Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-254

SALEM-WOODSTOWN 69 KV

46.67 MW Capacity / 70 MW Energy

January 2021

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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 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.

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 Solar generating facility located in Salem County, New Jersey. The installed facilities will have a total capability of 38 MW with 25.3 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-254
Project Name	SALEM-WOODSTOWN 69 KV
State	New Jersey
County	Salem
Transmission Owner	AEC
MFO	38
MWE	38
MWC	25.3
Fuel	Solar
Basecase Study Year	2024

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

AG1-254 will interconnect with the AEC transmission system tapping the 69 kV line between Mannington Mill and Woodtown #2 line.

5 Cost Summary

The AG1-254 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$6,400,000
Total System Network Upgrade Costs	$1,200,000
Total Costs	$7,600,000

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 2016-36, 2016-25 I.R.B. (6/20/2016). 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: Design and construct a new 3-breaker ring bus substation. Two terminals will be designated for the Salem-Woodstown 69 kV line, with the third terminal being designated for the interconnecting generator.

Estimate Assumptions:

Developer responsible for land purchase for the substation, price is not included.
Site clearing and grading performed by Developer.
Assumed Greenfield Substation Site Area to develop of 250' x 250'
Relaying and communication adjustments cost not included.

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

Description	Total Cost
Total Physical Interconnection Costs	$6,400,000

7 Schedule

Construction Time: 36 to 48 months

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 Meteorological Data Reporting Requirements

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

- Back Panel temperature (Fahrenheit) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Irradiance (Watts/meter2) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Ambient air temperature (Fahrenheit) - (Accepted, not required)
- Wind speed (meters/second) - (Accepted, not required)
- Wind direction (decimal degrees from true north) - (Accepted, not required)

10.3 Interconnected Transmission Owner Requirements

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

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 AG1-254 was evaluated as a 38 MW (Capacity 25.3 MW) injection tapping the 69 kV line between Mannington Mill and Woodtown #2 line in the AEC area. Project AG1-254 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-254 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)

None

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
166740034	228218	LAUREL	69.0	AE	228360	WOODTWN 2	69.0	AE	1	AE_P7-1 AE7TOWER	tower	107.0	106.84	108.87	DC	2.18
166740035	228218	LAUREL	69.0	AE	228360	WOODTWN 2	69.0	AE	1	AE_P7-1 AE18TOWER	tower	107.0	104.52	106.56	DC	2.18
165313860	228313	BRIDGPRT	230.0	AE	228401	MCKLTON	230.0	AE	1	JC-P7-1-JCC-230-13	tower	804.0	123.33	124.46	DC	9.7

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
167648170	214277	RICHMOND 35	230.0	PECO	214012	WANEETA3	230.0	PECO	1	Base Case	operation	760.0	132.34	132.8	DC	8.01
167903347	228222	US SLC T	69.0	AE	939500	AE1-179 TAP	69.0	AE	1	CARLL-240 TAP-SHERM-B	operation	89.0	130.23	131.58	DC	2.67
167903488	228252	CRLS CR2	69.0	AE	940000	AE1-240 TAP	69.0	AE	1	AE_P1-2 ORCH-CUMB	operation	93.0	115.12	115.37	DC	3.0

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
167903438	228311	CHAMBERS	230.0	AE	228312	PEDRKTWN	230.0	AE	1	AE_P1-2 ORCHARD XF	operation	551.0	118.42	120.71	DC	12.99
167903450	228313	BRIDGPRT	230.0	AE	228401	MCKLTON	230.0	AE	1	AE_P1-2 ORCHARD XF	operation	804.0	118.59	120.21	DC	12.92
167903451	228313	BRIDGPRT	230.0	AE	228401	MCKLTON	230.0	AE	1	Base Case	operation	650.0	117.77	119.16	DC	9.46
167903341	228360	WOODTWN 2	69.0	AE	228332	WOODTWN1	69.0	AE	1	CARLL-240 TAP-SHERM-B	operation	74.0	109.57	129.47	DC	14.73
167903343	228360	WOODTWN 2	69.0	AE	228332	WOODTWN1	69.0	AE	1	Base Case	operation	74.0	86.51	105.24	DC	13.86
169650238	939500	AE1-179 TAP	69.0	AE	228228	SO MVLLE	69.0	AE	1	CARLL-240 TAP-SHERM-A	operation	89.0	163.95	165.3	DC	2.67
169650283	940000	AE1-240 TAP	69.0	AE	228226	SHRMAN#2	69.0	AE	1	AE_P1-2 ORCH-CUMB	operation	93.0	152.44	152.69	DC	3.0
169650285	940000	AE1-240 TAP	69.0	AE	228226	SHRMAN#2	69.0	AE	1	Base Case	operation	82.0	121.46	123.2	DC	3.18

