Generation Interconnection

Feasibility Study Report

for

Queue Project AF2-038

PRINTZ 230 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 PECO.

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.

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.

3 General

The Interconnection Customer (IC) has proposed an uprate (battery storage unit) to an existing natural gas generating facility located in Delaware County, Pennsylvania. This project is an increase to the Interconnection Customer's **AA2-140** and will share the same point of interconnection. The AF2-038 queue position is a 20 MW energy (8 MW Capacity) uprate to the previous project. The total installed facilities will have a capability of 661.5 MW with 560.6 MW of this output being recognized by PJM as Capacity.

The project capability is summarized in the table below:

Description	Maximum Facility Output (MW)	Capacity Interconnection Rights (MW)
Existing	641.5	552.6
Requested Increase	20	8
Total	661.5	560.6

The proposed in-service date for this uprate project is June 01, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF2-038**
Project Name	PRINTZ 230 KV
State	Pennsylvania
County	Delaware
Transmission Owner	PECO
MFO	661.5
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

AF2-038 will interconnect with the PECO transmission system as an uprate to the Liberty Generator at the Printz 230 kV substation.

5 Cost Summary

The AF2-038 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$0
Total System Network Upgrade Costs	$291,000
Total Costs	$291,000

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 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

There is no additional Transmission Owner work to accommodate AF2-038.

7 Revenue Metering and SCADA Requirements

7.1 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.

7.2 Meteorological Data Reporting Requirements

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

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

7.3 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/

8 Summer Peak - Load Flow Analysis

The Queue Project AF2-038 was evaluated as a 20 MW (Capacity 8.0 MW) injection as an uprate to the Liberty Generator at the **Printz 230 kV** substation in the PECO area. Project AF2-038 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-038 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

8.1 Generation Deliverability

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

None

8.2 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
99858416	214035	WHITPAN1	230.0	PECO	213906	PLYMTG 1	230.0	PECO	1	PECO_P2-2_WHI230B2/* $ MONTCO $ WHI230B2 $ B	bus	519.0	99.83	100.01	DC	1.71
99858703	214035	WHITPAN1	230.0	PECO	213906	PLYMTG 1	230.0	PECO	1	PECO_P4_WHITP165/* $ MONTCO $ WHITP165 $ STBK	breaker	519.0	99.83	100.01	DC	1.71
99859652	228401	MCKLTON	230.0	AE	213559	DELCOTAP	230.0	PECO	1	PS_P7-1_O2241+V2274_LT	tower	725.0	99.99	100.13	DC	1.82

8.3 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)

None

8.4 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.

None

8.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Index	Facility	Upgrade Description	Cost
99859652	2	**MCKLTON 230.0 kV - DELCOTAP 230.0 kV Ckt 1**	**as2301r0001_ae2i: Various terminal reinforcements at Mickleton will be required** **Project Type : FAC** **Cost : $200,000** **Time Estimate : 12-32 Months**	$200,000
99858703, 99858416	1	**WHITPAN1 230.0 kV - PLYMTG 1 230.0 kV Ckt 1**	**PE030: Replace 2 pieces of station cable on Whitpain- Plymouth 220-13 line.** **Project Type : FAC** **Cost : $91,000** **Time Estimate : 36 Months**	$91,000
			TOTAL COST	**$291,000**

8.6 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".

8.6.1 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
99858703	214035	WHITPAN1	PECO	213906	PLYMTG 1	PECO	1	PECO_P4_WHITP165/* $ MONTCO $ WHITP165 $ STBK	breaker	519.0	99.83	100.01	DC	1.71

