Generation Interconnection

Feasibility Study Report

For

Queue Project AF2-025

ONTARIO 69 KV

8 MW Capacity / 20 MW Energy

July 2020

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1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is AEC.

2 Preface

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

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

The 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.

3 General

The Interconnection Customer (IC), has proposed a Storage generating facility located in Atlantic County, New Jersey. The installed facilities will have a total capability of 20 MW with 8 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is June 01, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF2-025**
Project Name	ONTARIO 69 KV
State	New Jersey
County	Atlantic
Transmission Owner	AEC
MFO	20

Queue Number	AF2-025
MWE	20
MWC	8
Fuel	Storage
Basecase Study Year	2023

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

4 Point of Interconnection

AF2-025 will interconnect with the AEC transmission system at the Ontario 69 kV substation.

5 Cost Summary

The AF2-025 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$500,000
Total System Network Upgrade Costs	$315,049,872
Total Costs	$315,549,872

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

6 Transmission Owner Scope of Work

Substation Interconnection Estimate

Scope: Install 69 kV terminal on Ontario #1 69 kV bus for AF2-025.

Developer responsible for land purchase and site development for substation expansion if required, price is not included.

Required Relaying and Communications

Ontario substation:

New protection relays are required for the new terminal and breakers.

The total physical interconnection costs is given in the table below:

Description	Total Cost
Total Physical Interconnection Costs	$500,000

7 Schedule

Construction estimated to take approximately 12-24 months to complete.

8 Transmission Owner Analysis

None

9 Interconnection Customer Requirements

Interconnection Customer Scope of Direct Connection Work

The IC is responsible for all design and construction related to activities on their side of the Point of Interconnection. Site preparation, including grading and an access road, as necessary, is assumed to be by the IC. Route selection, line design, and right-of-way acquisition of the direct connect facilities is not included in this report and is the responsibility of the IC. Protective relaying and metering design and installation must comply with ACE's applicable standards. The IC is also required to provide revenue metering and real-time telemetering data to PJM in conformance with the requirements contained in PJM Manuals M-01 and M-14 and the PJM Tariff.

ACE Interconnection Customer Scope of Direct Connection Work Requirements:

- ACE requires that an IC circuit breaker is located within 500 feet of the ACE substation to facilitate the relay protection scheme between ACE and the IC at the Point of Interconnection (POI).

Special Operating Requirements

1. ACE will require the capability to remotely disconnect the generator from the grid by communication from its System Operations facility. Such disconnection may be facilitated by a generator breaker, or other method depending upon the specific circumstances and the evaluation by ACE.

2. ACE reserves the right to charge the Interconnection Customer operation and maintenance expenses to maintain the Interconnection Customer attachment facilities, including metering and telecommunications facilities, owned by ACE.

Additional Interconnection Customer Responsibilities:

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 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.
2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.
3. The Interconnection Customer seeking to interconnect a wind generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per item 5.IV of Schedule H to the Interconnection Service Agreement.

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

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

10.2 Interconnected Transmission Owner Requirements

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

http://www.pjm.com/planning/design-engineering/to-tech-standards/

A three phase 69 kV revenue metering point will need to be established within the Interconnection Customer Facilities at the Point of Interconnection. The Interconnection Customer will purchase and install all metering instrument transformers as well as construct a metering structure per ACE's specifications. The secondary wiring connections at the instrument transformers will be completed by the Interconnection Customer and inspected by ACE, while the connections at the metering enclosure will be completed by ACE. The metering control cable and meter cabinets will be supplied by ACE and installed by the Interconnection Customer. The Interconnection Customer will install conduit for the control cable between the instrument transformers and the metering enclosure. The location of the metering enclosure will be determined during construction. The Interconnection Customer will provide 120V power to the meter cabinet. ACE will provide, program, install, and own the primary & backup solid state multi-function meters for the new metering position.

Each meter will be equipped with load profile, telemetry, and DNP outputs. The Interconnection Customer will be provided with one-meter DNP output for each meter. ACE will supply a wireless modem for MV90 interrogation. In the event that a wireless modem is unable to reliably communicate, the IC will be required to make provisions for a POTS (Plain Old Telephone Service) line or equivalent technology approved by ACE within approximately three feet of the ACE metering position to facilitate remote interrogation and data collection. It is the Interconnection Customer's responsibility to send the data that PJM and ACE require directly to PJM. The Interconnection Customer will grant permission for PJM to send ACE the following telemetry that the Interconnection Customer sends to PJM: real time MW, MVAR, volts, amperes, generator status, and interval MWH and MVARH.

ACE's revenue meters will be the official meters and must be the source for reporting generation output to PJM. The Interconnection Customer is responsible for installing telemetry equipment necessary to obtain the revenue meter data and submitting the data to PJM.

11 Summer Peak - Load Flow Analysis

The Queue Project AF2-025 was evaluated as a 20.0 MW (Capacity 8.0 MW) injection at the Ontario 69 kV substation in the AEC area. Project AF2-025 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-025 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

11.1 Generation Deliverability

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

None

11.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
101525460	228110	BLE	138.0	AE	228111	MDLE TP	138.0	AE	1	AE_P4-2 AE28	breaker	482.0	99.63	100.1	DC	2.26

