Generation Interconnection

Feasibility Study Report

for

Queue Project AF1-280

NELSON-LEE COUNTY

137 MW Capacity / 200 MW Energy

January, 2020

1 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 137 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 1, 2022. This study does not imply a TO commitment to this in-service date. The IC requested that both a Primary and Secondary Point of Interconnection be studied for the AF1-280 project.

Queue Number	AF1-280
Project Name	NELSON-LEE COUNTY
State	Illinois
County	Lee
Transmission Owner	ComEd
MFO	200
MWE	200
MWC	137
Fuel	Solar
Basecase Study Year	2023

1.1 Primary Point of Interconnection

Queue Position AF1-280, a 200 MW solar facility proposes to interconnect with the ComEd transmission system by tying into Nelson-Lee County 345 kV Line 15501, approximately 9.0 miles from TSS 155 Nelson.

1.2 Cost Summary

AF1-280 will be responsible for the following costs associated with the physical interconnection of the project:

Description	Total Cost
Attachment Facilities	$1,000,000
Direct Connection Network Upgrade	$23,000,000
Non Direct Connection Network Upgrades	$2,000,000
Total Costs	**$26,000,000**

In addition, the AF1-280 project may be responsible for a contribution to the following costs associated with network upgrades (See Section 16):

Description	Total Cost
System Upgrades	**$127,000,000**

Cost allocations for these upgrades will be provided in the System Impact Study Report.

2 Transmission Owner Scope of Work

Attachment Facilities

The AF1-280 generator lead will interconnect to a new 345kV Substation (see details in Direct Connection section below). The required Attachment Facilities are one 345kV line MOD, one dead-end structures and one set of revenue-metering.

Direct Connection Network Upgrades

In order to accommodate interconnection of AF1-280, a new 345kV Interconnection Substation would need to be built looping in the 345kV line 15501 between TSS 155 Nelson and TSS 937 Lee County E.C.

The scope of work includes installation of three 345kV circuit breakers in "breaker-and-a-half" bus configuration and tie in the Interconnection Substation to the 345kV line 15501 between TSS 155 Nelson and TSS 937 Lee County E.C., as shown in the one-line diagram below.

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

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

ComEd would design, engineer and construct the tie in of the Interconnection Substation to 345kV Line 15501. The preliminary cost estimate for Direct Connection Network Upgrade is given in the following tables.

Non-Direct Connection Network Upgrades

Relay/communications/SCADA upgrades at TSS 155 Nelson.

Relay/communications/SCADA upgrades at TSS 937 Lee County.

3 Attachment Facilities Cost Estimate

The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Installation of one 345kV line MOD, one dead-end structure and one set of revenue metering (see notes below on cost estimate)	$1,000,000
Total Attachment Facility Costs	**$1,000,000**

4 Direct Connection Cost Estimate

The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

For Option to Build Direct Connection cost estimates:

Description	Total Cost
Installation of a new 345kV substation as described above	N/A
Transmission line tie in work (foundations, structures, conductors)	$3,000,000
ComEd oversight and testing	$1,500,000
Total Direct Connection Facility Costs	**$4,500,000**

For ComEd building the interconnecting substation cost estimates:

Description	Total Cost
Installation of a new 345kV substation as described above	$ 20,000,000
Transmission line tie in work (foundations, structures, conductors)	$ 3,000,000
Total Direct Connection Facility Costs	**$ 23,000,000**

5 Non-Direct Connection Cost Estimate

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Relay/communications/SCADA upgrades at TSS 155 Nelson	$1,000,000
Relay/communications/SCADA upgrades at TSS 937 Lee County	$1,000,000
Total Non-Direct Connection Facility Costs	**$2,000,000**

Notes on Cost Estimate:

1) These estimates are Order-of-Magnitude estimates of the costs that ComEd would bill to the customer for this interconnection. These estimates are based on a one-line electrical diagram of the project and the information provided by the 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.

6 Schedule

Normally it takes about 24-months to engineer, design, procure material and construct 345kV facilities after ISA/ICSA are signed.

7 Transmission Owner Analysis

See Section 3

8 Interconnection Customer Requirements

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.

ComEd distribution line drops to move customer cranes and heavy equipment is not part of PJM process. The customer should directly contact ComEd New Business Group to arrange for line drops, if needed.

9 Revenue Metering and SCADA Requirements

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 Network Impacts

The Queue Project AF1-280 was evaluated as a 200.0 MW (Capacity 137.0 MW) injection tapping the Nelson to Lee County 345 kV line in the ComEd area. Project AF1-280 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-280 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

11 Generation Deliverability

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

None

12 Multiple Facility Contingency

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

None

13 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
7468012 6	25511 3	17STILLWE LL	345. 0	NIPS	24321 9	05DUMON T	345. 0	AEP	1	COMED_P1-2_695_B2	single	1409. 0	101.96	102.55	DC	18.27
7572145 0	27067 8	BYRON ; B	345. 0	CE	27069 4	CHERRY VA; B	345. 0	CE	1	COMED_P4_006-45-BT7-8__	breake r	1441. 0	115.27	117.03	DC	55.28
7572144 5	27069 4	CHERRY VA; B	345. 0	CE	27075 9	GARDEN PR; R	345. 0	CE	1	COMED_P4_144-45-BT6-8__	breake r	1479. 0	114.57	115.59	DC	32.63

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
7572208 7	27069 4	CHERRY VA; B	345. 0	CE	27075 9	GARDEN PR; R	345. 0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479. 0	102.59	103.29	DC	22.43
7572153 8	27073 0	ELECT JCT; B	345. 0	CE	27081 2	LOMBARD ; B	345. 0	CE	1	COMED_P4_012-45-BT5-6__	breaker	1479. 0	104.41	104.92	DC	16.52
7572203 1	27075 9	GARDEN PR; R	345. 0	CE	27088 3	SILVER LK; R	345. 0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479. 0	115.09	115.79	DC	22.43
7572203 4	27075 9	GARDEN PR; R	345. 0	CE	27088 3	SILVER LK; R	345. 0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479. 0	105.53	106.23	DC	22.43
7572125 2	27084 7	PLANO ; R	345. 0	CE	27520 8	PLANO ;4M	345. 0	CE	1	COMED_P4_167-45-BT8-12_	breaker	1379. 0	111.01	111.45	DC	14.42
7572125 3	27084 7	PLANO ; R	345. 0	CE	27520 8	PLANO ;4M	345. 0	CE	1	COMED_P4_167-45-BT8-9__	breaker	1379. 0	110.42	110.91	DC	15.07
7572125 4	27084 7	PLANO ; R	345. 0	CE	27520 8	PLANO ;4M	345. 0	CE	1	COMED_P4_167-45-BT9-12_	breaker	1379. 0	110.35	110.84	DC	15.07
7572187 9	27475 0	CRETE EC ;BP	345. 0	CE	25511 2	17STJOHN	345. 0	NIPS	1	COMED_P1-2_695_B2	single	1399. 0	100.97	101.51	DC	16.05
7572125 7	27520 8	PLANO ;4M	345. 0	CE	27063 0	PLANO ;	765. 0	CE	1	COMED_P4_167-45-BT8-12_	breaker	1379. 0	111.01	111.45	DC	14.42
7572125 8	27520 8	PLANO ;4M	345. 0	CE	27063 0	PLANO ;	765. 0	CE	1	COMED_P4_167-45-BT8-9__	breaker	1379. 0	110.42	110.91	DC	15.07
7572125 9	27520 8	PLANO ;4M	345. 0	CE	27063 0	PLANO ;	765. 0	CE	1	COMED_P4_167-45-BT9-12_	breaker	1379. 0	110.35	110.84	DC	15.07

14 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
7572208 5	27069 4	CHERRY VA; B	345. 0	CE	27075 9	GARDEN PR; R	345. 0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479. 0	114.4	115.43	DC	32.74
7572219 4	27073 0	ELECT JCT; B	345. 0	CE	27081 2	LOMBARD ; B	345. 0	CE	1	Base Case	operation	1201. 0	102.55	103.08	DC	14.29
7572219 5	27073 0	ELECT JCT; B	345. 0	CE	27081 2	LOMBARD ; B	345. 0	CE	1	COMED_P2-1_111-L11120__	operation	1479. 0	99.57	100.03	DC	15.1
7572203 0	27075 9	GARDEN PR; R	345. 0	CE	27088 3	SILVER LK; R	345. 0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479. 0	120.06	121.06	DC	32.74
7572203 3	27075 9	GARDEN PR; R	345. 0	CE	27088 3	SILVER LK; R	345. 0	CE	1	Base Case	operation	1201. 0	110.56	111.43	DC	23.04

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
7572206 8	27077 0	GOODIN GS ;4B	345. 0	CE	27076 6	GOODING S ;3B	345. 0	CE	1	COMED_P1-2_345-L11613AB-S	operatio n	1802. 0	117.16	117.67	DC	20.17
7572204 6	27082 8	NELSON ; B	345. 0	CE	94341 0	AF1-012 TAP	345. 0	CE	1	Base Case	operatio n	1334. 0	98.12	101.16	DC	40.4
7572215 4	27084 6	PLANO ; B	345. 0	CE	27520 7	PLANO ;3M	345. 0	CE	1	COMED_P1-3_TR94_PLANO_R-S	operatio n	1379. 0	106.66	107.21	DC	19.27
7572218 4	27476 8	LEE CO EC;BP	345. 0	CE	27067 8	BYRON ; B	345. 0	CE	1	COMED_P1-2_345-L15502_B-R-B	operatio n	1726. 0	99.76	102.31	DC	97.32
7572215 6	27520 7	PLANO ;3M	345. 0	CE	27063 0	PLANO ;	765. 0	CE	1	COMED_P1-3_TR94_PLANO_R-S	operatio n	1379. 0	106.66	107.21	DC	19.27
7572198 0	94341 0	AF1-012 TAP	345. 0	CE	27073 0	ELECT JCT; B	345. 0	CE	1	Base Case	operatio n	1334. 0	111.61	114.55	DC	40.4
7468001 8	95682 0	J1180 TAP	345. 0	AMIL	24771 2	05SULLIVA N	345. 0	AEP	1	AEP_P1-2_#286	operatio n	1466. 0	170.4	170.61	DC	14.77