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
214225	Y1-057 BAT	0.3791	50/50	0.3791
292070	**V1-026 (Withdrawn : 07/07/2020)**	**-0.9245**	**Adder**	**-1.09**
902401	**W2-028 (Withdrawn : 07/07/2020)**	**-0.2311**	**Adder**	**-0.27**
919901	AB1-000 1	-0.3897	Adder	-0.46
919911	AB1-000 2	-0.3897	Adder	-0.46
919921	AB1-000 3	-0.3897	Adder	-0.46
936911	AD2-115 C O1	0.6229	Adder	0.73
936912	AD2-115 E O1	0.3354	Adder	0.39
937561	AD2-077 C O1	24.0840	50/50	24.0840
937562	AD2-077 E O1	24.0840	50/50	24.0840
940271	AE2-010	-0.2244	Adder	-0.26
946701	AF1-334 C O1	0.5127	Adder	0.6
946702	AF1-334 E O1	0.3418	Adder	0.4
946721	AF1-336 C O1	0.5127	Adder	0.6
946722	AF1-336 E O1	0.3418	Adder	0.4
957361	AF2-030 C	0.1978	Adder	0.44
957362	AF2-030 E	0.2966	Adder	0.66
957443	AF2-038 BAT	0.9065	Merchant Transmission	0.9065
959173	AF2-208 BAT	4.5202	Merchant Transmission	4.5202
959812	AF2-272 E	0.0676	Adder	0.15
959862	AF2-277 E	0.0588	Adder	0.13
959902	AF2-281 E	0.0742	Adder	0.16
961372	AF2-428 E	0.0768	Adder	0.17
961382	AF2-429 E	0.0883	Adder	0.2
961392	AF2-430 E	0.0739	Adder	0.16
961402	AF2-431 E	0.0298	Adder	0.07
WEC	WEC	0.1068	Confirmed LTF	0.1068
LGEE	LGEE	0.1900	Confirmed LTF	0.1900
CPLE	CPLE	0.1488	Confirmed LTF	0.1488
VFT	VFT	3.2121	Confirmed LTF	3.2121
CBM-W2	CBM-W2	2.5962	Confirmed LTF	2.5962
CBM-W1	CBM-W1	4.3285	Confirmed LTF	4.3285
TVA	TVA	0.4228	Confirmed LTF	0.4228
CBM-S2	CBM-S2	1.4392	Confirmed LTF	1.4392
CBM-S1	CBM-S1	2.6242	Confirmed LTF	2.6242
G-007	G-007	0.0728	Confirmed LTF	0.0728
MEC	MEC	0.5260	Confirmed LTF	0.5260

8.6.2 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
99859652	228401	MCKLTON	AE	213559	DELCOTAP	PECO	1	PS_P7-1_O2241+V2274_LT	tower	725.0	99.99	100.13	DC	1.82

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
219258	KINSLEYDEP C	0.1006	50/50	0.1006
219259	KINSLEYDEP E	0.9515	50/50	0.9515
219384	DEPTFDSP1_C	0.0013	50/50	0.0013
219385	DEPTFDSP1_E	0.0126	50/50	0.0126
219388	DEPTFDSP2_C	0.0013	50/50	0.0013
219390	DEPTFDSP2_E	0.0126	50/50	0.0126
219393	DEPTFDSP3_C	0.0033	50/50	0.0033
219394	DEPTFDSP3_E	0.0316	50/50	0.0316
219408	DEPTFDSP4_C	0.0013	50/50	0.0013
219416	DEPTFDSP4_E	0.0126	50/50	0.0126
219662	THOROFSP1_C	0.0055	50/50	0.0055
219664	THOROFSP1_E	0.0516	50/50	0.0516
219665	THOROFSP2_C	0.0055	50/50	0.0055
219666	THOROFSP2_E	0.0516	50/50	0.0516
219683	THOSOLAR C	0.0302	50/50	0.0302
219684	THOSOLAR E	0.2854	50/50	0.2854
227881	GRENWCHG	0.4319	50/50	0.4319
227928	V4-067E	0.1392	Adder	0.16
228102	**BLE#2 ST (Deactivation : 30/04/2019)**	**14.2490**	**Adder**	**16.76**
228261	V4-054E	0.8459	Adder	1.0
228304	LOGAN	9.8607	50/50	9.8607
228306	PCLP STM	2.5141	50/50	2.5141
228307	PCLP GT	2.5141	50/50	2.5141
228309	CCLP NUG	8.6030	50/50	8.6030
228334	MANNMILG	1.4323	Adder	1.69
228343	**QUINTN#1 (Deactivation : 26/04/2020)**	**0.2699**	**Adder**	**0.32**
228357	V2-046E	2.1875	Adder	2.57
228400	MICK 1CT	2.1434	50/50	2.1434
228423	Q-090 2	38.7269	50/50	38.7269
228471	VALERO1	0.7254	50/50	0.7254
228472	VALERO2	0.4842	50/50	0.4842
228473	VALERO3	0.4842	50/50	0.4842
228484	VALERO4	0.4267	50/50	0.4267
228712	V2-041E	0.2681	Adder	0.32
228721	V2-035E	0.1799	Adder	0.21
228733	AB1-119 E	0.0682	Adder	0.08
902092	W1-130E	0.7210	Adder	0.85
902432	W2-030 E	0.5362	Adder	0.63
917471	Z2-083	3.9177	50/50	3.9177
919901	AB1-000 1	-0.6097	Adder	-0.72

