Generation Interconnection

Feasibility Study Report

for

Queue Project AE2-035

LENA 138 KV

21 MW Capacity / 50 MW Energy

July, 2019

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1 Preface

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

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

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

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

PJM utilizes manufacturer models to ensure the performance of turbines and inverters is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and inverters and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a $10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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

2 General

The Interconnection Customer (IC), has proposed an addition to an existing wind generating facility located in Stephenson County, Illinois.. This projects requests an increase to the install capability of 50 of uprate MW with 21 of uprate MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is May 21, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-035
Project Name	LENA 138 KV
State	None
County	Stephenson
Transmission Owner	ComEd
MFO	50
MWE	50
MWC	21
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

Queue Position AE2-035, a 50MW solar facility, proposes to interconnect with the ComEd transmission system by connecting to the customer-owned 138kV EcoGrove TSS 969.AE2-035 will interconnect with the ComEd transmission system Lena 138kV substation.

2.2 Cost Summary

The AE2-035 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$200,000
Direct Connection Network Upgrade	$ none
Non Direct Connection Network Upgrades	$ none
Total Costs	$200,000

In addition, the AE2-035 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	$45,700,000

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

3 Transmission Owner Scope of Work

Addition of a 50 MW solar facility behind the meter will require review and possible upgrade of SCADA, Communication, relays and metering. The estimated cost is $200,000. ComEd would take approximately 18-months to review and possibly upgrade SCADA, Communication, relays and metering after the ISA / ICSA are signed.

4 Attachment Facilities

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
SCADA, Communication, relays and metering	$200,000
Total Attachment Facility Costs	$200,000

5 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.

Description	Total Cost
Total Direct Connection Facility Costs	$ none

6 Non-Direct Connection Cost Estimate

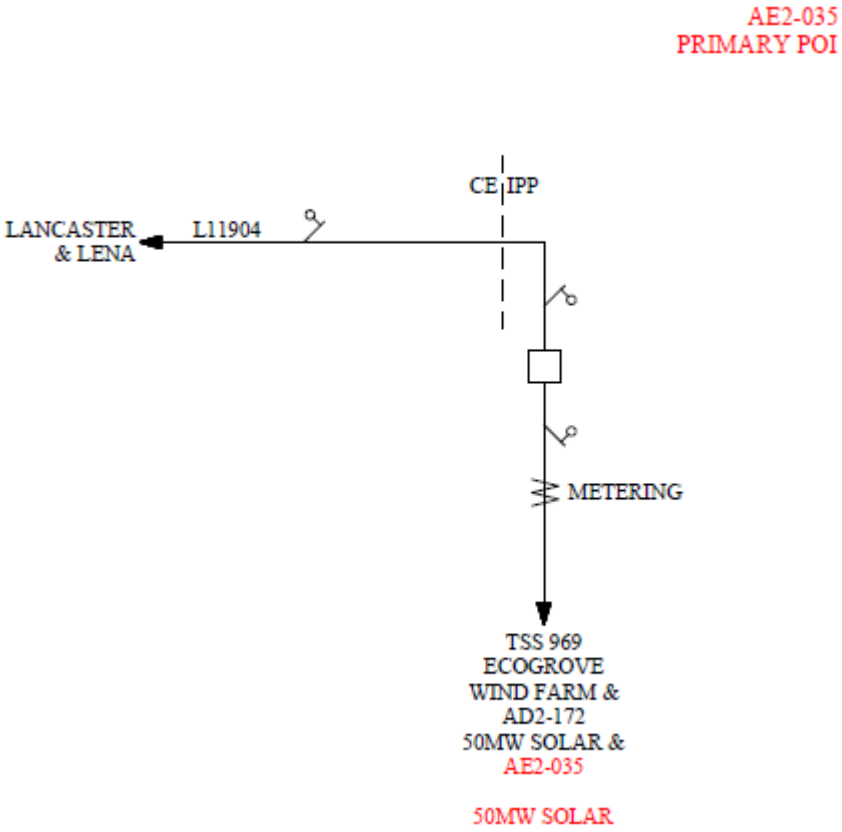
The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Total Non-Direct Connection Facility Costs	$ none

7 Schedule

ComEd would take approximately 18-months to review and possibly upgrade SCADA, Communication, relays and metering after the ISA / ICSA are signed.

