Generation Interconnection

Feasibility Study Report

for

Queue Project AF2-232

BOWMANNS MILL TAP-SCOTT 69 KV

24 MW Capacity / 40 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 PPL.

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 battery storage uprate to a planned solar generating facility located in Columbia County, Pennsylvania. This project is an increase to the Interconnection Customer's **AF1-226** project and will share the same point of interconnection. The AF2-232 queue position is a 40 MW Energy (24 MW Capacity) uprate to the previous project. The total installed facilities will have a capability of 75 MW with 38.7 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 (AF1-226)	35	14.7
Requested (AF2-232) Increase	40	24
Total	75	38.7

The proposed in-service date for this uprate project is December 15, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-232
Project Name	BOWMANNS MILL TAP-SCOTT 69 KV
State	Pennsylvania
County	Columbia
Transmission Owner	PPL
MFO	75
MWE	40
MWC	24
Fuel	Solar; Storage
Basecase Study Year	2023

New Service Customers proposing queue projects that 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

AF2-232 will interconnect with the PPL transmission system as an uprate to AF1-226 tapping **the Bowman's Mill to Scott 1 69 kV** line.

5 Cost Summary

The AF2-232 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$0[1]
Total System Network Upgrade Costs	$0
Total Costs	$0

[1] Refer to the AF1-226 interconnection study reports for the scope, cost and schedule for the physical interconnection. The cost of the physical interconnection will be borne by AF1-226.

This cost excludes CIAC Tax Gross Up charges. Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

6 Transmission Owner Scope of Work

The proposed Transmission Owner interconnection facilities for the AF1-226 project can accommodate the AF2-232 uprate. There is no additional Transmission Owner work required for the physical interconnection.

7 Interconnection Customer Requirements

Refer to AF1-226 interconnection study reports for requirements.

8 Revenue Metering and SCADA Requirements

8.1 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.

8.2 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

8.3 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/

9 Summer Peak - Load Flow Analysis

The Queue Project AF2-232 was evaluated as a 40.0 MW (Capacity 24.0 MW) injection as an uprate to AF1-226 tapping the **Bowman's Mill to Scott 1 69 kV** line in the PPL area. Project AF2-232 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission

Owners). Project AF2-232 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

9.1 Generation Deliverability

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

None

9.2 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
9941265 6	207942	COLUTR1	230.0	PPL	207935	CWSA	230.0	PPL	1	PL_P71_101751	tower	1195.0	97.85	100.19	DC	27.96
9941266 5	207943	COLUTR2	230.0	PPL	207942	COLUTR1	230.0	PPL	1	PL_P71_101751	tower	1195.0	99.68	100.29	DC	7.29

9.3 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

9.4 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
99411835	208040	MONT	230.0	PPL	208034	MILT	230.0	PPL	1	PL_P12_000942	operation	801.0	100.19	101.75	DC	12.49

9.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Index	Facility	Upgrade Description	Cost
99412656	1	COLU TR1 230.0 kV - CWSA 230.0 kV Ckt 1	PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : $0 Time Estimate : 36 Months	$0
99412665	2	COLU TR2 230.0 kV - COLU TR1 230.0 kV Ckt 1	PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : $0 Time Estimate : 36 Months	$0
			TOTAL COST	$0

9.6 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".

9.6.1 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
99412656	207942	COLU TR1	PPL	207935	CWSA	PPL	1	PL_P71_101751	tower	1195.0	97.85	100.19	DC	27.96