15 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
75721254,75721253, 75721252	6	PLANO ; R 345.0 kV - PLANO ;4M 345.0 kV Ckt 1	**CE** **CE_NUN_TSS 167-345KV_BT 8-12 (1430) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano (BT CB 8-14). The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $6M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution.** **Project Type : FAC** **Cost : $6,000,000** **Time Estimate : 30.0 Months** **CE_NUN_TSS 167-345KV_BT 8-9 (1432) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano, BT CB 8-14 and relocate 345kV L0101 to newly designated 345kV Bus 14 on the Blue Bus. The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $10M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution.** **Project Type : FAC** **Cost : $10,000,000** **Time Estimate : 30.0 Months** **CE_NUN_TSS 167-345KV_BT 10-12 (1433) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The contingency name should be BT 10-12 rather than BT 9-12.The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano, BT CB 9-10. The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $4M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution.** **Project Type : FAC** **Cost : $4,000,000** **Time Estimate : 30.0 Months**	$20,000,000

ID	Index	Facility	Upgrade Description	Cost
75721879	7	CRETE EC ;BP 345.0 kV - 17STJOHN 345.0 kV Ckt 1	**CE** **N5253 (1827) : L94507 SSTE rating is 1483 MVA. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to reconductor the line, upgrade station conductor and upgrade a relay package. A preliminary cost estimate is $14.9 M with an estimated construction timeline of 30 months. Upon complation of this upgrade the new ratings will be 1754/2246/2297/2488 MVA (SN/SLTE/SSTE/SLD).** **Project Type : FAC** **Cost : $14,900,000** **Time Estimate : 30.0 Months** **NIPS** **NonPJMArea (1906) : The external (i.e. Non-PJM) Transmission Owner, NIPS, will not evaluate this violation until the impact study phase.** **Project Type : FAC** **Cost : $0** **Time Estimate : 0.0 Months**	$14,900,000
75722034,75722031	5	GARDEN PR; R 345.0 kV - SILVER LK; R 345.0 kV Ckt 1	**CE** **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 a estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1248/1441/1667/1982 MVA SN/SLTE/SSTE/SLD.** **Project Type : FAC** **Cost : $45,700,000** **Time Estimate : 30.0 Months**	$45,700,000
75721445,75722087	3	CHERRY VA; B 345.0 kV - GARDEN PR; R 345.0 kV Ckt 1	**CE** **ce-017 (1472) : L15616 SSTE rating is 1568 MVA. The post contingency flow for this event exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor a portion of the line, perform sag mitigation on another portion of the line and station conductor upgrade at a line terminal. A preliminary estimate for the upgrades is $19.4M with a estimated construction time of 30 months. Upon completion the rating swill be 1248/1441/1667/1982 MVA (SN/SLTE/SSTE/SLD).** **Project Type : FAC** **Cost : $19,400,000** **Time Estimate : 30.0 Months**	$19,400,000

ID	Index	Facility	Upgrade Description	Cost
75721450	2	BYRON ; B 345.0 kV - CHERRY VA; B 345.0 kV Ckt 1	CE CE_NUN_L0621 (71) : ComEd 345kV l0621 SSTE rating is 1585 MVA. The upgrade will be to mitigate sag on the line and replace a 345kV circuit breaker at Cherry Valley. A preliminary estimate for the upgrade is $12.2 M with a estimated construction timeline of 24 months subject to outage coordination with Station 6 Byron Nuclear Station. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : $12,200,000 Time Estimate : 24.0 Months	$12,200,000
75721257,75721259, 75721258	8	PLANO ;4M 345.0 kV - PLANO ; 765.0 kV Ckt 1	CE CE_NUN_TSS 167-345KV_BT 8-12 (1430) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano (BT CB 8-14). The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $6M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution. Project Type : FAC Cost : $6,000,000 Time Estimate : 30.0 Months CE_NUN_TSS 167-345KV_BT 8-9 (1432) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano, BT CB 8-14 and relocate 345kV L0101 to newly designated 345kV Bus 14 on the Blue Bus. The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $10M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution. Project Type : FAC Cost : $10,000,000 Time Estimate : 30.0 Months CE_NUN_TSS 167-345KV_BT 10-12 (1433) : ComEd Tr. 94 at TSS 167 Plano SSTE rating is 1469 MVA. The contingency name should be BT 10-12 rather than BT 9-12.The upgrade will be to install a new 345kV bus tie circuit breaker at TSS 167 Plano, BT CB 9-10. The purpose is to reduce the impact of the current contingency impact. There will not be a rating change. A preliminary estimate for the upgrade is $4M with an estimated construction timeline of 30 months contingent upon line relocation issues. PJM to confirm this proposed solution. Project Type : FAC Cost : $4,000,000 Time Estimate : 30.0 Months	$20,000,000

ID	Index	Facility	Upgrade Description	Cost
74680126	1	17STILLWELL 345.0 kV - 05DUMONT 345.0 kV Ckt 1	AEP n4790 (245) : PJM Network Upgrade n4790. Replace Dumont substation 2500A wavetrap. Project Type : FAC Cost : $200,000 Time Estimate : 12-18 Months NIPS NonPJMArea (446) : The external (i.e. Non-PJM) Transmission Owner, NIPS, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : $0 Time Estimate : 0.0 Months	$200,000
75721538	4	ELECT JCT; B 345.0 kV - LOMBARD ; B 345.0 kV Ckt 1	CE CE_NUN_L11124 (1419) : ComEd 345kV L11124 SSTE rating is 1568 MVA. The upgrade will be to reconductor the line. A preliminary estimate is $14.6M with an estimated construction timeline of 30 months. Upon completion of the upgrade the ratings will be 1334/1726/1837/2084 MVA (SN/SLTE/SSTE/SLD). Project Type : FAC Cost : $14,600,000 Time Estimate : 30.0 Months	$14,600,000
			TOTAL COST	$127,000,000

16 Flow Gate Details

The following indices contain additional information about each flowgate presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact.It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

16.1 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
74680126	255113	17STILLWELL	NIPS	243219	05DUMONT	AEP	1	COMED_P1-2_695_B2	single	1409.0	101.96	102.55	DC	18.27

Bus #	Bus	MW Impact
274723	RIVER EC ;12	4.4883

Bus #	Bus	MW Impact
274724	RIVER EC ;11	4.4553
274788	**SE CHICAG;5U (Deativation : 06/01/20)**	**7.5156**
274789	**SE CHICAG;6U (Deativation : 06/01/20)**	**7.5354**
274790	**SE CHICAG;7U (Deativation : 06/01/20)**	**7.6346**
274791	**SE CHICAG;8U (Deativation : 06/01/20)**	**7.6346**
274792	**SE CHICAG;9U (Deativation : 06/01/20)**	**7.5445**
274793	**SE CHICAG;0U (Deativation : 06/01/20)**	**7.5445**
274794	**SE CHICAG;1U (Deativation : 06/01/20)**	**7.5445**
274795	**SE CHICAG;2U (Deativation : 06/01/20)**	**7.5445**
274798	UNIV PARK;1U	1.2579
274801	UNIV PARK;4U	1.2485
274826	FISK ;BP	2.3485
274827	FISK ;RP	1.6644
274830	U3-021 1	6.0841
274831	U3-021 2	6.0841
276160	W4-084	0.4194
276161	W4-086	0.2425
276164	X3-005 C	0.0870
293540	O-012 C	0.4974
914321	**Y2-103 (Withdrawn : 12/24/2019)**	**44.9116**
915011	Y3-013 1	3.7426
915021	Y3-013 2	3.7426
915031	Y3-013 3	3.7426
919581	AA2-030	17.5220
919621	AA2-039 C	2.0850
924041	AB2-047 C O1	3.3614
924471	AB2-096	42.2510
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**3.1249**
925581	AC1-033 C	1.4007
926311	AC1-109 1	1.9029
926321	AC1-109 2	1.9029
926331	AC1-110 1	1.8969
926341	AC1-110 2	1.8969
926351	AC1-111 1	0.7616
926361	AC1-111 2	0.7616
926371	AC1-111 3	0.7616
926381	AC1-111 4	0.7616
926391	AC1-111 5	0.7616
926401	AC1-111 6	0.7616
926431	AC1-114	2.3725
926821	AC1-168 C O1	1.1400
926841	AC1-171 C O1	1.0362
927091	AC1-204 1	72.4476
927101	AC1-204 2	72.4239
927201	AC1-214 C O1	2.0470
927451	AC1-142A 1	4.2136
927461	AC1-142A 2	4.2138
927511	AC1-113 1	1.1863
927521	AC1-113 2	1.1863
930481	AB1-089	65.5715
930501	AB1-091 O1	76.9365
930741	AB1-122 1O1	71.4161

