/SLD). The cost allocation is: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>\$ cost (\$17.2 M)</th></tr><tr><td>AF2-199</td><td>23.3</td><td>33.33%</td><td>5.7333</td></tr><tr><td>AF2-200</td><td>46.6</td><td>66.67%</td><td>11.4667</td></tr></table>	Queue	MW contribution	Percentage of Cost	\$ cost (\$17.2 M)	AF2-199	23.3	33.33%	5.7333	AF2-200	46.6	66.67%	11.4667	\$17.2 M	\$11.4667 M	N5254				
Queue	MW contribution	Percentage of Cost	\$ cost (\$17.2 M)																			
AF2-199	23.3	33.33%	5.7333																			
AF2-200	46.6	66.67%	11.4667																			
			Total Costs	\$81,300,000	\$29,369,100																	

Note : For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates \$0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently \$0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

11.7 Flow Gate Details

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

11.7.1 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
96367737	270730	ELECT JCT; B	CE	270812	LOMBARD ; B	CE	1	COMED_P2-2_111_EJ-345R_3	bus	1479.0	109.67	111.64	AC	29.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274738	AURORA EC;3P	4.3071	50/50	4.3071
274740	AURORA EC;4P	4.3071	50/50	4.3071
274859	EASYR;U1 E	5.9127	Adder	6.96
274860	EASYR;U2 E	5.9127	Adder	6.96
274872	LEE DEKAL;1U	0.8160	50/50	0.8160
276167	Z1-106 E2	1.1111	50/50	1.1111
276168	Z1-106 E1	1.1176	50/50	1.1176
290051	GSG-6; E	7.0908	Adder	8.34
290108	LEEDK;1U E	20.2340	50/50	20.2340
292543	L-013 2	0.5415	50/50	0.5415
293516	O-009 E1	4.5934	Adder	5.4
293517	O-009 E2	2.3331	Adder	2.74
293518	O-009 E3	2.5694	Adder	3.02
293715	O-029 E	4.9108	Adder	5.78
293716	O-029 E	2.6925	Adder	3.17
293717	O-029 E	2.4747	Adder	2.91
294763	P-046 E	3.8284	Adder	4.5
295109	WESTBROOK E	3.7963	Adder	4.47
295111	SUBLETTE E	1.8456	Adder	2.17
916221	Z1-073 E	3.6587	Adder	4.3
919581	AA2-030	10.8215	Adder	12.73
925302	AB2-191 E	0.9390	Adder	1.1
926311	AC1-109 1	0.9249	Adder	1.09
926321	AC1-109 2	0.9249	Adder	1.09
926331	AC1-110 1	2.5295	50/50	2.5295
926341	AC1-110 2	2.5295	50/50	2.5295
926351	AC1-111 1	0.4956	Adder	0.58
926361	AC1-111 2	0.4956	Adder	0.58
926371	AC1-111 3	0.4956	Adder	0.58
926381	AC1-111 4	0.4956	Adder	0.58
926391	AC1-111 5	0.4956	Adder	0.58
926401	AC1-111 6	0.4956	Adder	0.58
926431	AC1-114	0.8701	Adder	1.02
927511	AC1-113 1	0.4349	Adder	0.51
927521	AC1-113 2	0.4349	Adder	0.51
930481	AB1-089	30.3361	Adder	35.69
932881	AC2-115 1	0.8697	Adder	1.02
932891	AC2-115 2	0.8697	Adder	1.02
932921	AC2-116	0.3045	Adder	0.36
933431	AC2-156 C O1	0.8020	50/50	0.8020
933432	AC2-156 E O1	1.3086	50/50	1.3086

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
933911	AD1-013 C	1.2634	Adder	1.49
933912	AD1-013 E	2.0182	Adder	2.37
934431	AD1-067 C	0.0890	Adder	0.1
934432	AD1-067 E	0.3744	Adder	0.44
934701	AD1-098 C O1	4.6241	Adder	5.44
934702	AD1-098 E O1	3.3761	Adder	3.97
937001	AD2-134 C	1.8537	Adder	2.18
937002	AD2-134 E	7.6574	Adder	9.01
937311	AD2-172 C	1.0050	Adder	1.18
937312	AD2-172 E	1.3878	Adder	1.63
937531	AD2-214 C	2.2750	Adder	2.68
937532	AD2-214 E	1.5167	Adder	1.78
938861	AE1-114 C O1	1.8531	Adder	2.18
938862	AE1-114 E O1	6.3222	Adder	7.44
939051	AE1-134 1	0.8409	Adder	0.99
939061	AE1-134 2	0.8409	Adder	0.99
940501	AE2-035 C	1.0050	Adder	1.18
940502	AE2-035 E	1.3878	Adder	1.63
941131	AE2-107 C	5.4632	50/50	5.4632
941132	AE2-107 E	3.6421	50/50	3.6421
943121	AE2-341 C	10.6374	50/50	10.6374
943122	AE2-341 E	5.2236	50/50	5.2236
943411	AF1-012 C	10.9053	50/50	10.9053
943412	AF1-012 E	7.2702	50/50	7.2702
943591	AF1-030 C O1	7.0740	50/50	7.0740
943592	AF1-030 E O1	3.5000	50/50	3.5000
943921	AF1-060	0.4948	Adder	0.58
944041	AF1-072	0.8968	Adder	1.06
945351	AF1-200 FTIR	174.7048	Merchant Transmission	174.7048
946151	AF1-280 C O1	8.7419	Adder	10.28
946152	AF1-280 E O1	4.0200	Adder	4.73
946161	AF1-281 C	0.1914	Adder	0.23
946162	AF1-281 E	1.0848	Adder	1.28
946321	AF1-296 C O1	1.8826	Adder	2.21
946322	AF1-296 E O1	8.8137	Adder	10.37
946501	AF1-314 C	1.7856	Adder	2.1
946502	AF1-314 E	8.3597	Adder	9.83
946671	AF1-331	1.6408	Adder	1.93
955971	J1084	8.1360	PJM External (MISO)	8.1360
957333	AF2-027 BAT	3.1460	Merchant Transmission	3.1460
957471	AF2-041 C	26.6040	50/50	26.6040
957472	AF2-041 E	17.7360	50/50	17.7360
958911	AF2-182 C	11.4857	Adder	13.51
958912	AF2-182 E	7.6571	Adder	9.01
958921	AF2-183 C	2.0419	Adder	2.4
958922	AF2-183 E	3.0629	Adder	3.6
959081	AF2-199 C	8.8680	50/50	8.8680
959082	AF2-199 E	5.9120	50/50	5.9120
959091	AF2-200 C O1	17.7360	50/50	17.7360
959092	AF2-200 E O1	11.8240	50/50	11.8240
959101	AF2-201 C O1	2.4597	Adder	2.89
959102	AF2-201 E O1	7.0634	Adder	8.31