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.5276	50/50	63.5276
208912	**MONT G2 (Deactivation : 18/02/2019)**	**64.3484**	**50/50**	**64.3484**
208945	LOHA CT	0.7861	50/50	0.7861
208948	WILL CT	1.6974	50/50	1.6974
209018	SUNBIPCT	0.6888	50/50	0.6888
209019	VIKI IPP	1.5086	Adder	1.77
212369	PATRIOT 1	27.7249	50/50	27.7249
212370	PATRIOT 2	27.7249	50/50	27.7249
921653	AA2-008 E	23.9520	50/50	23.9520
939891	AE1-225 C O1	0.8863	Adder	1.04
939892	AE1-225 E O1	0.9806	Adder	1.15
940561	AE2-042 C O1	13.2940	50/50	13.2940
940562	AE2-042 E O1	6.5902	50/50	6.5902
940721	AE2-059 C	2.3861	50/50	2.3861
940722	AE2-059 E	3.2951	50/50	3.2951
940941	AE2-084 C	2.3861	50/50	2.3861
940942	AE2-084 E	3.2951	50/50	3.2951
941161	AE2-110 C	5.8707	50/50	5.8707
941162	AE2-110 E	8.1071	50/50	8.1071
941171	AE2-111 C	0.7623	Adder	0.9
941172	AE2-111 E	1.0527	Adder	1.24
942281	AE2-241 C	5.8707	50/50	5.8707
942282	AE2-241 E	8.1071	50/50	8.1071
942561	AE2-271 C O1	29.6185	50/50	29.6185
942562	AE2-271 E O1	19.7133	50/50	19.7133
943721	AF1-040 C	0.0943	Adder	0.11
943722	AF1-040 E	2.1077	50/50	2.1077
945511	AF1-216 C1O1	14.7636	50/50	14.7636
945512	AF1-216 E1O1	9.8310	50/50	9.8310
945521	AF1-216 C2	14.7628	50/50	14.7628
945522	AF1-216 E2	9.8304	50/50	9.8304
945611	AF1-226 C	10.2737	50/50	10.2737
945612	AF1-226 E	14.1875	50/50	14.1875
946471	AF1-311 C O1	27.6763	50/50	27.6763
946472	AF1-311 E O1	45.1561	50/50	45.1561
946691	AF1-333 C O1	2.2502	50/50	2.2502
946692	AF1-333 E O1	1.5002	50/50	1.5002
946731	AF1-337 C	2.2502	50/50	2.2502
946732	AF1-337 E	1.5002	50/50	1.5002
946741	AF1-338 C	2.2502	50/50	2.2502
946742	AF1-338 E	1.5002	50/50	1.5002

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946751	AF1-339 C O1	2.2502	50/50	2.2502
946752	AF1-339 E O1	1.5002	50/50	1.5002
946761	AF1-271A C	0.9618	Adder	1.13
946762	AF1-271A E	0.6412	Adder	0.75
957881	AF2-082 C	3.6607	50/50	3.6607
957882	AF2-082 E	2.4405	50/50	2.4405
957921	AF2-086 C O1	8.3867	50/50	8.3867
957922	AF2-086 E O1	5.5911	50/50	5.5911
957991	AF2-093 C	0.5113	50/50	0.5113
957992	AF2-093 E	0.3409	50/50	0.3409
958461	AF2-140	12.6063	50/50	12.6063
958511	AF2-145 C1	5.2592	50/50	5.2592
958512	AF2-145 E1	3.5061	50/50	3.5061
958521	AF2-145 C2	5.2589	50/50	5.2589
958522	AF2-145 E2	3.5059	50/50	3.5059
959121	AF2-203 C	8.3867	50/50	8.3867
959122	AF2-203 E	5.5911	50/50	5.5911
959411	AF2-232 C	16.7734	50/50	16.7734
959412	AF2-232 E	11.1822	50/50	11.1822
959431	AF2-234 C O1	1.1579	Adder	2.57
959432	AF2-234 E O1	0.7719	Adder	1.71
959932	AF2-284 E	0.8169	50/50	0.8169
959982	AF2-289 E	1.2253	50/50	1.2253
959992	AF2-290 E	0.5681	50/50	0.5681
960401	AF2-331 C O1	14.5665	50/50	14.5665
960402	AF2-331 E O1	9.7110	50/50	9.7110
960411	AF2-332 C O1	14.5665	50/50	14.5665
960412	AF2-332 E O1	9.7110	50/50	9.7110
960421	AF2-333 C O1	5.8266	50/50	5.8266
960422	AF2-333 E O1	3.8844	50/50	3.8844
960431	AF2-334 C O1	5.8266	50/50	5.8266
960432	AF2-334 E O1	3.8844	50/50	3.8844
961271	AF2-418 C	8.3867	50/50	8.3867
961272	AF2-418 E	5.5911	50/50	5.5911
961362	AF2-427 E	1.2253	50/50	1.2253
961412	AF2-432 E	1.3978	50/50	1.3978
961421	AF2-433 C O1	8.3867	50/50	8.3867
961422	AF2-433 E O1	5.5911	50/50	5.5911
961431	AF2-434 C O1	8.3867	50/50	8.3867
961432	AF2-434 E O1	5.5911	50/50	5.5911
NEWTON	NEWTON	0.3460	Confirmed LTF	0.3460
FARMERCITY	FARMERCITY	0.0181	Confirmed LTF	0.0181
CALDERWOOD	CALDERWOOD	0.1650	Confirmed LTF	0.1650
NY	NY	0.7443	Confirmed LTF	0.7443
PRAIRIE	PRAIRIE	0.8343	Confirmed LTF	0.8343
O-066	O-066	9.8582	Confirmed LTF	9.8582
CHEOAH	CHEOAH	0.1667	Confirmed LTF	0.1667
EDWARDS	EDWARDS	0.1120	Confirmed LTF	0.1120
TILTON	TILTON	0.2016	Confirmed LTF	0.2016
G-007	G-007	1.3759	Confirmed LTF	1.3759
GIBSON	GIBSON	0.1753	Confirmed LTF	0.1753
BLUEG	BLUEG	0.5573	Confirmed LTF	0.5573