11.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
99021630	206302	28OYSTER C	230.0	JCP&L	227955	CEDAR	230.0	AE	1	AE_P4-2 AE46	breaker	564.0	152.04	153.04	DC	5.64
99842523	227900	CARDIFF	230.0	AE	219100	NEWFRDM	230.0	PSE&G	1	AE_P4-2 AE46	breaker	692.0	239.74	240.84	DC	7.76
99842524	227900	CARDIFF	230.0	AE	219100	NEWFRDM	230.0	PSE&G	1	AE_P4-2 AE45	breaker	692.0	218.61	219.57	DC	6.95
99843583	227900	CARDIFF	230.0	AE	219100	NEWFRDM	230.0	PSE&G	1	AE_P7-1 AE13TOWER	tower	692.0	258.09	259.19	DC	7.76
99843584	227900	CARDIFF	230.0	AE	219100	NEWFRDM	230.0	PSE&G	1	AE_P7-1 AE15TOWER	tower	692.0	228.46	229.56	DC	7.76
101525645	227911	CARDIFF 2	69.0	AE	227922	MILL #1	69.0	AE	1	AE_P4-2 AE9	breaker	239.0	101.56	103.03	DC	3.51
101526695	227911	CARDIFF 2	69.0	AE	227922	MILL #1	69.0	AE	1	AE_P7-1 AE3TOWER	tower	239.0	107.73	109.25	DC	3.62
99021485	227955	CEDAR	230.0	AE	206302	28OYSTER C	230.0	JCP&L	1	AE_P4-2 AE7	breaker	564.0	250.09	251.04	DC	5.66
99021486	227955	CEDAR	230.0	AE	206302	28OYSTER C	230.0	JCP&L	1	AE_P4-2 AE6	breaker	564.0	250.1	251.04	DC	5.66

11.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
99842833	227900	CARDIFF	230.0	AE	219100	NEWFRDM	230.0	PSE&G	1	JC-P1-2-JCC-230-002T	operation	692.0	217.68	218.63	DC	7.0
101525910	227913	CARDIFF	138.0	AE	227902	LEWIS #1	138.0	AE	1	AE_P1-3 CARD 7 XFR	operation	478.0	135.0	136.08	DC	5.19
101525917	227934	CARDIFF 2	138.0	AE	227945	LEWIS #2	138.0	AE	1	AE_P1-3 CARD 6 XFR	operation	478.0	132.83	133.9	DC	5.11
101525853	227948	LEWIS #3	69.0	AE	227918	LEWIS #1	69.0	AE	1	AE_P1-2 LEWIS #1-LEWIS #3	operation	166.0	156.21	158.74	DC	4.19
99021911	227955	CEDAR	230.0	AE	206302	28OYSTER C	230.0	JCP&L	1	PS_P1-2_2310	operation	564.0	249.54	250.49	DC	5.74

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
101525460	1	**BLE 138.0 kV - MDLE TP 138.0 kV Ckt 1**	AE **at1403r0003 (113) : To mitigate the (ACE) Middle Tap Corson#1 138 kV line (from bus 228111 to bus 228110 ckt 1) overload, it will require increasing the emergency rating of the Middle Tap to Corson#1 138 kV line by rebuilding the circuit. The rebuild will include the installation of new poles, foundations, insulators, and conductor. In addition, various terminal reinforcements are required at Corson#1.** **Project Type : FAC** **Cost : $19,000,000** **Time Estimate : 36-60 Months**	$19,000,000
99021630	2	**28OYSTER C 230.0 kV - CEDAR 230.0 kV Ckt 1**	AE **at2318r0001 (141) : To mitigate the (ACE) Cedar Oyster Creek 230 kV line (from bus 227955 to bus 206302 ckt 1) overload, it will require increasing the emergency rating of the Cedar to Oyster Creek 230 kV line by rebuilding the circuit. The rebuild will include the installation of new poles, foundations, insulators, and conductor. In addition, various terminal reinforcements are required at Cedar.** **Project Type : FAC** **Cost : $27,000,000** **Time Estimate : 36-60 Months** JCP&L **JCP&L-AF2-F-0011a (1598): Reconductor the Oyster Creek - Cedar 230 kV line (JCP&L portion only ~0.1 miles. AE portion ~14 miles)** **Upgrade terminal equipment at Oyster Creek** **Additionally, AE would need to replace their section of the limiting conductor and provide estimates for their replacement.** **Project Type : FAC** **Cost : $469,866** **Time Estimate : 24.0 Months**	$27,469,866

ID	Idx	Facility	Upgrade Description	Cost
99843584,99842524,99842523,99843583	3	CARDIFF 230.0 kV - NEWFRDM 230.0 kV Ckt 1	AE as2310r0001 (58): To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require various terminal reinforcements are required at Cardiff. Project Type : FAC Cost : $400,000 Time Estimate : 24-36 Months AE as2310r0002 (59): To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require various terminal reinforcements at Cardiff. Project Type : FAC Cost : $600,000 Time Estimate : 24-36 Months AE as2310r0003 (60): To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require various terminal reinforcements at Cardiff. Project Type : FAC Cost : $600,000 Time Estimate : 24-36 Months AE as2310r0004_af1f (61): To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require various terminal reinforcements at Cardiff. Project Type : FAC Cost : $600,000 Time Estimate : 24-36 Months AE at2310r0001 (133) : To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require increasing the emergency rating of the Cardiff to New Freedom 230 kV line by rebuilding the circuit. The rebuild will include the installation of new poles, foundations, insulators, and conductor. Project Type : FAC Cost : $63,200,000 Time Estimate : 36-60 Months AE at2310r0002_af1f (134) : To mitigate the (ACE) Cardiff New Freedom 230 kV line (from bus 227900 to bus 219100 ckt 1) overload, it will require increasing the emergency rating of the Cardiff to New Freedom 230 kV line by rebuilding the circuit. The rebuild will include the installation of new poles, foundations, insulators, and conductor. Project Type : FAC Cost : $160,000,000 Time Estimate : 60-72 Months PSE&G r_PS_I004a_NF (1941) : Upgrade New Freedom 230kV terminal equipment to achieve a SER of 1593 MVA Project Type : FAC Cost : $4,851,583 Time Estimate : 13.0 Months PSE&G r_PS_I004b_NF (1942) : Upgrade New Freedom 230kV terminal equipment to achieve a SER of 1992 MVA Project Type : FAC Cost : $35,507,396 Time Estimate : 27.0 Months	$260,907,396