Bus #	Bus	MW Impact
930751	AB1-122 2O1	73.8648
932881	AC2-115 1	2.3725
932891	AC2-115 2	2.3725
932921	AC2-116	0.8304
932931	AC2-117	5.1303
933341	AC2-147 C	0.8696
933411	AC2-154 C	2.6391
933431	AC2-156 C O1	0.9536
933911	AD1-013 C	1.8530
933931	AD1-016 C	0.9268
934051	AD1-031 C O1	2.8441
934101	AD1-039 1	6.9988
934111	AD1-039 2	7.2387
934431	AD1-067 C	0.1318
934651	AD1-096 C	0.8889
934701	AD1-098 C O1	6.9023
934721	AD1-100 C	19.5037
934871	AD1-116 C	0.9467
934971	AD1-129 C	0.9017
935001	AD1-133 C O1	20.6596
936291	AD2-038 C O1	2.3271
936371	AD2-047 C O1	4.7225
936461	AD2-060	1.4723
936511	AD2-066 C O1	8.3930
936791	AD2-102 C	14.0984
937001	AD2-134 C	2.7428
937311	AD2-172 C	2.4531
937321	**AD2-175 C (Withdrawn : 12/10/2019)**	**17.2037**
937401	AD2-194 1	7.7908
937411	AD2-194 2	7.7882
937531	AD2-214 C	4.3919
938511	AE1-070 1	9.1541
938521	AE1-070 2	8.3723
938851	AE1-113 C	7.9578
938861	AE1-114 C O1	3.9186
939051	AE1-134 1	1.3616
939061	AE1-134 2	1.3616
939321	AE1-163 C O1	5.8477
939351	AE1-166 C O1	5.4399
939401	AE1-172 C O1	5.2547
939631	AE1-193 C	9.0251
939641	AE1-194 C	9.0251
939651	AE1-195 C	9.0251
939681	AE1-198 C	26.7976
939741	AE1-205 C O1	8.6880
940101	AE1-252 C O1	10.5562
940501	AE2-035 C	1.3002
940621	AE2-049 C O1	5.0382
940631	AE2-050 C O1	6.3035
941131	AE2-107 C	3.8704
941551	AE2-152 C O1	6.2768
941561	AE2-153 C O1	4.7339

Bus #	Bus	MW Impact
941731	AE2-173 O1	5.1714
942111	AE2-223 C	2.0168
942421	AE2-255 C O1	3.0143
942651	AE2-281 C O1	0.8354
942881	AE2-307 C O1	11.5565
942911	AE2-310 C O1	4.8921
942991	AE2-321 C	8.1592
943121	AE2-341 C	12.7307
943381	AF1-009 C	0.3165
943391	AF1-010 C	1.0555
943401	AF1-011 C	0.6568
943411	AF1-012 C	6.3366
943591	AF1-030 C O1	4.5004
943801	AF1-048 C	2.0215
943921	AF1-060	0.7429
944041	AF1-072	1.1395
944911	AF1-156 C	6.4150
945351	AF1-200 FTIR	163.4435
946151	AF1-280 C O1	8.2308
946161	AF1-281 C	0.1802
946321	AF1-296 C O1	2.0784
946501	AF1-314 C	2.4455
946521	AF1-316 C O1	3.5608
946531	AF1-317 C O1	1.2070
946541	AF1-318 C O1	3.0462
946661	AF1-330 C	1.0600
946671	AF1-331	1.2755
946681	AF1-332 C	1.2070
951721	J643	27.1477
953871	J847	13.8159
954751	J351	446.6809
955741	J1058	38.3430
WEC	WEC	4.4094
CBM-W2	CBM-W2	25.6183
NY	NY	1.3571
CBM-W1	CBM-W1	79.0132
TVA	TVA	1.7136
CHEOAH	CHEOAH	0.0115
CBM-S1	CBM-S1	7.0205
MADISON	MADISON	22.9260
MEC	MEC	15.3561
BLUEG	BLUEG	1.7169
TRIMBLE	TRIMBLE	0.6038
CATAWBA	CATAWBA	0.3080

16.2 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
75721450	270678	BYRON ; B	CE	270694	CHERRY VA; B	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	115.27	117.03	DC	55.28

Bus #	Bus	MW Impact
274656	BYRON ;1U	81.1826
274760	LEE CO EC;1U	3.4478
274761	LEE CO EC;2U	3.4478
274763	LEE CO EC;4U	3.4128
274764	LEE CO EC;5U	3.4565
274765	LEE CO EC;6U	3.4565
274766	LEE CO EC;7U	3.4041
274767	LEE CO EC;8U	3.4041
274859	EASYR;U1 E	25.5457
274860	EASYR;U2 E	25.5457
276160	W4-084	0.2851
276172	Z1-108 BAT	1.7754
293516	O-009 E1	8.6742
293517	O-009 E2	4.4058
293518	O-009 E3	4.8520
293715	O-029 E	9.2737
293716	O-029 E	5.0846
293717	O-029 E	4.6733
919581	AA2-030	25.5877
920273	AA2-123 BAT	2.9120
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**4.5634**
937531	AD2-214 C	4.6322
937532	AD2-214 E	3.0881
939051	AE1-134 1	1.9883
939061	AE1-134 2	1.9883
943391	AF1-010 C	1.0087
943392	AF1-010 E	0.6725
943401	AF1-011 C	0.6276
943402	AF1-011 E	1.0535
943411	AF1-012 C	7.5906
943412	AF1-012 E	5.0604
943803	AF1-048 BAT	7.8081
943922	AF1-060 BAT	1.4410
946151	AF1-280 C O1	17.0578
946152	AF1-280 E O1	7.8441
946161	AF1-281 C	0.3735
946162	AF1-281 E	2.1167
946321	AF1-296 C O1	2.0546
946322	AF1-296 E O1	9.6189
946531	AF1-317 C O1	1.4458
946681	AF1-332 C	1.4458
946682	AF1-332 E	2.1688
954792	J952 E	4.1607
954901	J963	0.8428
955051	J981 C	2.4027
955052	J981 E	12.9993

Bus #	Bus	MW Impact
955971	J1084	19.4550
956411	J1131	10.4710
CBM-W2	CBM-W2	6.8878
NY	NY	0.1963
TVA	TVA	0.6748
O-066	O-066	2.2982
CBM-S2	CBM-S2	0.0289
CBM-S1	CBM-S1	3.0502
TILTON	TILTON	0.0025
G-007	G-007	0.3546
MADISON	MADISON	1.2842
MEC	MEC	6.4116
GIBSON	GIBSON	0.0339
BLUEG	BLUEG	0.3594
TRIMBLE	TRIMBLE	0.1241
CATAWBA	CATAWBA	0.0017

16.3 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
75721445	270694	CHERRY VA; B	CE	270759	GARDEN PR; R	CE	1	COMED_P4_144-45-BT6-8__	breaker	1479.0	114.57	115.59	DC	32.63

Bus #	Bus	MW Impact
274656	BYRON ;1U	41.4378
274657	BYRON ;2U	40.5298
274822	ROCKFORD ;11	3.7754
274823	ROCKFORD ;21	3.8743
274824	ROCKFORD ;12	3.7425
274859	EASYR;U1 E	14.5428
274860	EASYR;U2 E	14.5428
276160	W4-084	0.4257
276172	Z1-108 BAT	2.0868
290051	GSG-6; E	7.4386
290108	LEEDK;1U E	14.8121
290266	R-018	0.2232
293516	O-009 E1	7.6184
293517	O-009 E2	3.8696
293518	O-009 E3	4.2615
293715	O-029 E	8.1450
293716	O-029 E	4.4658
293717	O-029 E	4.1045
294763	P-046 E	14.4357
919581	AA2-030	17.1350
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**3.0559**
926431	AC1-114	4.9268
927511	AC1-113 1	2.0938

Bus #	Bus	MW Impact
927521	AC1-113 2	2.0938
930481	AB1-089	139.7165
932881	AC2-115 1	4.9266
932891	AC2-115 2	4.9266
932921	AC2-116	1.7244
933341	AC2-147 C	1.0521
933342	AC2-147 E	1.7166
933911	AD1-013 C	1.2962
933912	AD1-013 E	2.0705
934431	AD1-067 C	0.0934
934432	AD1-067 E	0.3927
934651	AD1-096 C	1.3790
934652	AD1-096 E	2.2499
934701	AD1-098 C O1	5.0039
934702	AD1-098 E O1	3.6534
934971	AD1-129 C	1.0959
934972	AD1-129 E	0.7306
936791	AD2-102 C	24.0832
936792	AD2-102 E	16.0555
937001	AD2-134 C	1.9446
937002	AD2-134 E	8.0330
937311	AD2-172 C	3.7894
937312	AD2-172 E	5.2329
937531	AD2-214 C	3.8724
937532	AD2-214 E	2.5816
938861	AE1-114 C O1	5.2043
938862	AE1-114 E O1	17.7559
939051	AE1-134 1	1.3315
939061	AE1-134 2	1.3315
940501	AE2-035 C	2.0084
940502	AE2-035 E	2.7735
941131	AE2-107 C	2.2884
941132	AE2-107 E	1.5256
943381	AF1-009 C	0.2294
943382	AF1-009 E	0.9177
943391	AF1-010 C	0.8859
943392	AF1-010 E	0.5906
943401	AF1-011 C	0.5512
943402	AF1-011 E	0.9253
943411	AF1-012 C	5.0798
943412	AF1-012 E	3.3865
943422	AF1-013 E	1.1471
943921	AF1-060	1.1476
946151	AF1-280 C O1	10.0700
946152	AF1-280 E O1	4.6307
946161	AF1-281 C	0.2205
946162	AF1-281 E	1.2496
946321	AF1-296 C O1	1.7370
946322	AF1-296 E O1	8.1324
946501	AF1-314 C	3.7776
946502	AF1-314 E	17.6660
946531	AF1-317 C O1	0.9676