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.1786	Confirmed LTF	0.1786
CATAWBA	CATAWBA	0.1201	Confirmed LTF	0.1201

9.6.2 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
99412665	207943	COLU TR2	PPL	207942	COLU TR1	PPL	1	PL_P71_101751	tower	1195.0	99.68	100.29	DC	7.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.3706	50/50	63.3706
208912	**MONT G2 (Deactivation : 18/02/2019)**	**64.1894**	**50/50**	**64.1894**
208945	LOHA CT	0.7841	50/50	0.7841
208948	WILL CT	1.6932	50/50	1.6932
209018	SUNBIPCT	0.6871	50/50	0.6871
209019	VIKI IPP	1.5048	Adder	1.77
212369	PATRIOT 1	27.6563	50/50	27.6563
212370	PATRIOT 2	27.6563	50/50	27.6563
921653	AA2-008 E	23.8927	50/50	23.8927
939891	AE1-225 C O1	0.8841	Adder	1.04
939892	AE1-225 E O1	0.9781	Adder	1.15
940561	AE2-042 C O1	13.2612	50/50	13.2612
940562	AE2-042 E O1	6.5740	50/50	6.5740
940721	AE2-059 C	2.3802	50/50	2.3802
940722	AE2-059 E	3.2870	50/50	3.2870
940941	AE2-084 C	2.3802	50/50	2.3802
940942	AE2-084 E	3.2870	50/50	3.2870
941161	AE2-110 C	1.5312	50/50	1.5312
941162	AE2-110 E	2.1144	50/50	2.1144
941171	AE2-111 C	0.7603	Adder	0.89
941172	AE2-111 E	1.0500	Adder	1.24
941371	AE2-133 C	0.7362	Adder	0.87
941372	AE2-133 E	1.0167	Adder	1.2
942281	AE2-241 C	1.5312	50/50	1.5312
942282	AE2-241 E	2.1144	50/50	2.1144
942561	AE2-271 C O1	29.5453	50/50	29.5453
942562	AE2-271 E O1	19.6646	50/50	19.6646
943721	AF1-040 C	0.0941	Adder	0.11
943722	AF1-040 E	2.1024	50/50	2.1024
945511	AF1-216 C1O1	14.7271	50/50	14.7271
945512	AF1-216 E1O1	9.8067	50/50	9.8067
945521	AF1-216 C2	14.7263	50/50	14.7263
945522	AF1-216 E2	9.8061	50/50	9.8061
945611	AF1-226 C	2.6795	50/50	2.6795
945612	AF1-226 E	3.7003	50/50	3.7003
946471	AF1-311 C O1	27.6079	50/50	27.6079