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960381	AF2-329	5.5196	50/50	5.5196
960551	AF2-346 C	4.6737	50/50	4.6737
960552	AF2-346 E	3.1158	50/50	3.1158
960721	AF2-363 C O1	3.4444	Adder	4.05
960722	AF2-363 E O1	2.2963	Adder	2.7
960731	AF2-364 C O1	3.4814	Adder	4.1
960732	AF2-364 E O1	2.3209	Adder	2.73
960751	AF2-366 C	5.8312	50/50	5.8312
960752	AF2-366 E	3.8875	50/50	3.8875
961011	AF2-392 C O1	2.2763	Adder	2.68
961012	AF2-392 E O1	10.6573	Adder	12.54
961021	AF2-393 O1	3.8801	Adder	4.56
961031	AF2-394 O1	2.5867	Adder	3.04
BLUEG	BLUEG	0.1944	Confirmed LTF	0.1944
CBM-W2	CBM-W2	4.0868	Confirmed LTF	4.0868
NY	NY	0.1040	Confirmed LTF	0.1040
TVA	TVA	0.4312	Confirmed LTF	0.4312
O-066	O-066	1.2096	Confirmed LTF	1.2096
CBM-S2	CBM-S2	0.1618	Confirmed LTF	0.1618
CBM-S1	CBM-S1	1.9766	Confirmed LTF	1.9766
TILTON	TILTON	0.0076	Confirmed LTF	0.0076
G-007	G-007	0.1872	Confirmed LTF	0.1872
MADISON	MADISON	3.0119	Confirmed LTF	3.0119
MEC	MEC	3.9804	Confirmed LTF	3.9804
GIBSON	GIBSON	0.0235	Confirmed LTF	0.0235
TRIMBLE	TRIMBLE	0.0673	Confirmed LTF	0.0673
CBM-W1	CBM-W1	2.4520	Confirmed LTF	2.4520

11.7.2 Index 2

None

11.7.3 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
96368025	270678	BYRON ; B	CE	270694	CHERRY VA; B	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	124.78	126.06	AC	20.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274656	BYRON ;1U	97.7585	50/50	97.7585
274760	LEE CO EC;1U	4.1522	50/50	4.1522
274761	LEE CO EC;2U	4.1522	50/50	4.1522
274763	LEE CO EC;4U	4.1101	50/50	4.1101
274764	LEE CO EC;5U	4.1628	50/50	4.1628
274765	LEE CO EC;6U	4.1628	50/50	4.1628
274766	LEE CO EC;7U	4.0996	50/50	4.0996
274767	LEE CO EC;8U	4.0996	50/50	4.0996
274859	EASYR;U1 E	25.5555	Adder	30.07
274860	EASYR;U2 E	25.5555	Adder	30.07
276172	Z1-108 BAT	1.7730	Merchant Transmission	1.7730
293516	O-009 E1	8.6826	Adder	10.21
293517	O-009 E2	4.4101	Adder	5.19
293518	O-009 E3	4.8567	Adder	5.71
293715	O-029 E	9.2827	Adder	10.92
293716	O-029 E	5.0895	Adder	5.99
293717	O-029 E	4.6778	Adder	5.5
919581	AA2-030	25.6037	Adder	30.12
920273	AA2-123 BAT	2.9094	Merchant Transmission	2.9094
937531	AD2-214 C	4.6364	Adder	5.45
937532	AD2-214 E	3.0909	Adder	3.64
939051	AE1-134 1	1.9896	Adder	2.34
939061	AE1-134 2	1.9896	Adder	2.34
943411	AF1-012 C	14.3327	Adder	16.86
943412	AF1-012 E	9.5551	Adder	11.24
943803	AF1-048 BAT	7.8018	Merchant Transmission	7.8018
943922	AF1-060 BAT	1.2404	Merchant Transmission	1.2404
946151	AF1-280 C O1	32.1984	Adder	37.88
946152	AF1-280 E O1	14.8066	Adder	17.42
946161	AF1-281 C	0.7051	Adder	0.83
946162	AF1-281 E	3.9954	Adder	4.7
946321	AF1-296 C O1	3.8806	Adder	4.57
946322	AF1-296 E O1	18.1682	Adder	21.37
954792	J952 E	4.1796	PJM External (MISO)	4.1796
954901	J963	0.8465	PJM External (MISO)	0.8465
955051	J981 C	2.4139	PJM External (MISO)	2.4139
955052	J981 E	13.0601	PJM External (MISO)	13.0601
955971	J1084	19.5075	PJM External (MISO)	19.5075
956411	J1131	10.5060	PJM External (MISO)	10.5060
957471	AF2-041 C	15.3398	Adder	18.05
957472	AF2-041 E	10.2265	Adder	12.03
958911	AF2-182 C	42.3045	Adder	49.77

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958912	AF2-182 E	28.2030	Adder	33.18
958921	AF2-183 C	7.5208	Adder	8.85
958922	AF2-183 E	11.2812	Adder	13.27
959081	AF2-199 C	5.1133	Adder	6.02
959082	AF2-199 E	3.4088	Adder	4.01
959091	AF2-200 C O1	10.2265	Adder	12.03
959092	AF2-200 E O1	6.8177	Adder	8.02
960551	AF2-346 C	6.1426	Adder	7.23
960552	AF2-346 E	4.0950	Adder	4.82
961011	AF2-392 C O1	3.8357	Adder	4.51
961012	AF2-392 E O1	17.9583	Adder	21.13
961021	AF2-393 O1	6.5382	Adder	7.69
961031	AF2-394 O1	4.3588	Adder	5.13
BLUEG	BLUEG	0.3368	Confirmed LTF	0.3368
CBM-W2	CBM-W2	6.8714	Confirmed LTF	6.8714
NY	NY	0.1869	Confirmed LTF	0.1869
TVA	TVA	0.6930	Confirmed LTF	0.6930
O-066	O-066	2.1840	Confirmed LTF	2.1840
CBM-S2	CBM-S2	0.1040	Confirmed LTF	0.1040
CBM-S1	CBM-S1	3.1609	Confirmed LTF	3.1609
G-007	G-007	0.3380	Confirmed LTF	0.3380
MADISON	MADISON	1.1834	Confirmed LTF	1.1834
MEC	MEC	6.4053	Confirmed LTF	6.4053
GIBSON	GIBSON	0.0268	Confirmed LTF	0.0268
TRIMBLE	TRIMBLE	0.1169	Confirmed LTF	0.1169

11.7.4 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
157328099	270759	GARDEN PR; R	CE	270883	SILVER LK; R	CE	1	COMED_P1-2_345-L15502_B-R-C	single	1479.0	101.1	101.99	AC	15.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274657	BYRON ;2U	37.2718	80/20	37.2718
274822	ROCKFORD ;11	3.8031	80/20	3.8031
274823	ROCKFORD ;21	3.9029	80/20	3.9029
274824	ROCKFORD ;12	3.7699	80/20	3.7699
274830	U3-021 1	23.5786	80/20	23.5786
274831	U3-021 2	23.5786	80/20	23.5786
290266	R-018	0.2316	80/20	0.2316
919581	AA2-030	17.1964	Adder	20.23
924471	AB2-096	163.7405	80/20	163.7405
926431	AC1-114	4.2372	80/20	4.2372
927511	AC1-113 1	2.1184	80/20	2.1184
927521	AC1-113 2	2.1184	80/20	2.1184
930481	AB1-089	72.2147	Adder	84.96
932881	AC2-115 1	4.2368	80/20	4.2368
932891	AC2-115 2	4.2368	80/20	4.2368
932921	AC2-116	1.4830	80/20	1.4830
933911	AD1-013 C	1.1460	Adder	1.35
934431	AD1-067 C	0.0833	Adder	0.1
934701	AD1-098 C O1	4.4866	Adder	5.28
934971	AD1-129 C	0.9447	Adder	1.11
936791	AD2-102 C	23.3028	80/20	23.3028
937001	AD2-134 C	1.7351	Adder	2.04
937311	AD2-172 C	3.2906	Adder	3.87
937531	AD2-214 C	3.8134	Adder	4.49
938861	AE1-114 C O1	4.6616	Adder	5.48
939051	AE1-134 1	1.3363	Adder	1.57
939061	AE1-134 2	1.3363	Adder	1.57
940501	AE2-035 C	3.2906	Adder	3.87
941131	AE2-107 C	3.4843	Adder	4.1
943411	AF1-012 C	11.4981	Adder	13.53
943921	AF1-060	1.6203	Adder	1.91
946151	AF1-280 C O1	17.0949	Adder	20.11
946161	AF1-281 C	0.3743	Adder	0.44
946321	AF1-296 C O1	3.2245	Adder	3.79
946501	AF1-314 C	5.8467	Adder	6.88
946671	AF1-331	1.4883	Adder	1.75
950101	J390	98.5538	PJM External (MISO)	98.5538
952431	J760	4.2117	PJM External (MISO)	4.2117
953681	J818	11.3225	PJM External (MISO)	11.3225
953901	J850	16.8750	PJM External (MISO)	16.8750
954001	J864	3.7245	PJM External (MISO)	3.7245

