Generation Interconnection

Feasibility Study Report

for

Queue Project AE1-199

TWOMBLY ROAD 138 KV

20 MW Capacity / 20 MW Energy

June, 2019

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.

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

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

General

Queue Number	**AE1-199**
Project Name	TWOMBLY ROAD 138 KV
State	None
County	Ogle
Transmission Owner	RMU
MFO	60
MWE	20
MWC	20
Fuel	Solar
Basecase Study Year	2022

Primary Point of Interconnection

Queue Position AE1-199, proposes to add 20 MW solar facility, to the primary POI of a prior queue position AD1-013, a 40 MW solar farm, using the same generator lead. At the time of issuing this report, AD1-013 is in the System Impact Study Phase. Attachment Facilities and Non-Direct Network Upgrades required to interconnect this project included in the scope of the AD1-013 project.

Cost Summary

The AE1-199 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$0
Direct Connection Network Upgrade	$0
Non Direct Connection Network Upgrades	$0
Total Costs	$0

In addition, the AE1-199 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	$8,100,000

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

Transmission Owner Scope of Work

Attachment Facilities

None

Non-Direct Connection

None

Interconnection Customer Requirements

Not applicable

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.

Network Impacts

The Queue Project AE1-199 was evaluated as a 20 MW (Capacity 20 MW) injection at the City of Rochelle's H445 Twombley Road Substation in the RMU area. Project AE1-199 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-199 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

Generation Deliverability

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

None

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
220438	272516	STEWARD ; B	CE	271680	HAUMESSER; B	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	93.31	97.55	DC	19.99
220041	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P2-2_111_EJ-138B__2	bus	331.0	78.25	80.06	DC	5.99
220451	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P4_111-38-TR82___	breaker	309.0	83.83	85.76	DC	5.99
220615	272728	WATERMAN ; B	CE	271560	GLIDDEN ;BT	CE	1	COMED_P4_146-38-BT_____	breaker	344.0	93.3	95.42	DC	7.29
221695	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P7_138-L11106_B-R_+_345-L15502_B-R	tower	331.0	89.67	91.51	DC	6.11

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	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
220172	271680	HAUMESSER; B	CE	272756	W DEKALB ;3T	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	145.73	149.97	DC	19.99
220450	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P4_083-38-BT3-4__	breaker	331.0	105.5	108.01	DC	8.32
220222	272756	W DEKALB ;3T	CE	272730	WATERMAN ;3B	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	137.89	142.14	DC	19.99

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
220898	271680	HAUMESSER; B	CE	272756	W DEKALB ;3T	CE	1	COMED_P1-2_138-L10714_R-R-A	operation	452.0	151.79	156.21	DC	19.99
220902	271680	HAUMESSER; B	CE	272756	W DEKALB ;3T	CE	1	Base Case	operation	438.0	127.38	129.91	DC	11.08
220966	272002	MCGIRR RD;	CE	934700	AD1-098 TAP	CE	1	COMED_P2-1_094-L11323__	operation	449.0	130.92	135.37	DC	19.99
220967	272002	MCGIRR RD;	CE	934700	AD1-098 TAP	CE	1	COMED_P1-2_138-L11323_R-R	operation	449.0	130.92	135.37	DC	19.99
221026	272362	ESS H445 ;3B	CE	272516	STEWARD ; B	CE	1	COMED_P2-1_186-L16914__	operation	197.0	141.45	146.85	DC	10.64
221104	272516	STEWARD ; B	CE	271680	HAUMESSER; B	CE	1	COMED_P1-2_138-L10714_R-R-A	operation	449.0	97.79	102.24	DC	19.99
221105	272516	STEWARD ; B	CE	271680	HAUMESSER; B	CE	1	Base Case	operation	351.0	106.21	109.37	DC	11.09
221252	272728	WATERMAN ; B	CE	271560	GLIDDEN ;BT	CE	1	COMED_P1-2_138-L11301_R-R	operation	321.0	99.96	102.23	DC	7.29
221339	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P1-2_138-L11106_B-R	operation	309.0	82.28	84.22	DC	6.0
221074	272730	WATERMAN ;3B	CE	272728	WATERMAN ; B	CE	1	COMED_P1-2_138-L10714_R-R-A	operation	507.0	104.81	108.06	DC	16.44
221079	272730	WATERMAN ;3B	CE	272728	WATERMAN ; B	CE	1	Base Case	operation	487.0	87.89	89.78	DC	9.22
221346	272730	WATERMAN ;3B	CE	271558	GLIDDEN ; B	CE	1	COMED_P2-1_113-L11323__	operation	480.0	90.91	92.84	DC	9.26
220903	272756	W DEKALB ;3T	CE	272730	WATERMAN ;3B	CE	1	COMED_P1-2_138-L10714_R-R-A	operation	452.0	143.62	148.05	DC	19.99
220908	272756	W DEKALB ;3T	CE	272730	WATERMAN ;3B	CE	1	Base Case	operation	452.0	115.25	117.7	DC	11.08
220895	934700	AD1-098 TAP	CE	271333	DIXON ; R	CE	1	COMED_P1-2_138-L11323_R-R	operation	449.0	152.8	157.25	DC	19.99
220896	934700	AD1-098 TAP	CE	271333	DIXON ; R	CE	1	COMED_P2-1_094-	operation	449.0	152.8	157.25	DC	19.99

