Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-348

PEQUEST RIVER-WASHINGTON 34.5 KV

8.32 MW Capacity / 19.8 MW Energy

January 2021

Table of Contents

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 JCPL.

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 Warren County, New Jersey. The installed facilities will have a total capability of 19.8 MW with 8.32 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 17, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-348
Project Name	PEQUEST RIVER-WASHINGTON 34.5 KV
State	New Jersey
County	Warren
Transmission Owner	JCPL
MFO	19.8
MWE	19.8
MWC	8.32
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

AG1-348 will interconnect with the JCPL system by tapping the Pequest River - Washington 34.5 kV line with a three-switch tap and constructing a one span 34.5 kV line extension (between Furnace Brook and Washington Substations). The transmission line tap will be located approximately 1.7 miles from Pequest River substation and 6.1 miles from Washington substation. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the new interconnection line tap and the associated Attachment facilities.

Attachment 1 shows a one-line diagram of the proposed primary direct connection facilities for the AG1-348 generation project to connect to the FirstEnergy ("FE") transmission system. IC will be responsible for constructing all of the facilities on its side of the POI, including the Attachment facilities which connect the generator to the FE transmission system.

5 Cost Summary

The AG1-348 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$6,689,000
Total System Network Upgrade Costs	$39,147,300[1]
Total Costs	**$45,836,300**

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.

[1] This project currently causes and/or contributes to overloads of the Transmission System (see Summer Peak Load Flow Analysis section below) and therefore has potential to have cost allocation for the system reinforcements listed in the report. This will be re-evaluated in the System Impact phase. The results may vary with queue customers withdrawing from the queue and other generators deactivating over time. If a customer is the first to cause the need for a project (causes loading to exceed 100% of rating), then the customer is responsible. If a customer contributes to a facility that is already overloaded by a prior queue, then they may receive cost allocation.

6 Transmission Owner Scope of Work

The interconnection of the project at the Primary POI will be accomplished system by tapping the Pequest River - Washington 34.5 kV line with a three-switch tap and constructing a one span 34.5 kV line extension (between Furnace Brook and Washington Substations). The transmission line tap will be located approximately 1.7 miles from Pequest River substation and 6.1 miles from Washington substation. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the new interconnection line tap and the associated Attachment facilities.

The project will also require non-direct connection upgrades at the Pequest River - Washington substations.

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

Description	**Total Cost**
Construct a 2.1 mile 34.5 kV tap into the interconnection customer's substation.	$5,040,000
Install FE owned 34.5 kV metering in the interconnection customer's substation.	$105,000
Construct a tap and install 2-34.5 kV switches on the Pequest River - Washington 34.5 kV line.	$470,000
Upgrade relaying at Pequest River 34.5 kV.	$537,000
Upgrade relaying at Washington 34.5 kV.	$537,000
Total Physical Interconnection Costs	**$6,689,000**

7 Schedule

Based on the scope of work for the Attachment Facilities and the Direct and/or Non-Direct Connection facilities, it is expected to take a minimum of **24 months** after the signing of an Interconnection Construction Service Agreement to complete the installation. This includes the requirement for the IC to make a preliminary payment that compensates FE for the first three months of the engineering design work that is related to the construction of the interconnection substation. This assumes that there will be no environmental issues with any of the new properties associated with this project, that there will be no delays in acquiring the necessary permits for implementing the defined direct connection and network upgrades, and that all transmission system outages will be allowed when requested.

If the customer is ultimately responsible for network upgrades, then the schedule for those upgrades will be refined in future study phases. The customer would need to wait for those upgrades to be completed prior to commercial operation unless determined deliverable by an interim deliverability study. The elapsed time to complete any network upgrades is provided in the System Reinforcements table of this report[1].

8 Transmission Owner Analysis

8.1 Power Flow Analysis

FE performed an analysis of its underlying transmission <100 kV system. The AG1-348 project did not contribute to any overloads on the FE transmission <100 kV system.

9 Interconnection Customer Requirements

9.1 System Protection

The IC must design it's Customer Facilities in accordance with all applicable standards, including the standards in FE's "Requirements for Transmission Connected Facilities" document located at: http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx. Preliminary Protection requirements will be provided as part of the Facilities Study. Detailed Protection Requirements will be provided once the project enters the construction phase.