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
955221	J1000	3.3390	PJM External (MISO)	3.3390
955971	J1084	11.3010	PJM External (MISO)	11.3010
956581	J1154	5.7030	PJM External (MISO)	5.7030
956901	J1188	4.6925	PJM External (MISO)	4.6925
957471	AF2-041 C	19.7003	Adder	23.18
958911	AF2-182 C	22.4604	Adder	26.42
958921	AF2-183 C	3.9930	Adder	4.7
959081	AF2-199 C	6.5668	Adder	7.73
959091	AF2-200 C O1	13.1335	Adder	15.45
959101	AF2-201 C O1	8.0543	Adder	9.48
960551	AF2-346 C	4.9277	Adder	5.8
960581	AF2-349 C	84.2094	80/20	84.2094
960721	AF2-363 C O1	5.6276	Adder	6.62
960751	AF2-366 C	3.6624	Adder	4.31
961011	AF2-392 C O1	3.8034	Adder	4.47
961021	AF2-393 O1	6.4831	Adder	7.63
961031	AF2-394 O1	4.3221	Adder	5.08
BLUEG	BLUEG	0.4201	Confirmed LTF	0.4201
CBM-W2	CBM-W2	8.6732	Confirmed LTF	8.6732
NY	NY	0.2151	Confirmed LTF	0.2151
TVA	TVA	0.9422	Confirmed LTF	0.9422
WEC	WEC	0.3720	Confirmed LTF	0.3720
CBM-S2	CBM-S2	0.3930	Confirmed LTF	0.3930
CBM-S1	CBM-S1	4.3367	Confirmed LTF	4.3367
TILTON	TILTON	0.0750	Confirmed LTF	0.0750
MADISON	MADISON	10.3784	Confirmed LTF	10.3784
MEC	MEC	9.0144	Confirmed LTF	9.0144
GIBSON	GIBSON	0.0524	Confirmed LTF	0.0524
TRIMBLE	TRIMBLE	0.1458	Confirmed LTF	0.1458
CBM-W1	CBM-W1	35.7286	Confirmed LTF	35.7286

11.7.5 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
96368004	270770	GOODINGS ;4B	CE	270766	GOODINGS ;3B	CE	1	COMED_P4_112-45-BT4-5__	breaker	1802.0	108.83	109.18	AC	20.52

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274658	DRESDEN ;2U	132.2217	Adder	155.55
274659	DRESDEN ;3U	91.6004	Adder	107.77
274704	KENDALL ;1C	5.9748	50/50	5.9748
274705	KENDALL ;1S	3.9952	50/50	3.9952
274706	KENDALL ;2C	5.9748	50/50	5.9748
274707	KENDALL ;2S	3.9952	50/50	3.9952
274830	U3-021 1	4.5162	Adder	5.31
274831	U3-021 2	4.5162	Adder	5.31
274859	EASYR;U1 E	8.2742	Adder	9.73
274860	EASYR;U2 E	8.2742	Adder	9.73
274861	TOP CROP ;1U	1.1907	50/50	1.1907
274862	TOP CROP ;2U	2.3115	50/50	2.3115
276167	Z1-106 E2	0.8608	Adder	1.01
276168	Z1-106 E1	0.8611	Adder	1.01
276170	Z1-108 E	1.8358	Adder	2.16
290021	O50 E	22.1462	Adder	26.05
290051	GSG-6; E	7.1303	Adder	8.39
290108	LEEDK;1U E	2.7518	Adder	3.24
293516	O-009 E1	6.9518	Adder	8.18
293517	O-009 E2	3.5310	Adder	4.15
293518	O-009 E3	3.8886	Adder	4.57
293644	O22 E1	28.3446	50/50	28.3446
293645	O22 E2	55.0218	50/50	55.0218
293715	O-029 E	7.4322	Adder	8.74
293716	O-029 E	4.0750	Adder	4.79
293717	O-029 E	3.7454	Adder	4.41
293771	O-035 E	4.8081	Adder	5.66
294401	BSHIL;1U E	6.7408	Adder	7.93
294410	BSHIL;2U E	6.7408	Adder	7.93
294763	P-046 E	6.9734	Adder	8.2
295109	WESTBROOK E	3.8175	Adder	4.49
295111	SUBLETTE E	1.8558	Adder	2.18
915011	Y3-013 1	2.9376	Adder	3.46
915021	Y3-013 2	2.9376	Adder	3.46
915031	Y3-013 3	2.9376	Adder	3.46
916211	Z1-072 E	3.6385	Adder	4.28
916221	Z1-073 E	3.6791	Adder	4.33
919581	AA2-030	13.3704	Adder	15.73
920272	AA2-123 E	1.8006	Adder	2.12
924471	AB2-096	31.3625	Adder	36.9
925302	AB2-191 E	0.9442	Adder	1.11
925581	AC1-033 C	1.1038	Adder	1.3

