Generation Interconnection

Feasibility Study Report

for

Queue Project AE1-238

"OCEANVIEW WIND 230 KV"

225 MW Capacity / 816 MW Energy

April, 2019

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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 Jersey Central Power & Light Company (JCPL).

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.

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.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in

order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a $10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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.

General

The Interconnection Customer (IC), has proposed a Offshore Wind generating facility to be located off the coast of New Jersey. The installed facilities will have a total capability of **816 MW** with **225 MW** of this output being recognized by PJM as Capacity. The proposed in-service date for this project is **June 1, 2024**. **This study does not imply a TO commitment to this in-service date.**

Queue Number	**AE1-238**
Project Name	OCEANVIEW WIND 230 KV
Interconnection Customer	
State	None
County	Monmouth
Transmission Owner	JCPL
MFO	816
MWE	816
MWC	225
Fuel	Offshore Wind
Basecase Study Year	2022

Point of Interconnection

The **AE1-238 "Oceanview Wind 230 kV**" generation project will interconnect into the Oceanview 230 kV Substation, located in Monmouth County, New Jersey, via a single interconnection point. The primary direct connection of this project will be accomplished by adding (2) 230 kV circuit breakers at Oceanview Substation and extent the breaker-and-a-half bus. The POI will be at a JCPL installed deadend structure at the Oceanview yard. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the associated attachment facilities to the POI.

Attachment 1 shows a one-line diagram of the proposed primary direct connection of the (AE1-238) generation project to the Jersey Central Power & Light transmission systems. **Attachment 2** provides the proposed location for the project. IC will be responsible for constructing all of the facilities on its side of the POI including the attachment line. IC may not install above ground equipment within any JCPL right-of-way unless permission to do so is expressly granted by JCPL. The JCPL facilities required to be upgraded for the interconnection of the generation project and the associated cost estimate are shown in the Transmission Owner Scope of Work section.

Cost Summary

The AE1-238 project will be responsible for the following costs. These costs do not include CIAC Tax Gross-up:

Description	Total Cost
Attachment Facilities	$0
Direct Connection Network Upgrade	$0
Non Direct Connection Network Upgrades	$2,123,200
Total Costs	**$2,123,200**[1]

In addition, the AE1-238 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	**$63,012,700**

Cost allocations for these upgrades will be provided in the System Impact Study Report.

The required Attachment Facilities, Direct Connection, and Non-Direct Connection work for the interconnection of the AE1-238 generation project to the JCPL Transmission System is detailed in the following sections. The associated one-line with the generation project attachment facilities and primary direct and non-direct connection are shown in Attachment 1.

Note that the FE findings were made from a conceptual review of this project. A more detailed review of the connection facilities and their cost will be identified in the Facilities Study. Further note that the cost estimate data contained in this document should be considered high level estimates since it was produced without a detailed engineering review. The applicant will be responsible for the actual cost of construction. FE herein reserves the right to return to any issues in this document and, upon appropriate justification, request additional monies to complete any reinforcements to the transmission systems.

[1] This cost excludes any applicable state or federal taxes. If at a future date Federal CIAC (contribution in aid of construction) taxes are deemed necessary by the IRS for this project, JPCL shall be reimbursed by the Interconnection Customer for such taxes.

Transmission Owner Scope of Work

Attachment Facilities

The IC will be responsible for constructing the Attachment Facilities to the Point of Interconnection along with acquiring all easements, properties, and permits that may be required.

Direct Connection Cost Estimate

There is no Direct Connection scope of work for this project.

Non-Direct Connection Cost Estimate

To accommodate the proposed AE1-238 Project, JCPL will add (2) 230 kV circuit breakers at Oceanview Substation creating the start to a new breaker-and-a-half string. The IC will be responsible for constructing the Attachment Facilities to the Point of Interconnection along with acquiring all easements, properties, and permits that may be required.

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Oceanview Substation: Install (2) 230kV breakers creating the start to a new breaker and a half string for generation interconnection AE1-283 @ Oceanview SS	$2,123,200
Total Non-Direct Connection Facility Costs	**$2,123,200**

Incremental Capacity Transfer Rights (ICTRs)

Will be determined at a later study phase.

Schedule

Based on the extent of the JCPL primary Non-Direct Connection work required to support the AE1-238 generation project, it is expected to take a minimum of **fifteen (15) months** from the date of a fully executed Interconnection Construction Service Agreement to complete the installation. This includes the requirement for the IC to make a preliminary payment to FE which funds the Non-Direct Connection work. 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 PJM will allow all transmission system outages when requested.

Transmission Owner Analysis

Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2022 summer peak load flow model and the results were verified by FE. Additionally, FE performed an analysis of its underlying transmission <100 kV system. The AE1-238 project contributes to overloads on the FE transmission system as shown in the Network Impacts section of this report. The estimated cost of system reinforcements necessary to mitigate these overloads are provided in the System Reinforcements section.

Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by FE. The connection of AE1-238 project to the system does not result in any newly overdutied circuit breakers on the FE transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers.

Stability Analysis

PJM will be responsible for completing a dynamic stability analysis, as part of the System Impact Study. The results of this analysis will be reviewed by FE. Should stability concerns be identified in PJM's study, FE will develop appropriate system reinforcement(s) and included the estimated cost of any reinforcement(s) in FE's System Impact Study report.

System Protection

The IC must design its 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.

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 230 kV circuit breaker to protect the AE1-238 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 retail service agreement with the electric distribution company to serve the customer load supplied from the AE1-238 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.

Power Factor Requirements

The IC shall design its wind-powered 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.

Revenue Metering and SCADA Requirements

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.

JCPL Requirements

The Interconnection Customer will be required to comply with all FE Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "FirstEnergy Requirements for Transmission Connected Facilities" document located at the following link:

http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx.

Network Impacts

The Queue Project AE1-238 was evaluated as a 816 MW (Capacity 225 MW) injection at the Oceanview 230 kV substation in the JCPL area. Project AE1-238 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-238 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

Generation Deliverability

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

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
897050	218331	KILMER_I	PSE&G	218333	LNELSN_I	PSE&G	1	PS_P1-2_#2LINE	single	805.0	97.21	104.83	DC	60.99
897051	218331	KILMER_I	PSE&G	218333	LNELSN_I	PSE&G	1	PS_P1-2_#2LINE_LT	single	805.0	95.85	103.48	DC	60.99
897014	218332	KILMER_W	PSE&G	218334	LNELSN_W	PSE&G	1	PS_P1-2_#1LINE	single	679.0	99.91	106.64	DC	45.4
897015	218332	KILMER_W	PSE&G	218334	LNELSN_W	PSE&G	1	PS_P1-2_#1LINE_LT	single	679.0	99.12	105.85	DC	45.4

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	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
895950	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	X	JC-P2-3-JCC-230-47D	breaker	432.0	20.9	148.16	DC	549.77
895951	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	X	JC-P2-3-JCC-230-47C	breaker	432.0	19.55	145.0	DC	548.56
896044	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	Y	JC-P2-3-JCC-230-47A	breaker	432.0	46.37	135.53	DC	785.79
896045	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	Y	JC-P2-3-JCC-230-16A	breaker	432.0	26.42	132.6	DC	541.24
897752	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	Y	JC-P7-1-JCC-230-7A	tower	432.0	42.0	103.33	DC	326.72
897753	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	X	JC-P7-1-JCC-230-7A	tower	432.0	42.0	103.33	DC	326.72
895967	206314	28RED OAKA	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-19_E	breaker	869.0	99.85	128.17	DC	244.59
897693	206326	28E WINDSR	JCP&L	206316	28WINDSOR	JCP&L	1	PS_P7-1_1LINE+2LINE	tower	869.0	93.45	109.79	DC	141.86
897694	206326	28E WINDSR	JCP&L	206316	28WINDSOR	JCP&L	1	PS_P7-1_I1023+GBK-LN_LT	tower	869.0	90.73	107.05	DC	141.67
896267	206410	28R11RINGB	JCP&L	206315	28RED OAKB	JCP&L	1	JC-P2-3-JCC-230-26D	breaker	869.0	89.61	117.82	DC	244.8
896268	206410	28R11RINGB	JCP&L	206315	28RED OAKB	JCP&L	1	JC-P2-3-JCC-230-026C	breaker	869.0	76.46	104.73	DC	245.4
896269	206410	28R11RINGB	JCP&L	206315	28RED OAKB	JCP&L	1	JC-P2-3-JCC-230-20_A	breaker	869.0	72.59	100.85	DC	245.25
896206	206411	28R11RINGA	JCP&L	206314	28RED OAKA	JCP&L	1	JC-P2-3-JCC-230-26B	breaker	869.0	93.48	121.79	DC	245.65
896207	206411	28R11RINGA	JCP&L	206314	28RED OAKA	JCP&L	1	JC-P2-3-JCC-230-026A	breaker	869.0	80.24	108.61	DC	246.24
896208	206411	28R11RINGA	JCP&L	206314	28RED OAKA	JCP&L	1	JC-P2-3-JCC-230-19_E	breaker	869.0	75.42	103.78	DC	246.11
896209	206411	28R11RINGA	JCP&L	206314	28RED OAKA	JCP&L	1	JC-P2-3-JCC-230-81	breaker	869.0	79.65	101.91	DC	193.12