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
166740034,166740035	1	LAUREL 69.0 kV - WOODTWN2 69.0 kV Ckt 1	**as0740r0001_af1f (36) : To mitigate the (ACE) Laurel to Woodstown 69 kV line (from bus 228218 to bus 228360 ckt 1) overload, it will require reinforcement of terminal equipment at Woodstown #2 substation.** **Project Type : FAC** **Cost : $100,000** **Time Estimate : 12-24 Months** **as0740r0002_af1f (37) : To mitigate the (ACE) Laurel to Woodstown 69 kV line (from bus 228218 to bus 228360 ckt 1) overload, it will require reinforcement of terminal equipment at Woodstown #2 substation.** **Project Type : FAC** **Cost : $100,000** **Time Estimate : 12-24 Months**	$200,000
165313860	2	BRIDGPRT 230.0 kV - MCKLTON 230.0 kV Ckt 1	**as2315r0001_af1f (73) : To mitigate the (ACE) Bridgeport to Mickleton 230 kV line (from bus 228313 to bus 228401 ckt 1) overload, terminal reinforcement is required at both substation.** **Project Type : FAC** **Cost : $1,000,000** **Time Estimate : 12-24 Months**	$1,000,000
			TOTAL COST	**$1,200,000**

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
166740034	228218	LAUREL	AE	228360	WOODTWN2	AE	1	AE_P7-1 AE7TOWER	tower	107.0	106.84	108.87	DC	2.18

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
228102	BLE#2 ST (Deactivation : 30/04/2019)	7.3994	Adder	8.71
228200	CARL#1CT	1.4680	50/50	1.4680
228201	CARL#2CT	1.5539	50/50	1.5539
228251	CARLLS#4	1.4691	50/50	1.4691
228260	V4-054C	0.1811	50/50	0.1811
228261	V4-054E	1.8731	50/50	1.8731
228343	QUINTN#1 (Deactivation : 26/04/2020)	0.1843	50/50	0.1843
228702	WEST CT	0.4211	50/50	0.4211
228712	V2-041E	0.1770	Adder	0.21
228717	S121	0.7969	50/50	0.7969
228727	W2-039G	0.9241	50/50	0.9241
924531	AB2-102 C	9.8895	Adder	11.63
924532	AB2-102 E	0.2198	Adder	0.26
938781	AE1-104 C O1	6.8582	Adder	8.07
938782	AE1-104 E O1	17.5440	Adder	20.64
939501	AE1-179 C O1	6.2209	50/50	6.2209
939502	AE1-179 E O1	4.3902	50/50	4.3902
940001	AE1-240 C O1	5.4018	50/50	5.4018
940002	AE1-240 E O1	3.8558	50/50	3.8558
945431	AF1-208 C O1	6.9185	50/50	6.9185
945432	AF1-208 E O1	4.6123	50/50	4.6123
945731	AF1-238 C O1	6.1312	50/50	6.1312
945732	AF1-238 E O1	9.1968	50/50	9.1968
945741	AF1-239 C	1.4426	50/50	1.4426
945742	AF1-239 E	2.1640	50/50	2.1640
957251	AF2-019 C	0.3886	Adder	0.46
957252	AF2-019 E	0.5829	Adder	0.69
957261	AF2-020 C	2.4594	50/50	2.4594
957262	AF2-020 E	3.6892	50/50	3.6892
958811	AF2-172 C (Withdrawn : 01/14/2021)	0.8897	50/50	0.8897
958812	AF2-172 E (Withdrawn : 01/14/2021)	1.4515	50/50	1.4515
961621	AG1-001 C	2.5413	50/50	2.5413
961622	AG1-001 E	4.1463	50/50	4.1463
962801	AG1-129 C O1	7.7663	50/50	7.7663
962802	AG1-129 E O1	5.1775	50/50	5.1775
964003	AG1-254 BAT	2.1793	50/50	2.1793
964371	AG1-299 C	0.0587	Adder	0.13
964372	AG1-299 E	0.0391	Adder	0.09