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925582	AC1-033 E	7.3896	Adder	8.69
926311	AC1-109 1	1.2433	Adder	1.46
926321	AC1-109 2	1.2433	Adder	1.46
926331	AC1-110 1	1.2872	Adder	1.51
926341	AC1-110 2	1.2872	Adder	1.51
926351	AC1-111 1	0.4916	Adder	0.58
926361	AC1-111 2	0.4916	Adder	0.58
926371	AC1-111 3	0.4916	Adder	0.58
926381	AC1-111 4	0.4916	Adder	0.58
926391	AC1-111 5	0.4916	Adder	0.58
926401	AC1-111 6	0.4916	Adder	0.58
926431	AC1-114	1.7609	Adder	2.07
926841	AC1-171 C O1	0.9430	Adder	1.11
926842	AC1-171 E O1	6.2989	Adder	7.41
927091	AC1-204 1	17.6751	50/50	17.6751
927201	AC1-214 C O1	1.5431	Adder	1.82
927202	AC1-214 E O1	4.9055	Adder	5.77
927451	AC1-142A 1	4.5383	Adder	5.34
927461	AC1-142A 2	4.5633	Adder	5.37
927511	AC1-113 1	0.8804	Adder	1.04
927521	AC1-113 2	0.8804	Adder	1.04
930481	AB1-089	48.3722	Adder	56.91
930741	AB1-122 1O1	58.9433	Adder	69.35
930751	AB1-122 2O1	84.0797	Adder	98.92
932881	AC2-115 1	1.7609	Adder	2.07
932891	AC2-115 2	1.7609	Adder	2.07
932921	AC2-116	0.6163	Adder	0.73
933911	AD1-013 C	1.2507	Adder	1.47
933912	AD1-013 E	1.9980	Adder	2.35
933931	AD1-016 C	0.6842	Adder	0.8
933932	AD1-016 E	1.1164	Adder	1.31
934051	AD1-031 C O1	2.2411	Adder	2.64
934052	AD1-031 E O1	3.6565	Adder	4.3
934101	AD1-039 1	5.7764	Adder	6.8
934111	AD1-039 2	8.2398	Adder	9.69
934431	AD1-067 C	0.0895	Adder	0.11
934432	AD1-067 E	0.3765	Adder	0.44
934701	AD1-098 C O1	4.7155	Adder	5.55
934702	AD1-098 E O1	3.4428	Adder	4.05
934971	AD1-129 C	0.6668	Adder	0.78
934972	AD1-129 E	0.4445	Adder	0.52
935001	AD1-133 C O1	15.6626	Adder	18.43
935002	AD1-133 E O1	10.4417	Adder	12.28
936291	AD2-038 C O1	1.8965	Adder	2.23
936292	AD2-038 E O1	12.6920	Adder	14.93
936511	AD2-066 C O1	6.0941	Adder	7.17
936512	AD2-066 E O1	4.0627	Adder	4.78
936791	AD2-102 C	10.5703	Adder	12.44
936792	AD2-102 E	7.0468	Adder	8.29
937001	AD2-134 C	1.8640	Adder	2.19
937002	AD2-134 E	7.7001	Adder	9.06
937311	AD2-172 C	1.8305	Adder	2.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
937312	AD2-172 E	2.5279	Adder	2.97
937401	AD2-194 1	9.6145	Adder	11.31
937411	AD2-194 2	9.5028	Adder	11.18
937531	AD2-214 C	3.4125	Adder	4.01
937532	AD2-214 E	2.2750	Adder	2.68
938511	AE1-070 1	11.2971	Adder	13.29
938521	AE1-070 2	10.2155	Adder	12.02
938851	AE1-113 C	9.1353	Adder	10.75
938852	AE1-113 E	32.3889	Adder	38.1
938861	AE1-114 C O1	2.9316	Adder	3.45
938862	AE1-114 E O1	10.0020	Adder	11.77
939051	AE1-134 1	1.0390	Adder	1.22
939061	AE1-134 2	1.0390	Adder	1.22
939321	AE1-163 C O1	4.7656	Adder	5.61
939322	AE1-163 E O1	29.2744	Adder	34.44
939683	AE1-198 BAT	23.0813	50/50	23.0813
940501	AE2-035 C	1.8305	Adder	2.15
940502	AE2-035 E	2.5279	Adder	2.97
941131	AE2-107 C	4.3376	Adder	5.1
941132	AE2-107 E	2.8917	Adder	3.4
942421	AE2-255 C O1	3.4603	Adder	4.07
942422	AE2-255 E O1	10.3810	Adder	12.21
942651	AE2-281 C O1	0.6808	Adder	0.8
942652	AE2-281 E O1	4.1821	Adder	4.92
942991	AE2-321 C	6.0230	Adder	7.09
942992	AE2-321 E	2.9666	Adder	3.49
943411	AF1-012 C	9.0142	Adder	10.6
943412	AF1-012 E	6.0095	Adder	7.07
943801	AF1-048 C	2.8155	Adder	3.31
943802	AF1-048 E	1.8770	Adder	2.21
943921	AF1-060	0.9013	Adder	1.06
944041	AF1-072	1.5510	Adder	1.82
946151	AF1-280 C O1	11.7649	Adder	13.84
946152	AF1-280 E O1	5.4102	Adder	6.36
946161	AF1-281 C	0.2576	Adder	0.3
946162	AF1-281 E	1.4599	Adder	1.72
946321	AF1-296 C O1	3.0896	Adder	3.63
946322	AF1-296 E O1	14.4648	Adder	17.02
946501	AF1-314 C	3.2524	Adder	3.83
946502	AF1-314 E	15.2271	Adder	17.91
946661	AF1-330 C	1.4765	Adder	1.74
946662	AF1-330 E	0.3241	Adder	0.38
946671	AF1-331	1.6244	Adder	1.91
957331	AF2-027 C	1.9584	Adder	2.3
957332	AF2-027 E	2.9376	Adder	3.46
957401	AF2-034 C	2.1064	50/50	2.1064
957402	AF2-034 E	1.7944	50/50	1.7944
957471	AF2-041 C	15.6947	Adder	18.46
957472	AF2-041 E	10.4632	Adder	12.31
957751	AF2-069 C	0.1787	Adder	0.21
957752	AF2-069 E	0.5766	Adder	0.68
957761	AF2-070 C	0.2518	Adder	0.3

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957762	AF2-070 E	1.2223	Adder	1.44
958023	AF2-096 BAT	6.9339	Merchant Transmission	6.9339
958491	AF2-143 C	8.7531	Adder	10.3
958492	AF2-143 E	5.8354	Adder	6.87
958911	AF2-182 C	15.4576	Adder	18.19
958912	AF2-182 E	10.3051	Adder	12.12
958921	AF2-183 C	2.7480	Adder	3.23
958922	AF2-183 E	4.1220	Adder	4.85
959081	AF2-199 C	5.2316	Adder	6.15
959082	AF2-199 E	3.4877	Adder	4.1
959091	AF2-200 C O1	10.4632	Adder	12.31
959092	AF2-200 E O1	6.9754	Adder	8.21
959101	AF2-201 C O1	4.4804	Adder	5.27
959102	AF2-201 E O1	12.8659	Adder	15.14
959351	AF2-226 C	6.9472	50/50	6.9472
959352	AF2-226 E	10.4208	50/50	10.4208
960281	AF2-319 C	6.9472	50/50	6.9472
960282	AF2-319 E	10.4208	50/50	10.4208
960551	AF2-346 C	3.8633	Adder	4.55
960552	AF2-346 E	2.5755	Adder	3.03
960581	AF2-349 C	16.1293	Adder	18.98
960582	AF2-349 E	10.7528	Adder	12.65
960721	AF2-363 C O1	4.0734	Adder	4.79
960722	AF2-363 E O1	2.7156	Adder	3.19
960731	AF2-364 C O1	4.3042	Adder	5.06
960732	AF2-364 E O1	2.8694	Adder	3.38
961011	AF2-392 C O1	2.9887	Adder	3.52
961012	AF2-392 E O1	13.9926	Adder	16.46
961021	AF2-393 O1	5.0944	Adder	5.99
961031	AF2-394 O1	3.3963	Adder	4.0
990901	L-005 E	10.2949	Adder	12.11
BLUEG	BLUEG	0.7100	Confirmed LTF	0.7100
CBM-W2	CBM-W2	21.3431	Confirmed LTF	21.3431
NY	NY	0.6072	Confirmed LTF	0.6072
TVA	TVA	1.9362	Confirmed LTF	1.9362
WEC	WEC	3.4521	Confirmed LTF	3.4521
O-066	O-066	7.0963	Confirmed LTF	7.0963
CBM-S1	CBM-S1	9.0397	Confirmed LTF	9.0397
G-007	G-007	1.0962	Confirmed LTF	1.0962
MADISON	MADISON	17.2005	Confirmed LTF	17.2005
MEC	MEC	12.5467	Confirmed LTF	12.5467
TRIMBLE	TRIMBLE	0.2599	Confirmed LTF	0.2599
CATAWBA	CATAWBA	0.0150	Confirmed LTF	0.0150
CBM-W1	CBM-W1	51.9290	Confirmed LTF	51.9290