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	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
897456	206302	28OYSTER C	JCP&L	227955	CEDAR	AE	1	JC-P7-1-JCC-230-12	tower	564.0	102.79	106.33	DC	44.27
896139	206305	28RAR RVR	JCP&L	218331	KILMER_I	PSE&G	1	PS_P2-3_LNEPS_P1-2_2_LT	breaker	813.0	114.34	126.9	DC	221.18
896317	206305	28RAR RVR	JCP&L	218332	KILMER_W	PSE&G	1	PS_P2-3_LNEPS_P1-2_1_LT	breaker	817.0	103.4	112.66	DC	163.92
896964	206305	28RAR RVR	JCP&L	218331	KILMER_I	PSE&G	1	PS_P1-2_#2LINE_LT	single	813.0	103.2	110.75	DC	60.99
896965	206305	28RAR RVR	JCP&L	218331	KILMER_I	PSE&G	1	PS_P1-2_#2LINE	single	813.0	102.36	109.91	DC	60.99
895964	206314	28RED OAKA	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-26B	breaker	869.0	118.67	146.94	DC	244.11
895965	206314	28RED OAKA	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-026A	breaker	869.0	105.21	133.54	DC	244.71
895966	206314	28RED OAKA	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-81	breaker	869.0	107.47	129.7	DC	191.6
895931	206315	28RED OAKB	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-26D	breaker	869.0	122.57	150.72	DC	242.96
895932	206315	28RED OAKB	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-026C	breaker	869.0	109.16	137.38	DC	243.56
895933	206315	28RED OAKB	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-85	breaker	869.0	112.1	133.9	DC	187.66
895934	206315	28RED OAKB	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-20_A	breaker	869.0	103.86	132.07	DC	243.41

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	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
896960	206305	28RAR RVR	JCP&L	218331	KILMER_I	PSE&G	1	PS_P1-2_#2LINE_LT	operation	813.0	113.74	126.3	DC	221.18
897222	206305	28RAR RVR	JCP&L	218332	KILMER_W	PSE&G	1	PS_P1-2_#1LINE_LT	operation	817.0	99.64	108.94	DC	164.66
897046	218331	KILMER_I	PSE&G	218333	LNELSN_I	PSE&G	1	PS_P1-2_#2LINE	operation	805.0	107.85	120.54	DC	221.18
897010	218332	KILMER_W	PSE&G	218334	LNELSN_W	PSE&G	1	PS_P1-2_#1LINE	operation	679.0	110.72	121.91	DC	164.66
897018	218332	KILMER_W	PSE&G	218334	LNELSN_W	PSE&G	1	Base Case	operation	523.0	95.06	103.28	DC	93.24

System Reinforcements[2]

ID	Index	Facility	Upgrade Description	Cost
896317	11	28RAR RVR 230.0 kV - KILMER_W 230.0 kV Ckt 1	**JCP&L** Description : Reconductor 1590 45/7 MCM ACSS and upgrade terminal equipment at Raritan river on line to match or exceed 1334 MVA STE rating. Time Estimate : 17.0 Months Cost : $6,926,600 **PSE&G** Description : No Violation. PSE&G Terminal Equipment is Not Limiting Component	$6,926,600
896208,896209,896206,896207	8	28R11RINGA 230.0 kV - 28RED OAKA 230.0 kV Ckt 1	**JCP&L** Description : Reconductor the transmission line between Red Oak - Raritan River - South River Junction T1034 with 1590 45/7 MCM ACSS, and upgrade all terminal equipment at both stations to match or exceed 1334 MVA STE Rating. Also upgrade substation conductor at Red Oak. Time Estimate : 12.0 Months Cost : $1,237,200	$1,237,200
897693,897694	6	28E WINDSR 230.0 kV - 28WINDSOR 230.0 kV Ckt 1	**JCP&L** Description : Reconductor with 1590 45/7 MCM ACSS. Replace current transformers and Wave trap at Windsor on line to match or exceed 1334 MVA STE rating. Time Estimate : 18.0 Months Cost : $9,734,000	$9,734,000
897014,897015	2	KILMER_W 230.0 kV - LNELSN_W 230.0 kV Ckt 1	**PSE&G** Description : No Violation. PSE&G Terminal Equipment is Not Limiting Component	$0
897050,897051	1	KILMER_I 230.0 kV - LNELSN_I 230.0 kV Ckt 1	**PSE&G** Description : No Violation. PSE&G Terminal Equipment is Not Limiting Component	$0
896139,896964,896965	10	28RAR RVR 230.0 kV - KILMER_I 230.0 kV Ckt 1	**JCP&L** Description : Reconductor with 1590 45/7 MCM ACSS and upgrade equipment at on line to match or exceed 1334 MVA STE rating. Time Estimate : 17.0 Months Cost : $18,844,500 **PSE&G** Description : No Violation. PSE&G Terminal Equipment is Not Limiting Component	$18,844,500

[2] JCPL cost estimates presented in this System Reinforcements section include tax gross-up. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129.

ID	Index	Facility	Upgrade Description	Cost
896267,896268,896269	7	28R11RINGB 230.0 kV - 28RED OAKB 230.0 kV Ckt 1	**JCP&L** Description : Reconductor the transmission line between Red Oak - Raritan River - South River Junction G1047 with 1590 45/7 MCM ACSS, and upgrade all terminal equipment at both stations to match or exceed 1334 MVA STE Rating. Also upgrade substation conductor at Red Oak. Time Estimate : 24.0 Months Cost : $1,802,100	$1,802,100
895964,895965,895966,895967	5	28RED OAKA 230.0 kV - 28RAR RVR 230.0 kV Ckt 1	**JCP&L** Description : Reconductor the transmission line between Red Oak - Raritan River - South River Junction T1034 with 1590 45/7 MCM ACSS, and upgrade all terminal equipment at both stations to match or exceed 1334 MVA STE Rating. Also upgrade substation conductor at Red Oak. Time Estimate : 12.0 Months Cost : $14,497,500	$14,497,500
897456	9	28OYSTER C 230.0 kV - CEDAR 230.0 kV Ckt 1	**JCP&L** Description : Reconductor with 1590 45/7 MCM ACSS. Time Estimate : 8.0 Months Cost : $285,300 **AE** Description : No Violation. Incorrect Rating in Case.	$285,300
897753,895950,895951	3	28OCEANVW 230.0 kV - 28ATLANTIC 230.0 kV Ckt X	**JCP&L** Description : No Violation. The ratings are S/N: 709, S/E: 869	$0
897752,896044,896045	4	28OCEANVW 230.0 kV - 28ATLANTIC 230.0 kV Ckt Y	**JCP&L** Description : No Violation. The ratings are S/N: 709, S/E: 869	$0
895931,895932,895933,895934	12	28RED OAKB 230.0 kV - 28RAR RVR 230.0 kV Ckt 1	**JCP&L** Description : Reconductor the transmission line between Red Oak - Raritan River - South River Junction G1047 with 1590 45/7 MCM ACSS, and upgrade all terminal equipment at both stations to match or exceed 1334 MVA STE Rating. Also upgrade substation conductor at Red Oak. Time Estimate : 24.0 Months Cost : $9,685,500	$9,685,500
			TOTAL COST	**$63,012,700**

Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact.It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

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
897050	218331	KILMER_I	PSE&G	218333	LNELSN_I	PSE&G	1	PS_P1-2_#2LINE	single	805.0	97.21	104.83	DC	60.99

Bus #	Bus	MW Impact
206201	28JERSVGEN	0.07
206271	28MCRC/REC	0.3
206306	28LKWD G1	2.29
206308	28LKWD G2	2.29
206312	28LKWD G3	1.61
206325	28O C GEN	94.64
206327	28S RIV G1	5.23
206328	28S RIV G2	5.23
206329	28S RIV G3	7.27
206350	28RRCT1&2	6.25
206351	28RRCT3&4	5.85
206358	28PARLN1&2	3.29
206359	28PARLN3&4	4.07
206362	28RDOAKCT1	13.28
206363	28RDOAKCT2	13.25
206364	28RDOAKCT3	13.25
206365	28RDOAKST1	18.61
206366	28LKWD CT1	4.33
206367	28LKWD CT2	4.33
206368	28MDLSEXCO	1.23
206403	28W4-009	57.52
206412	28R11	212.89
207144	28HOW_X1-037	0.23
207145	28FRN_Y2-051	0.06
207204	28HOL_W1-112	0.08
207205	28MAN_W1-024	0.04
207206	28TIN_W1-124	0.32
901421	W1-113 C	0.08
902911	W2-078 C	0.1
903981	W3-079 C	0.08
905501	W4-060 C OP1	0.22
925541	AC1-029	1.48
927131	AC1-207 C	0.15
930891	AB1-138 C	0.61
934351	AD1-059	0.41
934841	AD1-113	18.11
937261	AD2-165	19.35
938151	AE1-020 C O1	47.51
938211	AE1-034 C O1	57.25
939121	AE1-142 C O1	1.37
939981	AE1-238 C	60.99