All new generator only and new generator plus load facilities must be isolated from the FE transmission System by a Power Transformer. Section 14.2.6 of FE's "Requirements for Transmission Connected Facilities" document specifies the winding configurations of the transformer connecting to a non-effectively grounded portion of the FE Transmission system shall be determined by FE on a case-by-case basis.

9.2 Compliance Issues and Interconnection Customer Requirements

The proposed Customer Facilities must be designed in accordance with FE's "Requirements for Transmission Connected Facilities" document located at: http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx. In particular, the IC is responsible for the following:

1. The purchase and installation of a fully rated 34.5 kV circuit breaker to protect the AG1-348 generator lead line. A single circuit breaker must be used to protect this line; if the project has several GSU transformers, the individual GSU transformer breakers cannot be used to protect this line.

2. The purchase and installation of the minimum required FE generation interconnection relaying and control facilities. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.

3. The purchase and installation of supervisory control and data acquisition ("SCADA") equipment to provide information in a compatible format to the FE Transmission System Control Center.

4. Compliance with the FE and PJM generator power factor and voltage control requirements.

5. The execution of a back-up service agreement to serve the customer load supplied from the AG1-348 generation project metering point when the units are out-of-service. This assumes the intent of the IC is to net the generation with the load.

The IC will also be required to meet all PJM, ReliabilityFirst, and NERC reliability criteria and operating procedures for standards compliance. For example, the IC will need to properly locate and report the over and under voltage and over and under frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and ReliabilityFirst audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the FE system.

9.3 Power Factor Requirements

The IC shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformer(s) connected to the FE transmission system.

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 FE revenue metering requirements for generation interconnection customers which can be found in FE's "Requirements for Transmission Connected Facilities" document located at: http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx

11 Summer Peak - Load Flow Analysis

The Queue Project AG1-348 was evaluated as a 19.8 MW (Capacity 8.32 MW) injection tapping the Pequest River to Washington 34.5 kV line in the JCPL area (between Furnace Brook and Washington Substations). Project AG1-348 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-348 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
16599380	206246	28PEQUEST	115.0	JCP&L	206713	28DRKTN TP	115.0	JCP&L	1	JC-P2-3-JCN-230-706	breaker	245.0	101.77	103.18	DC	3.45
166601485	206258	28STNY BRK	115.0	JCP&L	206256	28WHIPPANY	115.0	JCP&L	1	JC-P7-1-JCN-230-14T	tower	185.0	106.46	106.92	DC	1.86

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.

None.

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
166601485	2	**28STNY BRK 115.0 kV - 28WHIPPANY 115.0 kV Ckt 1**	**JCP&L-AG1-F-0003 (2119): Replace (1) 800 A Generic wave trap at Whippany.** **Project Type : FAC** **Cost : $134,250** **Time Estimate : 12.0 Months**	$134,250
165999380	1	**28PEQUEST 115.0 kV - 28DRKTN TP 115.0 kV Ckt 1**	**JCP&L-AG1-F-0002 (2118): Reconductor (1) section of 4/0 CU subconductor circular at Drakestown with a conductor able to meet or exceed 253 MVA STE.** **Reconductor 14.18 miles of 556.5 ACSR 26/7 transmission line from Belvedere Tap to Drakestown with 795 ACSR or a conductor able to meet or exceed 253 MVA STE.** **Replace (1) 5 A thermal relay at Pequest River.** **Reconductor 1.32 miles of 795 ACSR 26/7 transmission line from Pequest River to Belvedere Tap with 1590 ACSR or a conductor able to meet or exceed 253 MVA STE.** **Project Type : FAC** **Cost : $39,013,050** **Time Estimate : 66.0 Months**	$39,013,050
			TOTAL COST	**$39,147,300**