11.7.6 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
96368410	274750	CRETE EC ;BP	CE	255112	17STJOHN	NIPS	1	COMED_P1-2_695_B2	single	1399.0	102.32	102.34	AC	14.88

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274654	BRAIDWOOD;1U	29.2639	80/20	29.2639
274655	BRAIDWOOD;2U	28.4709	80/20	28.4709
274658	DRESDEN ;2U	106.0627	Adder	124.78
274659	DRESDEN ;3U	98.5874	Adder	115.99
274660	LASCO STA;1U	26.9109	80/20	26.9109
274661	LASCO STA;2U	27.0126	80/20	27.0126
274675	JOLIET 29;7U	12.2741	80/20	12.2741
274676	JOLIET 29;8U	12.2828	80/20	12.2828
274687	WILL CNTY;4U	12.3528	80/20	12.3528
274704	KENDALL ;1C	4.3408	80/20	4.3408
274705	KENDALL ;1S	2.9026	80/20	2.9026
274706	KENDALL ;2C	4.3408	80/20	4.3408
274707	KENDALL ;2S	2.9026	80/20	2.9026
274734	ELWOOD EC;8P	3.5197	80/20	3.5197
274736	ELWOOD EC;9P	3.5197	80/20	3.5197
274751	CRETE EC ;1U	6.3240	80/20	6.3240
274752	CRETE EC ;2U	6.3240	80/20	6.3240
274753	CRETE EC ;3U	6.3240	80/20	6.3240
274754	CRETE EC ;4U	6.3240	80/20	6.3240
274830	U3-021 1	5.4244	Adder	6.38
274831	U3-021 2	5.4244	Adder	6.38
274861	TOP CROP ;1U	0.5183	80/20	0.5183
274862	TOP CROP ;2U	1.0062	80/20	1.0062
915011	Y3-013 1	3.3507	Adder	3.94
915021	Y3-013 2	3.3507	Adder	3.94
915031	Y3-013 3	3.3507	Adder	3.94
924471	AB2-096	37.6694	Adder	44.32
926311	AC1-109 1	1.6931	Adder	1.99
926321	AC1-109 2	1.6931	Adder	1.99
926331	AC1-110 1	1.6890	Adder	1.99
926341	AC1-110 2	1.6890	Adder	1.99
926351	AC1-111 1	0.6760	Adder	0.8
926361	AC1-111 2	0.6760	Adder	0.8
926371	AC1-111 3	0.6760	Adder	0.8
926381	AC1-111 4	0.6760	Adder	0.8
926391	AC1-111 5	0.6760	Adder	0.8
926401	AC1-111 6	0.6760	Adder	0.8
926431	AC1-114	2.1131	Adder	2.49
927091	AC1-204 1	13.0923	80/20	13.0923
927451	AC1-142A 1	4.5123	80/20	4.5123
927461	AC1-142A 2	4.5155	80/20	4.5155
927511	AC1-113 1	1.0566	Adder	1.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
927521	AC1-113 2	1.0566	Adder	1.24
930481	AB1-089	58.4095	Adder	68.72
930501	AB1-091 O1	55.8756	Adder	65.74
930741	AB1-122 1O1	63.0976	Adder	74.23
930751	AB1-122 2O1	67.4182	Adder	79.32
932881	AC2-115 1	2.1131	Adder	2.49
932891	AC2-115 2	2.1131	Adder	2.49
932921	AC2-116	0.7396	Adder	0.87
933431	AC2-156 C O1	0.8442	Adder	0.99
933911	AD1-013 C	1.6454	Adder	1.94
933931	AD1-016 C	0.8267	Adder	0.97
934101	AD1-039 1	6.1836	Adder	7.27
934111	AD1-039 2	6.6070	Adder	7.77
934431	AD1-067 C	0.1170	Adder	0.14
934701	AD1-098 C O1	6.1290	Adder	7.21
934721	AD1-100 C	16.8631	Adder	19.84
934871	AD1-116 C	0.7908	Adder	0.93
934971	AD1-129 C	0.8036	Adder	0.95
936511	AD2-066 C O1	7.3761	Adder	8.68
936791	AD2-102 C	12.5552	Adder	14.77
937001	AD2-134 C	2.4353	Adder	2.87
937311	AD2-172 C	2.1831	Adder	2.57
937401	AD2-194 1	7.1216	Adder	8.38
937411	AD2-194 2	7.1089	Adder	8.36
938511	AE1-070 1	8.3679	Adder	9.84
938521	AE1-070 2	7.6421	Adder	8.99
938851	AE1-113 C	7.2251	Adder	8.5
939351	AE1-166 C O1	9.0221	Adder	10.61
939631	AE1-193 C	32.5293	80/20	32.5293
939641	AE1-194 C	32.5293	80/20	32.5293
939651	AE1-195 C	32.5293	80/20	32.5293
939681	AE1-198 C	96.5869	80/20	96.5869
940501	AE2-035 C	2.1831	Adder	2.57
941131	AE2-107 C	5.8206	Adder	6.85
941551	AE2-152 C O1	10.4101	Adder	12.25
941561	AE2-153 C O1	4.1400	Adder	4.87
942421	AE2-255 C O1	2.7368	Adder	3.22
942991	AE2-321 C	7.2771	Adder	8.56
943121	AE2-341 C	11.2591	Adder	13.25
943591	AF1-030 C O1	7.4874	Adder	8.81
943801	AF1-048 C	3.4018	Adder	4.0
943921	AF1-060	1.0749	Adder	1.26
944041	AF1-072	1.9190	Adder	2.26
944911	AF1-156 C	10.5853	Adder	12.45
945351	AF1-200 FTIR	273.6261	Merchant Transmission	273.6261
946501	AF1-314 C	3.8788	Adder	4.56
946661	AF1-330 C	1.7839	Adder	2.1
946671	AF1-331	2.1369	Adder	2.51
957331	AF2-027 C	2.2338	Adder	2.63
957401	AF2-034 C	1.5304	80/20	1.5304
957471	AF2-041 C	18.9659	Adder	22.31
958021	AF2-096 C	40.5782	80/20	40.5782