8 Transmission Owner Analysis



9 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.

10 Revenue Metering and SCADA 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.

11 Network Impacts

The Queue Project AE2-035 was evaluated as a 50.0 MW (Capacity 21.0 MW) injection at Ecogrove 138kV substation in the ComEd area. Project AE2-035 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-035 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

12 Generation Deliverability

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

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
2121291	270759	GARDEN PR; R	CE	270883	SILVER LK; R	CE	1	Base Case	single	1201.0	99.87	100.17	DC	3.52

13 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	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
2121072	272095	NELSON ; R	CE	275203	NELSON ;2M	CE	1	COMED_P4_155-38-L15518_	breaker	520.0	99.75	100.09	DC	3.91
2121073	275203	NELSON ;2M	CE	270828	NELSON ; B	CE	1	COMED_P4_155-38-L15518_	breaker	520.0	99.73	100.07	DC	3.91

14 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)

None

15 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	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
2121452	270942	ZION STA ;0B	CE	270915	WAUKEGAN ; R	CE	1	COMED_P1-2_345-L2219__B-N	operation	1479.0	99.99	100.07	DC	2.63
2121396	271498	FREEPORT ;BT	CE	271494	FREEPORT ;2R	CE	1	COMED_P2-1_119-L11904__	operation	173.0	78.69	107.58	DC	49.99

16 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
2121072	2	NELSON ; R 138.0 kV - NELSON ;2M 138.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	$0
2121291	1	GARDEN PR; R 345.0 kV - SILVER LK; R 345.0 kV Ckt 1	ce-012a (22) : 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
2121073	3	NELSON ;2M 138.0 kV - NELSON ; B 345.0 kV Ckt 1	No Reinforcement Needed. Not a valid violation	$0
			TOTAL COST	**$45,700,000**

If "No Reinforcement Needed. Not a valid violation" was provided as the Upgrade Description for a facility in the System Reinforcements table then that facility met one of the following conditions:

a. The loading on the facility at your queue position was less than 100%; therefore, the facility is not yet overloaded, but may be overloaded by end of the AE2 queue.
b. The TO reviewed their ratings on the facility and determined that the current rating was greater than the rating in PJM's model. This new rating was greater than the loading at your queue position making the violation invalid.
c. The TO reviewed the contingency and determined that contingency was not valid; therefore the violation is invalid. Any contingency corrections will be assessed and corrected in the AE2 impact study phase.

17 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, 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.

17.1 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
2121291	270759	GARDEN PR; R	CE	270883	SILVER LK; R	CE	1	Base Case	single	1201.0	99.87	100.17	DC	3.52

Bus #	Bus	MW Impact
270859	PWR VTR EC;R	45.99
274656	BYRON ;1U	25.94
274657	BYRON ;2U	25.46
274716	NELSON EC;1S	1.92
274717	NELSON EC;2C	1.39
274718	NELSON EC;2S	1.92
274760	LEE CO EC;1U	1.21
274761	LEE CO EC;2U	1.21
274762	LEE CO EC;3U	1.21
274763	LEE CO EC;4U	1.19
274764	LEE CO EC;5U	1.21
274765	LEE CO EC;6U	1.21
274766	LEE CO EC;7U	1.19
274767	LEE CO EC;8U	1.19
274822	ROCKFORD ;11	2.24
274823	ROCKFORD ;21	2.29
274824	ROCKFORD ;12	2.22
274856	ECOGROVE ;U1	0.41
274857	BIG SKY ;U1	0.37
274858	BIG SKY ;U2	0.37
290266	R-018	0.16
295110	SUBLETTE C	0.04
905471	W4-084	0.05
907361	X1-087	0.32
919221	AA1-146	14.22
919581	AA2-030	14.22
924471	AB2-096	160.98
925161	AB2-173	2.54
926431	AC1-114	3.99
927511	AC1-113 1	2.0
927521	AC1-113 2	2.0
927531	AC1-185 1	0.75
927541	AC1-185 2	0.75
927551	AC1-185 3	0.75
927561	AC1-185 4	0.75
927571	AC1-185 5	0.75
927581	AC1-185 6	0.75
927591	AC1-185 7	0.75
927601	AC1-185 8	0.75
930481	AB1-089	78.4
932881	AC2-115 1	3.99
932891	AC2-115 2	3.99