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
165999380	206246	28PEQUEST	JCP&L	206713	28DRKTN TP	JCP&L	1	JC-P2-3-JCN-230-706	breaker	245.0	101.77	103.18	DC	3.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
204651	27PORT CT	0.5537	50/50	0.5537
206345	28N27_Y2-018	0.3442	50/50	0.3442
206671	28HOFFMAN	1.0197	50/50	1.0197
206679	28M&M S721	-0.7793	Adder	-0.92
206742	**28SUX_V3-011 (Deactivation : 26/04/2020)**	**-0.1972**	**Adder**	**-0.23**
206747	28DSM_X3-029	2.2739	50/50	2.2739
207402	28AA2-082 E	0.9108	Adder	1.07
207411	AA2-060 BAT	0.6720	50/50	0.6720
207414	AA2-061 BAT	0.8960	50/50	0.8960
207438	AD2-070 E	0.2129	Adder	0.25
290131	U2-059E	0.0652	Adder	0.08
902062	W1-127E	0.0999	Adder	0.12
903632	W3-044 E OP1	0.0732	Adder	0.09
903962	W3-077 E	0.5203	Adder	0.61
905442	W4-046 E	0.2743	Adder	0.32
905602	W4-073 E	0.5482	Adder	0.64
905762	W4-097 E	0.0819	Adder	0.1
924142	AB2-058 E	0.3581	Adder	0.42
940012	AE1-243 E	1.0052	Adder	1.18
940441	AE2-028 C	0.0232	Adder	0.03
940442	AE2-028 E	0.0203	Adder	0.02
942253	AE2-237 BAT	28.5262	50/50	28.5262
943483	AF1-019 BAT	1.4874	Merchant Transmission	1.4874
943551	AF1-026	0.1012	Adder	0.12
944681	AF1-133 C	2.4473	50/50	2.4473
944682	AF1-133 E	1.6315	50/50	1.6315
945221	AF1-187	0.0316	50/50	0.0316
945921	AF1-257	0.0096	Adder	0.01
946561	AF1-320 C O1	7.9569	50/50	7.9569
946562	AF1-320 E O1	5.3046	50/50	5.3046
946613	AF1-325 BAT	3.6672	50/50	3.6672
958451	AF2-139 C	0.1832	Adder	0.22
958452	AF2-139 E	0.2525	Adder	0.3
960631	AF2-354 C	0.2818	Adder	0.33
960632	AF2-354 E	0.3892	Adder	0.46
961512	AF2-442 NFTW	22.1500	50/50	22.1500
961522	AF2-443 NFTW	22.3944	50/50	22.3944
964851	AG1-348 C	1.4513	50/50	1.4513
964852	AG1-348 E	2.0025	50/50	2.0025

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
WEC	WEC	0.0066	Confirmed LTF	0.0066
LGEE	LGEE	0.0132	Confirmed LTF	0.0132
CPLE	CPLE	0.0116	Confirmed LTF	0.0116
CBM-W2	CBM-W2	0.1882	Confirmed LTF	0.1882
NY	NY	0.2218	Confirmed LTF	0.2218
TVA	TVA	0.0280	Confirmed LTF	0.0280
O-066	O-066	6.8646	Confirmed LTF	6.8646
SIGE	SIGE	0.1093	Confirmed LTF	0.1093
CBM-S2	CBM-S2	0.1879	Confirmed LTF	0.1879
CBM-S1	CBM-S1	0.0076	Confirmed LTF	0.0076
G-007	G-007	0.7193	Confirmed LTF	0.7193
MEC	MEC	0.0334	Confirmed LTF	0.0334
LAGN	LAGN	0.0350	Confirmed LTF	0.0350
CBM-W1	CBM-W1	0.3084	Confirmed LTF	0.3084

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
166601485	206258	28STNY BRK	JCP&L	206256	28WHIPPANY	JCP&L	1	JC-P7-1-JCN-230-14T	tower	185.0	106.46	106.92	DC	1.86