ID	Idx	Facility	Upgrade Description	Cost
99021486,99021485	5	CEDAR 230.0 kV - 28OYSTER C 230.0 kV Ckt 1	AE **as2318r0001 (72)** : To mitigate the (ACE) Cedar Oyster Creek 230 kV line (from bus 227955 to bus 206302 ckt 1) overload, it will require various terminal reinforcements at Cedar. **Project Type** : FAC **Cost** : $700,000 **Time Estimate** : 24-48 Months AE **at2318r0001 (141)** : To mitigate the (ACE) Cedar Oyster Creek 230 kV line (from bus 227955 to bus 206302 ckt 1) overload, it will require increasing the emergency rating of the Cedar to Oyster Creek 230 kV line by rebuilding the circuit. The rebuild will include the installation of new poles, foundations, insulators, and conductor. In addition, various terminal reinforcements are required at Cedar. **Project Type** : FAC **Cost** : $27,000,000 **Time Estimate** : 36-60 Months JCP&L **JCP&L-AF1-S-0010a (1570)**: Reconductor the Oyster Creek - Cedar 230 kV line (JCP&L portion only ~0.1 miles. AE portion ~14 miles) Upgrade terminal equipment at Oyster Creek Additionally, AE would need to replace their section of the limiting conductor and provide estimates for their replacement. **Project Type** : FAC **Cost** : $469,866 **Time Estimate** : 12.0 Months JCP&L **JCP&L-AF1-S-0010b (1571)**: Replace disconnect switch at Oyster Creek Additionally, AE would need to replace their section of the limiting conductor and provide estimates for their replacement. **Project Type** : FAC **Cost** : $402,743 **Time Estimate** : 12.0 Months	$28,572,609
101525645,101526695	4	CARDIFF2 69.0 kV - MILL #1 69.0 kV Ckt 1	AE **ACECardMill69r01 (11)** : To mitigate the Cardiff-Mill 69 kV line overload, the 2.94 mile line will be rebuilt with an ACSS conductor capable of 2300 amp minimum and 69 kV Mill breaker 'J' will be replaced with a 3000 amp breaker . **Project Type** : FAC **Cost** : $6,100,000 **Time Estimate** : 30 to 36 Months	$6,100,000
			TOTAL COST	**$315,049,872**

11.6 Flow Gate Details

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

11.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
101525460	228110	BLE	AE	228111	MDLE TP	AE	1	AE_P4-2 AE28	breaker	482.0	99.63	100.1	DC	2.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
227842	MARINGEN	0.0743	50/50	0.0743
227928	V4-067E	0.1249	Adder	0.15
228014	PVILLEG	0.0262	50/50	0.0262
228102	**BLE#2 ST (Deactivation : 30/04/2019)**	**61.6625**	**50/50**	**61.6625**
228261	V4-054E	-0.5398	Adder	-0.64
228729	W2-030 C	0.0691	50/50	0.0691
228731	V3-036	0.1085	50/50	0.1085
902432	W2-030 E	0.6581	50/50	0.6581
924701	AB2-122 C	0.0540	Adder	0.06
924702	AB2-122 E	0.0925	Adder	0.11
930001	AB1-001 C	0.0925	50/50	0.0925
930002	AB1-001 E	0.1520	50/50	0.1520
933962	AD1-019 E	0.8689	50/50	0.8689
938781	AE1-104 C O1	49.7728	50/50	49.7728
938782	AE1-104 E O1	127.3429	50/50	127.3429
940361	AE2-020 C	5.6365	Adder	6.63
940362	AE2-020 E	26.3907	Adder	31.05
940371	AE2-021 C	5.6365	Adder	6.63
940372	AE2-021 E	26.3907	Adder	31.05
940381	AE2-022 C	3.2880	Adder	3.87
940382	AE2-022 E	15.3945	Adder	18.11
942101	AE2-222 C O1	9.8728	50/50	9.8728
942102	AE2-222 E O1	24.8012	50/50	24.8012
942381	AE2-251 C	17.8564	Adder	21.01
942382	AE2-251 E	45.6896	Adder	53.75
943732	AF1-041 E	0.2685	50/50	0.2685
945733	AF1-238 BAT	17.6307	50/50	17.6307
945743	AF1-239 BAT	4.1484	50/50	4.1484
957221	AF2-016 C	15.3084	50/50	15.3084
957222	AF2-016 E	22.9626	50/50	22.9626
957253	AF2-019 BAT	12.1320	50/50	12.1320
957263	AF2-020 BAT	2.0402	50/50	2.0402
957283	AF2-022 BAT	9.1985	50/50	9.1985
957311	AF2-025 C	0.9047	50/50	0.9047
957312	AF2-025 E	1.3571	50/50	1.3571
957323	AF2-026 BAT	5.0454	50/50	5.0454
958781	**AF2-169 C O1 (Withdrawn : 06/09/2020)**	**1.8860**	**50/50**	**1.8860**
958782	**AF2-169 E O1 (Withdrawn : 06/09/2020)**	**224.4285**	**50/50**	**224.4285**

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
999905	MARINGEN 2	0.4536	50/50	0.4536
999906	PVILLEG 2	0.1983	50/50	0.1983
WEC	WEC	0.0107	Confirmed LTF	0.0107
LGEE	LGEE	0.0194	Confirmed LTF	0.0194
CPLE	CPLE	0.0185	Confirmed LTF	0.0185
G-007A	G-007A	1.2563	Confirmed LTF	1.2563
VFT	VFT	1.7415	Confirmed LTF	1.7415
CBM-W2	CBM-W2	0.2703	Confirmed LTF	0.2703
CBM-W1	CBM-W1	0.4253	Confirmed LTF	0.4253
TVA	TVA	0.0448	Confirmed LTF	0.0448
CBM-S2	CBM-S2	0.1734	Confirmed LTF	0.1734
CBM-S1	CBM-S1	0.2726	Confirmed LTF	0.2726
MEC	MEC	0.0524	Confirmed LTF	0.0524