Bus #	Bus	MW Impact
932921	AC2-116	1.4
933341	AC2-147 C	0.95
933911	AD1-013 C	1.19
934401	AD1-064 C O1	2.38
934431	AD1-067 C	0.09
934651	AD1-096 C	1.3
934701	AD1-098 C O1	4.57
934971	AD1-129 C	1.05
936791	AD2-102 C	18.5
937001	AD2-134 C	1.78
937311	AD2-172 C	3.52
937531	AD2-214 C	3.26
938861	AE1-114 C O1	4.34
939051	AE1-134 1	1.1
939061	AE1-134 2	1.1
939691	AE1-199	1.54
939921	AE1-228 C O1	6.43
940501	AE2-035 C	3.52
940881	AE2-077 C	5.08
941131	AE2-107 C	4.1
950081	J384	2.04
950101	J390	65.1
952431	J760	4.15
952511	J584 C	0.82
953111	J807 C	0.45
953681	J818	10.94
953691	J819 C	1.14
953901	J850	16.04
954001	J864	3.36
BLUEG	BLUEG	1.31
CANNELTON	CANNELTON	0.02
CARR	CARR	0.13
CATAWBA	CATAWBA	0.0
CBM-S1	CBM-S1	1.03
CBM-W1	CBM-W1	12.7
CBM-W2	CBM-W2	17.57
ELMERSMITH	ELMERSMITH	0.0
GIBSON	GIBSON	0.03
HAMLET	HAMLET	0.03
MEC	MEC	19.74
RENSSELAER	RENSSELAER	0.1
TILTON	TILTON	0.09
TRIMBLE	TRIMBLE	0.15
WEC	WEC	0.1

17.2 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
2121072	272095	NELSON ; R	CE	275203	NELSON ;2M	CE	1	COMED_P4_155-38-L15518_	breaker	520.0	99.75	100.09	DC	3.91

Bus #	Bus	MW Impact
272363	ESS H440 ; R	0.46
274832	U4-027	27.73
274848	CAMPGROVE;RU	0.6
274849	CRESCENT ;1U	0.18
274850	MENDOTA H;RU	0.11
274851	PROVIDENC;RU	0.28
274855	GSG-6 ;RU	0.47
274872	LEE DEKAL;1U	0.67
274877	BISHOP HL;1U	0.45
274878	BISHOP HL;2U	0.45
290051	GSG-6; E	15.38
290108	LEEDK;1U E	22.77
293513	O-009 C1	1.19
293514	O-009 C2	0.6
293515	O-009 C3	0.67
293516	O-009 E1	39.16
293517	O-009 E2	19.89
293518	O-009 E3	21.9
293712	O-029 C	1.49
293713	O-029 C	0.82
293714	O-029 C	0.76
293715	O-029 E	48.99
293716	O-029 E	26.86
293717	O-029 E	24.69
293771	O-035 E	9.22
294401	BSHIL;1U E	14.85
294410	BSHIL;2U E	14.85
294763	P-046 E	6.26
295108	WESTBROOK C	0.17
295109	WESTBROOK E	8.23
295110	SUBLETTE C	0.15
295111	SUBLETTE E	7.76
905471	W4-084	0.15
907361	X1-087	0.25
916211	Z1-072 E	6.98
916221	Z1-073 E	7.94
919621	AA2-039 C	3.62
919622	AA2-039 E	24.23
925301	AB2-191 C	0.18
925302	AB2-191 E	2.04
925581	AC1-033 C	2.43
925582	AC1-033 E	16.29