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
919911	AB1-000 2	-0.6097	Adder	-0.72
919921	AB1-000 3	-0.6097	Adder	-0.72
923153	AB1-116 E	0.0924	Adder	0.11
923532	AB1-169AC	69.3583	Adder	81.6
924051	AB2-049 C	0.3954	Adder	0.47
924052	AB2-049 E	0.6452	Adder	0.76
924531	AB2-102 C	23.2292	Adder	27.33
924532	AB2-102 E	0.5162	Adder	0.61
924701	AB2-122 C	0.0601	Adder	0.07
924702	AB2-122 E	0.1031	Adder	0.12
930001	AB1-001 C	0.0736	Adder	0.09
930002	AB1-001 E	0.1209	Adder	0.14
933962	AD1-019 E	0.6795	Adder	0.8
936491	AD2-064 C (Withdrawn : 06/16/2020)	0.0495	Adder	0.06
936492	AD2-064 E (Withdrawn : 06/16/2020)	0.0682	Adder	0.08
936501	AD2-065 C	0.0920	Adder	0.11
936502	AD2-065 E	0.1269	Adder	0.15
937011	AD2-135 C	0.0532	Adder	0.06
937012	AD2-135 E	0.0905	Adder	0.11
938421	AE1-061 C	0.3479	Adder	0.41
938422	AE1-061 E	0.3479	Adder	0.41
938431	AE1-062 C	0.8251	Adder	0.97
938432	AE1-062 E	0.8251	Adder	0.97
938781	AE1-104 C O1	11.5016	Adder	13.53
938782	AE1-104 E O1	29.4266	Adder	34.62
938871	AE1-115 C	2.0497	50/50	2.0497
938872	AE1-115 E	2.0497	50/50	2.0497
939301	AE1-161 C	2.7217	Adder	3.2
939302	AE1-161 E	4.0826	Adder	4.8
939501	AE1-179 C O1	4.2879	Adder	5.04
939502	AE1-179 E O1	3.0260	Adder	3.56
939821	AE1-218 C O1	0.1057	Adder	0.12
939822	AE1-218 E O1	0.1586	Adder	0.19
939831	AE1-219 C O1	0.2379	Adder	0.28
939832	AE1-219 E O1	0.3436	Adder	0.4
939931	AE1-229 C O1	13.6548	Adder	16.06
939932	AE1-229 E O1	9.2515	Adder	10.88
940001	AE1-240 C O1	3.5691	Adder	4.2
940002	AE1-240 E O1	2.5476	Adder	3.0
940271	AE2-010	-0.2467	Adder	-0.29
940361	AE2-020 C	8.6131	Adder	10.13
940362	AE2-020 E	40.3273	Adder	47.44
940371	AE2-021 C	8.6131	Adder	10.13
940372	AE2-021 E	40.3273	Adder	47.44
940381	AE2-022 C	5.0243	Adder	5.91
940382	AE2-022 E	23.5243	Adder	27.68
940781	AE2-065 C	0.0371	50/50	0.0371
940782	AE2-065 E	0.3376	50/50	0.3376
942101	AE2-222 C O1	7.6375	Adder	8.99
942102	AE2-222 E O1	19.1859	Adder	22.57
942381	AE2-251 C	27.2862	Adder	32.1