11.6.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
99021630	206302	28OYSTER C	JCP&L	227955	CEDAR	AE	1	AE_P4-2 AE46	breaker	564.0	152.04	153.04	DC	5.64

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
206271	28MCRC/REC	0.3823	Adder	0.45
206280	28LAKEHURS	0.2907	50/50	0.2907
206308	28LKWD G2	1.6042	50/50	1.6042
206325	**28O C GEN (Deactivation : 17/09/2018)**	**49.7078**	**50/50**	**49.7078**
206360	28O CRK C1	1.2968	50/50	1.2968
206361	28O CRK C2	0.8576	50/50	0.8576
206366	28LKWD CT1	3.2334	50/50	3.2334
206367	28LKWD CT2	3.2334	50/50	3.2334
206370	LKWD CT3	18.9567	Adder	22.3
207143	28BYD_X4-031	0.1230	Adder	0.14
227928	V4-067E	-0.3984	Adder	-0.47
228261	V4-054E	-0.7707	Adder	-0.91
228334	MANNMILG	-0.4917	Adder	-0.58
901982	W1-119 E	0.3297	Adder	0.39
901992	W1-120E	0.3297	Adder	0.39
902032	W1-124E	0.6154	Adder	0.72
903982	W3-079 E	0.3179	Adder	0.37
907082	X1-037 E	0.6205	Adder	0.73
914092	Y2-051 E	0.2351	Adder	0.28
917612	Z2-102 E	0.4848	Adder	0.57
919662	AA2-048 E	0.5058	Adder	0.6
923292	AB1-138 C	0.0742	50/50	0.0742
923293	AB1-138 E	0.7171	50/50	0.7171
923463	AB1-163 E	0.3916	Adder	0.46
924701	AB2-122 C	-0.1721	Adder	-0.2
938423	AE1-061 BAT	0.7489	50/50	0.7489
939121	AE1-142 C O1	1.2333	50/50	1.2333
939122	AE1-142 E O1	1.7747	50/50	1.7747
939303	AE1-161 BAT	4.9580	Merchant Transmission	4.9580
939981	AE1-238 C	13.4277	Adder	15.8
939982	AE1-238 E	35.2700	Adder	41.49
940161	AE2-000 C O1	50.7028	50/50	50.7028
940162	AE2-000 E O1	129.7311	50/50	129.7311
940401	AE2-024 C O1	11.5914	Adder	13.64
940402	AE2-024 E O1	54.2697	Adder	63.85
940411	AE2-025 C	5.8513	Adder	6.88
940412	AE2-025 E	27.3929	Adder	32.23
940691	AE2-056 C	0.0940	Adder	0.11
940692	AE2-056 E	0.0823	Adder	0.1
940921	AE2-081 C	0.0999	Adder	0.12
940922	AE2-081 E	0.1028	Adder	0.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944332	AF1-101 E O1	127.1882	50/50	127.1882
945571	AF1-222 C	8.3699	Adder	9.85
945572	AF1-222 E	22.0661	Adder	25.96
945733	AF1-238 BAT	23.8081	50/50	23.8081
945743	AF1-239 BAT	5.6019	50/50	5.6019
945951	AF1-260	0.0723	Adder	0.09
957223	AF2-016 BAT	82.5300	50/50	82.5300
957253	AF2-019 BAT	10.2420	50/50	10.2420
957263	AF2-020 BAT	2.9146	50/50	2.9146
957273	AF2-021 BAT	24.2164	50/50	24.2164
957283	AF2-022 BAT	11.8285	50/50	11.8285
957313	AF2-025 BAT	5.6394	50/50	5.6394
957323	AF2-026 BAT	6.5052	50/50	6.5052
957781	AF2-072 C	0.9894	Adder	2.2
957782	AF2-072 E	0.9894	Adder	2.2
959151	AF2-206 C O1	0.2511	Adder	0.56
959152	AF2-206 E O1	0.3466	Adder	0.77
999905	MARINGEN 2	-0.9590	Adder	-1.13
999906	PVILLEG 2	-0.4089	Adder	-0.48
NEWTON	NEWTON	0.0043	Confirmed LTF	0.0043
FARMERCITY	FARMERCITY	0.0003	Confirmed LTF	0.0003
G-007A	G-007A	10.2133	Confirmed LTF	10.2133
VFT	VFT	11.2875	Confirmed LTF	11.2875
CALDERWOOD	CALDERWOOD	0.0084	Confirmed LTF	0.0084
CBM-W1	CBM-W1	0.0125	Confirmed LTF	0.0125
PRAIRIE	PRAIRIE	0.0155	Confirmed LTF	0.0155
CHEOAH	CHEOAH	0.0085	Confirmed LTF	0.0085
EDWARDS	EDWARDS	0.0007	Confirmed LTF	0.0007
TILTON	TILTON	0.0013	Confirmed LTF	0.0013
GIBSON	GIBSON	0.0016	Confirmed LTF	0.0016
BLUEG	BLUEG	0.0052	Confirmed LTF	0.0052
TRIMBLE	TRIMBLE	0.0017	Confirmed LTF	0.0017
CATAWBA	CATAWBA	0.0101	Confirmed LTF	0.0101

11.6.3 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
99843583	227900	CARDIFF	AE	219100	NEWFRDM	PSE&G	1	AE_P7-1 AE13TOWER	tower	692.0	258.09	259.19	DC	7.76

