Generation Interconnection

Feasibility Study Report

for

Queue Project AF2-315

SUSQUEHANNA UNIT 2 500 KV

0 MW Capacity / 50 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.

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.

An Interconnection Customer entering the New Services Queue on or after October 1, 2018 (except those regulated by the United States Nuclear Regulatory Commission) shall provide primary frequency response in accordance with Section 4.7.2 of Appendix 2 to the Interconnection Service Agreement. See PJM Manual 14D Section 7.1.1 for more 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 to an existing nuclear generating facility located in Luzerne County, Pennsylvania. This project is an increase to the Interconnection Customer's NQ123 project, which shares the same points of interconnection. The AF2-315 queue position is a 50 MW Energy (0 MW Capacity) uprate to the previous project. The total installed facilities will have a capability of 1310 MW with 1251.7 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 (NQ123)	1260	1251.7
Requested (AF2-315) Increase	50	0
Total	1310	1251.7

The proposed in-service date for this uprate project is August 01, 2020. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF2-315**
Project Name	SUSQUEHANNA UNIT 2 230 KV
State	Pennsylvania
County	Luzerne
Transmission Owner	PPL
MFO	1310
MWE	50
MWC	0
Fuel	Nuclear
Basecase Study Year	2023

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

AF2-315 will interconnect with the PPL transmission system as an uprate to Susquehanna Nuclear Generating Facility at the Susquehanna 500 kV substation.

5 Cost Summary

The AF2-315 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 0
Total System Network Upgrade Costs	$ 141,000,000
Total Costs	$ 141,000,000

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 existing Transmission Owner interconnection facilities can support this uprate.

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 AF2-315 was evaluated as a 50.0 MW (Capacity 0.0 MW) injection as an uprate to Susquehanna Nuclear Generating Facility at the **Susquehanna 500 kV substation** in the PPL area. Project AF2-315 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-315 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
99568689	200022	SUSQHANA	500	PJM	200023	WESCOVLE	500	PJM	1	PJM500_PL_P42_000922	breaker	3486.0	99.46	100.12	DC	22.68
99568690	200022	SUSQHANA	500	PJM	200023	WESCOVLE	500	PJM	1	PJM500_PL_P42_000923	breaker	3486.0	99.46	100.12	DC	22.68

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
99568689, 99568690	1	SUSQHANA 500.0 kV - WESCOVLE 500.0 kV Ckt 1	R-PL-0004 (1913) : Build new SUNB-DAUP 230kV Line and Rebuild DAUP 230kV Yard Project Type : CON Cost : $141,000,000 Time Estimate : 80 Months	$141,000,000
			TOTAL COST	$141,000,000

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
99568690	200022	SUSQHANA	PJM	200023	WESCOVLE	PJM	1	PJM500_PL_P42_000923	breaker	3486.0	99.46	100.12	DC	22.68

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200038	SUSQ 2	71.2267	50/50	71.2267
200083	FRPO 1	34.6140	50/50	34.6140
200084	FRPO 2	34.6140	50/50	34.6140
200823	26MHP_X3-003	2.9216	Adder	3.44
203907	26Y2-042	3.2174	Adder	3.79
203909	26Z1-038	2.9238	Adder	3.44
208930	HUST 11	15.8361	50/50	15.8361
208931	HUST 12	17.1854	50/50	17.1854
208932	HUST 13	15.8361	50/50	15.8361
208933	HUST 10	28.1215	50/50	28.1215
208948	WILL CT	1.6884	50/50	1.6884
209003	KSTN IPP (Deactivation : 31/05/2020)	1.1591	Adder	1.36
209006	NEPC IPP (Deactivation : 24/10/2018)	6.2225	Adder	7.32
209019	VIKI IPP	4.7244	Adder	5.56
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	11.6273	Adder	13.68
211369	W1-111 BAT	0.0239	Adder	0.03
211375	BEAC	4.7865	Adder	5.63
211418	BUMO	3.2521	Adder	3.83
211770	PEFO 1	6.9526	Adder	8.18
211771	PEFO 2	6.9526	Adder	8.18
212370	PATRIOT 2	23.4964	50/50	23.4964
292935	U2-015E OP1	21.7642	Adder	25.6
294573	P-028 E	17.5297	Adder	20.62
917662	Z2-107 E (Suspended)	2.3655	Adder	2.78
918521	AA1-066	6.1536	50/50	6.1536
918602	AA1-077 E	18.6878	Adder	21.99
920651	AA2-171 E	15.2325	50/50	15.2325
920711	AA2-182 C (Withdrawn : 05/04/2020)	402.2212	50/50	402.2212
921653	AA2-008 E	17.2540	Adder	20.3
923673	AB1-182 E	5.2586	Adder	6.19
924291	AB2-074 C (Withdrawn : 05/04/2020)	20.5845	50/50	20.5845
924292	AB2-074 E (Withdrawn : 05/04/2020)	25.9365	50/50	25.9365
925951	AC1-071 C (Suspended)	1.9459	Adder	2.29
925952	AC1-071 E (Suspended)	13.0267	Adder	15.33
932691	AC2-092	28.9855	50/50	28.9855
938331	AE1-051	2.3655	Adder	2.78