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942382	AE2-251 E	69.8178	Adder	82.14
943071	AE2-334 C	3.7978	Adder	4.47
943072	AE2-334 E	2.0246	Adder	2.38
943732	AF1-041 E	0.2130	Adder	0.25
944951	AF1-160 C	0.8251	Adder	0.97
944952	AF1-160 E	0.8663	Adder	1.02
945431	AF1-208 C O1	3.9428	Adder	4.64
945432	AF1-208 E O1	2.6285	Adder	3.09
945731	AF1-238 C	5.9559	Adder	7.01
945732	AF1-238 E	8.9338	Adder	10.51
945741	AF1-239 C	1.4014	Adder	1.65
945742	AF1-239 E	2.1021	Adder	2.47
945971	AF1-262	0.1305	Adder	0.15
957221	AF2-016 C	5.7552	Adder	12.78
957222	AF2-016 E	8.6328	Adder	19.16
957251	AF2-019 C	0.8394	Adder	1.86
957252	AF2-019 E	1.2591	Adder	2.79
957261	AF2-020 C	0.5802	Adder	1.29
957262	AF2-020 E	0.8703	Adder	1.93
957281	AF2-022 C	1.1210	Adder	2.49
957282	AF2-022 E	1.6815	Adder	3.73
957291	AF2-023 C O1	4.1004	50/50	4.1004
957292	AF2-023 E O1	6.1506	50/50	6.1506
957301	AF2-024 C	5.3542	50/50	5.3542
957302	AF2-024 E	8.0313	50/50	8.0313
957311	AF2-025 C	0.3790	Adder	0.84
957312	AF2-025 E	0.5685	Adder	1.26
957321	AF2-026 C	0.7027	Adder	1.56
957322	AF2-026 E	1.0541	Adder	2.34
957443	AF2-038 BAT	0.9651	Merchant Transmission	0.9651
957641	AF2-058	0.1808	Adder	0.4
958781	**AF2-169 C O1 (Withdrawn : 06/09/2020)**	**0.2310**	**Adder**	**0.51**
958782	**AF2-169 E O1 (Withdrawn : 06/09/2020)**	**27.4864**	**Adder**	**61.01**
958811	AF2-172 C	0.2595	Adder	0.58
958812	AF2-172 E	0.4233	Adder	0.94
959111	AF2-202 C	0.0826	Adder	0.18
959112	AF2-202 E	0.1130	Adder	0.25
999905	MARINGEN 2	0.3576	Adder	0.42
999906	PVILLEG 2	0.1520	Adder	0.18
NEWTON	NEWTON	0.2697	Confirmed LTF	0.2697
FARMERCITY	FARMERCITY	0.0141	Confirmed LTF	0.0141
G-007A	G-007A	4.3155	Confirmed LTF	4.3155
VFT	VFT	7.7400	Confirmed LTF	7.7400
CALDERWOOD	CALDERWOOD	0.1292	Confirmed LTF	0.1292
PRAIRIE	PRAIRIE	0.6509	Confirmed LTF	0.6509
CHEOAH	CHEOAH	0.1301	Confirmed LTF	0.1301
EDWARDS	EDWARDS	0.0875	Confirmed LTF	0.0875
TILTON	TILTON	0.1575	Confirmed LTF	0.1575
GIBSON	GIBSON	0.1370	Confirmed LTF	0.1370
BLUEG	BLUEG	0.4357	Confirmed LTF	0.4357

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.1397	Confirmed LTF	0.1397
CATAWBA	CATAWBA	0.0938	Confirmed LTF	0.0938

8.7 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
AB1-000	N/A	N/A
AB1-001	Absecon 12 kV	Engineering and Procurement
AB1-116	Egg Harbor Road 12kV	In Service
AB1-119	Tansboro Road 12kV	In Service
AB1-169A	Minotola 138 kV	Withdrawn
AB2-049	Gloucester Township 12kV	Active
AB2-102	Cumberland 230kV	Active
AB2-122	Egg Harbor 12kV	Engineering and Procurement
AD1-019	Ontario 23 kV	Active
AD2-064	Tansboro 12kV	Withdrawn
AD2-065	Berlin 12kV	Engineering and Procurement
AD2-077	Buxmont 69 kV	Active
AD2-115	Lyons-Moselem 69kV	Active
AD2-135	Williamstown 12kV	Active
AE1-061	Minotola 12 kV	Active
AE1-062	Silver Lake 69 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
AE1-218	Glassboro 12 kV	Engineering and Procurement
AE1-219	Glassboro 12 kV II	Engineering and Procurement
AE1-229	Deepwater-Upper Pittsgrove 138 kV	Active
AE1-240	Carlls Corner-Sherman Avenue 69 kV	Active
AE2-010	Paper Tap 69 kV	Engineering and Procurement
AE2-020	Cardiff 230 kV I	Active
AE2-021	Cardiff 230 kV II	Active
AE2-022	Cardiff 230 kV III	Active
AE2-065	Deptford 13 kV	Under Construction
AE2-222	Higbee 69 kV	Active
AE2-251	Cardiff 230 kV	Active
AE2-334	Clayton-Williamstown 69 kV	Active
AF1-041	Absecon 12.47 kV	In Service
AF1-160	Silver Lake 69 kV	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
AF1-334	Northkill 69 kV	Active