Bus #	Bus	MW Impact
BAYOU	BAYOU	0.72
BIG_CAJUN1	BIG_CAJUN1	1.11
BIG_CAJUN2	BIG_CAJUN2	2.23
BLUEG	BLUEG	3.53
CALDERWOOD	CALDERWOOD	0.37
CANNELTON	CANNELTON	0.21
CARR	CARR	1.14
CATAWBA	CATAWBA	0.23
CHEOAH	CHEOAH	0.34
CHILHOWEE	CHILHOWEE	0.12
CHOCTAW	CHOCTAW	0.74
COFFEEN	COFFEEN	0.37
COTTONWOOD	COTTONWOOD	2.87
DEARBORN	DEARBORN	0.64
DUCKCREEK	DUCKCREEK	0.81
EDWARDS	EDWARDS	0.37
ELMERSMITH	ELMERSMITH	0.37
FARMERCITY	FARMERCITY	0.24
G-007A	G-007A	124.04
GIBSON	GIBSON	0.15
HAMLET	HAMLET	0.75
NEWTON	NEWTON	0.97
PRAIRIE	PRAIRIE	1.81
RENSSELAER	RENSSELAER	0.9
SANTEETLA	SANTEETLA	0.1
SMITHLAND	SMITHLAND	0.14
TATANKA	TATANKA	0.44
TILTON	TILTON	0.44
TRIMBLE	TRIMBLE	0.39
TVA	TVA	1.2
UNIONPOWER	UNIONPOWER	0.53

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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
897014	218332	KILMER_W	PSE&G	218334	LNELSN_W	PSE&G	1	PS_P1-2_#1LINE	single	679.0	99.91	106.64	DC	45.4

Bus #	Bus	MW Impact
206201	28JERSVGEN	0.05
206271	28MCRC/REC	0.22
206306	28LKWD G1	1.72
206308	28LKWD G2	1.72
206312	28LKWD G3	1.21
206325	28O C GEN	71.52
206327	28S RIV G1	3.86
206328	28S RIV G2	3.86
206329	28S RIV G3	5.36
206350	28RRCT1&2	4.6
206351	28RRCT3&4	4.31
206358	28PARLN1&2	2.43
206359	28PARLN3&4	3.0
206362	28RDOAKCT1	9.78
206363	28RDOAKCT2	9.76
206364	28RDOAKCT3	9.76
206365	28RDOAKST1	13.71
206366	28LKWD CT1	3.26
206367	28LKWD CT2	3.26
206368	28MDLSEXCO	0.91
206403	28W4-009	42.36
206412	28R11	156.89
207144	28HOW_X1-037	0.17
207145	28FRN_Y2-051	0.04
207204	28HOL_W1-112	0.06
207205	28MAN_W1-024	0.03
207206	28TIN_W1-124	0.24
901421	W1-113 C	0.06
902911	W2-078 C	0.07
903981	W3-079 C	0.06
905501	W4-060 C OP1	0.17
925541	AC1-029	1.09
927131	AC1-207 C	0.12
930891	AB1-138 C	0.46
934351	AD1-059	0.31
934841	AD1-113	13.34
937261	AD2-165	14.26
938151	AE1-020 C O1	35.9
938211	AE1-034 C O1	43.06
939121	AE1-142 C O1	1.03
939981	AE1-238 C	45.4

Bus #	Bus	MW Impact
BAYOU	BAYOU	0.45
BIG_CAJUN1	BIG_CAJUN1	0.69
BIG_CAJUN2	BIG_CAJUN2	1.39
BLUEG	BLUEG	2.22
CALDERWOOD	CALDERWOOD	0.23
CANNELTON	CANNELTON	0.13
CARR	CARR	1.18
CATAWBA	CATAWBA	0.14
CHEOAH	CHEOAH	0.21
CHILHOWEE	CHILHOWEE	0.08
CHOCTAW	CHOCTAW	0.46
COFFEEN	COFFEEN	0.23
COTTONWOOD	COTTONWOOD	1.79
DEARBORN	DEARBORN	0.41
DUCKCREEK	DUCKCREEK	0.51
EDWARDS	EDWARDS	0.23
ELMERSMITH	ELMERSMITH	0.23
FARMERCITY	FARMERCITY	0.15
G-007A	G-007A	91.34
GIBSON	GIBSON	0.09
HAMLET	HAMLET	0.46
NEWTON	NEWTON	0.61
PRAIRIE	PRAIRIE	1.14
RENSSELAER	RENSSELAER	0.94
SANTEETLA	SANTEETLA	0.06
SMITHLAND	SMITHLAND	0.09
TATANKA	TATANKA	0.28
TILTON	TILTON	0.28
TRIMBLE	TRIMBLE	0.25
TVA	TVA	0.75
UNIONPOWER	UNIONPOWER	0.33

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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
895950	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	X	JC-P2-3-JCC-230-47D	breaker	432.0	20.9	148.16	DC	549.77

Bus #	Bus	MW Impact
206325	28O C GEN	45.48
901982	W1-119 E	0.63
901991	W1-120C	0.43
901992	W1-120E	0.7
902082	W1-129E	0.17
902322	W2-019 E	0.2
902952	W2-082 E OP1	0.57
903982	W3-079 E	0.35
905252	W4-025 E	0.24
912102	X4-015 E	0.17
914092	Y2-051 E	0.26
917612	Z2-102 E	0.46
917682	Z2-109 E	1.65
919662	AA2-048 E	0.56
930891	AB1-138 C	0.28
930892	AB1-138 E	0.47
931122	AB1-163 E	0.36
938151	AE1-020 C O1	22.83
938152	AE1-020 E O1	58.42
938211	AE1-034 C O1	27.68
938212	AE1-034 E O1	70.83
939121	AE1-142 C O1	0.65
939122	AE1-142 E O1	0.94
939981	AE1-238 C	151.59
939982	AE1-238 E	398.18
CARR	CARR	0.26
CBM-S1	CBM-S1	0.16
CBM-S2	CBM-S2	0.1
CBM-W1	CBM-W1	0.24
CBM-W2	CBM-W2	1.11
CIN	CIN	0.11
CPLE	CPLE	0.04
G-007	G-007	7.47
IPL	IPL	0.07
LGEE	LGEE	0.03
MEC	MEC	0.21
MECS	MECS	0.13
O-066	O-066	4.66
RENSSELAER	RENSSELAER	0.21
WEC	WEC	0.03

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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
896044	206300	28OCEANVW	JCP&L	206286	28ATLANTIC	JCP&L	Y	JC-P2-3-JCC-230-47A	breaker	432.0	46.37	135.53	DC	785.79

Bus #	Bus	MW Impact
206271	28MCRC/REC	0.12
207206	28TIN_W1-124	0.25
902032	W1-124E	2.7
912182	X4-031 E	0.22
919672	AA2-049 E	0.65
920732	AA2-184 E	2.1
939981	AE1-238 C	216.67
939982	AE1-238 E	569.12
BAYOU	BAYOU	0.0
BIG_CAJUN1	BIG_CAJUN1	0.0
BIG_CAJUN2	BIG_CAJUN2	0.0
BLUEG	BLUEG	0.01
CALDERWOOD	CALDERWOOD	0.0
CANNELTON	CANNELTON	0.0
CARR	CARR	0.01
CATAWBA	CATAWBA	0.0
CHEOAH	CHEOAH	0.0
CHILHOWEE	CHILHOWEE	0.0
CHOCTAW	CHOCTAW	0.0
COFFEEN	COFFEEN	0.0
COTTONWOOD	COTTONWOOD	0.0
DEARBORN	DEARBORN	0.0
DUCKCREEK	DUCKCREEK	0.0
EDWARDS	EDWARDS	0.0
ELMERSMITH	ELMERSMITH	0.0
FARMERCITY	FARMERCITY	0.0
G-007	G-007	0.19
GIBSON	GIBSON	0.0
HAMLET	HAMLET	0.0
NEWTON	NEWTON	0.0
O-066	O-066	0.14
PRAIRIE	PRAIRIE	0.0
RENSSELAER	RENSSELAER	0.01
SANTEETLA	SANTEETLA	0.0
SMITHLAND	SMITHLAND	0.0
TATANKA	TATANKA	0.0
TILTON	TILTON	0.0
TRIMBLE	TRIMBLE	0.0
TVA	TVA	0.0
UNIONPOWER	UNIONPOWER	0.0