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958481	AF2-142 C	9.3644	Adder	11.02
959081	AF2-199 C	6.3220	Adder	7.44
959091	AF2-200 C O1	12.6439	Adder	14.88
959101	AF2-201 C O1	5.3433	Adder	6.29
959351	AF2-226 C	3.0242	80/20	3.0242
960281	AF2-319 C	3.0242	80/20	3.0242
960381	AF2-329	5.8422	Adder	6.87
960581	AF2-349 C	19.3729	Adder	22.79
960721	AF2-363 C O1	5.2453	Adder	6.17
960731	AF2-364 C O1	5.4670	Adder	6.43
960751	AF2-366 C	6.1752	Adder	7.26
BLUEG	BLUEG	2.0658	Confirmed LTF	2.0658
CBM-W2	CBM-W2	18.7060	Confirmed LTF	18.7060
NY	NY	1.1154	Confirmed LTF	1.1154
TVA	TVA	1.2166	Confirmed LTF	1.2166
WEC	WEC	3.9381	Confirmed LTF	3.9381
CHEOAH	CHEOAH	0.0671	Confirmed LTF	0.0671
CBM-S1	CBM-S1	4.2515	Confirmed LTF	4.2515
MADISON	MADISON	20.2023	Confirmed LTF	20.2023
MEC	MEC	13.3889	Confirmed LTF	13.3889
GIBSON	GIBSON	0.1813	Confirmed LTF	0.1813
CALDERWOOD	CALDERWOOD	0.0567	Confirmed LTF	0.0567
TRIMBLE	TRIMBLE	0.7012	Confirmed LTF	0.7012
CATAWBA	CATAWBA	0.2769	Confirmed LTF	0.2769
CBM-W1	CBM-W1	55.4693	Confirmed LTF	55.4693

11.7.7 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
157328354	274768	LEE CO EC;BP	CE	270678	BYRON ; B	CE	1	COMED_P1-2_345-L15502_B-R-C	single	1726.0	106.65	109.34	AC	46.64

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274662	QUAD CITI;1U	42.0614	80/20	42.0614
274663	QUAD CITI;2U	42.1441	80/20	42.1441
274699	CORDOVA ;1C	7.4012	80/20	7.4012
274700	CORDOVA ;2C	7.4012	80/20	7.4012
274701	CORDOVA ;1S	8.3264	80/20	8.3264
274715	NELSON EC;1C	10.9942	80/20	10.9942
274716	NELSON EC;1S	8.0219	80/20	8.0219
274717	NELSON EC;2C	11.0791	80/20	11.0791
274718	NELSON EC;2S	8.0938	80/20	8.0938
274760	LEE CO EC;1U	7.0142	80/20	7.0142
274761	LEE CO EC;2U	7.0142	80/20	7.0142
274762	LEE CO EC;3U	6.9164	80/20	6.9164
274763	LEE CO EC;4U	6.9430	80/20	6.9430
274764	LEE CO EC;5U	7.0319	80/20	7.0319
274765	LEE CO EC;6U	7.0319	80/20	7.0319
274766	LEE CO EC;7U	6.9253	80/20	6.9253
274767	LEE CO EC;8U	6.9253	80/20	6.9253
274848	CAMP GROVE;RU	0.6005	80/20	0.6005
274849	CRESCENT ;1U	0.1799	80/20	0.1799
274850	MENDOTA H;RU	0.0446	80/20	0.0446
274851	PROVIDENC;RU	0.2745	80/20	0.2745
274855	GSG-6 ;RU	0.1879	80/20	0.1879
274857	BIG SKY ;U1	2.1336	80/20	2.1336
274858	BIG SKY ;U2	2.1336	80/20	2.1336
274877	BISHOP HL;1U	0.4454	80/20	0.4454
274878	BISHOP HL;2U	0.4454	80/20	0.4454
276156	O-029 C	0.5061	80/20	0.5061
276157	O-029 C	0.5471	80/20	0.5471
276158	O-029 C	0.9985	80/20	0.9985
276160	W4-084	0.1462	80/20	0.1462
293513	O-009 C1	0.9346	80/20	0.9346
293514	O-009 C2	0.4742	80/20	0.4742
293515	O-009 C3	0.5243	80/20	0.5243
295108	WESTBROOK C	0.0639	80/20	0.0639
295110	SUBLETTE C	0.0288	80/20	0.0288
919221	AA1-146	10.2561	80/20	10.2561
919581	AA2-030	61.0337	80/20	61.0337
925301	AB2-191	0.0721	80/20	0.0721
925581	AC1-033 C	1.7365	80/20	1.7365
926821	AC1-168 C O1	0.6693	80/20	0.6693
926841	AC1-171 C O1	0.7087	80/20	0.7087

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
927201	AC1-214 C O1	2.0968	80/20	2.0968
927531	AC1-185 1	0.5334	80/20	0.5334
927541	AC1-185 2	0.5334	80/20	0.5334
927551	AC1-185 3	0.5334	80/20	0.5334
927561	AC1-185 4	0.5334	80/20	0.5334
927571	AC1-185 5	0.5334	80/20	0.5334
927581	AC1-185 6	0.5334	80/20	0.5334
927591	AC1-185 7	0.5334	80/20	0.5334
927601	AC1-185 8	0.5334	80/20	0.5334
934051	AD1-031 C O1	3.5272	80/20	3.5272
934431	AD1-067 C	0.0562	80/20	0.0562
934701	AD1-098 C O1	3.5362	80/20	3.5362
937001	AD2-134 C	1.1693	80/20	1.1693
937531	AD2-214 C	11.7337	80/20	11.7337
938861	AE1-114 C O1	2.6241	80/20	2.6241
939051	AE1-134 1	4.7427	80/20	4.7427
939061	AE1-134 2	4.7427	80/20	4.7427
943411	AF1-012 C	40.8145	80/20	40.8145
946151	AF1-280 C O1	66.6683	80/20	66.6683
946161	AF1-281 C	1.4599	80/20	1.4599
946321	AF1-296 C O1	9.8816	80/20	9.8816
946541	AF1-318 C O1	4.1820	80/20	4.1820
951381	J504	6.4395	PJM External (MISO)	6.4395
951421	J514	3.9054	PJM External (MISO)	3.9054
951511	J530 C	6.4260	PJM External (MISO)	6.4260
954901	J963	1.6343	PJM External (MISO)	1.6343
955051	J981 C	4.5702	PJM External (MISO)	4.5702
955971	J1084	37.1040	PJM External (MISO)	37.1040
956411	J1131	19.9460	PJM External (MISO)	19.9460
957471	AF2-041 C	69.9534	80/20	69.9534
957751	AF2-069 C	0.2428	80/20	0.2428
957761	AF2-070 C	0.3421	80/20	0.3421
958341	AF2-128 C O1	1.0186	80/20	1.0186
958911	AF2-182 C	87.5934	80/20	87.5934
958921	AF2-183 C	15.5722	80/20	15.5722
959081	AF2-199 C	23.3178	80/20	23.3178
959091	AF2-200 C O1	46.6356	80/20	46.6356
960551	AF2-346 C	17.4919	80/20	17.4919
961011	AF2-392 C O1	10.2386	80/20	10.2386
961021	AF2-393 O1	17.4522	80/20	17.4522
961031	AF2-394 O1	11.6348	80/20	11.6348
LGEE	LGEE	0.1791	Confirmed LTF	0.1791
CPL	CPL	0.4042	Confirmed LTF	0.4042
CBM-W2	CBM-W2	22.8092	Confirmed LTF	22.8092
NY	NY	0.0337	Confirmed LTF	0.0337
TVA	TVA	2.7720	Confirmed LTF	2.7720
CBM-S2	CBM-S2	4.6760	Confirmed LTF	4.6760
CBM-S1	CBM-S1	14.2369	Confirmed LTF	14.2369
MADISON	MADISON	9.9228	Confirmed LTF	9.9228
MEC	MEC	17.5696	Confirmed LTF	17.5696
CBM-W1	CBM-W1	21.2545	Confirmed LTF	21.2545

11.7.8 Index 8

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
96367953	957470	AF2-041 TAP	CE	270730	ELECT JCT; B	CE	1	COMED_P4_006-45-BT3-4__	breaker	1656.0	131.53	138.65	AC	118.83