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
206325	**28O C GEN (Deactivation : 17/09/2018)**	**32.6567**	**50/50**	**32.6567**
206360	28O CRK C1	0.8520	50/50	0.8520
206361	28O CRK C2	0.5634	50/50	0.5634
227842	MARINGEN	0.2545	50/50	0.2545
227927	V4-067C	0.0716	50/50	0.0716
227928	V4-067E	0.6858	50/50	0.6858
228014	PVILLEG	0.0874	50/50	0.0874
228102	**BLE#2 ST (Deactivation : 30/04/2019)**	**46.9037**	**50/50**	**46.9037**
228712	V2-041E	0.2825	Adder	0.33
228728	W1-130C	0.2412	50/50	0.2412
228729	W2-030 C	0.2436	50/50	0.2436
228731	V3-036	0.3687	50/50	0.3687
228732	V1-021 C	0.0793	50/50	0.0793
902092	W1-130E	2.2769	50/50	2.2769
902432	W2-030 E	2.3218	50/50	2.3218
923532	AB1-169AC	219.6975	50/50	219.6975
924531	AB2-102 C	24.4647	Adder	28.78
924532	AB2-102 E	0.5437	Adder	0.64
924701	AB2-122 C	0.2963	50/50	0.2963
924702	AB2-122 E	0.5079	50/50	0.5079
930001	AB1-001 C	0.3230	50/50	0.3230
930002	AB1-001 E	0.5309	50/50	0.5309
933962	AD1-019 E	2.9538	50/50	2.9538
938421	AE1-061 C	1.0985	50/50	1.0985
938422	AE1-061 E	1.0985	50/50	1.0985
938781	AE1-104 C O1	37.8598	50/50	37.8598
938782	AE1-104 E O1	96.8637	50/50	96.8637
939121	AE1-142 C O1	0.6819	Adder	0.8
939122	AE1-142 E O1	0.9812	Adder	1.15
939501	AE1-179 C O1	2.8251	Adder	3.32
939502	AE1-179 E O1	1.9937	Adder	2.35
940001	AE1-240 C O1	2.3528	Adder	2.77
940002	AE1-240 E O1	1.6794	Adder	1.98
940161	AE2-000 C O1	33.3104	50/50	33.3104
940162	AE2-000 E O1	85.2299	50/50	85.2299
940361	AE2-020 C	50.6537	50/50	50.6537
940362	AE2-020 E	237.1645	50/50	237.1645
940371	AE2-021 C	50.6537	50/50	50.6537
940372	AE2-021 E	237.1645	50/50	237.1645
940381	AE2-022 C	29.5480	50/50	29.5480

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
940382	AE2-022 E	138.3460	50/50	138.3460
942101	AE2-222 C O1	33.2378	50/50	33.2378
942102	AE2-222 E O1	83.4952	50/50	83.4952
942381	AE2-251 C	160.4701	50/50	160.4701
942382	AE2-251 E	410.5979	50/50	410.5979
943732	AF1-041 E	0.9497	50/50	0.9497
944332	AF1-101 E O1	83.5593	50/50	83.5593
945731	AF1-238 C	4.3849	Adder	5.16
945732	AF1-238 E	6.5773	Adder	7.74
945741	AF1-239 C	1.0317	Adder	1.21
945742	AF1-239 E	1.5476	Adder	1.82
957221	AF2-016 C	47.9364	50/50	47.9364
957222	AF2-016 E	71.9046	50/50	71.9046
957251	AF2-019 C	3.7059	50/50	3.7059
957252	AF2-019 E	5.5589	50/50	5.5589
957271	AF2-021 C	4.0931	50/50	4.0931
957272	AF2-021 E	6.1397	50/50	6.1397
957281	AF2-022 C	1.2445	Adder	2.76
957282	AF2-022 E	1.8667	Adder	4.14
957311	AF2-025 C	3.1057	50/50	3.1057
957312	AF2-025 E	4.6585	50/50	4.6585
957321	AF2-026 C	0.6763	Adder	1.5
957322	AF2-026 E	1.0145	Adder	2.25
958781	**AF2-169 C O1 (Withdrawn : 06/09/2020)**	**1.4346**	**50/50**	**1.4346**
958782	**AF2-169 E O1 (Withdrawn : 06/09/2020)**	**170.7122**	**50/50**	**170.7122**
958811	AF2-172 C	0.1455	Adder	0.32
958812	AF2-172 E	0.2375	Adder	0.53
999905	MARINGEN 2	1.5533	50/50	1.5533
999906	PVILLEG 2	0.6623	50/50	0.6623
NEWTON	NEWTON	0.0946	Confirmed LTF	0.0946
FARMERCITY	FARMERCITY	0.0050	Confirmed LTF	0.0050
G-007A	G-007A	6.3126	Confirmed LTF	6.3126
VFT	VFT	6.3533	Confirmed LTF	6.3533
CALDERWOOD	CALDERWOOD	0.0477	Confirmed LTF	0.0477
PRAIRIE	PRAIRIE	0.2299	Confirmed LTF	0.2299
CHEOAH	CHEOAH	0.0480	Confirmed LTF	0.0480
EDWARDS	EDWARDS	0.0304	Confirmed LTF	0.0304
TILTON	TILTON	0.0548	Confirmed LTF	0.0548
GIBSON	GIBSON	0.0475	Confirmed LTF	0.0475
BLUEG	BLUEG	0.1510	Confirmed LTF	0.1510
TRIMBLE	TRIMBLE	0.0484	Confirmed LTF	0.0484
CATAWBA	CATAWBA	0.0361	Confirmed LTF	0.0361

11.6.4 Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
101526695	227911	CARDIFF2	AE	227922	MILL #1	AE	1	AE_P7-1 AE3TOWER	tower	239.0	107.73	109.25	DC	3.62