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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
895964	206314	28RED OAKA	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-26B	breaker	869.0	118.67	146.94	DC	244.11

Bus #	Bus	MW Impact
206271	28MCRC/REC	0.31
206325	28O C GEN	96.22
206327	28S RIV G1	6.63
206328	28S RIV G2	6.63
206329	28S RIV G3	9.22
206358	28PARLN1&2	4.07
206359	28PARLN3&4	5.04
206363	28RDOAKCT2	17.08
206364	28RDOAKCT3	17.08
206412	28R11	269.89
207144	28HOW_X1-037	0.2
207204	28HOL_W1-112	0.07
207206	28TIN_W1-124	0.34
901112	W1-032 E OP1	0.2
901912	W1-112E OP1	0.76
901982	W1-119 E	1.41
901991	W1-120C	0.96
901992	W1-120E	1.57
902032	W1-124E	3.66
902082	W1-129E	0.38
902322	W2-019 E	0.45
902952	W2-082 E OP1	1.28
903981	W3-079 C	0.08
903982	W3-079 E	0.88
905252	W4-025 E	0.54
907082	X1-037 E	2.16
912102	X4-015 E	0.38
912182	X4-031 E	0.51
914092	Y2-051 E	0.61
917612	Z2-102 E	1.03
917682	Z2-109 E	12.27
918452	AA1-060 E	2.13
919662	AA2-048 E	1.39
919672	AA2-049 E	0.89
920732	AA2-184 E	5.92
925541	AC1-029	1.88
930891	AB1-138 C	0.62
930892	AB1-138 E	1.03
931122	AB1-163 E	0.84
934032	AD1-028 E	0.03

Bus #	Bus	MW Impact
937261	AD2-165	24.54
938151	AE1-020 C O1	48.31
938152	AE1-020 E O1	123.6
938211	AE1-034 C O1	58.13
938212	AE1-034 E O1	148.73
939121	AE1-142 C O1	1.39
939122	AE1-142 E O1	2.0
939981	AE1-238 C	67.31
939982	AE1-238 E	176.8
BAYOU	BAYOU	0.3
BIG_CAJUN1	BIG_CAJUN1	0.47
BIG_CAJUN2	BIG_CAJUN2	0.94
BLUEG	BLUEG	1.53
CALDERWOOD	CALDERWOOD	0.15
CANNELTON	CANNELTON	0.09
CARR	CARR	1.04
CATAWBA	CATAWBA	0.09
CHEOAH	CHEOAH	0.14
CHILHOWEE	CHILHOWEE	0.05
CHOCTAW	CHOCTAW	0.31
COFFEEN	COFFEEN	0.16
COTTONWOOD	COTTONWOOD	1.21
DEARBORN	DEARBORN	0.29
DUCKCREEK	DUCKCREEK	0.35
EDWARDS	EDWARDS	0.16
ELMERSMITH	ELMERSMITH	0.16
FARMERCITY	FARMERCITY	0.11
G-007	G-007	30.12
GIBSON	GIBSON	0.06
HAMLET	HAMLET	0.29
NEWTON	NEWTON	0.42
O-066	O-066	17.89
PRAIRIE	PRAIRIE	0.78
RENSSELAER	RENSSELAER	0.82
SANTEETLA	SANTEETLA	0.04
SMITHLAND	SMITHLAND	0.06
TATANKA	TATANKA	0.19
TILTON	TILTON	0.19
TRIMBLE	TRIMBLE	0.17
TVA	TVA	0.51
UNIONPOWER	UNIONPOWER	0.22

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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
897693	206326	28E WINDSR	JCP&L	206316	28WINDSOR	JCP&L	1	PS_P7-1_1LINE+2LINE	tower	869.0	93.45	109.79	DC	141.86

Bus #	Bus	MW Impact
206271	28MCRC/REC	0.18
206325	28O C GEN	85.35
206327	28S RIV G1	1.8
206328	28S RIV G2	1.8
206329	28S RIV G3	2.5
206358	28PARLN1&2	1.17
206359	28PARLN3&4	1.45
206363	28RDOAKCT2	4.5
206364	28RDOAKCT3	4.5
206412	28R11	73.33
207145	28FRN_Y2-051	0.05
207204	28HOL_W1-112	0.04
207206	28TIN_W1-124	0.2
901032	W1-024E OP1	0.38
901111	W1-032 C OP1	0.03
901112	W1-032 E OP1	0.37
901912	W1-112E OP1	0.42
901982	W1-119 E	0.82
901991	W1-120C	0.56
901992	W1-120E	0.91
902032	W1-124E	2.13
902082	W1-129E	0.2
902322	W2-019 E	0.23
902952	W2-082 E OP1	0.68
903982	W3-079 E	0.72
905252	W4-025 E	0.29
905502	W4-060 E OP1	1.0
907082	X1-037 E	1.72
912102	X4-015 E	0.2
912182	X4-031 E	0.34
914092	Y2-051 E	0.52
917612	Z2-102 E	0.62
917682	Z2-109 E	3.33
919662	AA2-048 E	1.15
919672	AA2-049 E	0.52
920732	AA2-184 E	3.44
925541	AC1-029	0.51
927132	AC1-207 E	1.0
930891	AB1-138 C	0.53
930892	AB1-138 E	0.88
931122	AB1-163 E	0.65

Bus #	Bus	MW Impact
934032	AD1-028 E	0.03
934841	AD1-113	5.79
937261	AD2-165	6.67
937522	AD2-213 E O1	1.73
938151	AE1-020 C O1	42.85
938152	AE1-020 E O1	109.64
938211	AE1-034 C O1	52.72
938212	AE1-034 E O1	134.9
939121	AE1-142 C O1	1.23
939122	AE1-142 E O1	1.77
939981	AE1-238 C	39.12
939982	AE1-238 E	102.75
BAYOU	BAYOU	0.24
BIG_CAJUN1	BIG_CAJUN1	0.37
BIG_CAJUN2	BIG_CAJUN2	0.74
BLUEG	BLUEG	1.15
CALDERWOOD	CALDERWOOD	0.12
CANNELTON	CANNELTON	0.07
CARR	CARR	0.13
CATAWBA	CATAWBA	0.08
CHEOAH	CHEOAH	0.11
CHILHOWEE	CHILHOWEE	0.04
CHOCTAW	CHOCTAW	0.25
COFFEEN	COFFEEN	0.12
COTTONWOOD	COTTONWOOD	0.95
DEARBORN	DEARBORN	0.2
DUCKCREEK	DUCKCREEK	0.26
EDWARDS	EDWARDS	0.12
ELMERSMITH	ELMERSMITH	0.12
FARMERCITY	FARMERCITY	0.08
G-007A	G-007A	39.66
GIBSON	GIBSON	0.05
HAMLET	HAMLET	0.26
NEWTON	NEWTON	0.32
O-066	O-066	3.57
PRAIRIE	PRAIRIE	0.59
RENSSELAER	RENSSELAER	0.1
SANTEETLA	SANTEETLA	0.03
SMITHLAND	SMITHLAND	0.05
TATANKA	TATANKA	0.14
TILTON	TILTON	0.14
TRIMBLE	TRIMBLE	0.13
TVA	TVA	0.4
UNIONPOWER	UNIONPOWER	0.18

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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
896267	206410	28R11RINGB	JCP&L	206315	28RED OAKB	JCP&L	1	JC-P2-3-JCC-230-26D	breaker	869.0	89.61	117.82	DC	244.8

Bus #	Bus	MW Impact
206201	28JERSVGEN	0.06
206271	28MCRC/REC	0.31
206325	28O C GEN	97.1
206327	28S RIV G1	6.52
206328	28S RIV G2	6.52
206329	28S RIV G3	9.06
206358	28PARLN1&2	4.15
206359	28PARLN3&4	5.12
206412	28R11	265.28
207144	28HOW_X1-037	0.21
207145	28FRN_Y2-051	0.06
207204	28HOL_W1-112	0.07
207206	28TIN_W1-124	0.35
901112	W1-032 E OP1	0.2
901912	W1-112E OP1	0.77
901982	W1-119 E	1.43
901991	W1-120C	0.97
901992	W1-120E	1.59
902032	W1-124E	3.67
902082	W1-129E	0.38
902322	W2-019 E	0.45
902952	W2-082 E OP1	1.3
903981	W3-079 C	0.08
903982	W3-079 E	0.88
905252	W4-025 E	0.54
907082	X1-037 E	2.18
912102	X4-015 E	0.38
912182	X4-031 E	0.51
914092	Y2-051 E	0.61
917612	Z2-102 E	1.05
917682	Z2-109 E	12.06
918452	AA1-060 E	2.16
919662	AA2-048 E	1.4
919672	AA2-049 E	0.89
920732	AA2-184 E	5.94
925541	AC1-029	1.85
930891	AB1-138 C	0.62
930892	AB1-138 E	1.04
931122	AB1-163 E	0.84
934032	AD1-028 E	0.03