Bus #	Bus	MW Impact
946671	AF1-331	0.8922
946681	AF1-332 C	0.9676
946682	AF1-332 E	1.4514
950101	J390	83.6714
952431	J760	5.3721
952511	J584 C	1.0645
952512	J584 E	5.7593
953111	J807 C	1.2239
953112	J807 E	6.6214
953681	J818	14.1923
953691	J819 C	1.4986
953692	J819 E	8.1078
953901	J850	21.0825
954001	J864	4.4352
955221	J1000	3.7495
955971	J1084	11.1600
956371	J1127	5.6362
956391	J1129	8.5768
956581	J1154	7.1483
956901	J1188	5.8185
WEC	WEC	0.5314
CBM-W2	CBM-W2	8.5585
NY	NY	0.2688
CBM-W1	CBM-W1	39.8193
TVA	TVA	0.8932
O-066	O-066	3.1450
CBM-S2	CBM-S2	0.0058
CBM-S1	CBM-S1	3.9533
TILTON	TILTON	0.1399
G-007	G-007	0.4857
MADISON	MADISON	11.2936
MEC	MEC	9.4657
GIBSON	GIBSON	0.0988
BLUEG	BLUEG	0.5711
TRIMBLE	TRIMBLE	0.1948
CATAWBA	CATAWBA	0.0046

16.4 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
75721538	270730	ELECT JCT; B	CE	270812	LOMBARD ; B	CE	1	COMED_P4_012-45-BT5-6__	breaker	1479.0	104.41	104.92	DC	16.52

Bus #	Bus	MW Impact
274658	DRESDEN ;2U	17.2975
274738	AURORA EC;3P	3.6981
274740	AURORA EC;4P	3.6981

Bus #	Bus	MW Impact
274859	EASYR;U1 E	6.4905
274860	EASYR;U2 E	6.4905
274872	LEE DEKAL;1U	0.7040
276160	W4-084	0.2605
276167	Z1-106 E2	0.8783
276168	Z1-106 E1	1.0426
290021	O50 E	9.9294
290051	GSG-6; E	7.4423
290108	LEEDK;1U E	21.0160
292543	L-013 2	0.4183
293516	O-009 E1	5.2810
293517	O-009 E2	2.6823
293518	O-009 E3	2.9540
293715	O-029 E	5.6459
293716	O-029 E	3.0956
293717	O-029 E	2.8452
294763	P-046 E	4.2527
919581	AA2-030	11.9558
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**2.1322**
926331	AC1-110 1	2.6145
926341	AC1-110 2	2.6145
926351	AC1-111 1	0.3574
926361	AC1-111 2	0.3574
926371	AC1-111 3	0.3574
926381	AC1-111 4	0.3574
926391	AC1-111 5	0.3574
926401	AC1-111 6	0.3574
926431	AC1-114	0.9613
927511	AC1-113 1	0.4805
927521	AC1-113 2	0.4805
930481	AB1-089	31.8882
930751	AB1-122 2O1	77.6998
932881	AC2-115 1	0.9610
932891	AC2-115 2	0.9610
932921	AC2-116	0.3365
933341	AC2-147 C	0.4887
933342	AC2-147 E	0.7974
933431	AC2-156 C O1	0.8045
933432	AC2-156 E O1	1.3125
933911	AD1-013 C	1.3218
933912	AD1-013 E	2.1115
934111	AD1-039 2	7.6146
934431	AD1-067 C	0.0935
934432	AD1-067 E	0.3929
934651	AD1-096 C	0.4375
934652	AD1-096 E	0.7138
934701	AD1-098 C O1	4.8644
934702	AD1-098 E O1	3.5515
934971	AD1-129 C	0.3350
934972	AD1-129 E	0.2233
936511	AD2-066 C O1	3.8543
936512	AD2-066 E O1	2.5695

Bus #	Bus	MW Impact
937001	AD2-134 C	1.9455
937002	AD2-134 E	8.0370
937311	AD2-172 C	1.1163
937312	AD2-172 E	1.5416
937531	AD2-214 C	2.5833
937532	AD2-214 E	1.7222
938851	AE1-113 C	4.0959
938852	AE1-113 E	14.5217
938861	AE1-114 C O1	2.0542
938862	AE1-114 E O1	7.0085
939051	AE1-134 1	0.9290
939061	AE1-134 2	0.9290
939733	**AE1-204 BAT (Withdrawn : 11/18/2019)**	**0.2383**
940501	AE2-035 C	0.5917
940502	AE2-035 E	0.8171
941131	AE2-107 C	6.3630
941132	AE2-107 E	4.2420
942421	AE2-255 C O1	1.5515
942422	AE2-255 E O1	4.6544
943121	AE2-341 C	10.5610
943122	AE2-341 E	5.1860
943381	AF1-009 C	0.2230
943382	AF1-009 E	0.8921
943391	AF1-010 C	0.6141
943392	AF1-010 E	0.4094
943401	AF1-011 C	0.3821
943402	AF1-011 E	0.6414
943411	AF1-012 C	11.8755
943412	AF1-012 E	7.9170
943422	AF1-013 E	1.1151
943591	AF1-030 C O1	7.0442
943592	AF1-030 E O1	3.4538
943921	AF1-060	0.3381
944041	AF1-072	0.4699
945351	AF1-200 FTIR	79.7911
946151	AF1-280 C O1	5.0967
946152	AF1-280 E O1	2.3437
946161	AF1-281 C	0.1116
946162	AF1-281 E	0.6324
946321	AF1-296 C O1	1.1486
946322	AF1-296 E O1	5.3775
946501	AF1-314 C	1.1129
946502	AF1-314 E	5.2044
946531	AF1-317 C O1	2.2620
946671	AF1-331	0.9098
946681	AF1-332 C	2.2620
946682	AF1-332 E	3.3930
955971	J1084	8.8935
CBM-W2	CBM-W2	5.9705
NY	NY	0.1565
CBM-W1	CBM-W1	8.1690
TVA	TVA	0.5866

Bus #	Bus	MW Impact
O-066	O-066	1.8278
CBM-S2	CBM-S2	0.1272
CBM-S1	CBM-S1	2.6753
G-007	G-007	0.2829
MADISON	MADISON	4.5844
MEC	MEC	5.1817
GIBSON	GIBSON	0.0251
BLUEG	BLUEG	0.2778
TRIMBLE	TRIMBLE	0.0963

16.5 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
75722031	270759	GARDEN PR; R	CE	270883	SILVER LK; R	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	115.09	115.79	DC	22.43

Bus #	Bus	MW Impact
274656	BYRON ;1U	42.1114
274657	BYRON ;2U	41.1894
274823	ROCKFORD ;21	3.9580
274830	U3-021 1	25.1259
274831	U3-021 2	25.1259
276160	W4-084	0.4261
290266	R-018	0.2279
919581	AA2-030	17.0282
924471	AB2-096	174.4855
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**3.0369**
926431	AC1-114	5.0332
927511	AC1-113 1	2.1390
927521	AC1-113 2	2.1390
930481	AB1-089	141.9825
932881	AC2-115 1	4.2781
932891	AC2-115 2	4.2781
932921	AC2-116	1.7616
933341	AC2-147 C	1.0610
933911	AD1-013 C	1.2866
934431	AD1-067 C	0.0927
934651	AD1-096 C	1.4012
934701	AD1-098 C O1	4.9705
934971	AD1-129 C	1.1407
936791	AD2-102 C	24.5585
937001	AD2-134 C	1.9303
937311	AD2-172 C	3.8554
937531	AD2-214 C	3.8616
938861	AE1-114 C O1	5.2676

Bus #	Bus	MW Impact
939051	AE1-134 1	1.3232
939061	AE1-134 2	1.3232
940501	AE2-035 C	2.0434
941131	AE2-107 C	2.2573
942991	AE2-321 C	4.0947
943381	AF1-009 C	0.2279
943391	AF1-010 C	0.8828
943401	AF1-011 C	0.5493
943411	AF1-012 C	4.9459
943801	AF1-048 C	1.0145
943921	AF1-060	1.1676
946151	AF1-280 C O1	10.1046
946161	AF1-281 C	0.2213
946321	AF1-296 C O1	1.7333
946501	AF1-314 C	3.8435
946531	AF1-317 C O1	0.9421
946671	AF1-331	0.8856
946681	AF1-332 C	0.9421
950101	J390	86.1284
952431	J760	5.4840
952511	J584 C	1.0925
953111	J807 C	1.2468
953681	J818	14.6899
953691	J819 C	1.5319
953901	J850	21.8575
954001	J864	4.5392
955221	J1000	3.7985
955251	J1003	3.4750
955971	J1084	11.0085
956371	J1127	5.7909
956391	J1129	8.8075
956581	J1154	7.3988
956901	J1188	5.9840
WEC	WEC	0.6631
CBM-W2	CBM-W2	8.5913
NY	NY	0.2765
CBM-W1	CBM-W1	41.2079
TVA	TVA	0.8918
CBM-S1	CBM-S1	3.9277
TILTON	TILTON	0.1424
MADISON	MADISON	11.5476
MEC	MEC	9.5499
GIBSON	GIBSON	0.1037
BLUEG	BLUEG	0.5920
TRIMBLE	TRIMBLE	0.2015
CATAWBA	CATAWBA	0.0077

16.6 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
75721252	270847	PLANO ; R	CE	275208	PLANO ;4M	CE	1	COMED_P4_167-45-BT8-12_	breaker	1379.0	111.01	111.45	DC	14.42