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
227927	V4-067C	0.0455	50/50	0.0455
227928	V4-067E	0.4365	50/50	0.4365
924701	AB2-122 C	0.1895	50/50	0.1895
924702	AB2-122 E	0.3249	50/50	0.3249
940361	AE2-020 C	5.5144	Adder	6.49
940362	AE2-020 E	25.8188	Adder	30.38
940371	AE2-021 C	5.5144	Adder	6.49
940372	AE2-021 E	25.8188	Adder	30.38
940381	AE2-022 C	3.2167	Adder	3.78
940382	AE2-022 E	15.0610	Adder	17.72
942381	AE2-251 C	17.4695	Adder	20.55
942382	AE2-251 E	44.6995	Adder	52.59
957223	AF2-016 BAT	12.0729	Merchant Transmission	12.0729
957253	AF2-019 BAT	4.1504	50/50	4.1504
957283	AF2-022 BAT	1.5489	Merchant Transmission	1.5489
957313	AF2-025 BAT	3.6164	50/50	3.6164
957323	AF2-026 BAT	0.8529	Merchant Transmission	0.8529
999905	MARINGEN 2	-0.5781	Adder	-0.68
999906	PVILLEG 2	-0.0865	Adder	-0.1
WEC	WEC	0.0057	Confirmed LTF	0.0057
LGEE	LGEE	0.0103	Confirmed LTF	0.0103
CPLE	CPLE	0.0119	Confirmed LTF	0.0119
VFT	VFT	0.0064	Confirmed LTF	0.0064
CBM-W2	CBM-W2	0.1474	Confirmed LTF	0.1474
CBM-W1	CBM-W1	0.2252	Confirmed LTF	0.2252
TVA	TVA	0.0252	Confirmed LTF	0.0252
CBM-S2	CBM-S2	0.1040	Confirmed LTF	0.1040
CBM-S1	CBM-S1	0.1534	Confirmed LTF	0.1534
G-007	G-007	0.0364	Confirmed LTF	0.0364
MEC	MEC	0.0286	Confirmed LTF	0.0286

11.6.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
99021486	227955	CEDAR	AE	206302	28OYSTER C	JCP&L	1	AE_P4-2 AE6	breaker	564.0	250.1	251.04	DC	5.66

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
227842	MARINGEN	0.1858	50/50	0.1858
227927	V4-067C	0.0496	50/50	0.0496
227928	V4-067E	0.4754	50/50	0.4754
228014	PVILLEG	0.0644	50/50	0.0644
228102	**BLE#2 ST (Deactivation : 30/04/2019)**	**35.9501**	**50/50**	**35.9501**
228202	CUMB CT	1.6611	50/50	1.6611
228203	P06	1.7600	50/50	1.7600
228261	V4-054E	0.5700	Adder	0.67
228334	MANNMILG	0.5062	Adder	0.6
228343	**QUINTN#1 (Deactivation : 26/04/2020)**	**0.1250**	**Adder**	**0.15**
228357	V2-046E	0.7749	Adder	0.91
228712	V2-041E	0.3160	Adder	0.37
228721	V2-035E	0.0979	Adder	0.12
228729	W2-030 C	0.1758	50/50	0.1758
228731	V3-036	0.2699	50/50	0.2699
228732	V1-021 C	0.0689	50/50	0.0689
902092	W1-130E	0.6657	Adder	0.78
902432	W2-030 E	1.6754	50/50	1.6754
919663	AA2-048 BAT	0.5909	Merchant Transmission	0.5909
923532	AB1-169AC	64.9451	Adder	76.41
924531	AB2-102 C	34.1437	50/50	34.1437
924532	AB2-102 E	0.6449	Adder	0.76
924701	AB2-122 C	0.2053	50/50	0.2053
924702	AB2-122 E	0.3520	50/50	0.3520
930001	AB1-001 C	0.2897	50/50	0.2897
930002	AB1-001 E	0.4761	50/50	0.4761
933962	AD1-019 E	2.1622	50/50	2.1622
938421	AE1-061 C	0.3212	Adder	0.38
938422	AE1-061 E	0.3212	Adder	0.38
938781	AE1-104 C O1	29.0182	50/50	29.0182
938782	AE1-104 E O1	74.2427	50/50	74.2427
938871	AE1-115 C	0.6100	Adder	0.72
938872	AE1-115 E	0.6100	Adder	0.72
939121	AE1-142 C O1	-1.0248	Adder	-1.21
939301	AE1-161 C	1.6883	Adder	1.99
939302	AE1-161 E	2.5324	Adder	2.98
939501	AE1-179 C O1	3.6491	Adder	4.29
939502	AE1-179 E O1	2.5752	Adder	3.03
939931	AE1-229 C O1	6.5740	Adder	7.73
939932	AE1-229 E O1	4.4541	Adder	5.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
940001	AE1-240 C O1	3.0354	Adder	3.57
940002	AE1-240 E O1	2.1666	Adder	2.55
940361	AE2-020 C	35.3583	50/50	35.3583
940362	AE2-020 E	165.5502	50/50	165.5502
940371	AE2-021 C	35.3583	50/50	35.3583
940372	AE2-021 E	165.5502	50/50	165.5502
940381	AE2-022 C	20.6257	50/50	20.6257
940382	AE2-022 E	96.5710	50/50	96.5710
940691	AE2-056 C	-0.0936	Adder	-0.11
940921	AE2-081 C	-0.0995	Adder	-0.12
942101	AE2-222 C O1	24.4216	50/50	24.4216
942102	AE2-222 E O1	61.3484	50/50	61.3484
942381	AE2-251 C	112.0145	50/50	112.0145
942382	AE2-251 E	286.6136	50/50	286.6136
943732	AF1-041 E	0.6928	50/50	0.6928
945431	AF1-208 C O1	2.2640	Adder	2.66
945432	AF1-208 E O1	1.5093	Adder	1.78
945731	AF1-238 C	5.4812	Adder	6.45
945732	AF1-238 E	8.2218	Adder	9.67
945741	AF1-239 C	1.2897	Adder	1.52
945742	AF1-239 E	1.9345	Adder	2.28
945971	AF1-262	0.0711	Adder	0.08
957221	AF2-016 C	33.6444	50/50	33.6444
957222	AF2-016 E	50.4666	50/50	50.4666
957251	AF2-019 C	3.2080	50/50	3.2080
957252	AF2-019 E	4.8120	50/50	4.8120
957261	AF2-020 C	0.3892	Adder	0.86
957262	AF2-020 E	0.5837	Adder	1.3
957271	AF2-021 C	9.8923	50/50	9.8923
957272	AF2-021 E	14.8385	50/50	14.8385
957281	AF2-022 C	3.0768	50/50	3.0768
957282	AF2-022 E	4.6152	50/50	4.6152
957291	AF2-023 C O1	0.6469	Adder	1.44
957292	AF2-023 E O1	0.9704	Adder	2.15
957311	AF2-025 C	2.2648	50/50	2.2648
957312	AF2-025 E	3.3972	50/50	3.3972
957321	AF2-026 C	0.7777	Adder	1.73
957322	AF2-026 E	1.1665	Adder	2.59
957641	AF2-058	0.1218	Adder	0.27
957783	AF2-072 BAT	2.3068	Merchant Transmission	2.3068
958781	**AF2-169 C O1 (Withdrawn : 06/09/2020)**	**1.0995**	**50/50**	**1.0995**
958782	**AF2-169 E O1 (Withdrawn : 06/09/2020)**	**130.8450**	**50/50**	**130.8450**
958811	AF2-172 C	0.1987	Adder	0.44
958812	AF2-172 E	0.3243	Adder	0.72
959111	AF2-202 C	0.0555	Adder	0.12
959112	AF2-202 E	0.0760	Adder	0.17
999905	MARINGEN 2	1.1338	50/50	1.1338
999906	PVILLEG 2	0.4881	50/50	0.4881
WEC	WEC	0.0063	Confirmed LTF	0.0063
LGEE	LGEE	0.0126	Confirmed LTF	0.0126