Bus #	Bus	MW Impact
937261	AD2-165	24.12
938151	AE1-020 C O1	48.75
938152	AE1-020 E O1	124.73
938211	AE1-034 C O1	58.53
938212	AE1-034 E O1	149.76
939121	AE1-142 C O1	1.4
939122	AE1-142 E O1	2.01
939981	AE1-238 C	67.5
939982	AE1-238 E	177.3
BAYOU	BAYOU	0.09
BIG_CAJUN1	BIG_CAJUN1	0.13
BIG_CAJUN2	BIG_CAJUN2	0.27
BLUEG	BLUEG	0.5
CALDERWOOD	CALDERWOOD	0.04
CANNELTON	CANNELTON	0.03
CARR	CARR	0.96
CATAWBA	CATAWBA	0.02
CHEOAH	CHEOAH	0.04
CHILHOWEE	CHILHOWEE	0.01
CHOCTAW	CHOCTAW	0.09
COFFEEN	COFFEEN	0.05
COTTONWOOD	COTTONWOOD	0.35
DEARBORN	DEARBORN	0.11
DUCKCREEK	DUCKCREEK	0.12
EDWARDS	EDWARDS	0.05
ELMERSMITH	ELMERSMITH	0.05
FARMERCITY	FARMERCITY	0.03
G-007	G-007	29.79
GIBSON	GIBSON	0.02
HAMLET	HAMLET	0.06
NEWTON	NEWTON	0.14
O-066	O-066	17.1
PRAIRIE	PRAIRIE	0.25
RENSSELAER	RENSSELAER	0.76
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.02
TATANKA	TATANKA	0.06
TILTON	TILTON	0.06
TRIMBLE	TRIMBLE	0.06
TVA	TVA	0.15
UNIONPOWER	UNIONPOWER	0.06

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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
896206	206411	28R11RINGA	JCP&L	206314	28RED OAKA	JCP&L	1	JC-P2-3-JCC-230-26B	breaker	869.0	93.48	121.79	DC	245.65

Bus #	Bus	MW Impact
206201	28JERSVGEN	0.06
206271	28MCRC/REC	0.31
206325	28O C GEN	97.39
206327	28S RIV G1	6.65
206328	28S RIV G2	6.65
206329	28S RIV G3	9.25
206358	28PARLN1&2	4.09
206359	28PARLN3&4	5.05
206412	28R11	270.71
207144	28HOW_X1-037	0.21
207145	28FRN_Y2-051	0.06
207204	28HOL_W1-112	0.07
207206	28TIN_W1-124	0.35
901112	W1-032 E OP1	0.2
901912	W1-112E OP1	0.77
901982	W1-119 E	1.43
901991	W1-120C	0.98
901992	W1-120E	1.59
902032	W1-124E	3.68
902082	W1-129E	0.38
902322	W2-019 E	0.45
902952	W2-082 E OP1	1.3
903981	W3-079 C	0.08
903982	W3-079 E	0.88
905252	W4-025 E	0.54
907082	X1-037 E	2.18
912102	X4-015 E	0.38
912182	X4-031 E	0.51
914092	Y2-051 E	0.62
917612	Z2-102 E	1.05
917682	Z2-109 E	12.31
918452	AA1-060 E	2.17
919662	AA2-048 E	1.41
919672	AA2-049 E	0.89
920732	AA2-184 E	5.95
925541	AC1-029	1.89
930891	AB1-138 C	0.62
930892	AB1-138 E	1.04
931122	AB1-163 E	0.85
934032	AD1-028 E	0.03

Bus #	Bus	MW Impact
937261	AD2-165	24.61
938151	AE1-020 C O1	48.89
938152	AE1-020 E O1	125.1
938211	AE1-034 C O1	58.71
938212	AE1-034 E O1	150.22
939121	AE1-142 C O1	1.4
939122	AE1-142 E O1	2.02
939981	AE1-238 C	67.73
939982	AE1-238 E	177.91
BAYOU	BAYOU	0.1
BIG_CAJUN1	BIG_CAJUN1	0.16
BIG_CAJUN2	BIG_CAJUN2	0.32
BLUEG	BLUEG	0.58
CALDERWOOD	CALDERWOOD	0.05
CANNELTON	CANNELTON	0.03
CARR	CARR	0.97
CATAWBA	CATAWBA	0.03
CHEOAH	CHEOAH	0.05
CHILHOWEE	CHILHOWEE	0.02
CHOCTAW	CHOCTAW	0.11
COFFEEN	COFFEEN	0.06
COTTONWOOD	COTTONWOOD	0.42
DEARBORN	DEARBORN	0.12
DUCKCREEK	DUCKCREEK	0.14
EDWARDS	EDWARDS	0.06
ELMERSMITH	ELMERSMITH	0.06
FARMERCITY	FARMERCITY	0.04
G-007	G-007	29.92
GIBSON	GIBSON	0.02
HAMLET	HAMLET	0.07
NEWTON	NEWTON	0.16
O-066	O-066	17.22
PRAIRIE	PRAIRIE	0.29
RENSSELAER	RENSSELAER	0.77
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.02
TATANKA	TATANKA	0.07
TILTON	TILTON	0.07
TRIMBLE	TRIMBLE	0.06
TVA	TVA	0.17
UNIONPOWER	UNIONPOWER	0.08

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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
897456	206302	28OYSTER C	JCP&L	227955	CEDAR	AE	1	JC-P7-1-JCC-230-12	tower	564.0	102.79	106.33	DC	44.27

Bus #	Bus	MW Impact
206280	28LAKEHURS	0.44
206325	28O C GEN	255.74
206360	28O CRK C1	2.17
206361	28O CRK C2	1.39
901981	W1-119 C	0.11
901982	W1-119 E	1.22
901991	W1-120C	0.83
901992	W1-120E	1.35
902032	W1-124E	0.67
902082	W1-129E	0.27
902322	W2-019 E	0.3
902952	W2-082 E OP1	0.93
903982	W3-079 E	0.32
905252	W4-025 E	0.39
907082	X1-037 E	0.59
907272	X1-085 E	0.17
912102	X4-015 E	0.27
912182	X4-031 E	0.12
914092	Y2-051 E	0.23
917611	Z2-102 C	0.09
917612	Z2-102 E	0.94
918452	AA1-060 E	1.46
919662	AA2-048 E	0.51
919672	AA2-049 E	0.16
930891	AB1-138 C	0.73
930892	AB1-138 E	1.22
931122	AB1-163 E	0.65
938151	AE1-020 C O1	128.39
938152	AE1-020 E O1	328.51
938211	AE1-034 C O1	20.86
938212	AE1-034 E O1	53.38
938421	AE1-061 C	0.22
938422	AE1-061 E	0.22
939121	AE1-142 C O1	2.74
939122	AE1-142 E O1	3.94
939301	AE1-161 C	0.63
939302	AE1-161 E	0.94
939981	AE1-238 C	12.21
939982	AE1-238 E	32.06
CATAWBA	CATAWBA	0.0

Bus #	Bus	MW Impact
CBM-N	CBM-N	0.74
CBM-S1	CBM-S1	0.04
CBM-W1	CBM-W1	0.13
CBM-W2	CBM-W2	0.35
CIN	CIN	0.05
G-007A	G-007A	8.02
HAMLET	HAMLET	0.01
IPL	IPL	0.03
LGEE	LGEE	0.01
MEC	MEC	0.09
MECS	MECS	0.1
NYISO	NYISO	3.2
O-066A	O-066A	1.62
VFT	VFT	9.25
WEC	WEC	0.01

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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
896139	206305	28RAR RVR	JCP&L	218331	KILMER_I	PSE&G	1	PS_P2-3_LNEPS_P1-2_2_LT	breaker	813.0	114.34	126.9	DC	221.18