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964381	AG1-300 C	0.0978	Adder	0.22
964382	AG1-300 E	0.0652	Adder	0.14
CALDERWOOD	CALDERWOOD	0.0134	Confirmed LTF	0.0134
NY	NY	0.0155	Confirmed LTF	0.0155
PRAIRIE	PRAIRIE	0.0697	Confirmed LTF	0.0697
O-066	O-066	0.1817	Confirmed LTF	0.1817
CHEOAH	CHEOAH	0.0135	Confirmed LTF	0.0135
COTTONWOOD	COTTONWOOD	0.0567	Confirmed LTF	0.0567
G-007	G-007	0.0063	Confirmed LTF	0.0063
HAMLET	HAMLET	0.0156	Confirmed LTF	0.0156
GIBSON	GIBSON	0.0147	Confirmed LTF	0.0147
BLUEG	BLUEG	0.0469	Confirmed LTF	0.0469
TRIMBLE	TRIMBLE	0.0150	Confirmed LTF	0.0150
CATAWBA	CATAWBA	0.0094	Confirmed LTF	0.0094

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
165313860	228313	BRIDGPRT	AE	228401	MCKLTON	AE	1	JC-P7-1-JCC-230-13	tower	804.0	123.33	124.46	DC	9.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
219137	THOSOLAR C (Deactivation : 01/06/2015)	-0.0338	Adder	-0.04
227801	ONTC&DCT	3.9041	Adder	4.59
227842	MARINGEN	0.7884	Adder	0.93
227928	V4-067E	0.1604	Adder	0.19
228102	BLE#2 ST (Deactivation : 30/04/2019)	17.4847	Adder	20.57
228200	CARL#1CT	0.9069	50/50	0.9069
228201	CARL#2CT	0.9599	50/50	0.9599
228251	CARLLS#4	0.9103	50/50	0.9103
228260	V4-054C	0.1132	50/50	0.1132
228261	V4-054E	1.1705	50/50	1.1705
228304	LOGAN	24.5820	50/50	24.5820
228306	PCLP STM	6.0471	50/50	6.0471
228307	PCLP GT	6.0471	50/50	6.0471
228309	CCLP NUG	17.9285	50/50	17.9285
228343	QUINTN#1 (Deactivation : 26/04/2020)	0.4598	50/50	0.4598
228351	V2-046C	0.2768	50/50	0.2768
228357	V2-046E	2.7218	50/50	2.7218
228712	V2-041E	0.3407	Adder	0.4
228720	V2-035C	0.0241	50/50	0.0241
228721	V2-035E	0.0684	50/50	0.0684
902092	W1-130E	0.5445	Adder	0.64
902432	W2-030 E	0.6188	Adder	0.73
924531	AB2-102 C	32.8797	Adder	38.68
924532	AB2-102 E	0.7307	Adder	0.86
924702	AB2-122 E (Withdrawn : 05/05/2020)	0.1203	Adder	0.14
930002	AB1-001 E	0.1407	Adder	0.17
933962	AD1-019 E	0.7687	Adder	0.9
938421	AE1-061 C	0.2627	Adder	0.31
938422	AE1-061 E	0.2627	Adder	0.31
938781	AE1-104 C O1	16.2059	Adder	19.07
938782	AE1-104 E O1	41.4564	Adder	48.77
938871	AE1-115 C	3.1707	50/50	3.1707
939301	AE1-161 C	1.8765	Adder	2.21
939302	AE1-161 E	2.8147	Adder	3.31
939501	AE1-179 C O1	4.8710	Adder	5.73
939502	AE1-179 E O1	3.4375	Adder	4.04
939931	AE1-229 C O1	25.4513	50/50	25.4513