Bus #	Bus	MW Impact
274660	LASCO STA;1U	26.9412
274661	LASCO STA;2U	27.0506
274737	AURORA EC;1P	2.5859
274739	AURORA EC;2P	2.5859
274746	AURORA EC;0P	0.4957
274830	U3-021 1	3.4953
274831	U3-021 2	3.4953
274847	GR RIDGE ;BU	0.6020
274859	EASYR;U1 E	5.9739
274860	EASYR;U2 E	5.9739
274871	GR RIDGE ;2U	0.7645
274881	PILOT HIL;1E	7.6457
275149	KELLYCK ;1E	7.6457
276160	W4-084	0.2247
276161	W4-086	0.0953
276167	Z1-106 E2	0.8026
276168	Z1-106 E1	0.8009
276169	Z1-107 E	1.0574
276170	Z1-108 E	1.4586
276173	Z2-081	0.2074
290051	GSG-6; E	5.8146
290108	LEEDK;1U E	13.5524
293061	N-015 E	17.2500
293516	O-009 E1	4.7280
293517	O-009 E2	2.4014
293518	O-009 E3	2.6446
293715	O-029 E	5.0547
293716	O-029 E	2.7714
293717	O-029 E	2.5472
293771	O-035 E	3.1918
294392	P-010 E	21.9075
294401	BSHIL;1U E	4.1908
294410	BSHIL;2U E	4.1908
294763	P-046 E	5.2034
914321	**Y2-103 (Withdrawn : 12/24/2019)**	**23.9751**
915011	Y3-013 1	1.9979
915021	Y3-013 2	1.9979
915031	Y3-013 3	1.9979
919581	AA2-030	9.2788
919621	AA2-039 C	1.0215
919622	AA2-039 E	6.8363
920272	AA2-123 E	1.4168
924471	AB2-096	24.2730
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**1.6548**
925581	AC1-033 C	0.6864
925582	AC1-033 E	4.5950

Bus #	Bus	MW Impact
926311	AC1-109 1	1.8282
926321	AC1-109 2	1.8282
926331	AC1-110 1	1.0757
926341	AC1-110 2	1.0757
926351	AC1-111 1	0.5465
926361	AC1-111 2	0.5465
926371	AC1-111 3	0.5465
926381	AC1-111 4	0.5465
926391	AC1-111 5	0.5465
926401	AC1-111 6	0.5465
926431	AC1-114	1.3435
926821	AC1-168 C O1	0.6803
926822	AC1-168 E O1	4.5656
927201	AC1-214 C O1	1.0244
927202	AC1-214 E O1	3.2565
927511	AC1-113 1	0.6718
927521	AC1-113 2	0.6718
930481	AB1-089	38.0218
930501	AB1-091 O1	30.7428
930751	AB1-122 2O1	28.4208
932881	AC2-115 1	1.3435
932891	AC2-115 2	1.3435
932921	AC2-116	0.4702
933341	AC2-147 C	0.4722
933342	AC2-147 E	0.7704
933411	AC2-154 C	1.0376
933412	AC2-154 E	1.6930
933431	AC2-156 C O1	0.5344
933432	AC2-156 E O1	0.8720
933911	AD1-013 C	1.0302
933912	AD1-013 E	1.6456
933931	AD1-016 C	0.5384
933932	AD1-016 E	0.8784
934051	AD1-031 C O1	1.3939
934052	AD1-031 E O1	2.2743
934111	AD1-039 2	2.7852
934431	AD1-067 C	0.0730
934432	AD1-067 E	0.3070
934651	AD1-096 C	0.4946
934652	AD1-096 E	0.8070
934701	AD1-098 C O1	3.8189
934702	AD1-098 E O1	2.7882
934721	AD1-100 C	4.6994
934722	AD1-100 E	21.9306
934971	AD1-129 C	0.5171
934972	AD1-129 E	0.3447
936371	AD2-047 C O1	1.8568
936372	AD2-047 E O1	9.0657
936461	AD2-060	0.5789
936511	AD2-066 C O1	3.8655
936512	AD2-066 E O1	2.5770
936791	AD2-102 C	7.9193

Bus #	Bus	MW Impact
936792	AD2-102 E	5.2795
937001	AD2-134 C	1.5200
937002	AD2-134 E	6.2792
937311	AD2-172 C	1.3659
937312	AD2-172 E	1.8862
937321	**AD2-175 C (Withdrawn : 12/10/2019)**	**6.8648**
937322	**AD2-175 E (Withdrawn : 12/10/2019)**	**4.5765**
937531	AD2-214 C	2.2708
937532	AD2-214 E	1.5139
938861	AE1-114 C O1	2.1470
938862	AE1-114 E O1	7.3250
939051	AE1-134 1	0.7210
939061	AE1-134 2	0.7210
939351	AE1-166 C O1	2.4411
939352	AE1-166 E O1	2.2533
939732	**AE1-204 E (Withdrawn : 11/18/2019)**	**0.2940**
940501	AE2-035 C	0.7239
940502	AE2-035 E	0.9997
940621	AE2-049 C O1	1.9826
940622	AE2-049 E O1	1.3217
940631	AE2-050 C O1	3.5550
940632	AE2-050 E O1	2.3700
940752	AE2-062 E	0.0268
940762	**AE2-063 E (Withdrawn : 01/14/2020)**	**0.0268**
941131	AE2-107 C	2.1629
941132	AE2-107 E	1.4420
941551	AE2-152 C O1	2.8167
941552	AE2-152 E O1	1.8778
941561	AE2-153 C O1	2.4744
941562	AE2-153 E O1	11.5846
942881	AE2-307 C O1	6.5175
942882	AE2-307 E O1	2.3700
942911	AE2-310 C O1	1.9251
942912	AE2-310 E O1	0.5172
942991	AE2-321 C	4.7331
942992	AE2-321 E	2.3312
943121	AE2-341 C	7.1341
943122	AE2-341 E	3.5032
943381	AF1-009 C	0.1751
943382	AF1-009 E	0.7003
943391	AF1-010 C	0.5498
943392	AF1-010 E	0.3665
943401	AF1-011 C	0.3421
943402	AF1-011 E	0.5742
943411	AF1-012 C	3.3623
943412	AF1-012 E	2.2415
943422	AF1-013 E	0.8754
943591	AF1-030 C O1	2.5220
943592	AF1-030 E O1	1.2366
943801	AF1-048 C	1.1727
943802	AF1-048 E	0.7818
943921	AF1-060	0.4137

Bus #	Bus	MW Impact
944041	AF1-072	0.6959
944911	AF1-156 C	3.3531
944912	AF1-156 E	2.2354
945351	AF1-200 FTIR	627.3905
946151	AF1-280 C O1	4.4499
946152	AF1-280 E O1	2.0463
946161	AF1-281 C	0.0974
946162	AF1-281 E	0.5522
946321	AF1-296 C O1	1.0586
946322	AF1-296 E O1	4.9563
946501	AF1-314 C	1.3617
946502	AF1-314 E	6.3677
946521	AF1-316 C O1	7.5900
946522	AF1-316 E O1	11.3850
946531	AF1-317 C O1	0.6404
946541	AF1-318 C O1	1.5682
946542	AF1-318 E O1	7.3427
946661	AF1-330 C	0.6157
946662	AF1-330 E	0.1352
946671	AF1-331	0.7091
946681	AF1-332 C	0.6404
946682	AF1-332 E	0.9606
950101	J390	35.9213
952431	J760	1.5714
953151	J831	2.0104
953491	J947	10.3940
954141	J878	10.5400
955301	J1009	21.5280
955311	J1010	21.1440
955321	J1011	21.1440
955581	J1042 C	1.5621
955582	J1042 E	8.8519
955601	J1044 C	5.2080
955602	J1044 E	5.2080
955631	J1047	10.4160
955671	J1051	2.5155
955691	J1053	15.0480
956171	J1104	5.0810
956391	J1129	3.3430
990901	L-005 E	6.0007
WEC	WEC	2.3515
CBM-W2	CBM-W2	8.5585
NY	NY	0.6780
CBM-W1	CBM-W1	37.2298
TVA	TVA	0.3948
O-066	O-066	8.0640
CHEOAH	CHEOAH	0.1236
CBM-S1	CBM-S1	0.7753
G-007	G-007	1.2470
MADISON	MADISON	11.2452
MEC	MEC	7.3015
GIBSON	GIBSON	0.1600

Bus #	Bus	MW Impact
CALDERWOOD	CALDERWOOD	0.1173
BLUEG	BLUEG	1.3506
TRIMBLE	TRIMBLE	0.4547
CATAWBA	CATAWBA	0.2083

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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
75721879	274750	CRETE EC ;BP	CE	255112	17STJOHN	NIPS	1	COMED_P1-2_695_B2	single	1399.0	100.97	101.51	DC	16.05