Bus #	Bus	MW Impact
206325	28O C GEN	94.64
206329	28S RIV G3	7.27
206350	28RRCT1&2	6.25
206351	28RRCT3&4	5.85
206362	28RDOAKCT1	13.28
206363	28RDOAKCT2	13.25
206364	28RDOAKCT3	13.25
206365	28RDOAKST1	18.61
206403	28W4-009	57.52
206412	28R11	212.89
901032	W1-024E OP1	0.46
901112	W1-032 E OP1	0.28
901422	W1-113 E	0.85
901912	W1-112E OP1	0.83
901982	W1-119 E	1.46
901991	W1-120C	1.0
901992	W1-120E	1.62
902032	W1-124E	3.45
902082	W1-129E	0.39
902322	W2-019 E	0.47
902912	W2-078 E	1.05
902952	W2-082 E OP1	1.34
903982	W3-079 E	0.86
905252	W4-025 E	0.56
905502	W4-060 E OP1	2.39
907082	X1-037 E	2.45
907272	X1-085 E	0.41
912102	X4-015 E	0.39
912182	X4-031 E	0.5
914092	Y2-051 E	0.6
917612	Z2-102 E	1.07
917682	Z2-109 E	9.68
918452	AA1-060 E	2.56
919662	AA2-048 E	1.37
919672	AA2-049 E	0.83
920732	AA2-184 E	5.61
924852	AB2-139 E	0.08
927132	AC1-207 E	1.67
930891	AB1-138 C	0.61
930892	AB1-138 E	1.02

Bus #	Bus	MW Impact
931122	AB1-163 E	0.84
934032	AD1-028 E	0.07
934841	AD1-113	18.11
937261	AD2-165	19.35
938151	AE1-020 C O1	47.51
938152	AE1-020 E O1	121.57
938211	AE1-034 C O1	57.25
938212	AE1-034 E O1	146.49
939121	AE1-142 C O1	1.37
939122	AE1-142 E O1	1.97
939981	AE1-238 C	60.99
939982	AE1-238 E	160.2
BAYOU	BAYOU	0.72
BIG_CAJUN1	BIG_CAJUN1	1.11
BIG_CAJUN2	BIG_CAJUN2	2.23
BLUEG	BLUEG	3.53
CALDERWOOD	CALDERWOOD	0.37
CANNELTON	CANNELTON	0.21
CARR	CARR	1.14
CATAWBA	CATAWBA	0.23
CHEOAH	CHEOAH	0.34
CHILHOWEE	CHILHOWEE	0.12
CHOCTAW	CHOCTAW	0.74
COFFEEN	COFFEEN	0.37
COTTONWOOD	COTTONWOOD	2.87
DEARBORN	DEARBORN	0.64
DUCKCREEK	DUCKCREEK	0.81
EDWARDS	EDWARDS	0.37
ELMERSMITH	ELMERSMITH	0.37
FARMERCITY	FARMERCITY	0.24
G-007A	G-007A	124.04
GIBSON	GIBSON	0.15
HAMLET	HAMLET	0.75
NEWTON	NEWTON	0.97
O-066	O-066	17.72
PRAIRIE	PRAIRIE	1.81
RENSSELAER	RENSSELAER	0.9
SANTEETLA	SANTEETLA	0.1
SMITHLAND	SMITHLAND	0.14
TATANKA	TATANKA	0.44
TILTON	TILTON	0.44
TRIMBLE	TRIMBLE	0.39
TVA	TVA	1.2
UNIONPOWER	UNIONPOWER	0.53

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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
896317	206305	28RAR RVR	JCP&L	218332	KILMER_W	PSE&G	1	PS_P2-3_LNEPS_P1-2_1_LT	breaker	817.0	103.4	112.66	DC	163.92

Bus #	Bus	MW Impact
206325	28O C GEN	71.38
206329	28S RIV G3	5.32
206350	28RRCT1&2	4.57
206351	28RRCT3&4	4.28
206362	28RDOAKCT1	9.72
206363	28RDOAKCT2	9.7
206364	28RDOAKCT3	9.7
206365	28RDOAKST1	13.62
206403	28W4-009	42.08
206412	28R11	155.9
901032	W1-024E OP1	0.35
901112	W1-032 E OP1	0.21
901422	W1-113 E	0.64
901912	W1-112E OP1	0.62
901982	W1-119 E	1.11
901991	W1-120C	0.76
901992	W1-120E	1.23
902032	W1-124E	2.56
902082	W1-129E	0.3
902322	W2-019 E	0.35
902912	W2-078 E	0.79
902952	W2-082 E OP1	1.02
903982	W3-079 E	0.65
905252	W4-025 E	0.42
905502	W4-060 E OP1	1.76
907082	X1-037 E	1.82
907272	X1-085 E	0.31
912102	X4-015 E	0.3
912182	X4-031 E	0.37
914092	Y2-051 E	0.45
917612	Z2-102 E	0.81
917682	Z2-109 E	7.09
918452	AA1-060 E	1.95
919662	AA2-048 E	1.03
919672	AA2-049 E	0.62
920732	AA2-184 E	4.15
924852	AB2-139 E	0.06
927132	AC1-207 E	1.25
930891	AB1-138 C	0.46
930892	AB1-138 E	0.77

Bus #	Bus	MW Impact
931122	AB1-163 E	0.63
934032	AD1-028 E	0.05
934841	AD1-113	13.25
937261	AD2-165	14.17
937512	AD2-210 E	0.18
938151	AE1-020 C O1	35.84
938152	AE1-020 E O1	91.7
938211	AE1-034 C O1	42.94
938212	AE1-034 E O1	109.87
939121	AE1-142 C O1	1.03
939122	AE1-142 E O1	1.48
939981	AE1-238 C	45.2
939982	AE1-238 E	118.72
BAYOU	BAYOU	0.43
BIG_CAJUN1	BIG_CAJUN1	0.66
BIG_CAJUN2	BIG_CAJUN2	1.34
BLUEG	BLUEG	2.14
CALDERWOOD	CALDERWOOD	0.22
CANNELTON	CANNELTON	0.13
CARR	CARR	1.24
CATAWBA	CATAWBA	0.14
CHEOAH	CHEOAH	0.2
CHILHOWEE	CHILHOWEE	0.07
CHOCTAW	CHOCTAW	0.44
COFFEEN	COFFEEN	0.23
COTTONWOOD	COTTONWOOD	1.72
DEARBORN	DEARBORN	0.39
DUCKCREEK	DUCKCREEK	0.49
EDWARDS	EDWARDS	0.23
ELMERSMITH	ELMERSMITH	0.22
FARMERCITY	FARMERCITY	0.15
G-007A	G-007A	90.75
GIBSON	GIBSON	0.09
HAMLET	HAMLET	0.44
NEWTON	NEWTON	0.59
O-066	O-066	22.68
PRAIRIE	PRAIRIE	1.09
RENSSELAER	RENSSELAER	0.98
SANTEETLA	SANTEETLA	0.06
SMITHLAND	SMITHLAND	0.09
TATANKA	TATANKA	0.27
TILTON	TILTON	0.27
TRIMBLE	TRIMBLE	0.24
TVA	TVA	0.72
UNIONPOWER	UNIONPOWER	0.32

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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
895931	206315	28RED OAKB	JCP&L	206305	28RAR RVR	JCP&L	1	JC-P2-3-JCC-230-26D	breaker	869.0	122.57	150.72	DC	242.96

Bus #	Bus	MW Impact
206271	28MCRC/REC	0.31
206325	28O C GEN	95.71
206327	28S RIV G1	6.5
206328	28S RIV G2	6.5
206329	28S RIV G3	9.03
206358	28PARLN1&2	4.13
206359	28PARLN3&4	5.1
206362	28RDOAKCT1	17.12
206365	28RDOAKST1	23.99
206412	28R11	264.28
207144	28HOW_X1-037	0.2
207204	28HOL_W1-112	0.07
207206	28TIN_W1-124	0.34
901112	W1-032 E OP1	0.2
901912	W1-112E OP1	0.76
901982	W1-119 E	1.4
901991	W1-120C	0.96
901992	W1-120E	1.56
902032	W1-124E	3.65
902082	W1-129E	0.38
902322	W2-019 E	0.44
902952	W2-082 E OP1	1.28
903981	W3-079 C	0.08
903982	W3-079 E	0.87
905252	W4-025 E	0.53
907082	X1-037 E	2.15
912102	X4-015 E	0.38
912182	X4-031 E	0.51
914092	Y2-051 E	0.61
917612	Z2-102 E	1.03
917682	Z2-109 E	12.01
918452	AA1-060 E	2.12
919662	AA2-048 E	1.39
919672	AA2-049 E	0.88
920732	AA2-184 E	5.9
925541	AC1-029	1.84
930891	AB1-138 C	0.61
930892	AB1-138 E	1.02
931122	AB1-163 E	0.83
934032	AD1-028 E	0.03