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946472	AF1-311 E O1	45.0445	50/50	45.0445
946691	AF1-333 C O1	2.2447	50/50	2.2447
946692	AF1-333 E O1	1.4965	50/50	1.4965
946731	AF1-337 C	2.2447	50/50	2.2447
946732	AF1-337 E	1.4965	50/50	1.4965
946741	AF1-338 C	2.2447	50/50	2.2447
946742	AF1-338 E	1.4965	50/50	1.4965
946751	AF1-339 C O1	2.2447	50/50	2.2447
946752	AF1-339 E O1	1.4965	50/50	1.4965
946761	AF1-271A C	0.9593	Adder	1.13
946762	AF1-271A E	0.6396	Adder	0.75
957881	AF2-082 C	3.6515	50/50	3.6515
957882	AF2-082 E	2.4343	50/50	2.4343
957921	AF2-086 C O1	2.1874	50/50	2.1874
957922	AF2-086 E O1	1.4582	50/50	1.4582
957991	AF2-093 C	0.5100	50/50	0.5100
957992	AF2-093 E	0.3400	50/50	0.3400
958461	AF2-140	12.5751	50/50	12.5751
958511	AF2-145 C1	5.2462	50/50	5.2462
958512	AF2-145 E1	3.4975	50/50	3.4975
958521	AF2-145 C2	5.2459	50/50	5.2459
958522	AF2-145 E2	3.4973	50/50	3.4973
959121	AF2-203 C	2.1874	50/50	2.1874
959122	AF2-203 E	1.4582	50/50	1.4582
959411	AF2-232 C	4.3747	50/50	4.3747
959412	AF2-232 E	2.9165	50/50	2.9165
959421	AF2-233 C O1	0.5472	Adder	1.21
959422	AF2-233 E O1	0.3648	Adder	0.81
959431	AF2-234 C O1	1.1549	Adder	2.56
959432	AF2-234 E O1	0.7700	Adder	1.71
959932	AF2-284 E	0.8149	50/50	0.8149
959982	AF2-289 E	1.2223	50/50	1.2223
959992	AF2-290 E	0.5667	50/50	0.5667
960401	AF2-331 C O1	14.5305	50/50	14.5305
960402	AF2-331 E O1	9.6870	50/50	9.6870
960411	AF2-332 C O1	14.5305	50/50	14.5305
960412	AF2-332 E O1	9.6870	50/50	9.6870
960421	AF2-333 C O1	5.8122	50/50	5.8122
960422	AF2-333 E O1	3.8748	50/50	3.8748
960431	AF2-334 C O1	5.8122	50/50	5.8122
960432	AF2-334 E O1	3.8748	50/50	3.8748
961271	AF2-418 C	2.1874	50/50	2.1874
961272	AF2-418 E	1.4582	50/50	1.4582
961362	AF2-427 E	1.2223	50/50	1.2223
961412	AF2-432 E	0.3646	50/50	0.3646
961421	AF2-433 C O1	2.1874	50/50	2.1874
961422	AF2-433 E O1	1.4582	50/50	1.4582
961431	AF2-434 C O1	2.1874	50/50	2.1874
961432	AF2-434 E O1	1.4582	50/50	1.4582
NEWTON	NEWTON	0.3449	Confirmed LTF	0.3449
FARMERCITY	FARMERCITY	0.0180	Confirmed LTF	0.0180
CALDERWOOD	CALDERWOOD	0.1645	Confirmed LTF	0.1645