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System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
220222	5	W DEKALB ;3T 138.0 kV - WATERMAN ;3B 138.0 kV Ckt 1	CE Description : Line conductor upgrade.(Note that there may be additional 138kV line tower costs as a result of this upgrade. This estimate does not include potential tower work. The tower costs will be determined during the Facility Study). Time Estimate : 36.0 Months Cost : $4,500,000	$4,500,000
220615	3	WATERMAN ; B 138.0 kV - GLIDDEN ;BT 138.0 kV Ckt 1	CE Description : No Violation. The ALDR rating is 395 MVA.	$0
220438	1	STEWARD ; B 138.0 kV - HAUMESSER; B 138.0 kV Ckt 1	CE Description : No Violation. Facility loading does not exceed 100%.	$0
220172	4	HAUMESSER; B 138.0 kV - W DEKALB ;3T 138.0 kV Ckt 1	CE Description : Line conductoring work, replace line relaying scheme & 1-138kV disconnect switch Time Estimate : 24-30 Months Cost : $3,600,000	$3,600,000
220041,220450,220451,221695	2	WATERMAN ; B 138.0 kV - SANDWICH ; R 138.0 kV Ckt 1	CE Description : No Violation. The ALDR rating is 381 MVA.	$0
			TOTAL COST	$8,100,000

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.

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
220438	272516	STEWARD ; B	CE	271680	HAUMESSER; B	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	93.31	97.55	DC	19.99

Bus #	Bus	MW Impact
272363	ESS H440 ; R	3.37
274850	MENDOTA H;RU	0.8
274855	GSG-6 ;RU	3.36
290051	GSG-6; E	87.57
295108	WESTBROOK C	1.17
295109	WESTBROOK E	46.88
916221	Z1-073 E	45.18
925301	AB2-191 C	1.29
925302	AB2-191 E	11.6
933911	AD1-013 C	15.39
933912	AD1-013 E	24.59
934431	AD1-067 C	1.1
934432	AD1-067 E	4.62
934701	AD1-098 C O1	57.78
934702	AD1-098 E O1	42.19
937001	AD2-134 C	22.89
937002	AD2-134 E	94.57
939691	AE1-199	19.99
939921	AE1-228 C O1	83.97
939922	AE1-228 E O1	55.98
BAYOU	BAYOU	0.04
BIG_CAJUN1	BIG_CAJUN1	0.06
BIG_CAJUN2	BIG_CAJUN2	0.11
BLUEG	BLUEG	0.18
CALDERWOOD	CALDERWOOD	0.02
CANNELTON	CANNELTON	0.01
CARR	CARR	0.01
CATAWBA	CATAWBA	0.01
CHEOAH	CHEOAH	0.02
CHILHOWEE	CHILHOWEE	0.01
CHOCTAW	CHOCTAW	0.04
COFFEEN	COFFEEN	0.02
COTTONWOOD	COTTONWOOD	0.15
DEARBORN	DEARBORN	0.03
DUCKCREEK	DUCKCREEK	0.04
EDWARDS	EDWARDS	0.02
ELMERSMITH	ELMERSMITH	0.02
FARMERCITY	FARMERCITY	0.01
G-007	G-007	0.04
GIBSON	GIBSON	0.01
HAMLET	HAMLET	0.04