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
938391	AE1-058 C	62.5026	Adder	73.53
938392	AE1-058 E	62.5026	Adder	73.53
938401	AE1-059 C O1	50.5002	Adder	59.41
939521	AE1-181 C	6.4618	Adder	7.6
939522	AE1-181 E	4.3079	Adder	5.07
939891	AE1-225 C O1	2.7756	Adder	3.27
939892	AE1-225 E O1	3.0708	Adder	3.61
940561	AE2-042 C O1	16.9056	50/50	16.9056
940562	AE2-042 E O1	8.3805	50/50	8.3805
940592	AE2-046 E	6.2225	Adder	7.32
940721	AE2-059 C	3.0343	50/50	3.0343
940722	AE2-059 E	4.1903	50/50	4.1903
940941	AE2-084 C	3.0343	50/50	3.0343
940942	AE2-084 E	4.1903	50/50	4.1903
941161	AE2-110 C	3.0112	50/50	3.0112
941162	AE2-110 E	4.1584	50/50	4.1584
941171	AE2-111 C	2.3716	Adder	2.79
941172	AE2-111 E	3.2751	Adder	3.85
941371	AE2-133 C	2.2667	Adder	2.67
941372	AE2-133 E	3.1303	Adder	3.68
942281	AE2-241 C	3.0112	50/50	3.0112
942282	AE2-241 E	4.1584	50/50	4.1584
942561	AE2-271 C O1	18.3513	Adder	21.59
942562	AE2-271 E O1	12.2141	Adder	14.37
942771	AE2-295 C O1	7.3087	Adder	8.6
942772	AE2-295 E O1	42.4017	Adder	49.88
943721	AF1-040 C	0.2953	Adder	0.35
943722	AF1-040 E	5.6102	Adder	6.6
945511	AF1-216 C1O1	15.3134	50/50	15.3134
945512	AF1-216 E1O1	10.1970	50/50	10.1970
945521	AF1-216 C2	15.3134	50/50	15.3134
945522	AF1-216 E2	10.1970	50/50	10.1970
945611	AF1-226 C	5.2697	50/50	5.2697
945612	AF1-226 E	7.2771	50/50	7.2771
946471	AF1-311 C O1	17.1479	Adder	20.17
946472	AF1-311 E O1	27.9782	Adder	32.92
946691	AF1-333 C O1	3.5654	Adder	4.19
946692	AF1-333 E O1	2.3769	Adder	2.8
946731	AF1-337 C	3.5654	Adder	4.19
946732	AF1-337 E	2.3769	Adder	2.8
946741	AF1-338 C	3.5654	Adder	4.19
946742	AF1-338 E	2.3769	Adder	2.8
946751	AF1-339 C O1	3.5654	Adder	4.19
946752	AF1-339 E O1	2.3769	Adder	2.8
946761	AF1-271A C	3.0118	Adder	3.54
946762	AF1-271A E	2.0079	Adder	2.36
957121	AF2-006 C	1.5045	Adder	3.34
957122	AF2-006 E	1.0030	Adder	2.23
957131	AF2-007 C	1.5045	Adder	3.34
957132	AF2-007 E	1.0030	Adder	2.23
957621	AF2-056 C O1	4.7293	Adder	10.5
957622	AF2-056 E O1	2.4363	Adder	5.41