Queue Number	Project Name	Status
AF1-336	Northkill 69 kV	Active
AF2-016	Lewis 138 kV	Active
AF2-019	Rio Grande 69 kV	Active
AF2-020	Carll's Corner 69 kV	Active
AF2-022	Cumberland 138 kV	Active
AF2-023	Churchtown 69 kV	Active
AF2-024	Mickleton 69 kV	Active
AF2-025	Missouri Ave 69 kV	Active
AF2-026	Sherman Ave 138 kV	Active
AF2-030	Ontelaunee 230 kV	Active
AF2-038	Printz 230 kV	Active
AF2-058	Fairton 12 kV	Active
AF2-169	BL England 138 kV	Withdrawn
AF2-172	Whibco 12 kV	Active
AF2-202	Landis 12 V	Active
AF2-208	Colora 230 kV	Active
AF2-272	Bernville 13.2 kV	Engineering and Procurement
AF2-277	Richland 12.47 kV	Active
AF2-281	Lynnville 13.2 kV	Engineering and Procurement
AF2-428	West Boyertown 13.2 kV	Engineering and Procurement
AF2-429	South Hamburg 34.5 kV	Active
AF2-430	Moselem 13.2 kV	Engineering and Procurement
AF2-431	Baldy 13.2 kV	Active
V1-026	Limerick	Withdrawn
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
W2-028	Limerick #1	Withdrawn
W2-030	Egg Harbor Township	In Service
Y1-057	Barbadoes 34kV	Deactivated
Z2-083	Mickleton 230kV	In Service

8.8 Contingency Descriptions

Contingency Name	Contingency Definition
PECO_P2-2_WHI230B2/* $ MONTCO $ WHI230B2 $ B	CONTINGENCY 'PECO_P2-2_WHI230B2/* $ MONTCO $ WHI230B2 $ B' DISCONNECT BUS 214036 /* WHITPAN2 230.00 $ MONTCO $ WHI230B2 $ B END
PS_P7-1_O2241+V2274_LT	CONTINGENCY 'PS_P7-1_O2241+V2274_LT' /* THOROFARE - EAGLE POINT & DEPTFORD - GLOUCESTER DISCONNECT BUS 219759 /* EAGLE POINT 3 SECTION DISCONNECT BUS 219762 /* THOROFARE SECTION 2 CLOSE LINE FROM BUS 219211 TO BUS 219212 CKT Z /* THOROFARE T10/20 TRIP LINE FROM BUS 219110 TO BUS 219128 CKT 1 DISCONNECT BUS 219757 /* DEPTFORD SECTION 2 CLOSE LINE FROM BUS 219255 TO BUS 219256 CKT Z /* DEPTFORD T3 TO T4 CLOSE LINE FROM BUS 219180 TO BUS 219181 CKT Z /* DEPTFORD T1 TO T2 MOVE 8 MW LOAD FROM BUS 219180 TO BUS 219162 /* INTERSTATION TIE TRANSFER LOAD FROM DEPTFORD TO BEAVERBK T1 MOVE 8 MW LOAD FROM BUS 219181 TO BUS 219163 /* INTERSTATION TIE TRANSFER LOAD FROM DEPTFORD TO BEAVERBK T2 MOVE 8 MW LOAD FROM BUS 219255 TO BUS 219162 /* INTERSTATION TIE TRANSFER LOAD FROM DEPTFORD TO BEAVERBK T1 MOVE 8 MW LOAD FROM BUS 219256 TO BUS 219163 /* INTERSTATION TIE TRANSFER LOAD FROM DEPTFORD TO BEAVERBK T2 END
PECO_P4_WHITP165/* $ MONTCO $ WHITP165 $ STBK	CONTINGENCY 'PECO_P4_WHITP165/* $ MONTCO $ WHITP165 $ STBK' DISCONNECT BUS 214036 /* WHITPAN2 230.00 $ MONTCO $ WHITP165 $ STBK DISCONNECT BUS 213828 /* N WALES9 230.00 $ MONTCO $ WHITP165 $ STBK END

9 Short Circuit Analysis

Short circuit analysis will be performed during the System Impact Study.

10 Affected Systems

None