Bus #	Bus	MW Impact
NEWTON	NEWTON	0.05
O-066	O-066	0.12
PRAIRIE	PRAIRIE	0.09
RENSSELAER	RENSSELAER	0.01
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.01
TATANKA	TATANKA	0.02
TILTON	TILTON	0.02
TRIMBLE	TRIMBLE	0.02
TVA	TVA	0.06
UNIONPOWER	UNIONPOWER	0.03

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
220450	272728	WATERMAN ; B	CE	272445	SANDWICH ; R	CE	1	COMED_P4_083-38-BT3-4__	breaker	331.0	105.5	108.01	DC	8.32

Bus #	Bus	MW Impact
272363	ESS H440 ; R	1.4
274850	MENDOTA H;RU	0.32
274855	GSG-6 ;RU	1.36
274872	LEE DEKAL;1U	3.87
290051	GSG-6; E	35.6
290108	LEEDK;1U E	105.15
295108	WESTBROOK C	0.48
295109	WESTBROOK E	19.06
295111	SUBLETTE E	2.0
916221	Z1-073 E	18.37
925301	AB2-191 C	0.52
925302	AB2-191 E	4.71
933911	AD1-013 C	6.41
933912	AD1-013 E	10.24
934431	AD1-067 C	0.45
934432	AD1-067 E	1.88
934701	AD1-098 C O1	22.47
934702	AD1-098 E O1	16.41
937001	AD2-134 C	9.31
937002	AD2-134 E	38.44
939691	AE1-199	8.32
939921	AE1-228 C O1	35.67
939922	AE1-228 E O1	23.78
BLUEG	BLUEG	0.28
CARR	CARR	0.03
CBM-S1	CBM-S1	0.34
CBM-S2	CBM-S2	0.02
CBM-W1	CBM-W1	2.94
CBM-W2	CBM-W2	5.56
DEARBORN	DEARBORN	0.14
G-007	G-007	0.08
GIBSON	GIBSON	0.0
MEC	MEC	5.38
O-066	O-066	0.28
RENSSELAER	RENSSELAER	0.02
TRIMBLE	TRIMBLE	0.03
WEC	WEC	0.27

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
220615	272728	WATERMAN ; B	CE	271560	GLIDDEN ;BT	CE	1	COMED_P4_146-38-BT_____	breaker	344.0	93.3	95.42	DC	7.29

Bus #	Bus	MW Impact
272363	ESS H440 ; R	1.22
274850	MENDOTA H;RU	0.28
274855	GSG-6 ;RU	1.2
274872	LEE DEKAL;1U	3.39
290051	GSG-6; E	31.18
290108	LEEDK;1U E	92.17
295108	WESTBROOK C	0.42
295109	WESTBROOK E	16.69
295111	SUBLETTE E	1.73
916221	Z1-073 E	16.09
925301	AB2-191 C	0.46
925302	AB2-191 E	4.13
933911	AD1-013 C	5.61
933912	AD1-013 E	8.97
934431	AD1-067 C	0.39
934432	AD1-067 E	1.65
934701	AD1-098 C O1	19.68
934702	AD1-098 E O1	14.37
937001	AD2-134 C	8.15
937002	AD2-134 E	33.67
939691	AE1-199	7.29
939921	AE1-228 C O1	31.25
939922	AE1-228 E O1	20.83
BLUEG	BLUEG	0.2
CARR	CARR	0.02
CBM-S1	CBM-S1	0.29
CBM-S2	CBM-S2	0.03
CBM-W1	CBM-W1	2.26
CBM-W2	CBM-W2	4.55
DEARBORN	DEARBORN	0.11
G-007	G-007	0.06
GIBSON	GIBSON	0.0
MEC	MEC	4.36
O-066	O-066	0.21
RENSSELAER	RENSSELAER	0.02
TRIMBLE	TRIMBLE	0.02
WEC	WEC	0.14

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
220172	271680	HAUMESSER; B	CE	272756	W DEKALB ;3T	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	145.73	149.97	DC	19.99