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CPLE	CPLE	0.0404	Confirmed LTF	0.0404
CBM-W2	CBM-W2	0.2293	Confirmed LTF	0.2293
NY	NY	0.6896	Confirmed LTF	0.6896
CBM-W1	CBM-W1	0.2127	Confirmed LTF	0.2127
TVA	TVA	0.0462	Confirmed LTF	0.0462
O-066	O-066	12.5530	Confirmed LTF	12.5530
CBM-S2	CBM-S2	0.3006	Confirmed LTF	0.3006
CBM-S1	CBM-S1	0.2641	Confirmed LTF	0.2641
G-007	G-007	4.4689	Confirmed LTF	4.4689
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
MEC	MEC	0.0365	Confirmed LTF	0.0365

11.7 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

Queue Number	Project Name	Status
AA2-048	Allenwood-Larrabee 34kV	Engineering and Procurement
AB1-001	Absecon 12 kV	Engineering and Procurement
AB1-138	Navy 34.5kV	In Service
AB1-163	Glidden-Van Hiseville 34.5 kV	Engineering and Procurement
AB1-169A	Minotola 138 kV	Withdrawn
AB2-102	Cumberland 230kV	Active
AB2-122	Egg Harbor 12kV	Engineering and Procurement
AD1-019	Ontario 23 kV	Active
AE1-061	Minotola 12 kV	Active
AE1-104	BL England 138 kV	Active
AE1-115	Churchtown 69 kV	Active
AE1-142	Manitou-Pleasant Plains 34.5 kV	Under Construction
AE1-161	Landis 138 kV	Active
AE1-179	South Millville-Newport 69 kV	Active
AE1-229	Deepwater-Upper Pittsgrove 138 kV	Active
AE1-238	Oceanview Wind 230 kV	Active
AE1-240	Carlls Corner-Sherman Avenue 69 kV	Active
AE2-000	N/A	N/A
AE2-020	Cardiff 230 kV I	Active
AE2-021	Cardiff 230 kV II	Active
AE2-022	Cardiff 230 kV III	Active
AE2-024	Larrabee 230 kV I	Active
AE2-025	Larrabee 230 kV II	Active
AE2-056	Howell 12.47 kV Solar I	Engineering and Procurement
AE2-081	Howell 12.47 kV Solar II	Engineering and Procurement
AE2-222	Higbee 69 kV	Active
AE2-251	Cardiff 230 kV	Active
AF1-041	Absecon 12.47 kV	In Service
AF1-101	Oyster Creek 230 kV III	Active
AF1-208	Quinton-Roadstown 69 kV	Active
AF1-222	Oceanview Wind 2 230 kV	Active
AF1-238	Sherman Ave. 69 kV	Active
AF1-239	Sherman Ave-Vineland 69 kV	Active
AF1-260	Allenwood-Larrabee 2 34.5 kV	Active
AF1-262	Upper Pittsgrove 12 kV	Active
AF2-016	Lewis 138 kV	Active
AF2-019	Rio Grande 69 kV	Active
AF2-020	Carll's Corner 69 kV	Active
AF2-021	Cedar 69 kV	Active

Queue Number	Project Name	Status
AF2-022	Cumberland 138 kV	Active
AF2-023	Churchtown 69 kV	Active
AF2-025	Missouri Ave 69 kV	Active
AF2-026	Sherman Ave 138 kV	Active
AF2-058	Fairton 12 kV	Active
AF2-072	Larrabee 230 kV	Active
AF2-169	BL England 138 kV	Withdrawn
AF2-172	Whibco 12 kV	Active
AF2-202	Landis 12 V	Active
AF2-206	Larrabee-Point Pleasant 34.5 kV	Active
V1-021	Cape May County 12kV	In Service
V2-035	Pittsgrove	In Service
V2-041	Clayville 12kV	In Service
V2-046	Pilesgrove Township 12kV	In Service
V3-036	Ontario 23kV	In Service
V4-054	Fairfield Township 12kV	In Service
V4-067	Cates Road Egg Harbor Township 12kV	In Service
W1-119	Pemberton Township 1 34.5 kV	In Service
W1-120	Pemberton Township 2 34.5 kV	In Service
W1-124	Tinton Falls 34.5kV	In Service
W1-130	Vine Road 12kV	In Service
W2-030	Egg Harbor Township	In Service
W3-079	Allenwood-Larabee 34.5kV	In Service
X1-037	Howell	In Service
X4-031	Bennett-Farmingdale 34kV	In Service
Y2-051	Brick-Lane Mill 34.5kV	In Service
Z2-102	Argonne-New Lisbon 34.5kV	In Service