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274715	NELSON EC;1C	9.6789	50/50	9.6789
274716	NELSON EC;1S	7.0622	50/50	7.0622
274717	NELSON EC;2C	9.7536	50/50	9.7536
274718	NELSON EC;2S	7.1254	50/50	7.1254
274761	LEE CO EC;2U	4.5359	50/50	4.5359
274764	LEE CO EC;5U	4.5474	50/50	4.5474
274765	LEE CO EC;6U	4.5474	50/50	4.5474
274859	EASYR;U1 E	27.9170	Adder	32.84
274860	EASYR;U2 E	27.9170	Adder	32.84
293516	O-009 E1	17.2864	Adder	20.34
293517	O-009 E2	8.7801	Adder	10.33
293518	O-009 E3	9.6693	Adder	11.38
293715	O-029 E	18.4811	Adder	21.74
293716	O-029 E	10.1329	Adder	11.92
293717	O-029 E	9.3132	Adder	10.96
293771	O-035 E	4.9354	Adder	5.81
294401	BSHIL;1U E	8.0866	Adder	9.51
294410	BSHIL;2U E	8.0866	Adder	9.51
916211	Z1-072 E	3.7349	Adder	4.39
919221	AA1-146	9.0290	50/50	9.0290
919581	AA2-030	53.7317	50/50	53.7317
925581	AC1-033 C	1.3245	Adder	1.56
925582	AC1-033 E	8.8671	Adder	10.43
927201	AC1-214 C O1	1.5840	Adder	1.86
927202	AC1-214 E O1	5.0354	Adder	5.92
934051	AD1-031 C O1	2.6901	Adder	3.16
934052	AD1-031 E O1	4.3892	Adder	5.16
937531	AD2-214 C	9.0882	Adder	10.69
937532	AD2-214 E	6.0588	Adder	7.13
938861	AE1-114 C O1	4.1862	Adder	4.92
938862	AE1-114 E O1	14.2822	Adder	16.8
939051	AE1-134 1	4.1753	50/50	4.1753
939061	AE1-134 2	4.1753	50/50	4.1753
943411	AF1-012 C	44.9662	50/50	44.9662
943412	AF1-012 E	29.9775	50/50	29.9775
946151	AF1-280 C O1	46.8759	50/50	46.8759
946152	AF1-280 E O1	21.5561	50/50	21.5561
946161	AF1-281 C	1.0265	50/50	1.0265
946162	AF1-281 E	5.8167	50/50	5.8167
946321	AF1-296 C O1	7.6870	Adder	9.04
946322	AF1-296 E O1	35.9888	Adder	42.34

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
950471	J438 C	3.3717	PJM External (MISO)	3.3717
950472	J438 E	13.4869	PJM External (MISO)	13.4869
951381	J504	5.7865	PJM External (MISO)	5.7865
951421	J514	3.4599	PJM External (MISO)	3.4599
951511	J530 C	5.5045	PJM External (MISO)	5.5045
951512	J530 E	22.0180	PJM External (MISO)	22.0180
954091	J873 C	3.3038	PJM External (MISO)	3.3038
954092	J873 E	17.8742	PJM External (MISO)	17.8742
954702	J844 E	14.1620	PJM External (MISO)	14.1620
954792	J952 E	6.7954	PJM External (MISO)	6.7954
954861	J959 C	2.2974	PJM External (MISO)	2.2974
954862	J959 E	12.4296	PJM External (MISO)	12.4296
954901	J963	1.4067	PJM External (MISO)	1.4067
955051	J981 C	3.8638	PJM External (MISO)	3.8638
955052	J981 E	20.9042	PJM External (MISO)	20.9042
955971	J1084	31.5210	PJM External (MISO)	31.5210
956411	J1131	16.9080	PJM External (MISO)	16.9080
956831	J1181 C	3.0077	PJM External (MISO)	3.0077
956832	J1181 E	16.2723	PJM External (MISO)	16.2723
957471	AF2-041 C	106.9488	50/50	106.9488
957472	AF2-041 E	71.2992	50/50	71.2992
957751	AF2-069 C	0.1834	Adder	0.22
957752	AF2-069 E	0.5919	Adder	0.7
957761	AF2-070 C	0.2584	Adder	0.3
957762	AF2-070 E	1.2547	Adder	1.48
958911	AF2-182 C	61.5888	50/50	61.5888
958912	AF2-182 E	41.0592	50/50	41.0592
958921	AF2-183 C	10.9491	50/50	10.9491
958922	AF2-183 E	16.4237	50/50	16.4237
959081	AF2-199 C	35.6496	50/50	35.6496
959082	AF2-199 E	23.7664	50/50	23.7664
959091	AF2-200 C O1	71.2992	50/50	71.2992
959092	AF2-200 E O1	47.5328	50/50	47.5328
960551	AF2-346 C	19.2713	50/50	19.2713
960552	AF2-346 E	12.8475	50/50	12.8475
961011	AF2-392 C O1	8.1451	Adder	9.58
961012	AF2-392 E O1	38.1340	Adder	44.86
961021	AF2-393 O1	13.8837	Adder	16.33
961031	AF2-394 O1	9.2558	Adder	10.89
990901	L-005 E	10.8712	Adder	12.79
LGEE	LGEE	0.0268	Confirmed LTF	0.0268
CPL	CPL	0.2441	Confirmed LTF	0.2441
BLUEG	BLUEG	0.0226	Confirmed LTF	0.0226
CBM-W2	CBM-W2	21.1630	Confirmed LTF	21.1630
NY	NY	0.1814	Confirmed LTF	0.1814
TVA	TVA	2.4920	Confirmed LTF	2.4920
O-066	O-066	2.0227	Confirmed LTF	2.0227
CBM-S2	CBM-S2	3.3177	Confirmed LTF	3.3177
CBM-S1	CBM-S1	12.4222	Confirmed LTF	12.4222
G-007	G-007	0.3120	Confirmed LTF	0.3120
MADISON	MADISON	14.5414	Confirmed LTF	14.5414
MEC	MEC	18.0574	Confirmed LTF	18.0574

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.0295	Confirmed LTF	0.0295
CBM-W1	CBM-W1	45.2362	Confirmed LTF	45.2362

11.8 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
AA1-146	Nelson	Active
AA2-030	Nelson	Active
AA2-123	Marengo 34kV	In Service
AB1-089	Byron-Wayne 345kV #1	Active
AB1-091	Davis Creek 345kV	Active
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Engineering and Procurement
AB2-096	Silver Lake-Cherry Valley	Active
AB2-191	Mendota Hills	In Service
AC1-033	Kewanee	Active
AC1-109	Aurora 345kV	In Service
AC1-110	Aurora 138kV	Active
AC1-111	Aurora 138kV	In Service
AC1-113	Rockford	Partially in Service - Under Construction
AC1-114	Rockford II	Partially in Service - Under Construction
AC1-142A	Joliet	Active
AC1-168	Kewanee-Streator	Active
AC1-171	Powerton	Active
AC1-185	Lee County	In Service
AC1-204	Elwood	Under Construction
AC1-214	Crescent Ridge	Partially in Service - Under Construction
AC2-115	Rockford	Partially in Service - Under Construction
AC2-116	Rockford II	Partially in Service - Under Construction
AC2-156	Sandwich 34.5kV	Active
AD1-013	Twombly Road 138kV	Active
AD1-016	Marengo	Active
AD1-031	Kewanee 138 kV	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-067	Mendota Hills	In Service
AD1-098	Dixon-McGirr	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD1-116	Nevada 345 kV	Active
AD1-129	Belvidere 34 kV	Active
AD1-133	Pontiac MidPoint-Dresden	Active
AD2-038	Powerton	Active