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939932	AE1-229 E O1	17.2440	50/50	17.2440
940001	AE1-240 C O1	4.1148	Adder	4.84
940002	AE1-240 E O1	2.9371	Adder	3.46
940161	AE2-000 C O1	20.8724	Adder	24.56
940162	AE2-000 E O1	53.4052	Adder	62.83
940361	AE2-020 C	10.2181	Adder	12.02
940362	AE2-020 E	47.8421	Adder	56.28
940371	AE2-021 C	10.2181	Adder	12.02
940372	AE2-021 E	47.8421	Adder	56.28
940381	AE2-022 C	5.9606	Adder	7.01
940382	AE2-022 E	27.9079	Adder	32.83
942101	AE2-222 C	8.5219	Adder	10.03
942102	AE2-222 E	21.8052	Adder	25.65
942381	AE2-251 C	32.3709	Adder	38.08
942382	AE2-251 E	82.8279	Adder	97.44
943732	AF1-041 E	0.2406	Adder	0.28
944331	AF1-101 C O1	20.4628	Adder	24.07
944332	AF1-101 E O1	52.3584	Adder	61.6
945431	AF1-208 C O1	6.0305	50/50	6.0305
945432	AF1-208 E O1	4.0203	50/50	4.0203
945731	AF1-238 C O1	6.4539	Adder	7.59
945732	AF1-238 E O1	9.6809	Adder	11.39
945741	AF1-239 C	1.5186	Adder	1.79
945742	AF1-239 E	2.2779	Adder	2.68
945971	AF1-262	0.1811	50/50	0.1811
957221	AF2-016 C	12.2206	Adder	14.38
957222	AF2-016 E	18.3309	Adder	21.57
957251	AF2-019 C	1.0154	Adder	1.19
957252	AF2-019 E	1.5231	Adder	1.79
957261	AF2-020 C	1.5193	50/50	1.5193
957262	AF2-020 E	2.2789	50/50	2.2789
957271	AF2-021 C	0.7455	Adder	0.88
957272	AF2-021 E	1.1182	Adder	1.32
957291	AF2-023 C	5.4082	50/50	5.4082
957292	AF2-023 E	8.1123	50/50	8.1123
957311	AF2-025 C	0.8093	Adder	0.95
957312	AF2-025 E	1.2139	Adder	1.43
958811	AF2-172 C (Withdrawn : 01/14/2021)	0.6653	50/50	0.6653
958812	AF2-172 E (Withdrawn : 01/14/2021)	1.0856	50/50	1.0856
961621	AG1-001 C	0.9095	Adder	2.02
961622	AG1-001 E	1.4840	Adder	3.29
962621	AG1-111	3.1707	50/50	3.1707
962801	AG1-129 C O1	2.7796	Adder	6.17
962802	AG1-129 E O1	1.8531	Adder	4.11
963401	AG1-189 C	0.1631	Adder	0.36
963402	AG1-189 E	0.2207	Adder	0.49
964001	AG1-254 C	6.4609	50/50	6.4609
964002	AG1-254 E	3.2432	50/50	3.2432
964011	AG1-255 C	11.5644	50/50	11.5644
964012	AG1-255 E	5.7822	50/50	5.7822
964371	AG1-299 C	0.1323	Adder	0.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964372	AG1-299 E	0.0882	Adder	0.2
964381	AG1-300 C	0.2205	Adder	0.49
964382	AG1-300 E	0.1470	Adder	0.33
966301	AG1-499 C	0.5071	Adder	1.13
966302	AG1-499 E	0.3381	Adder	0.75
CALDERWOOD	CALDERWOOD	0.0910	Confirmed LTF	0.0910
NY	NY	0.1880	Confirmed LTF	0.1880
PRAIRIE	PRAIRIE	0.4804	Confirmed LTF	0.4804
O-066	O-066	2.6314	Confirmed LTF	2.6314
SIGE	SIGE	0.0214	Confirmed LTF	0.0214
CHEOAH	CHEOAH	0.0916	Confirmed LTF	0.0916
COTTONWOOD	COTTONWOOD	0.3885	Confirmed LTF	0.3885
G-007	G-007	0.3255	Confirmed LTF	0.3255
HAMLET	HAMLET	0.1028	Confirmed LTF	0.1028
GIBSON	GIBSON	0.1021	Confirmed LTF	0.1021
BLUEG	BLUEG	0.3246	Confirmed LTF	0.3246
TRIMBLE	TRIMBLE	0.1041	Confirmed LTF	0.1041
CATAWBA	CATAWBA	0.0630	Confirmed LTF	0.0630