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
206345	28N27_Y2-018	0.1537	Adder	0.18
206638	28PEAPACK	0.1936	Adder	0.23
206671	28HOFFMAN	0.4239	Adder	0.5
206679	28M&M S721	1.2337	50/50	1.2337
206742	**28SUX_V3-011 (Deactivation : 26/04/2020)**	**0.2599**	**50/50**	**0.2599**
206746	28WNG_W3-110	0.0702	50/50	0.0702
206747	28DSM_X3-029	0.9453	Adder	1.11
206762	28FRD_X1-012	0.0659	50/50	0.0659
206763	28BVR_Y1-020	0.1140	50/50	0.1140
207412	28AA2-060 E	0.7571	50/50	0.7571
207413	28AA2-061 E	1.0094	50/50	1.0094
207440	AE1-081 E O1	0.1115	Adder	0.13
903632	W3-044 E OP1	0.0749	Adder	0.09
903672	W3-106 E	0.8908	50/50	0.8908
903682	W3-110 E	0.7259	50/50	0.7259
903962	W3-077 E	0.4529	Adder	0.53
905442	W4-046 E	0.4091	Adder	0.48
905542	W4-064 E	0.0839	Adder	0.1
907012	X1-012 E	0.7004	50/50	0.7004
924142	AB2-058 E	0.3117	Adder	0.37
933322	**AC2-144 E (Suspended)**	**0.0189**	**Adder**	**0.02**
933582	AC2-175 E	0.1332	Adder	0.16
940441	AE2-028 C	0.0218	Adder	0.03
940442	AE2-028 E	0.0191	Adder	0.02
942251	AE2-237 C	5.6845	50/50	5.6845
942252	AE2-237 E	22.7379	50/50	22.7379
943482	AF1-019 E	1.5354	Adder	1.81
944681	AF1-133 C	1.0173	Adder	1.2
944682	AF1-133 E	0.6782	Adder	0.8
946561	AF1-320 C O1	3.1502	Adder	3.71
946562	AF1-320 E O1	2.1001	Adder	2.47
946612	AF1-325 E	3.8840	50/50	3.8840
946622	**AF1-326 E (Withdrawn : 12/03/2020)**	**1.5257**	**Adder**	**1.79**
946632	**AF1-327 E (Withdrawn : 12/03/2020)**	**1.5761**	**Adder**	**1.85**
946642	AF1-328 E O1	1.5873	Adder	1.87
958441	AF2-138 C	1.5622	50/50	1.5622
958442	AF2-138 E	2.1574	50/50	2.1574

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960631	AF2-354 C	0.2882	Adder	0.34
960632	AF2-354 E	0.3980	Adder	0.47
961511	AF2-442 NFTI	22.1038	50/50	22.1038
961521	AF2-443 NFTI	22.3129	50/50	22.3129
962171	AG1-062 C	0.3786	Adder	0.84
962172	AG1-062 E	0.2524	Adder	0.56
963421	AG1-191 C	0.2572	Adder	0.57
963422	AG1-191 E	0.3552	Adder	0.79
964851	AG1-348 C	0.3518	Adder	0.78
964852	AG1-348 E	0.4854	Adder	1.08
WEC	WEC	0.0145	Confirmed LTF	0.0145
LGEE	LGEE	0.0283	Confirmed LTF	0.0283
CPLE	CPLE	0.0239	Confirmed LTF	0.0239
CBM-W2	CBM-W2	0.3942	Confirmed LTF	0.3942
NY	NY	0.4772	Confirmed LTF	0.4772
TVA	TVA	0.0588	Confirmed LTF	0.0588
O-066	O-066	15.2165	Confirmed LTF	15.2165
SIGE	SIGE	0.2421	Confirmed LTF	0.2421
CBM-S2	CBM-S2	0.3863	Confirmed LTF	0.3863
CBM-S1	CBM-S1	0.0163	Confirmed LTF	0.0163
G-007	G-007	1.5697	Confirmed LTF	1.5697
MEC	MEC	0.0715	Confirmed LTF	0.0715
LAGN	LAGN	0.0752	Confirmed LTF	0.0752
CBM-W1	CBM-W1	0.6589	Confirmed LTF	0.6589