Bus #	Bus	MW Impact
274654	BRAIDWOOD;1U	24.0837
274655	BRAIDWOOD;2U	23.4305
274660	LASCO STA;1U	22.1388
274661	LASCO STA;2U	22.2225
274675	JOLIET 29;7U	10.0973
274676	JOLIET 29;8U	10.1045
274687	WILL CNTY;4U	10.1641
274704	KENDALL ;1C	3.5713
274705	KENDALL ;1S	2.3881
274706	KENDALL ;2C	3.5713
274707	KENDALL ;2S	2.3881
274732	ELWOOD EC;7P	2.8952
274734	ELWOOD EC;8P	2.8952
274736	ELWOOD EC;9P	2.8952
274751	CRETE EC ;1U	5.2389
274752	CRETE EC ;2U	5.2389
274753	CRETE EC ;3U	5.2389
274754	CRETE EC ;4U	5.2389
274830	U3-021 1	5.3661
274831	U3-021 2	5.3661
274861	TOP CROP ;1U	0.4267
274862	TOP CROP ;2U	0.8283
276160	W4-084	0.3681
276161	W4-086	0.2068
914321	**Y2-103 (Withdrawn : 12/24/2019)**	**39.7922**
915011	Y3-013 1	3.3160
915021	Y3-013 2	3.3160
915031	Y3-013 3	3.3160
919581	AA2-030	15.3761
919621	AA2-039 C	1.8214
924041	AB2-047 C O1	2.8144
924471	AB2-096	37.2648
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**2.7422**
925581	AC1-033 C	1.2237
926311	AC1-109 1	1.6759

Bus #	Bus	MW Impact
926321	AC1-109 2	1.6759
926331	AC1-110 1	1.6717
926341	AC1-110 2	1.6717
926351	AC1-111 1	0.6691
926361	AC1-111 2	0.6691
926371	AC1-111 3	0.6691
926381	AC1-111 4	0.6691
926391	AC1-111 5	0.6691
926401	AC1-111 6	0.6691
926431	AC1-114	2.0900
926821	AC1-168 C O1	1.0019
926841	AC1-171 C O1	0.8988
927091	AC1-204 1	65.5803
927101	AC1-204 2	65.4618
927201	AC1-214 C O1	1.7868
927451	AC1-142A 1	4.4688
927461	AC1-142A 2	4.4720
927511	AC1-113 1	1.0450
927521	AC1-113 2	1.0450
930481	AB1-089	57.7737
930501	AB1-091 O1	56.3852
930741	AB1-122 1O1	62.4329
930751	AB1-122 2O1	66.7535
932881	AC2-115 1	2.0900
932891	AC2-115 2	2.0900
932921	AC2-116	0.7315
932931	AC2-117	3.9964
933341	AC2-147 C	0.7640
933411	AC2-154 C	1.9419
933431	AC2-156 C O1	0.8355
933911	AD1-013 C	1.6276
933931	AD1-016 C	0.8179
934051	AD1-031 C O1	2.4848
934101	AD1-039 1	6.1184
934111	AD1-039 2	6.5418
934431	AD1-067 C	0.1157
934651	AD1-096 C	0.7820
934701	AD1-098 C O1	6.0622
934721	AD1-100 C	16.6897
934871	AD1-116 C	0.7820
934971	AD1-129 C	0.7950
935001	AD1-133 C O1	17.7404
936291	AD2-038 C O1	1.9968
936371	AD2-047 C O1	3.4749
936461	AD2-060	1.0834
936511	AD2-066 C O1	7.2956
936791	AD2-102 C	12.4165
937001	AD2-134 C	2.4090
937311	AD2-172 C	2.1588
937321	**AD2-175 C (Withdrawn : 12/10/2019)**	**12.6140**
937401	AD2-194 1	7.0523
937411	AD2-194 2	7.0395

Bus #	Bus	MW Impact
937531	AD2-214 C	3.8443
938511	AE1-070 1	8.2864
938521	AE1-070 2	7.5675
938851	AE1-113 C	7.1488
938861	AE1-114 C O1	3.4446
939051	AE1-134 1	1.1948
939061	AE1-134 2	1.1948
939321	AE1-163 C O1	5.0176
939351	AE1-166 C O1	4.7339
939401	AE1-172 C O1	4.4108
939631	AE1-193 C	32.4415
939641	AE1-194 C	32.4415
939651	AE1-195 C	32.4415
939681	AE1-198 C	96.3263
939741	AE1-205 C O1	7.2742
940101	AE1-252 C O1	8.8610
940501	AE2-035 C	1.1442
940621	AE2-049 C O1	3.7765
940631	AE2-050 C O1	14.1993
941131	AE2-107 C	3.3993
941551	AE2-152 C O1	5.4622
941561	AE2-153 C O1	4.0993
941731	AE2-173 O1	4.3299
942111	AE2-223 C	1.6887
942421	AE2-255 C O1	2.7079
942651	AE2-281 C O1	0.7168
942881	AE2-307 C O1	26.0320
942911	AE2-310 C O1	3.6670
942991	AE2-321 C	7.1996
943121	AE2-341 C	11.1437
943381	AF1-009 C	0.2779
943391	AF1-010 C	0.9252
943401	AF1-011 C	0.5757
943411	AF1-012 C	5.5694
943591	AF1-030 C O1	3.9394
943801	AF1-048 C	1.7837
943921	AF1-060	0.6538
944041	AF1-072	1.0065
944911	AF1-156 C	5.5551
945351	AF1-200 FTIR	143.5550
946151	AF1-280 C O1	7.2303
946161	AF1-281 C	0.1583
946321	AF1-296 C O1	1.8164
946501	AF1-314 C	2.1521
946521	AF1-316 C O1	3.2152
946531	AF1-317 C O1	1.0608
946541	AF1-318 C O1	2.6555
946661	AF1-330 C	0.9354
946671	AF1-331	1.1203
946681	AF1-332 C	1.0608
WEC	WEC	3.8940
CBM-W2	CBM-W2	18.2391

Bus #	Bus	MW Impact
NY	NY	1.1984
CBM-W1	CBM-W1	53.5053
TVA	TVA	1.0248
CHEOAH	CHEOAH	0.1356
CBM-S1	CBM-S1	3.0757
MADISON	MADISON	20.1439
MEC	MEC	13.1744
GIBSON	GIBSON	0.2555
CALDERWOOD	CALDERWOOD	0.1247
BLUEG	BLUEG	2.3019
TRIMBLE	TRIMBLE	0.7769
CATAWBA	CATAWBA	0.3252

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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
75721257	275208	PLANO ;4M	CE	270630	PLANO ;	CE	1	COMED_P4_167-45-BT8-12_	breaker	1379.0	111.01	111.45	DC	14.42

Bus #	Bus	MW Impact
274660	LASCO STA;1U	26.9412
274661	LASCO STA;2U	27.0506
274737	AURORA EC;1P	2.5859
274739	AURORA EC;2P	2.5859
274746	AURORA EC;0P	0.4957
274830	U3-021 1	3.4953
274831	U3-021 2	3.4953
274847	GR RIDGE ;BU	0.6020
274859	EASYR;U1 E	5.9739
274860	EASYR;U2 E	5.9739
274871	GR RIDGE ;2U	0.7645
274881	PILOT HIL;1E	7.6457
275149	KELLYCK ;1E	7.6457
276160	W4-084	0.2247
276161	W4-086	0.0953
276167	Z1-106 E2	0.8026
276168	Z1-106 E1	0.8009
276169	Z1-107 E	1.0574
276170	Z1-108 E	1.4586
276173	Z2-081	0.2074
290051	GSG-6; E	5.8146
290108	LEEDK;1U E	13.5524
293061	N-015 E	17.2500
293516	O-009 E1	4.7280
293517	O-009 E2	2.4014
293518	O-009 E3	2.6446
293715	O-029 E	5.0547

Bus #	Bus	MW Impact
293716	O-029 E	2.7714
293717	O-029 E	2.5472
293771	O-035 E	3.1918
294392	P-010 E	21.9075
294401	BSHIL;1U E	4.1908
294410	BSHIL;2U E	4.1908
294763	P-046 E	5.2034
914321	**Y2-103 (Withdrawn : 12/24/2019)**	**23.9751**
915011	Y3-013 1	1.9979
915021	Y3-013 2	1.9979
915031	Y3-013 3	1.9979
919581	AA2-030	9.2788
919621	AA2-039 C	1.0215
919622	AA2-039 E	6.8363
920272	AA2-123 E	1.4168
924471	AB2-096	24.2730
925161	**AB2-173 (Withdrawn : 12/24/2019)**	**1.6548**
925581	AC1-033 C	0.6864
925582	AC1-033 E	4.5950
926311	AC1-109 1	1.8282
926321	AC1-109 2	1.8282
926331	AC1-110 1	1.0757
926341	AC1-110 2	1.0757
926351	AC1-111 1	0.5465
926361	AC1-111 2	0.5465
926371	AC1-111 3	0.5465
926381	AC1-111 4	0.5465
926391	AC1-111 5	0.5465
926401	AC1-111 6	0.5465
926431	AC1-114	1.3435
926821	AC1-168 C O1	0.6803
926822	AC1-168 E O1	4.5656
927201	AC1-214 C O1	1.0244
927202	AC1-214 E O1	3.2565
927511	AC1-113 1	0.6718
927521	AC1-113 2	0.6718
930481	AB1-089	38.0218
930501	AB1-091 O1	30.7428
930751	AB1-122 2O1	28.4208
932881	AC2-115 1	1.3435
932891	AC2-115 2	1.3435
932921	AC2-116	0.4702
933341	AC2-147 C	0.4722
933342	AC2-147 E	0.7704
933411	AC2-154 C	1.0376
933412	AC2-154 E	1.6930
933431	AC2-156 C O1	0.5344
933432	AC2-156 E O1	0.8720
933911	AD1-013 C	1.0302
933912	AD1-013 E	1.6456
933931	AD1-016 C	0.5384
933932	AD1-016 E	0.8784