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
AB1-001	Absecon 12 kV	In Service
AB2-102	Cumberland 230kV	Active
AB2-122	Egg Harbor 12kV	Withdrawn
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
AE1-161	Landis 138 kV	Active
AE1-179	South Millville-Newport 69 kV	Active
AE1-229	Deepwater-Upper Pittsgrove 138 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
AE2-222	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
AF1-238	Sherman Ave. 69 kV	Active
AF1-239	Sherman Ave-Vineland 69 kV	Active
AF1-262	Upper Pittsgrove 12 kV	Active
AF2-016	Lewis 138 kV	Active
AF2-019	Middle 69 kV	Active
AF2-020	Carll's Corner 69 kV	Active
AF2-021	Cedar 69 kV	Active
AF2-023	Churchtown 69 kV	Active
AF2-025	Missouri Ave 69 kV	Active
AF2-172	Newport 12 kV	Withdrawn
AG1-001	US Silica-Unimin 69 kV	Active
AG1-111	Churchtown 69 kV	Active
AG1-129	US Silica 69 kV	Active
AG1-189	Oyster Creek-Bamber Lake 34.5	Active
AG1-254	Salem-Woodstown 69 kV	Active
AG1-255	Churchtown-Orchard 230 kV	Active
AG1-299	U.S. Silica 12.47 kV	Active
AG1-300	U.S Silica II 12.47 kV	Active
AG1-499	Henry Harris 69 kV	Active

Queue Number	Project Name	Status
V2-035	Pittsgrove	In Service
V2-041	Clayville 12kV	In Service
V2-046	Pilesgrove Township 12kV	In Service
V4-054	Fairfield Township 12kV	In Service
V4-067	Cates Road Egg Harbor Township 12kV	In Service
W1-130	Vine Road 12kV	In Service
W2-030	Egg Harbor Township	In Service
W2-039	Clayville 69kV	In Service

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
JC-P7-1-JCC-230-13	CONTINGENCY 'JC-P7-1-JCC-230-13' /* MANITOU-OYSTER CREEK 230 LINES & OYSTER GEN DISCONNECT BRANCH FROM BUS 206297 TO BUS 206302 CKT 1 DISCONNECT BRANCH FROM BUS 206297 TO BUS 206302 CKT 2 END
AE_P7-1 AE7TOWER	CONTINGENCY 'AE_P7-1 AE7TOWER' DISCONNECT BUS 227905 /* #1 BLE TO SCULL TO MILL 138 KV DISCONNECT BUS 227929 /* #1 SCULL 12 KV DISCONNECT BUS 227906 /* #2 BLE TO SCULL TO MILL 138 KV DISCONNECT BUS 227930 /* #2 SCULL 12 KV END
AE_P1-2 ORCH-CUMB	CONTINGENCY 'AE_P1-2 ORCH-CUMB' OPEN LINE FROM BUS 228002 TO BUS 228207 CIRCUIT 1 / END
AE_P7-1 AE18TOWER	CONTINGENCY 'AE_P7-1 AE18TOWER' DISCONNECT BUS 227903 /* #1 MILL TO LEWIS 138 KV DISCONNECT BUS 227904 /* #2 MILL TO LEWIS 138 KV END
CARLL-240 TAP-SHERM-A	CONTINGENCY 'CARLL-240 TAP-SHERM-A' OPEN LINE FROM BUS 228252 TO BUS 940000 CIRCUIT 1 / END
CARLL-240 TAP-SHERM-B	CONTINGENCY 'CARLL-240 TAP-SHERM-B' OPEN LINE FROM BUS 940000 TO BUS 228226 CIRCUIT 1 / END
AE_P1-2 ORCHARD XF	CONTINGENCY 'AE_P1-2 ORCHARD XF' OPEN LINE FROM BUS 200063 TO BUS 228002 CIRCUIT 1 / END
Base Case	

12 Short Circuit Analysis

The following Breakers are overdutied

None

13 Affected Systems

None

14 Attachment 1: One Line Diagram