Bus #	Bus	MW Impact
926821	AC1-168 C O1	0.97
926822	AC1-168 E O1	6.53
926841	AC1-171 C O1	0.87
926842	AC1-171 E O1	5.82
927201	AC1-214 C O1	2.96
927202	AC1-214 E O1	9.41
933341	AC2-147 C	1.48
933342	AC2-147 E	2.41
933911	AD1-013 C	2.63
933912	AD1-013 E	4.2
934051	AD1-031 C O1	4.94
934052	AD1-031 E O1	8.07
934431	AD1-067 C	0.19
934432	AD1-067 E	0.81
934651	AD1-096 C	1.01
934652	AD1-096 E	1.65
934701	AD1-098 C O1	10.67
934702	AD1-098 E O1	7.79
937001	AD2-134 C	4.02
937002	AD2-134 E	16.61
937311	AD2-172 C	1.64
937312	AD2-172 E	2.27
938861	AE1-114 C O1	4.78
938862	AE1-114 E O1	18.28
939631	AE1-193 C O1	12.08
939632	AE1-193 E O1	80.86
939681	AE1-198 C O1	35.87
939682	AE1-198 E O1	30.48
939691	AE1-199	3.41
939921	AE1-228 C O1	13.96
939922	AE1-228 E O1	9.3
940501	AE2-035 C	1.64
940502	AE2-035 E	2.27
941131	AE2-107 C	6.43
941132	AE2-107 E	4.29
953201	J715 C	1.58
953202	J715 E	8.57
990901	L-005 E	19.73
CALDERWOOD	CALDERWOOD	0.03
CATAWBA	CATAWBA	0.0
CBM-N	CBM-N	0.06
CHEOAH	CHEOAH	0.03
CHILHOWEE	CHILHOWEE	0.01
CIN	CIN	0.42
COTTONWOOD	COTTONWOOD	0.78
CPLE	CPLE	0.01
FARMERCITY	FARMERCITY	0.55
G-007A	G-007A	0.2
IPL	IPL	0.25
LGEE	LGEE	0.07
MECS	MECS	0.5
NYISO	NYISO	0.28

Bus #	Bus	MW Impact
PRAIRIE	PRAIRIE	0.59
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.03
TATANKA	TATANKA	1.17
TVA	TVA	0.26
UNIONPOWER	UNIONPOWER	0.24
VFT	VFT	0.53
Z1-043	Z1-043	27.51

17.3 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
2121073	275203	NELSON ;2M	CE	270828	NELSON ; B	CE	1	COMED_P4_155-38-L15518_	breaker	520.0	99.73	100.07	DC	3.91

Bus #	Bus	MW Impact
272363	ESS H440 ; R	0.46
274832	U4-027	27.73
274848	CAMPGROVE;RU	0.6
274849	CRESCENT ;1U	0.18
274850	MENDOTA H;RU	0.11
274851	PROVIDENC;RU	0.28
274855	GSG-6 ;RU	0.47
274872	LEE DEKAL;1U	0.67
274877	BISHOP HL;1U	0.45
274878	BISHOP HL;2U	0.45
290051	GSG-6; E	15.38
290108	LEEDK;1U E	22.77
293513	O-009 C1	1.19
293514	O-009 C2	0.6
293515	O-009 C3	0.67
293516	O-009 E1	39.16
293517	O-009 E2	19.89
293518	O-009 E3	21.9
293712	O-029 C	1.49
293713	O-029 C	0.82
293714	O-029 C	0.76
293715	O-029 E	48.99
293716	O-029 E	26.86
293717	O-029 E	24.69
293771	O-035 E	9.22
294401	BSHIL;1U E	14.85
294410	BSHIL;2U E	14.85
294763	P-046 E	6.26
295108	WESTBROOK C	0.17
295109	WESTBROOK E	8.23
295110	SUBLETTE C	0.15
295111	SUBLETTE E	7.76
905471	W4-084	0.15
907361	X1-087	0.25
916211	Z1-072 E	6.98
916221	Z1-073 E	7.94
919621	AA2-039 C	3.62
919622	AA2-039 E	24.23
925301	AB2-191 C	0.18
925302	AB2-191 E	2.04
925581	AC1-033 C	2.43
925582	AC1-033 E	16.29