Queue Number	Project Name	Status
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
AE1-163	Powerton-Nevada 345 kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE1-193	Crete 345 kV	Active
AE1-194	Crete 345 kV	Active
AE1-195	Crete 345 kV	Active
AE1-198	Crete 345 kV	Active
AE2-035	Lena 138 kV	Active
AE2-062	Romeoville 12 kV	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
AF1-012	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
AF1-318	Crescent Ridge-Corbin	Active
AF1-330	Marengo	Active
AF1-331	Twombly Road	Active
AF2-027	Zion Energy Center 345 kV	Active
AF2-034	Kendall	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-069	Crescent Ridge 138 kV	Active
AF2-070	Crescent Ridge 138 kV	Active
AF2-096	Braidwood-East Frankfort 345 kV	Active
AF2-128	Crescent Ridge-Corbin 138 kV	Active
AF2-142	Nevada 345 kV	Active
AF2-143	Powerton-Nevada 345 kV	Active
AF2-182	Nelson-Lee County 345 kV II	Active
AF2-183	Nelson-Lee County 345 kV	Active
AF2-199	Nelson-Electric Junction 345 kV	Active
AF2-200	Nelson-Electric Junction 345 kV	Active

Queue Number	Project Name	Status
AF2-201	Lena-Ecogrove 138 kV	Active
AF2-226	Katydid Road 345 kV	Active
AF2-319	Katydid Road 345 kV	Active
AF2-329	Sandwich-Plano 138 kV	Active
AF2-346	Electric Junction-Nelson 345 kV	Active
AF2-349	Garden Prairie-Silver Lake 345 kV	Active
AF2-363	Glidden 138 kV	Active
AF2-364	Wayne Red 138 kV	Active
AF2-366	Glidden-Waterman 138 kV	Active
AF2-392	Nelson-Dixon 138 kV	Active
AF2-393	Nelson-Dixon 138 kV	Active
AF2-394	Nelson-Dixon 138 kV	Active
U3-021	Silver Lake-Cherry Valley	Active
W4-084	Dixon 12kV	Deactivated
Y3-013	Zion Energy Center	Active
Z1-072	Crescent Ridge	In Service
Z1-073	Mendota Hills	In Service
Z1-106	West Chicago 34kV	In Service
Z1-108	McHenry 34kV	In Service
Z2-081	Streator 34.5kV	In Service
J1000	MISO	MISO
J1084	MISO	MISO
J1131	MISO	MISO
J1154	MISO	MISO
J1181	MISO	MISO
J1188	MISO	MISO
J390	MISO	MISO
J438	MISO	MISO
J504	MISO	MISO
J514	MISO	MISO
J530	MISO	MISO
J760	MISO	MISO
J818	MISO	MISO
J844	MISO	MISO
J850	MISO	MISO
J864	MISO	MISO
J873	MISO	MISO
J952	MISO	MISO
J959	MISO	MISO
J963	MISO	MISO
J981	MISO	MISO

11.9 Contingency Descriptions

Contingency Name	Contingency Definition
COMED_P4_112-45-BT4-5__	CONTINGENCY 'COMED_P4_112-45-BT4-5__' TRIP BRANCH FROM BUS 270666 TO BUS 270664 CKT 1 / B ISL;BT 345 B ISL; B 345 TRIP BRANCH FROM BUS 270666 TO BUS 270926 CKT 1 / B ISL;BT 345 WILTO; B 345 TRIP BRANCH FROM BUS 270770 TO BUS 270666 CKT 1 / GOODI;4B 345 B ISL;BT 345 TRIP BRANCH FROM BUS 270852 TO BUS 270704 CKT 1 / PONTI; B 345 LORET; B 345 END
COMED_P1-2_345-L15502_B-R-C	CONTINGENCY 'COMED_P1-2_345-L15502_B-R-C' TRIP BRANCH FROM BUS 957470 TO BUS 270730 CKT 1 / AF2-041 TAP 345 ELEC JUNC; B 345 END
COMED_P2-1_111-L11120__	CONTINGENCY 'COMED_P2-1_111-L11120__' TRIP BRANCH FROM BUS 270733 TO BUS 270747 CKT 1 / ELECT;3R 345 W407K;OT 345 END
COMED_P4_006-45-BT3-4__	CONTINGENCY 'COMED_P4_006-45-BT3-4__' TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 REMOVE UNIT 1 FROM BUS 274656 / BYRON;1U 25 END
COMED_P1-2_345-L0627__B-R	CONTINGENCY 'COMED_P1-2_345-L0627__B-R' TRIP BRANCH FROM BUS 274768 TO BUS 270678 CKT 1 / LEECO;BP 345 BYRON; B 345 END
COMED_P2-2_111_EJ-345R__3	CONTINGENCY 'COMED_P2-2_111_EJ-345R__3' DISCONNECT BUS 270733 / ELEC JUNC;3R 345 DISCONNECT BUS 275183 / ELEC JUNC;3M 138 END
COMED_P4_167-45-BT5-6__	CONTINGENCY 'COMED_P4_167-45-BT5-6__' TRIP BRANCH FROM BUS 270846 TO BUS 270847 CKT 1 / PLANO ; B 345 PLANO ; R 345 TRIP BRANCH FROM BUS 270847 TO BUS 270733 CKT 1 / PLANO ; R 345 ELEC JUNC;3R 345 TRIP BRANCH FROM BUS 275208 TO BUS 270630 CKT 1 / PLANO ;4M 345 PLANO ; 765 TRIP BRANCH FROM BUS 275208 TO BUS 270847 CKT 1 / PLANO ;4M 345 PLANO ; R 345 TRIP BRANCH FROM BUS 275208 TO BUS 275308 CKT 1 / PLANO ;4M 345 PLANO ;4C 33 END

Contingency Name	Contingency Definition
COMED_P1-2_695_B2	CONTINGENCY 'COMED_P1-2_695_B2' OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTO; 765 1 END
COMED_P4_006-45-BT7-8__	CONTINGENCY 'COMED_P4_006-45-BT7-8__' TRIP BRANCH FROM BUS 270678 TO BUS 930480 CKT 1 / BYRON ; B 345 AB1-089 TAP 345 TRIP BRANCH FROM BUS 270678 TO BUS 270679 CKT 1 / BYRON ; B 345 BYRON ; R 345 END
Base Case	
COMED_P7_345-L13821_R-R+_345-L18502AB-N	CONTINGENCY 'COMED_P7_345-L13821_R-R+_345-L18502AB-N' TRIP BRANCH FROM BUS 270883 TO BUS 270807 CKT 1 / SILVE; R 345 LIBER; R 345 TRIP BRANCH FROM BUS 270900 TO BUS 270806 CKT 1 / TOLLW; B 345 LIBER; B 345 END

12 Short Circuit Analysis

No breakers were identified as overdutied as part of this study.

13 Stability and Reactive Power

Analysis to be run in the Facilities Study Phase.

14 Affected Systems

14.1 MISO

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

Attachment 1: One Line Diagram

AF2-200
SECONDARY POI