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
NY	NY	0.7421	Confirmed LTF	0.7421
PRAIRIE	PRAIRIE	0.8317	Confirmed LTF	0.8317
O-066	O-066	9.8314	Confirmed LTF	9.8314
CHEOAH	CHEOAH	0.1662	Confirmed LTF	0.1662
EDWARDS	EDWARDS	0.1117	Confirmed LTF	0.1117
TILTON	TILTON	0.2010	Confirmed LTF	0.2010
G-007	G-007	1.3718	Confirmed LTF	1.3718
GIBSON	GIBSON	0.1747	Confirmed LTF	0.1747
BLUEG	BLUEG	0.5555	Confirmed LTF	0.5555
TRIMBLE	TRIMBLE	0.1781	Confirmed LTF	0.1781
CATAWBA	CATAWBA	0.1197	Confirmed LTF	0.1197

9.7 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
AA2-008	Saegers 230 kV	In Service
AE1-225	Columbia-Sunbury 69 kV	Active
AE2-042	Milton 69 kV	Active
AE2-059	Derry Tap-Derry Bus 69 kV	Active
AE2-084	Derry Tap-Derry Bus 69 kV	Active
AE2-110	Columbia-West Bloomsburg 69 kV	Active
AE2-111	Beavertown Tap-Beavertown Weaving Tap 69kV	Active
AE2-133	Penns Tap-Richfield Tie 69 kV	Active
AE2-241	Bloomsburg-Columbia 69 kV	Active
AE2-271	Montour 230 kV	Active
AF1-040	Dauphin-Pine Grove 69 kV	Active
AF1-216	Lycoming-Lock Haven 69 kV	Active
AF1-226	Bowmans Mill-Scott 69 kV	Active
AF1-271A	Gratz 69 kV	Active
AF1-311	Montour 230 kV	Active
AF1-333	Laurelton-Mifflinburg 69 kV	Active
AF1-337	Laurelton-Mifflinburg 69 kV	Active
AF1-338	Laurelton-Mifflinburg 69 kV	Active
AF1-339	Laurelton-Mifflinburg 69 kV	Active
AF2-082	Dauphin PG Tie–Dauphin Juniata Tie 69 k	Active
AF2-086	Scott Tap-Bowmans Mill Tap 69 kV	Active
AF2-093	Derry 12.47 kV	Active
AF2-140	Saegers 230 kV	Active
AF2-145	Lycoming-Lock Haven 69 kV	Active

Queue Number	Project Name	Status
AF2-203	Rohrsburg 12.5 kV	Active
AF2-232	Bowmanns Mill Tap-Scott 69 kV	Active
AF2-233	Penns-Richfield Tie #1 69 kV	Active
AF2-234	Sunbury Yard #1-Richfield Tie #2 69 kV	Active
AF2-284	Watson 12.47 kV	Active
AF2-289	Watson 12.47 kV	Active
AF2-290	Derry 12.47 kV	Active
AF2-331	Montour 230 kV	Active
AF2-332	Montour 230 kV	Active
AF2-333	Montour 230 kV	Active
AF2-334	Montour 230 kV	Active
AF2-418	Millville Tap 69 kV	Active
AF2-427	Watson 12.47 kV	Active
AF2-432	University 12.47 kV	Active
AF2-433	Columbia-Geisinger Tap #1 69 kV	Active
AF2-434	Columbia-Geisinger Tap #1 69 kV	Active

9.8 Contingency Descriptions

Contingency Name	Contingency Definition
PL_P12_000942	CONTINGENCY 'PL_P12_000942' /* CWSA-COLU 230KV LINE WITH COLU TR1 DISCONNECT BUS 207942 /* COLU-CWSA 1 230KV & COLU T1 END
PL_P71_101751	CONTINGENCY 'PL_P71_101751' /* MONT-BETA 1 & 2 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 1 /* MONT-BETA 1 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 2 /* MONT-BETA 2 END

10 Short Circuit Analysis

To be performed during the System Impact Study

11 Affected Systems

11.1 NYISO

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