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957881	AF2-082 C	5.1643	Adder	11.46
957882	AF2-082 E	3.4429	Adder	7.64
957921	AF2-086 C O1	4.3018	50/50	4.3018
957922	AF2-086 E O1	2.8678	50/50	2.8678
957991	AF2-093 C	0.6502	50/50	0.6502
957992	AF2-093 E	0.4335	50/50	0.4335
958461	AF2-140	4.8130	Adder	10.68
958511	AF2-145 C1	5.4551	50/50	5.4551
958512	AF2-145 E1	3.6367	50/50	3.6367
958521	AF2-145 C2	5.4551	50/50	5.4551
958522	AF2-145 E2	3.6367	50/50	3.6367
959121	AF2-203 C	4.3018	50/50	4.3018
959122	AF2-203 E	2.8678	50/50	2.8678
959411	AF2-232 C	8.6035	50/50	8.6035
959412	AF2-232 E	5.7357	50/50	5.7357
959421	AF2-233 C O1	1.6915	Adder	3.75
959422	AF2-233 E O1	1.1277	Adder	2.5
959431	AF2-234 C O1	3.6044	Adder	8.0
959432	AF2-234 E O1	2.4029	Adder	5.33
959602	AF2-251 E	7.4688	Adder	16.58
959701	AF2-261 C O1	4.1386	Adder	9.19
959702	AF2-261 E O1	5.7152	Adder	12.69
959711	AF2-262 C O1	2.3973	Adder	5.32
959712	AF2-262 E O1	3.3106	Adder	7.35
959912	AF2-282 E	0.3761	Adder	0.83
959922	AF2-283 E	0.2507	Adder	0.56
959932	AF2-284 E	0.7130	50/50	0.7130
959942	AF2-285 E	0.2065	Adder	0.46
959982	AF2-289 E	1.0695	50/50	1.0695
959992	AF2-290 E	0.7225	50/50	0.7225
960242	AF2-315 E	22.6770	50/50	22.6770
960401	AF2-331 C O1	4.7834	Adder	10.62
960402	AF2-331 E O1	3.1889	Adder	7.08
960411	AF2-332 C O1	4.7834	Adder	10.62
960412	AF2-332 E O1	3.1889	Adder	7.08
960421	AF2-333 C O1	1.9133	Adder	4.25
960422	AF2-333 E O1	1.2756	Adder	2.83
960431	AF2-334 C O1	1.9133	Adder	4.25
960432	AF2-334 E O1	1.2756	Adder	2.83
961261	AF2-417 C O1	1.1253	Adder	2.5
961262	AF2-417 E O1	0.7502	Adder	1.67
961271	AF2-418 C	4.3018	50/50	4.3018
961272	AF2-418 E	2.8678	50/50	2.8678
961301	AF2-421 C O1	1.5221	Adder	3.38
961302	AF2-421 E O1	1.0147	Adder	2.25
961311	AF2-422 C O1	1.5221	Adder	3.38
961312	AF2-422 E O1	1.0147	Adder	2.25
961321	AF2-423 C O1	1.5221	Adder	3.38
961322	AF2-423 E O1	1.0147	Adder	2.25
961331	AF2-424 C O1	1.8075	Adder	4.01
961332	AF2-424 E O1	1.2050	Adder	2.67
961341	AF2-425 C O1	1.8075	Adder	4.01

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961342	AF2-425 E O1	1.2050	Adder	2.67
961362	AF2-427 E	1.0695	50/50	1.0695
961412	AF2-432 E	0.7170	50/50	0.7170
961421	AF2-433 C O1	4.3018	50/50	4.3018
961422	AF2-433 E O1	2.8678	50/50	2.8678
961431	AF2-434 C O1	4.3018	50/50	4.3018
961432	AF2-434 E O1	2.8678	50/50	2.8678
961451	AF2-436	0.1016	Adder	0.23
961461	AF2-437	0.1398	Adder	0.31
961531	AF2-444 C	1.7774	Adder	3.95
961532	AF2-444 E	1.2050	Adder	2.67
961541	AF2-445A C	1.6911	Adder	3.75
961542	AF2-445A E	1.1465	Adder	2.54
NEWTON	NEWTON	2.3650	Confirmed LTF	2.3650
FARMERCITY	FARMERCITY	0.1236	Confirmed LTF	0.1236
G-007A	G-007A	3.0448	Confirmed LTF	3.0448
VFT	VFT	17.5762	Confirmed LTF	17.5762
CALDERWOOD	CALDERWOOD	1.1302	Confirmed LTF	1.1302
PRAIRIE	PRAIRIE	5.7136	Confirmed LTF	5.7136
CHEOAH	CHEOAH	1.1396	Confirmed LTF	1.1396
EDWARDS	EDWARDS	0.7658	Confirmed LTF	0.7658
TILTON	TILTON	1.3797	Confirmed LTF	1.3797
GIBSON	GIBSON	1.2001	Confirmed LTF	1.2001
BLUEG	BLUEG	3.8192	Confirmed LTF	3.8192
TRIMBLE	TRIMBLE	1.2243	Confirmed LTF	1.2243
CATAWBA	CATAWBA	0.8169	Confirmed LTF	0.8169