Bus #	Bus	MW Impact
272363	ESS H440 ; R	3.37
274850	MENDOTA H;RU	0.8
274855	GSG-6 ;RU	3.36
274872	LEE DEKAL;1U	7.36
290051	GSG-6; E	87.55
290108	LEEDK;1U E	199.88
295108	WESTBROOK C	1.17
295109	WESTBROOK E	46.87
916221	Z1-073 E	45.17
925301	AB2-191 C	1.29
925302	AB2-191 E	11.59
933911	AD1-013 C	15.39
933912	AD1-013 E	24.59
934431	AD1-067 C	1.1
934432	AD1-067 E	4.62
934701	AD1-098 C O1	57.77
934702	AD1-098 E O1	42.17
937001	AD2-134 C	22.89
937002	AD2-134 E	94.54
939691	AE1-199	19.99
939921	AE1-228 C O1	83.95
939922	AE1-228 E O1	55.97
BAYOU	BAYOU	0.06
BIG_CAJUN1	BIG_CAJUN1	0.1
BIG_CAJUN2	BIG_CAJUN2	0.2
BLUEG	BLUEG	0.3
CALDERWOOD	CALDERWOOD	0.03
CANNELTON	CANNELTON	0.02
CARR	CARR	0.02
CATAWBA	CATAWBA	0.02
CHEOAH	CHEOAH	0.03
CHILHOWEE	CHILHOWEE	0.01
CHOCTAW	CHOCTAW	0.06
COFFEEN	COFFEEN	0.03
COTTONWOOD	COTTONWOOD	0.25
DEARBORN	DEARBORN	0.05
DUCKCREEK	DUCKCREEK	0.07
EDWARDS	EDWARDS	0.03
ELMERSMITH	ELMERSMITH	0.03
FARMERCITY	FARMERCITY	0.02

Bus #	Bus	MW Impact
G-007	G-007	0.06
GIBSON	GIBSON	0.01
HAMLET	HAMLET	0.07
NEWTON	NEWTON	0.08
O-066	O-066	0.21
PRAIRIE	PRAIRIE	0.15
RENSSELAER	RENSSELAER	0.02
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.01
TATANKA	TATANKA	0.04
TILTON	TILTON	0.04
TRIMBLE	TRIMBLE	0.03
TVA	TVA	0.1
UNIONPOWER	UNIONPOWER	0.05

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
220222	272756	W DEKALB ;3T	CE	272730	WATERMAN ;3B	CE	1	COMED_P4_107-38-L15508_	breaker	471.0	137.89	142.14	DC	19.99

Bus #	Bus	MW Impact
272363	ESS H440 ; R	3.37
274850	MENDOTA H;RU	0.8
274855	GSG-6 ;RU	3.36
274872	LEE DEKAL;1U	7.36
290051	GSG-6; E	87.55
290108	LEEDK;1U E	199.88
295108	WESTBROOK C	1.17
295109	WESTBROOK E	46.87
916221	Z1-073 E	45.17
925301	AB2-191 C	1.29
925302	AB2-191 E	11.59
933911	AD1-013 C	15.39
933912	AD1-013 E	24.59
934431	AD1-067 C	1.1
934432	AD1-067 E	4.62
934701	AD1-098 C O1	57.77
934702	AD1-098 E O1	42.17
937001	AD2-134 C	22.89
937002	AD2-134 E	94.54
939691	AE1-199	19.99
939921	AE1-228 C O1	83.95
939922	AE1-228 E O1	55.97
BAYOU	BAYOU	0.06
BIG_CAJUN1	BIG_CAJUN1	0.1
BIG_CAJUN2	BIG_CAJUN2	0.2
BLUEG	BLUEG	0.3
CALDERWOOD	CALDERWOOD	0.03
CANNELTON	CANNELTON	0.02
CARR	CARR	0.02
CATAWBA	CATAWBA	0.02
CHEOAH	CHEOAH	0.03
CHILHOWEE	CHILHOWEE	0.01
CHOCTAW	CHOCTAW	0.06
COFFEEN	COFFEEN	0.03
COTTONWOOD	COTTONWOOD	0.25
DEARBORN	DEARBORN	0.05
DUCKCREEK	DUCKCREEK	0.07
EDWARDS	EDWARDS	0.03
ELMERSMITH	ELMERSMITH	0.03
FARMERCITY	FARMERCITY	0.02