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
AE_P7-1 AE15TOWER	CONTINGENCY 'AE_P7-1 AE15TOWER' DISCONNECT BRANCH FROM BUS 227901 TO BUS 227949 CKT 1 /* DOR TO LEW 138 KV DISCONNECT BRANCH FROM BUS 228002 TO BUS 227900 CKT 1 /* ORCH TO CARD 230 KV END
AE_P4-2 AE7	CONTINGENCY 'AE_P4-2 AE7' /*CARDIFF TO NEW FREEDOM BREAKER V DISCONNECT BRANCH FROM BUS 219100 TO BUS 227900 CKT 1 /*NEW FREEDOM TO CARDIFF 230 230 DISCONNECT BRANCH FROM BUS 227900 TO BUS 227910 CKT 1 /*CARDIFF CARDIFF 230 69 T1 END
AE_P4-2 AE6	CONTINGENCY 'AE_P4-2 AE6' /*CARDIFF TO NEW FREEDOM BREAKER W DISCONNECT BRANCH FROM BUS 219100 TO BUS 227900 CKT 1 /*NEW FREEDOM TO CARDIFF 230 230 DISCONNECT BRANCH FROM BUS 227900 TO BUS 227911 CKT 1 /*CARDIFF CARDIFF 230 69 T2 END
AE_P7-1 AE13TOWER	CONTINGENCY 'AE_P7-1 AE13TOWER' DISCONNECT BRANCH FROM BUS 228500 TO BUS 228502 CKT 1 /* LANDIS TO MINO 138 KV DISCONNECT BRANCH FROM BUS 228002 TO BUS 227900 CKT 1 /* ORCH TO CARD 230 KV END
AE_P1-3 CARD 7 XFR	CONTINGENCY 'AE_P1-3 CARD 7 XFR' OPEN LINE FROM BUS 227900 TO BUS 227934 CIRCUIT 1 / END
AE_P4-2 AE28	CONTINGENCY 'AE_P4-2 AE28' /*ENGLAND TO MERION CITY BREAKER C DISCONNECT BRANCH FROM BUS 228110 TO BUS 228197 CKT 1 /*ENGLAND MERION 138 138 DISCONNECT BRANCH FROM BUS 228110 TO BUS 227905 CKT 1 /*ENGLAND #1 SCULL 138 138 END
JC-P1-2-JCC-230-002T	CONTINGENCY 'JC-P1-2-JCC-230-002T' /** OYSTER CREEK - CEDAR (S2045) 230 KV DISCONNECT BRANCH FROM BUS 206302 TO BUS 227955 CKT 1 /* 28OYSTER C 230 CEDAR 230 END

Contingency Name	Contingency Definition
AE_P4-2 AE46	CONTINGENCY 'AE_P4-2 AE46' /*ORCHARD 230 BUS BREAKER D DISCONNECT BRANCH FROM BUS 228002 TO BUS 228310 CKT 1 /* ORCHARD TO CHURCHTOWN 230 230 DISCONNECT BRANCH FROM BUS 200063 TO BUS 228002 CKT 1 /*ORCHARD ORCHARD 500 230 T1 END
AE_P4-2 AE9	CONTINGENCY 'AE_P4-2 AE9' /*CARDIFF TO ORCHARD BREAKER NEW1 DISCONNECT BRANCH FROM BUS 228002 TO BUS 227900 CKT 1 /* CARDIFF TO ORCHARD 230 230 DISCONNECT BRANCH FROM BUS 227900 TO BUS 227934 CKT 1 /*CARDIFF CARDIFF 230 138 T7 END
AE_P4-2 AE45	CONTINGENCY 'AE_P4-2 AE45' /*ORCHARD 230 BUS BREAKER E DISCONNECT BRANCH FROM BUS 228002 TO BUS 227900 CKT 1 /* ORCHARD TO CARDIFF 230 230 DISCONNECT BRANCH FROM BUS 200063 TO BUS 228002 CKT 1 /*ORCHARD ORCHARD 500 230 T1 END
AE_P7-1 AE3TOWER	CONTINGENCY 'AE_P7-1 AE3TOWER' DISCONNECT BRANCH FROM BUS 227900 TO BUS 227955 CKT 1 /* CARDIFF TO CEDAR 230 KV DISCONNECT BRANCH FROM BUS 227913 TO BUS 227902 CKT 1 /* CARDIFF TO LEWIS 138 KV END
AE_P1-2 LEWIS #1-LEWIS #3	CONTINGENCY 'AE_P1-2 LEWIS #1-LEWIS #3' DISCONNECT BRANCH FROM BUS 227902 TO BUS 227949 CKT 1 END
AE_P1-3 CARD 6 XFR	CONTINGENCY 'AE_P1-3 CARD 6 XFR' OPEN LINE FROM BUS 227900 TO BUS 227913 CIRCUIT 1 / END
PS_P1-2_2310	CONTINGENCY 'PS_P1-2_2310' /* NEW FREEDOM TO CARDIFF TIELINE TRIP LINE FROM BUS 219100 TO BUS 227900 CKT 1 /* NEW FREEDOM TO CARDIFF END

12 Short Circuit Analysis

The following Breakers are overdutied

None

13 Affected Systems

None

14 Attachment 1: One Line Diagram