Bus #	Bus	MW Impact
934051	AD1-031 C O1	1.3939
934052	AD1-031 E O1	2.2743
934111	AD1-039 2	2.7852
934431	AD1-067 C	0.0730
934432	AD1-067 E	0.3070
934651	AD1-096 C	0.4946
934652	AD1-096 E	0.8070
934701	AD1-098 C O1	3.8189
934702	AD1-098 E O1	2.7882
934721	AD1-100 C	4.6994
934722	AD1-100 E	21.9306
934971	AD1-129 C	0.5171
934972	AD1-129 E	0.3447
936371	AD2-047 C O1	1.8568
936372	AD2-047 E O1	9.0657
936461	AD2-060	0.5789
936511	AD2-066 C O1	3.8655
936512	AD2-066 E O1	2.5770
936791	AD2-102 C	7.9193
936792	AD2-102 E	5.2795
937001	AD2-134 C	1.5200
937002	AD2-134 E	6.2792
937311	AD2-172 C	1.3659
937312	AD2-172 E	1.8862
937321	**AD2-175 C (Withdrawn : 12/10/2019)**	**6.8648**
937322	**AD2-175 E (Withdrawn : 12/10/2019)**	**4.5765**
937531	AD2-214 C	2.2708
937532	AD2-214 E	1.5139
938861	AE1-114 C O1	2.1470
938862	AE1-114 E O1	7.3250
939051	AE1-134 1	0.7210
939061	AE1-134 2	0.7210
939351	AE1-166 C O1	2.4411
939352	AE1-166 E O1	2.2533
939732	**AE1-204 E (Withdrawn : 11/18/2019)**	**0.2940**
940501	AE2-035 C	0.7239
940502	AE2-035 E	0.9997
940621	AE2-049 C O1	1.9826
940622	AE2-049 E O1	1.3217
940631	AE2-050 C O1	3.5550
940632	AE2-050 E O1	2.3700
940752	AE2-062 E	0.0268
940762	**AE2-063 E (Withdrawn : 01/14/2020)**	**0.0268**
941131	AE2-107 C	2.1629
941132	AE2-107 E	1.4420
941551	AE2-152 C O1	2.8167
941552	AE2-152 E O1	1.8778
941561	AE2-153 C O1	2.4744
941562	AE2-153 E O1	11.5846
942881	AE2-307 C O1	6.5175
942882	AE2-307 E O1	2.3700
942911	AE2-310 C O1	1.9251

Bus #	Bus	MW Impact
942912	AE2-310 E O1	0.5172
942991	AE2-321 C	4.7331
942992	AE2-321 E	2.3312
943121	AE2-341 C	7.1341
943122	AE2-341 E	3.5032
943381	AF1-009 C	0.1751
943382	AF1-009 E	0.7003
943391	AF1-010 C	0.5498
943392	AF1-010 E	0.3665
943401	AF1-011 C	0.3421
943402	AF1-011 E	0.5742
943411	AF1-012 C	3.3623
943412	AF1-012 E	2.2415
943422	AF1-013 E	0.8754
943591	AF1-030 C O1	2.5220
943592	AF1-030 E O1	1.2366
943801	AF1-048 C	1.1727
943802	AF1-048 E	0.7818
943921	AF1-060	0.4137
944041	AF1-072	0.6959
944911	AF1-156 C	3.3531
944912	AF1-156 E	2.2354
945351	AF1-200 FTIR	627.3905
946151	AF1-280 C O1	4.4499
946152	AF1-280 E O1	2.0463
946161	AF1-281 C	0.0974
946162	AF1-281 E	0.5522
946321	AF1-296 C O1	1.0586
946322	AF1-296 E O1	4.9563
946501	AF1-314 C	1.3617
946502	AF1-314 E	6.3677
946521	AF1-316 C O1	7.5900
946522	AF1-316 E O1	11.3850
946531	AF1-317 C O1	0.6404
946541	AF1-318 C O1	1.5682
946542	AF1-318 E O1	7.3427
946661	AF1-330 C	0.6157
946662	AF1-330 E	0.1352
946671	AF1-331	0.7091
946681	AF1-332 C	0.6404
946682	AF1-332 E	0.9606
950101	J390	35.9213
952431	J760	1.5714
953151	J831	2.0104
953491	J947	10.3940
954141	J878	10.5400
955301	J1009	21.5280
955311	J1010	21.1440
955321	J1011	21.1440
955581	J1042 C	1.5621
955582	J1042 E	8.8519
955601	J1044 C	5.2080

Bus #	Bus	MW Impact
955602	J1044 E	5.2080
955631	J1047	10.4160
955671	J1051	2.5155
955691	J1053	15.0480
956171	J1104	5.0810
956391	J1129	3.3430
990901	L-005 E	6.0007
WEC	WEC	2.3515
CBM-W2	CBM-W2	8.5585
NY	NY	0.6780
CBM-W1	CBM-W1	37.2298
TVA	TVA	0.3948
O-066	O-066	8.0640
CHEOAH	CHEOAH	0.1236
CBM-S1	CBM-S1	0.7753
G-007	G-007	1.2470
MADISON	MADISON	11.2452
MEC	MEC	7.3015
GIBSON	GIBSON	0.1600
CALDERWOOD	CALDERWOOD	0.1173
BLUEG	BLUEG	1.3506
TRIMBLE	TRIMBLE	0.4547
CATAWBA	CATAWBA	0.2083

Affected Systems

17 Affected Systems

17.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

17.2 MISO

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

17.3 TVA

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

17.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

17.5 NYISO

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

Contingency Name	Contingency Definition
COMED_P4_167-45-BT8-9__	CONTINGENCY 'COMED_P4_167-45-BT8-9__' TRIP BRANCH FROM BUS 270802 TO BUS 270846 CKT 1 / LASCO STA; B 345 PLANO ; B 345 TRIP BRANCH FROM BUS 270846 TO BUS 270847 CKT 1 / PLANO ; B 345 PLANO ; R 345 TRIP BRANCH FROM BUS 270846 TO BUS 270730 CKT 1 / PLANO ; B 345 ELEC JUNC; B 345 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 1 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 2 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 270846 TO BUS 272278 TO BUS 275354 CKT 1 / PLANO ; B 345 PLANO;1I 138 PLANO;1C 34.5 END
COMED_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_P2-1_111-L11120__	CONTINGENCY 'COMED_P2-1_111-L11120__' TRIP BRANCH FROM BUS 270733 TO BUS 270747 CKT 1 / ELECT;3R 345 W407K;0T 345 END
COMED_P1-3_TR94_PLANO_R-S	CONTINGENCY 'COMED_P1-3_TR94_PLANO_R-S' 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
COMED_P4_167-45-BT9-12_	CONTINGENCY 'COMED_P4_167-45-BT9-12_' TRIP BRANCH FROM BUS 270802 TO BUS 270846 CKT 1 / LASCO STA; B 345 PLANO ; B 345 TRIP BRANCH FROM BUS 270846 TO BUS 270847 CKT 1 / PLANO ; B 345 PLANO ; R 345 TRIP BRANCH FROM BUS 275207 TO BUS 270630 CKT 1 / PLANO ;3M 345 PLANO ; 765 TRIP BRANCH FROM BUS 275207 TO BUS 270846 CKT 1 / PLANO ;3M 345 PLANO ; B 345 TRIP BRANCH FROM BUS 275207 TO BUS 275307 CKT 1 / PLANO ;3M 345 PLANO ;3C 33 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_P1-2_345-L15502_B-R-B	CONTINGENCY 'COMED_P1-2_345-L15502_B-R-B' TRIP BRANCH FROM BUS 943410 TO BUS 270730 CKT 1 / AF1-012 TAP 345 ELEC JUNC; B 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
AEP_P1-2_#286	CONTINGENCY 'AEP_P1-2_#286' OPEN BRANCH FROM BUS 243221 TO BUS 348885 CKT 1 / 243221 05EUGENE 345 348885 7BUNSONVILLE 345 1 END

Contingency Name	Contingency Definition
COMED_P4_006-45-BT7-8__	CONTINGENCY 'COMED_P4_006-45-BT7-8__' TRIP BRANCH FROM BUS 270678 TO BUS 930480 CKT 1 / BYRON ; B 345 AB1-089 TAP 345 TRIP BRANCH FROM BUS 270678 TO BUS 270679 CKT 1 / BYRON ; B 345 BYRON ; R 345 END
COMED_P4_012-45-BT5-6__	CONTINGENCY 'COMED_P4_012-45-BT5-6__' TRIP BRANCH FROM BUS 270716 TO BUS 270736 CKT 1 / DRESD; B 345 ELWOO; B 345 TRIP BRANCH FROM BUS 270736 TO BUS 270737 CKT 1 / ELWOO; B 345 ELWOO; R 345 TRIP BRANCH FROM BUS 274702 TO BUS 270716 CKT 1 / KEND
Base Case	
COMED_P4_167-45-BT8-12_	CONTINGENCY 'COMED_P4_167-45-BT8-12_' TRIP BRANCH FROM BUS 275207 TO BUS 270630 CKT 1 / PLANO ;3M 345 PLANO ; 765 TRIP BRANCH FROM BUS 275207 TO BUS 270846 CKT 1 / PLANO ;3M 345 PLANO ; B 345 TRIP BRANCH FROM BUS 275207 TO BUS 275307 CKT 1 / PLANO ;3M 345 PLANO ;3C 33 TRIP BRANCH FROM BUS 270846 TO BUS 270730 CKT 1 / PLANO ; B 345 ELEC JUNC; B 345 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 1 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 2 / PLANO ; B 138 PLANO;1I 138 TRIP BRANCH FROM BUS 270846 TO BUS 272278 TO BUS 275354 CKT 1 / PLANO ; B 345 PLANO;1I 138 PLANO;1C 34.5 END
COMED_P4_144-45-BT6-8__	CONTINGENCY 'COMED_P4_144-45-BT6-8__' TRIP BRANCH FROM BUS 930480 TO BUS 270916 CKT 1 / AB1-089 TAP 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270730 TO BUS 270916 CKT 1 / ELEC JUNC; B 345 WAYNE ; B 345 TRIP BRANCH FROM BUS 270916 TO BUS 270917 CKT 1 / WAYNE ; B 345 WAYNE ; R 345 END
COMED_P1-2_345-L0626__B-R-A	CONTINGENCY 'COMED_P1-2_345-L0626__B-R-A' TRIP BRANCH FROM BUS 270678 TO BUS 930480 CKT 1 / BYRON ; B 345 AB1-089 TAP 345 END