Bus #	Bus	MW Impact
G-007	G-007	0.06
GIBSON	GIBSON	0.01
HAMLET	HAMLET	0.07
NEWTON	NEWTON	0.08
O-066	O-066	0.21
PRAIRIE	PRAIRIE	0.15
RENSSELAER	RENSSELAER	0.02
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.01
TATANKA	TATANKA	0.04
TILTON	TILTON	0.04
TRIMBLE	TRIMBLE	0.03
TVA	TVA	0.1
UNIONPOWER	UNIONPOWER	0.05

Affected Systems

MISO

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

Contingency Name	Contingency Definition
COMED_P2-2_111_EJ-138B__2	CONTINGENCY 'COMED_P2-2_111_EJ-138B__2' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271390 TO BUS 272724 CKT 1 / ELECT; B 138 WARRE;BT 138 TRIP BRANCH FROM BUS 271390 TO BUS 275239 CKT 1 / ELECT; B 138 ELECT;2M 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 DISCONNECT BUS 271560 / GLIDD;BT 138 DISCONNECT BUS 272522 / SUGAR; B 138 REMOVE SWSHUNT FROM BUS 271390 END
COMED_P2-1_113-L11323__	CONTINGENCY 'COMED_P2-1_113-L11323__' TRIP BRANCH FROM BUS 272730 TO BUS 272728 CKT 1 / WATER;3B 138 WATER; B 138 END
COMED_P2-1_094-L11323__	CONTINGENCY 'COMED_P2-1_094-L11323__' TRIP BRANCH FROM BUS 271680 TO BUS 272756 CKT 1 / HAUME; B 138 W DEK;3T 138 END
COMED_P4_146-38-BT_____	CONTINGENCY 'COMED_P4_146-38-BT_____' TRIP BRANCH FROM BUS 271116 TO BUS 272250 CKT 1 / BRIST; B 138 PLANO; B 138 TRIP BRANCH FROM BUS 272024 TO BUS 271182 CKT 1 / MONTG; B 138 W507 ; B 138 TRIP BRANCH FROM BUS 272026 TO BUS 271116 CKT 1 / MONTG;BT 138 BRIST; B 138 TRIP BRANCH FROM BUS 272026 TO BUS 272024 CKT 1 / MONTG;BT 138 MONTG; B 138 TRIP BRANCH FROM BUS 272202 TO BUS 272026 CKT 1 / OSWEG; B 138 MONTG;BT 138 TRIP BRANCH FROM BUS 272794 TO BUS 272202 CKT 1 / WOLFS; B 138 OSWEG; B 138 MOVE 100 PERCENT LOAD FROM BUS 271116 TO BUS 271117 / BRIST; B 138 BRIST; R 138 MOVE 100 PERCENT LOAD FROM BUS 272202 TO BUS 272203 / OSWEG; B 138 OSWEG; R 138 CLOSE LINE FROM BUS 271182 TO BUS 271183 CKT 1 / W507 ; B 138 W507 ; R 138 CLOSE LINE FROM BUS 272024 TO BUS 272025 CKT 1 / MONTG; B 138 MONTG; R 138 TRIP BRANCH FROM BUS 272728 TO BUS 272445 CKT 1 / WATER; B 138 SANDW; R 138 END
COMED_P4_111-38-TR82___	CONTINGENCY 'COMED_P4_111-38-TR82___' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271390 TO BUS 272724 CKT 1 / ELECT; B 138 WARRE;BT 138 TRIP BRANCH FROM BUS 271390 TO BUS 275239 CKT 1 / ELECT; B 138 ELECT;2M 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 DISCONNECT BUS 271560 / GLIDD;BT 138 DISCONNECT BUS 272522 / SUGAR; B 138 DISCONNECT BUS 275239 / ELECT;2M 138 REMOVE SWSHUNT FROM BUS 271390 END