Bus #	Bus	MW Impact
937261	AD2-165	24.03
938151	AE1-020 C O1	48.05
938152	AE1-020 E O1	122.95
938211	AE1-034 C O1	57.83
938212	AE1-034 E O1	147.97
939121	AE1-142 C O1	1.38
939122	AE1-142 E O1	1.99
939981	AE1-238 C	66.99
939982	AE1-238 E	175.96
BAYOU	BAYOU	0.33
BIG_CAJUN1	BIG_CAJUN1	0.5
BIG_CAJUN2	BIG_CAJUN2	1.02
BLUEG	BLUEG	1.65
CALDERWOOD	CALDERWOOD	0.17
CANNELTON	CANNELTON	0.1
CARR	CARR	1.05
CATAWBA	CATAWBA	0.1
CHEOAH	CHEOAH	0.15
CHILHOWEE	CHILHOWEE	0.05
CHOCTAW	CHOCTAW	0.34
COFFEEN	COFFEEN	0.17
COTTONWOOD	COTTONWOOD	1.31
DEARBORN	DEARBORN	0.31
DUCKCREEK	DUCKCREEK	0.38
EDWARDS	EDWARDS	0.17
ELMERSMITH	ELMERSMITH	0.17
FARMERCITY	FARMERCITY	0.11
G-007	G-007	30.03
GIBSON	GIBSON	0.07
HAMLET	HAMLET	0.32
NEWTON	NEWTON	0.45
O-066	O-066	17.91
PRAIRIE	PRAIRIE	0.84
RENSSELAER	RENSSELAER	0.83
SANTEETLA	SANTEETLA	0.04
SMITHLAND	SMITHLAND	0.07
TATANKA	TATANKA	0.21
TILTON	TILTON	0.21
TRIMBLE	TRIMBLE	0.18
TVA	TVA	0.55
UNIONPOWER	UNIONPOWER	0.24

Affected Systems

LG&E

LG&E Impacts to be determined during later study phases (as applicable).

MISO

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

TVA

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

Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

NYISO

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

Contingency Definitions

Contingency Name	Contingency Definition
JC-P7-1-JCC-230-7A	CONTINGENCY 'JC-P7-1-JCC-230-7A' /* SMITHBURG - LARRABEE 230 LINES DISCONNECT BRANCH FROM BUS 206309 TO BUS 206294 CKT 1 DISCONNECT BRANCH FROM BUS 206309 TO BUS 206294 CKT 2 END
JC-P2-3-JCC-230-81	CONTINGENCY 'JC-P2-3-JCC-230-81' /* SOUTH RIVER JUNCTION T-R11 RING A LINES STUCK BREAKER DISCONNECT BUS 206315 /* RED OAK 230 KV B TAP DISCONNECT BUS 206362 /* RED OAK 230 KV #1 DISCONNECT BUS 206365 /* RED OAK 230 KV #4 DISCONNECT BRANCH FROM BUS 206410 TO BUS 206411 CKT 1 /* SOUTH RIVER JUNCTION - R11 RING A 230 LINE END
PS_P1-2_#1LINE	CONTINGENCY 'PS_P1-2_#1LINE' /* LAKE NELSON TO RARITIAN RIVER DISCONNECT BUS 218331 /* KILMER #1 END
PS_P2-3_LNEPS_P1-2_1_LT	CONTINGENCY 'PS_P2-3_LNEPS_P1-2_1_LT' /* STUCK BREAKER ON LAKE NELSON I LINE DISCONNECT BUS 218312 /* GREEN BROOK STATION DISCONNECT BUS 218301 /* MIDDLE LOSS OF BUS DISCONNECT BUS 218333 /* LAKE NELSON BUS I DISCONNECT BUS 218331 /* REMOVE KILMER LINE #1 CLOSE LINE FROM BUS 218384 TO BUS 218387 CKT Z /* KILMER CLOSE LINE FROM BUS 218385 TO BUS 218386 CKT Z /* KILMER MOVE 8 MW LOAD FROM BUS 218387 TO BUS 218399 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO NEWDOVR T2 MOVE 8 MW LOAD FROM BUS 218385 TO BUS 218393 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO MDWRD T2 MOVE 8 MW LOAD FROM BUS 218386 TO BUS 218347 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO BNNTLANE T2 CLOSE LINE FROM BUS 218388 TO BUS 218389 CKT Z /* LAKE NELSON MOVE 8 MW LOAD FROM BUS 218389 TO BUS 218384 /* INTERSTATION TIE TRANSFER LOAD FROM LNELSN TO KILMER T2 MOVE 8 MW LOAD FROM BUS 218388 TO BUS 218385 /* INTERSTATION TIE TRANSFER LOAD FROM LNELSN TO KILMER T4 CLOSE LINE FROM BUS 218382 TO BUS 218383 CKT Z /* GREENBROOK MOVE 8 MW LOAD FROM BUS 218382 TO BUS 218406 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO SOMRVLLE T2 MOVE 8 MW LOAD FROM BUS 218382 TO BUS 218386 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO KILMER T1 MOVE 8 MW LOAD FROM BUS 218383 TO BUS 218395 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO SOUTH SECOND ST.(METUCHEN 26KV IM) END
JC-P2-3-JCC-230-85	CONTINGENCY 'JC-P2-3-JCC-230-85' /* SOUTH RIVER JUNCTION PARLIN-G1047 RARITAN RIVER LINES STUCK BREAKER DISCONNECT BRANCH FROM BUS 206410 TO BUS 206322 CKT 1 /* SOUTH RIVER JUNCTION - PARLIN 230 LINE DISCONNECT BUS 206314 /* RED OAK 230 KV A TAP DISCONNECT BUS 206363 /* RED OAK 230 KV #2 DISCONNECT BUS 206364 /* RED OAK 230 KV #3 END

Contingency Name	Contingency Definition
PS_P1-2_#2LINE_LT	CONTINGENCY 'PS_P1-2_#2LINE_LT' /* LAKE NELSON TO RARITIAN RIVER DISCONNECT BUS 218332 /* REMOVE KILMER CLOSE LINE FROM BUS 218384 TO BUS 218387 CKT Z /* KILMER CLOSE LINE FROM BUS 218385 TO BUS 218386 CKT Z /* KILMER MOVE 8 MW LOAD FROM BUS 218384 TO BUS 218383 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO GREENBK T1 MOVE 8 MW LOAD FROM BUS 218387 TO BUS 218399 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO NEWDOVR T2 MOVE 8 MW LOAD FROM BUS 218385 TO BUS 218393 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO MDWRD T2 MOVE 8 MW LOAD FROM BUS 218386 TO BUS 218347 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO BNNTLANE T2 END
JC-P2-3-JCC-230-19_E	CONTINGENCY 'JC-P2-3-JCC-230-19_E' /* RAR RIVER-PARLIN-RED OAK & PARLIN 1_2 DISCONNECT BRANCH FROM BUS 206410 TO BUS 206315 CKT 1 DISCONNECT BUS 206315 DISCONNECT BUS 206362 DISCONNECT BUS 206365 END
JC-P2-3-JCC-230-47D	CONTINGENCY 'JC-P2-3-JCC-230-47D' /* LARRABEE-ATLANTIC (Y2025) AND OCEANVIEW BANK 2 DISCONNECT BRANCH FROM BUS 206300 TO BUS 206286 CKT Y /* 28OCEANVW 230 ATLANTIC 230 DISCONNECT BRANCH FROM BUS 206300 TO BUS 206273 CKT 2 /* 28OCEANVW 230 OCEANVIE 230 END
JC-P2-3-JCC-230-47C	CONTINGENCY 'JC-P2-3-JCC-230-47C' /* LARRABEE-ATLANTIC (Y2025) AND OCEANVIEW BANK 1 DISCONNECT BRANCH FROM BUS 206300 TO BUS 206286 CKT Y /* 28OCEANVW 230 ATLANTIC 230 DISCONNECT BRANCH FROM BUS 206300 TO BUS 206273 CKT 1 /* 28OCEANVW 230 OCEANVIE 230 END
JC-P2-3-JCC-230-47A	CONTINGENCY 'JC-P2-3-JCC-230-47A' /* LARRABEE-OCEANVIEW AND LARRABEE-ATLANTIC (X2024) DISCONNECT BRANCH FROM BUS 206300 TO BUS 206294 CKT 1 /* 28OCEANVW 230 LARRABEE 230 DISCONNECT BRANCH FROM BUS 206300 TO BUS 206286 CKT X /* 28OCEANVW 230 ATLANTIC 230 END
JC-P2-3-JCC-230-26D	CONTINGENCY 'JC-P2-3-JCC-230-26D' /* RARITAN RIVER B146 STUCK BREAKER DISCONNECT BUS 206314 /* RED OAK 230 KV A TAP DISCONNECT BUS 206363 /* RED OAK 230 KV #2 DISCONNECT BUS 206364 /* RED OAK 230 KV #3 DISCONNECT BRANCH FROM BUS 206305 TO BUS 206303 CKT 13 /* RARITAN RIVER #13 230/115 KV TRANSFORMER DISCONNECT BUS 206403 /* WOODBRIDGE GENERATOR END