11.7 Queue Dependencies

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

Queue Number	Project Name	Status
AA2-060	Branchville-Sussex #1 34kV	Engineering and Procurement
AA2-061	Branchville-Sussex #2 34.5kV	Engineering and Procurement
AA2-082	Alpha 34.5kV	In Service
AB2-058	Stewartsville 34.5kV	In Service
AC2-144	Newburgh 12.47kV	Suspended
AC2-175	Berkshire Solar 12 kV	Engineering and Procurement
AD2-070	Gilbert-Morris Park 34.5kV	In Service
AE1-081	Landing 12.47 kV	In Service
AE1-243	Warren Glen Storage 34.5 kV	Active
AE2-028	Broadway 12.47 kV	Active
AE2-237	Vernon-Sugar Loaf #2 115 kV	Active
AF1-019	Branchville-Holiday Lakes 34.5 kV	Active
AF1-026	Edge Road Battery Storage (CIRs)	In Service
AF1-133	Pequest River-Richmond 34.5 kV	Engineering and Procurement
AF1-187	Portland 3 & 4 115 kV	Partially in Service - Under Construction
AF1-257	Hawks 2 12 kV	Active
AF1-320	Merrill Creek 115 kV	Active
AF1-325	Sparta-Woodruff's Gap 34.5 kV	Active
AF1-326	Pohatcong-Newburgh 34.5 kV	Withdrawn
AF1-327	Pohatcong-Newburgh 34.5 kV	Withdrawn
AF1-328	Hackettstown-Pohatcong 34.5 kV	Active
AF2-138	Flanders-West Wharton 34.5 kV	Active
AF2-139	Gilbert-Warren Glen 34.5 kV	Active
AF2-354	Washington 34.5 kV II	Engineering and Procurement
AF2-442	Vernon 115 kV	Active
AF2-443	Vernon 115 kV	Active
AG1-062	Flanders-Pohatcong Mountain 34.5 kV	Active
AG1-191	Chester-Pohatcong Mountain 34.5 kV	Active
AG1-348	Pequest River 34.5 kV	Active
U2-059	Foul Rift 13kV	In Service
V3-011	Sussex 12.47kV	In Service
W1-127	Phillipsburg 12.47kV	In Service
W3-044	Washington 34.5kV	In Service
W3-077	Broadway-Stewartsville 34.5kV	In Service
W3-106	Sussex-Wykertown 34.5kV	In Service
W3-110	Sussex	In Service
W4-046	Washington-Mobile Chemical 34.5kV	In Service
W4-064	N. Newton 12kV	In Service
W4-073	Phillipsburg 34.5kV	In Service

Queue Number	Project Name	Status
W4-097	Hawks 12.5kV	In Service
X1-012	Branchville-Sussex 34.5kV	In Service
X3-029	Belvidere	In Service
Y1-020	Sussex 34kV	In Service
Y2-018	Pequest River 34.5kV	In Service

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
JC-P7-1-JCN-230-14T	CONTINGENCY 'JC-P7-1-JCN-230-14T' /* PORTLAND-GREYSTONE & GREYSTONE-W.WHARTON 230 KV S1007 E1045 DISCONNECT BRANCH FROM BUS 206241 TO BUS 204510 CKT 1 /* 28GRYSTN Q 230 27PORTLAND 230 REMOVE LOAD 3 FROM BUS 206241 /* 28GRYSTN Q 230 DISCONNECT BRANCH FROM BUS 206240 TO BUS 206255 CKT 1 /* 28GRYSTN J 230 28W WHRTN 230 DISCONNECT BRANCH FROM BUS 206255 TO BUS 206203 CKT 4 /* 28W WHRTN 230 28W WHRTN 35 END
JC-P2-3-JCN-230-706	CONTINGENCY 'JC-P2-3-JCN-230-706' /* WEST WHARTON 230 BRKR 1A3 - A2001 WW1 WW3 (WW BKR 1A3) DISCONNECT BRANCH FROM BUS 206255 TO BUS 206377 CKT ZL /* 28W WHRTN 230 28DOTWHART 230 A2001 DISCONNECT BRANCH FROM BUS 206377 TO BUS 206374 CKT 1 /* 28DOTWHART 230 28ELASTMLD 230 A2001 DISCONNECT BRANCH FROM BUS 206374 TO BUS 206247 CKT 1 /* 28ELASTMLD 230 28POHATCNG 230 A2001 DISCONNECT BRANCH FROM BUS 206255 TO BUS 206254 CKT 3 /* 28W WHRTN 230 28W WHRTN 115 W WHRTN #3 DISCONNECT BRANCH FROM BUS 206255 TO BUS 206203 CKT 1 /* 28W WHRTN 230 28W WHRTN 35 W WHRTN #1 END

12 Short Circuit Analysis

The following Breakers are overdutied:

None.

12.1 System Reinforcements - Short Circuit

No short circuit impacts were identified for this project.

13 Affected Systems

13.1 NYISO

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

14 Attachment 1: One Line Diagram