Contingency Name	Contingency Definition
COMED_P7_138-L11106_B-R_+_345-L15502_B-R	CONTINGENCY 'COMED_P7_138-L11106_B-R_+_345-L15502_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 TRIP BRANCH FROM BUS 270828 TO BUS 270730 CKT 1 / NELSON ; B 345 ELEC JUNC; B 345 END
COMED_P1-2_138-L11301_R-R	CONTINGENCY 'COMED_P1-2_138-L11301_R-R' TRIP BRANCH FROM BUS 272728 TO BUS 272445 CKT 1 / WATER; B 138 SANDW; R 138 END
COMED_P1-2_138-L10714_R-R-A	CONTINGENCY 'COMED_P1-2_138-L10714_R-R-A' TRIP BRANCH FROM BUS 271333 TO BUS 934700 CKT 1 / DIXON; R 138 AD1-098 TAP 138 END
COMED_P4_107-38-L15508_	CONTINGENCY 'COMED_P4_107-38-L15508_' TRIP BRANCH FROM BUS 271331 TO BUS 271333 CKT 1 / DIXON;8R 138 DIXON; R 138 TRIP BRANCH FROM BUS 272097 TO BUS 271331 CKT 1 / NELSO;RT 138 DIXON;8R 138 TRIP BRANCH FROM BUS 272097 TO BUS 272095 CKT 1 / NELSO;RT 138 NELSO; R 138 TRIP BRANCH FROM BUS 272097 TO BUS 293710 CKT 1 / NELSO;RT 138 O29 138 MOVE 100 PERCENT LOAD FROM BUS 271331 TO BUS 271330 / DIXON;8R 138 DIXON;7B 138 MOVE 100 PERCENT LOAD FROM BUS 271333 TO BUS 271332 / DIXON; R 138 DIXON; B 138 DISCONNECT BUS 271333 / DIXON; R 138 END
COMED_P2-1_186-L16914__	CONTINGENCY 'COMED_P2-1_186-L16914__' TRIP BRANCH FROM BUS 272365 TO BUS 272516 CKT 1 / H440 ;RT 138 STEWA; B 138 END
Base Case	
COMED_P1-2_138-L11106_B-R	CONTINGENCY 'COMED_P1-2_138-L11106_B-R' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 END

Contingency Name	Contingency Definition
COMED_P4_083-38-BT3-4__	CONTINGENCY 'COMED_P4_083-38-BT3-4__' TRIP BRANCH FROM BUS 271390 TO BUS 271586 CKT 1 / ELECT; B 138 W541 ; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 271558 CKT 1 / GLIDD;BT 138 GLIDD; B 138 TRIP BRANCH FROM BUS 271560 TO BUS 272728 CKT 1 / GLIDD;BT 138 WATER; B 138 TRIP BRANCH FROM BUS 271586 TO BUS 272114 CKT 1 / W541 ; B 138 N AUR; B 138 TRIP BRANCH FROM BUS 272114 TO BUS 272522 CKT 1 / N AUR; B 138 SUGAR; B 138 TRIP BRANCH FROM BUS 272522 TO BUS 271560 CKT 1 / SUGAR; B 138 GLIDD;BT 138 MOVE 100 PERCENT LOAD FROM BUS 271586 TO BUS 271587 / W541 ; B 138 W541 ; R 138 MOVE 100 PERCENT LOAD FROM BUS 272522 TO BUS 272523 / SUGAR; B 138 SUGAR; R 138 CLOSE LINE FROM BUS 272114 TO BUS 272115 CKT 1 / N AUR; B 138 N AUR; R 138 TRIP BRANCH FROM BUS 271558 TO BUS 272730 CKT 1 / GLIDD; B 138 WATER;3B 138 MOVE 100 PERCENT LOAD FROM BUS 272761 TO BUS 272759 / W DEK;7R 138 W DEK;4R 138 DISCONNECT BUS 271581 / B200 ; R 138 DISCONNECT BUS 272757 / W DEK;7T 138 END
COMED_P1-2_138-L11323_R-R	CONTINGENCY 'COMED_P1-2_138-L11323_R-R' TRIP BRANCH FROM BUS 271680 TO BUS 272756 CKT 1 / HAUME; B 138 W DEK;3T 138 TRIP BRANCH FROM BUS 272730 TO BUS 271558 CKT 1 / WATER;3B 138 GLIDD; B 138 TRIP BRANCH FROM BUS 272730 TO BUS 272728 CKT 1 / WATER;3B 138 WATER; B 138 TRIP BRANCH FROM BUS 272756 TO BUS 272730 CKT 1 / W DEK;3T 138 WATER;3B 138 TRIP BRANCH FROM BUS 272756 TO BUS 272759 CKT 1 / W DEK;3T 138 W DEK;4R 138 MOVE 100 PERCENT LOAD FROM BUS 272759 TO BUS 272761 / W DEK;4R 138 W DEK;7R 138 END

Short Circuit

No issues identified