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
AA1-066	Susquehanna-Lackawanna 500kV	In Service
AA1-077	Lackawanna 230kV	In Service
AA2-008	Saegers 230 kV	In Service
AA2-171	Sunbury #1 500kV	In Service
AA2-182	Sunbury #2 500kV	Withdrawn
AB1-182	Bear Creek	Engineering and Procurement
AB2-074	Sunbury #2 500kV	Withdrawn
AC1-071	Paupack-Lackawanna 230kV	Suspended
AC2-092	Susquehanna-Lackawanna 500kV	Active
AE1-051	East Carbondale-Lackawanna 69kV	Active
AE1-058	Frackville-Siegfried 230 kV	Active
AE1-059	Stanton-Summit 230 kV	Active
AE1-181	St. Johns-Freeland 69 kV	Active
AE1-225	Columbia-Sunbury 69 kV	Active
AE2-042	Milton 69 kV	Active
AE2-046	Harwood-East Hazelton 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
AE2-295	Eldred 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
AF2-006	Jermyn Tap-Brownell 69 kV	Active
AF2-007	Tinker Tap–East Carbondale 69 kV	Active
AF2-056	Shenandoah Tap 1– Mahanoy Tap 2 69 kV	Active
AF2-082	Dauphin PG Tie–Dauphin Juniata Tie 69 k	Active
AF2-086	Scott Tap-Bowmans Mill Tap 69 kV	Active

Queue Number	Project Name	Status
AF2-093	Derry 12.47 kV	Active
AF2-140	Saegers 230 kV	Active
AF2-145	Lycoming-Lock Haven 69 kV	Active
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
AF2-251	Susquehanna unit 1 230 kV	Active
AF2-261	Harwood-Susquehanna #1 230 kV	Active
AF2-262	Freeland #1 Tap-Jeddo-Highland 69 kV	Active
AF2-282	Edelle 12.47 kV	Active
AF2-283	Greenfield 12.47 kV	Active
AF2-284	Watson 12.47 kV	Active
AF2-285	W. Damascus 12.47 kV	Active
AF2-289	Watson 12.47 kV	Active
AF2-290	Derry 12.47 kV	Active
AF2-315	Susquehanna unit 2 230 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
AF2-417	West Damascus Tap-West Damascus 69 kV	Active
AF2-418	Millville Tap 69 kV	Active
AF2-421	East Hazelton-Weatherly Tap 69	Active
AF2-422	East Hazelton 12.47 kV	Active
AF2-423	East Hazelton 12.47 kV	Active
AF2-424	Reed-Reed Tap #1 69 kV	Active
AF2-425	Sunbury-Reed 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
AF2-436	Wyalusing 34.5 kV II	Active
AF2-437	Oxbow 34.5 kV III	Active
AF2-444	Reed-Fairview Tap #2 69 kV	Active
AF2-445A	Fishbach-Port Carbon 69 kV	Active
U2-015	Harwood-E. Palmerton 230kV	Withdrawn
W1-111	Harwood-Berwick 69kV	In Service
X3-003	Mehoopany II 115 kV	In Service
Y2-042	Oxbow 25kV	In Service
Z1-038	Florey Knob 34.5kV	Withdrawn
Z2-107	East Carbondale-Lackawanna 69kV	Suspended

8.8 Contingency Descriptions

Contingency Name	Contingency Definition
PJM500_PL_P42_000922	CONTINGENCY 'PJM500_PL_P42_000922' /* SUNBURY 500KV YARD 3N BF DISCONNECT BRANCH FROM BUS 200021 TO BUS 208109 CKT 24 /* /* T24 DISCONNECT BRANCH FROM BUS 200021 TO BUS 200009 CKT 1 /* /* JUNIATA-SUNBURY 500KV LINE END
PJM500_PL_P42_000923	CONTINGENCY 'PJM500_PL_P42_000923' /* SUNBURY 500KV YARD 3T BF DISCONNECT BRANCH FROM BUS 200021 TO BUS 208109 CKT 25 /* /* T25 DISCONNECT BRANCH FROM BUS 200021 TO BUS 200009 CKT 1 /* /* JUNIATA-SUNBURY 500KV LINE END

9 Short Circuit Analysis

To be performed during the System Impact Study

10 Affected Systems

10.1 NYISO

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