Bus #	Bus	MW Impact
926821	AC1-168 C O1	0.97
926822	AC1-168 E O1	6.53
926841	AC1-171 C O1	0.87
926842	AC1-171 E O1	5.82
927201	AC1-214 C O1	2.96
927202	AC1-214 E O1	9.41
933341	AC2-147 C	1.48
933342	AC2-147 E	2.41
933911	AD1-013 C	2.63
933912	AD1-013 E	4.2
934051	AD1-031 C O1	4.94
934052	AD1-031 E O1	8.07
934431	AD1-067 C	0.19
934432	AD1-067 E	0.81
934651	AD1-096 C	1.01
934652	AD1-096 E	1.65
934701	AD1-098 C O1	10.67
934702	AD1-098 E O1	7.79
937001	AD2-134 C	4.02
937002	AD2-134 E	16.61
937311	AD2-172 C	1.64
937312	AD2-172 E	2.27
938861	AE1-114 C O1	4.78
938862	AE1-114 E O1	18.28
939631	AE1-193 C O1	12.08
939632	AE1-193 E O1	80.86
939681	AE1-198 C O1	35.87
939682	AE1-198 E O1	30.48
939691	AE1-199	3.41
939921	AE1-228 C O1	13.96
939922	AE1-228 E O1	9.3
940501	AE2-035 C	1.64
940502	AE2-035 E	2.27
941131	AE2-107 C	6.43
941132	AE2-107 E	4.29
953201	J715 C	1.58
953202	J715 E	8.57
990901	L-005 E	19.73
CALDERWOOD	CALDERWOOD	0.03
CATAWBA	CATAWBA	0.0
CBM-N	CBM-N	0.06
CHEOAH	CHEOAH	0.03
CHILHOWEE	CHILHOWEE	0.01
CIN	CIN	0.42
COTTONWOOD	COTTONWOOD	0.78
CPLE	CPLE	0.01
FARMERCITY	FARMERCITY	0.55
G-007A	G-007A	0.2
IPL	IPL	0.25
LGEE	LGEE	0.07
MECS	MECS	0.5
NYISO	NYISO	0.28

Bus #	Bus	MW Impact
PRAIRIE	PRAIRIE	0.59
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.03
TATANKA	TATANKA	1.17
TVA	TVA	0.26
UNIONPOWER	UNIONPOWER	0.24
VFT	VFT	0.53
Z1-043	Z1-043	27.51

Affected Systems

18 Affected Systems

18.1 LG&E

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

18.2 MISO

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

18.3 TVA

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

18.4 Duke Energy Progress

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

18.5 NYISO

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

Contingency Name	Contingency Definition
Base Case	
COMED_P4_155-38-L15518_	CONTINGENCY 'COMED_P4_155-38-L15518_' TRIP BRANCH FROM BUS 272094 TO BUS 272366 CKT 1 / NELSO; B 138 R FAL; B 138 TRIP BRANCH FROM BUS 272366 TO BUS 272512 CKT 1 / R FAL; B 138 H71 ;BT 138 TRIP BRANCH FROM BUS 272512 TO BUS 937530 CKT 1 / H71 ;BT 138 AD2-214 TAP 138 /* CONTINGENCY LINE ADDED FOR AE1 BUILD TRIP BRANCH FROM BUS 272512 TO BUS 272514 CKT 1 / H71 ;BT 138 H71 ; B 138 MOVE 100 PERCENT LOAD FROM BUS 272514 TO BUS 272515 / H71 ; B 138 H71 ; R 138 CLOSE LINE FROM BUS 272366 TO BUS 272367 CKT 1 / R FAL; B 138 R FAL; R 138 TRIP BRANCH FROM BUS 272094 TO BUS 271330 CKT 1 / NELSO; B 138 DIXON;7B 138 TRIP BRANCH FROM BUS 272094 TO BUS 275204 CKT 1 / NELSO; B 138 NELSO;4M 138 END
COMED_P1-2_345-L2219__B-N	CONTINGENCY 'COMED_P1-2_345-L2219__B-N' TRIP BRANCH FROM BUS 270940 TO BUS 270914 CKT 1 / ZION STA ; B 345 END
COMED_P2-1_119-L11904__	CONTINGENCY 'COMED_P2-1_119-L11904__' TRIP BRANCH FROM BUS 271897 TO BUS 271498 CKT 1 / LANCASTER; R 138 FREEPORT ;BT END

Short Circuit

19 Short Circuit

No issues identified