Contingency Name	Contingency Definition
JC-P2-3-JCC-230-26B	CONTINGENCY 'JC-P2-3-JCC-230-26B' /* RARITAN RIVER B144 STUCK BREAKER DISCONNECT BUS 206315 /* RED OAK 230 KV B TAP DISCONNECT BUS 206362 /* RED OAK 230 KV #1 DISCONNECT BUS 206365 /* RED OAK 230 KV #4 DISCONNECT BRANCH FROM BUS 206305 TO BUS 206303 CKT 13 /* RARITAN RIVER #13 230/115 KV TRANSFORMER DISCONNECT BUS 206403 /* WOODBRIDGE GENERATOR END
JC-P2-3-JCC-230-20_A	CONTINGENCY 'JC-P2-3-JCC-230-20_A' /* RAR RIVER-RED OAK-SO.RIVER & SO.RIVER 1_3 DISCONNECT BRANCH FROM BUS 206314 TO BUS 206363 CKT 1 DISCONNECT BRANCH FROM BUS 206314 TO BUS 206364 CKT 1 DISCONNECT BRANCH FROM BUS 206314 TO BUS 206411 CKT 1 /* BUS 206321 IS REPLACED WITH 206411 DUE TO R11 B. FEB. 17_ 2009. DISCONNECT BUS 206314 DISCONNECT BUS 206363 DISCONNECT BUS 206364 END
JC-P7-1-JCC-230-12	CONTINGENCY 'JC-P7-1-JCC-230-12' /* LEISURE VILLAGE-MANITOU A2027 & C2029 DISCONNECT BRANCH FROM BUS 206295 TO BUS 206297 CKT 1 DISCONNECT BRANCH FROM BUS 206297 TO BUS 206277 CKT 7 DISCONNECT BRANCH FROM BUS 206296 TO BUS 206297 CKT 1 DISCONNECT BRANCH FROM BUS 206296 TO BUS 206276 CKT 3 SET BUS 206296 LOAD TO 0 MW END
PS_P7-1_1LINE+2LINE	CONTINGENCY 'PS_P7-1_1LINE+2LINE' /* LAKE NELSON - RARITIAN X2 DISCONNECT BUS 218331 /* REMOVE KILMER 1 DISCONNECT BUS 218332 /* REMOVE KILMER 2 MOVE 8 MW LOAD FROM BUS 218384 TO BUS 218383 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO GREENBK T1 MOVE 8 MW LOAD FROM BUS 218387 TO BUS 218399 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO NEWDOVR T2 MOVE 8 MW LOAD FROM BUS 218385 TO BUS 218393 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO MDWRD T2 MOVE 8 MW LOAD FROM BUS 218386 TO BUS 218347 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO BNNTLANE T2 END

Contingency Name	Contingency Definition
PS_P2-3_LNEPS_P1-2_2_LT	CONTINGENCY 'PS_P2-3_LNEPS_P1-2_2_LT' /* LAKE NELSON LINE #2 STUCK BREAKER DISCONNECT BUS 218334 /* LAKE NELSON LOSS OF BUS W SIDE DISCONNECT BUS 218522 /* REMOVE MIDDLESEX DISCONNECT BUS 218332 /* REMOVE KILMER CLOSE LINE FROM BUS 218384 TO BUS 218387 CKT Z /* KILMER CLOSE LINE FROM BUS 218385 TO BUS 218386 CKT Z /* KILMER MOVE 8 MW LOAD FROM BUS 218384 TO BUS 218383 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO GREENBK T1 MOVE 8 MW LOAD FROM BUS 218387 TO BUS 218399 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO NEWDOVR T2 MOVE 8 MW LOAD FROM BUS 218385 TO BUS 218393 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO MDWRD T2 MOVE 8 MW LOAD FROM BUS 218386 TO BUS 218347 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO BNNTLANE T2 CLOSE LINE FROM BUS 218388 TO BUS 218389 CKT Z /* LAKE NELSON MOVE 8 MW LOAD FROM BUS 218389 TO BUS 218384 /* INTERSTATION TIE TRANSFER LOAD FROM LNELSN TO KILMER T2 MOVE 8 MW LOAD FROM BUS 218388 TO BUS 218385 /* INTERSTATION TIE TRANSFER LOAD FROM LNELSN TO KILMER T4 END
PS_P1-2_#2LINE	CONTINGENCY 'PS_P1-2_#2LINE' /* LAKE NELSON TO RARITIAN RIVER DISCONNECT BUS 218332 /* KILMER LINE #2 END
PS_P7-1_I1023+GBK-LN_LT	CONTINGENCY 'PS_P7-1_I1023+GBK-LN_LT' /* LAKE NELSON - GILLETE BRIDGEWATER & LAKE NELSON -GREENBROOK DISCONNECT BUS 218312 /* GREENBROOK I DISCONNECT BUS 218301 /* MIDDLESEX I DISCONNECT BUS 218333 /* LAKE NELSON I DISCONNECT BUS 218334 /* LAKE NELSON W DISCONNECT BUS 218522 /* MIDDLESEX W CLOSE LINE FROM BUS 218382 TO BUS 218383 CKT Z /* GREENBROOK MOVE 8 MW LOAD FROM BUS 218382 TO BUS 218406 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO SOMRVLLE T2 MOVE 8 MW LOAD FROM BUS 218382 TO BUS 218386 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO KILMER T1 MOVE 8 MW LOAD FROM BUS 218383 TO BUS 218384 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO KILMER T2 MOVE 8 MW LOAD FROM BUS 218383 TO BUS 218395 /* INTERSTATION TIE TRANSFER LOAD FROM GREENBK TO SOUTH SECOND ST.(METUCHEN 26KV IM) END
Base Case	

Contingency Name	Contingency Definition
PS_P1-2_#1LINE_LT	CONTINGENCY 'PS_P1-2_#1LINE_LT' /* LAKE NELSON TO RARITIAN RIVER DISCONNECT BUS 218331 /* KILMER LINE #1 CLOSE LINE FROM BUS 218384 TO BUS 218387 CKT Z /* KILMER CLOSE LINE FROM BUS 218385 TO BUS 218386 CKT Z /* KILMER MOVE 8 MW LOAD FROM BUS 218384 TO BUS 218383 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO GREENBK T1 MOVE 8 MW LOAD FROM BUS 218387 TO BUS 218399 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO NEWDOVR T2 MOVE 8 MW LOAD FROM BUS 218385 TO BUS 218393 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO MDWRD T2 MOVE 8 MW LOAD FROM BUS 218386 TO BUS 218347 /* INTERSTATION TIE TRANSFER LOAD FROM KILMER TO BNNTLANE T2 END
JC-P2-3-JCC-230-026A	CONTINGENCY 'JC-P2-3-JCC-230-026A' /* RARITAN RIVER B143 STUCK BREAKER DISCONNECT BUS 206315 /* RED OAK 230 KV B TAP DISCONNECT BUS 206362 /* RED OAK 230 KV #1 DISCONNECT BUS 206365 /* RED OAK 230 KV #4 DISCONNECT BRANCH FROM BUS 206305 TO BUS 206303 CKT 17 /* RARITAN RIVER #17 230/115 KV TRANSFORMER DISCONNECT BUS 206350 /* SAYREVILLE GENERATOR DISCONNECT BUS 206351 /* SAYREVILLE GENERATOR END
JC-P2-3-JCC-230-026C	CONTINGENCY 'JC-P2-3-JCC-230-026C' /* RARITAN RIVER B145 STUCK BREAKER DISCONNECT BUS 206314 /* RED OAK 230 KV A TAP DISCONNECT BUS 206363 /* RED OAK 230 KV #2 DISCONNECT BUS 206364 /* RED OAK 230 KV #3 DISCONNECT BRANCH FROM BUS 206305 TO BUS 206303 CKT 17 /* RARITAN RIVER #17 230/115 KV TRANSFORMER DISCONNECT BUS 206350 /* SAYREVILLE GENERATOR DISCONNECT BUS 206351 /* SAYREVILLE GENERATOR END
JC-P2-3-JCC-230-16A	CONTINGENCY 'JC-P2-3-JCC-230-16A' /* ATLANTIC B11 STUCK BREAKER DISCONNECT BRANCH FROM BUS 206286 TO BUS 206292 CKT 1 /* ATLANTIC-FRENEAU DISCONNECT BRANCH FROM BUS 206292 TO BUS 206267 CKT 2 /* FRENEAU BK2 REMOVE LOAD 4 FROM BUS 206292 /* FRENEAU BK4 DISCONNECT BRANCH FROM BUS 206286 TO BUS 206300 CKT X /* ATLANTIC - OCEANVIEW (X2024) END

Short Circuit

Short Circuit

The following Breakers are overduty:

None

Attachment 1 – AE1-238 One Line Diagram

Attachment 2 – AE1-238 Project Location