Short Circuit

18 Short Circuit

The following breakers are overdutied:

None

19 Secondary Point of Interconnection

The Queue Project AF1-280 was evaluated as a 220.0 MW (Capacity 137.0 MW) injection tapping the Easy Road to South Dixon 138 kV line in the ComEd area. Project AF1-280 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-280 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

20 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
6098160 1	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P1-2_345-L0624__R-R	single	1441.0	99.23	100.33	DC	15.95
6098162 3	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	Base Case	single	1679.0	99.79	101.19	DC	23.69
4446403 9	270770	GOODINGS ;4B	345.0	CE	270766	GOODINGS ;3B	345.0	CE	1	COMED_P2-1_116-L11613A_	single	1802.0	99.73	100.1	DC	14.24
6098146 5	274768	LEE CO EC;BP	345.0	CE	270828	NELSON ; B	345.0	CE	1	Base Case	single	1201.0	96.44	102.77	DC	76.89

21 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
6098086 3	270807	LIBERTYVI ; R	345.0	CE	270857	PHTS 117 ; R	345.0	CE	1	COMED_P4_144-45-BT6-9__	breaker	1479.0	100.0	100.59	DC	19.32

22 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
43595390	255113	17STILLWELL	345.0	NIPS	243219	05DUMONT	345.0	AEP	1	COMED_P1-2_695_B2	single	1409.0	100.99	101.59	DC	18.8
44463478	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT7-8__	breaker	1441.0	185.61	187.77	DC	68.87
44464327	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P1-2_345-L0622__R-R	single	1441.0	115.4	116.66	DC	18.66
45819750	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P4_006-45-BT10-14	breaker	1441.0	131.02	132.42	DC	44.64
60981620	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	COMED_P1-2_345-L97116__-R_FSA	single	2058.0	103.76	104.39	DC	29.1
60981621	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	COMED_P1-2_345-L15616__-R_FSA	single	2058.0	100.33	101.74	DC	29.1
60981622	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	COMED_P1-2_345-L15616__-R_NON_FSA	single	2058.0	100.33	101.74	DC	29.1
44464314	270679	BYRON ; R	345.0	CE	270695	CHERRY VA; R	345.0	CE	1	COMED_P1-2_345-L0621__B-R	single	1479.0	117.68	118.95	DC	19.5
44464558	270679	BYRON ; R	345.0	CE	270918	WEMPLETOW; B	345.0	CE	1	COMED_P7_345-L0621__B-R_+_345-L0622__R-R	tower	2084.0	116.9	117.78	DC	40.47
60981574	270679	BYRON ; R	345.0	CE	270695	CHERRY VA; R	345.0	CE	1	COMED_P1-2_345-L0624__R-R	single	1479.0	107.64	108.83	DC	17.57
60982048	270679	BYRON ; R	345.0	CE	270695	CHERRY VA; R	345.0	CE	1	COMED_P7_345-L0621__B-R_+_138-L15621_R-R	tower	1768.0	101.06	101.86	DC	31.1
44464025	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	138.15	138.92	DC	25.11
44464028	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479.0	128.6	129.36	DC	25.11
44464029	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	single	1201.0	120.89	121.55	DC	17.6
44463556	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	COMED_P4_012-45-BT5-6__	breaker	1479.0	103.67	104.21	DC	17.5
44463946	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	150.65	151.42	DC	25.11
44463948	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479.0	141.08	141.84	DC	25.11
44463949	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	single	1201.0	115.34	116.0	DC	17.6
44463486	270807	LIBERTYVI; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT6-11_	breaker	1479.0	119.59	120.09	DC	16.06
44463487	270807	LIBERTYVI; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_159-38-TR81___	breaker	1479.0	102.25	102.73	DC	15.47
44463488	270807	LIBERTYVI; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT10-11	breaker	1479.0	101.42	101.88	DC	15.07
44463489	270807	LIBERTYVI; R	345.0	CE	270857	P HTS 117; R	345.0	CE	1	COMED_P4_016-45-BT9-11_	breaker	1479.0	100.56	101.03	DC	15.14
44464050	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1656.0	101.85	103.65	DC	30.15
44463866	274750	CRETE EC ;BP	345.0	CE	255112	17STJOHN	345.0	NIPS	1	COMED_P1-2_695_B2	single	1399.0	100.12	100.68	DC	16.52
60981461	274768	LEE CO EC;BP	345.0	CE	270828	NELSON ; B	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	single	1479.0	122.55	128.24	DC	84.96
60981462	274768	LEE CO EC;BP	345.0	CE	270828	NELSON ; B	345.0	CE	1	COMED_P1-2_345-L0626__B-R-A	single	1479.0	108.99	114.74	DC	84.96
44464236	930480	AB1-089 TAP	345.0	CE	270916	WAYNE ; B	345.0	CE	1	COMED_P1-2_345-L97116__-R_FSA	single	2058.0	114.88	115.52	DC	29.1
60981475	930480	AB1-089 TAP	345.0	CE	270916	WAYNE ; B	345.0	CE	1	Base Case	single	1679.0	112.0	113.41	DC	23.69
44463959	943410	AF1-012 TAP	345.0	CE	270730	ELECT JCT; B	345.0	CE	1	Base Case	single	1334.0	100.59	102.16	DC	25.78
43594970	956820	J1180 TAP	345.0	AMIL	247712	05SULLIVAN	345.0	AEP	1	AEP_P4_#3128_05EUGENE 345_A2	breaker	1466.0	176.15	176.32	DC	15.71

23 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
4446432 4	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	COMED_P1-2_345-L97116__-R_FSA	operation	2058.0	113.07	114.07	DC	45.73
4446432 8	270678	BYRON ; B	345.0	CE	270694	CHERRY VA; B	345.0	CE	1	COMED_P1-2_345-L0622__R-R	operation	1441.0	116.51	117.43	DC	29.33
6098161 8	270678	BYRON ; B	345.0	CE	930480	AB1-089 TAP	345.0	CE	1	Base Case	operation	1679.0	107.73	108.73	DC	37.22
4446431 5	270679	BYRON ; R	345.0	CE	270695	CHERRY VA; R	345.0	CE	1	COMED_P1-2_345-L0621__B-R	operation	1479.0	118.81	119.75	DC	30.64
4446402 2	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	150.02	151.23	DC	39.46
4446402 4	270694	CHERRY VA; B	345.0	CE	270759	GARDEN PR; R	345.0	CE	1	Base Case	operation	1201.0	111.31	112.35	DC	27.66
4446415 6	270730	ELECT JCT; B	345.0	CE	270812	LOMBARD ; B	345.0	CE	1	Base Case	operation	1201.0	101.39	101.96	DC	15.12
4446394 4	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479.0	138.89	140.1	DC	39.46
4446394 7	270759	GARDEN PR; R	345.0	CE	270883	SILVER LK; R	345.0	CE	1	Base Case	operation	1201.0	126.63	127.67	DC	27.66
4446403 2	270770	GOODINGS ;4B	345.0	CE	270766	GOODINGS ;3B	345.0	CE	1	COMED_P1-2_345-L11613AB-S	operation	1802.0	123.44	124.01	DC	22.3
4446403 7	270770	GOODINGS ;4B	345.0	CE	270766	GOODINGS ;3B	345.0	CE	1	Base Case	operation	1560.0	101.34	101.81	DC	16.19
4446404 6	270828	NELSON ; B	345.0	CE	943410	AF1-012 TAP	345.0	CE	1	Base Case	operation	1334.0	105.8	107.18	DC	40.51
4446416 6	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	COMED_P1-2_345-L15502_B-R-B	operation	1726.0	117.0	120.03	DC	116.39
4446417 0	274768	LEE CO EC;BP	345.0	CE	270678	BYRON ; B	345.0	CE	1	Base Case	operation	1334.0	110.41	113.72	DC	98.32
6098146 4	274768	LEE CO EC;BP	345.0	CE	270828	NELSON ; B	345.0	CE	1	COMED_P1-2_345-L0626__B-R-B	operation	1479.0	98.44	102.52	DC	133.51

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
4446423 1	93048 0	AB1-089 TAP	345. 0	CE	27091 6	WAYNE ; B	345. 0	CE	1	COMED_P 1-2_345-L97116__-R_FSA	operatio n	2058. 0	124.12	125.12	DC	45.73
4446423 5	93048 0	AB1-089 TAP	345. 0	CE	27091 6	WAYNE ; B	345. 0	CE	1	Base Case	operatio n	1679. 0	120.45	121.45	DC	37.22
4446395 6	94341 0	AF1-012 TAP	345. 0	CE	27073 0	ELECT JCT; B	345. 0	CE	1	Base Case	operatio n	1334. 0	123.19	124.54	DC	40.51
4359527 9	95682 0	J1180 TAP	345. 0	AMIL	24771 2	05SULLIVA N	345. 0	AEP	1	AEP_P1-2_#286	operatio n	1466. 0	171.29	171.45	DC	16.04