Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-192

PERRY-STONEBORO 69 KV

12 MW Capacity / 20 MW Energy

January 2021

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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 ATSI.

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 Mercer County, Pennsylvania. The installed facilities will have a total capability of 20 MW with 12 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is January 15, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-192
Project Name	PERRY-STONEBORO 69 KV
State	Pennsylvania
County	Mercer
Transmission Owner	ATSI
MFO	20
MWE	20
MWC	12
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

4.1 Primary Point of Interconnection

The interconnection of the project at the Primary POI will be accomplished by tapping the Maysville-McDowell 69 kV line and constructing a one span tap. The transmission line tap will be located approximately 19.5 miles from Maysville 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 McDowell Substation.

Attachment 1 shows a one-line diagram of the proposed primary Direct Connection facilities for the AG1-192 generation project to connect to the FirstEnergy ("FE") Transmission System. The IC will be responsible for constructing the facilities on its side of the POI, including the Attachment Facilities which connect the generator to the FE Transmission System's Direct Connection facilities.

4.2 Secondary Point of Interconnection

There is no secondary point of interconnection specified for AG1-192.

5 Cost Summary

The AG1-192 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$1,453,000
Total System Network Upgrade Costs (TO identified)	$94,924,091[1]
Total System Network Upgrade Costs (PJM identified)	$0
Total Costs	$96,377,091

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 contributes to overloads of the TO system (see Transmission Owner 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 by tapping the Maysville-McDowell 69 kV line and constructing a one span tap. The transmission line tap will be located approximately 19.5 miles from Maysville 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 McDowell Substation.

Attachment 1 shows a one-line diagram of the proposed primary Direct Connection facilities for the AG1-192 generation project to connect to the FirstEnergy ("FE") Transmission System. The IC will be responsible for constructing the facilities on its side of the POI, including the Attachment Facilities which connect the generator to the FE Transmission System's Direct Connection facilities.

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

Description	**Total Cost**
Construct a one span 69 kV tap into the interconnection customer's substation.	$510,000
Construct a tap and install 2-69 kV switches on the Maysville - McDowell 69 kV line.	$440,000
Upgrade relaying at McDowell.	$503,000
Total Physical Interconnection Costs	$1,453,000

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 **14 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.

8 Transmission Owner Analysis[2]

8.1 Transmission Owner Identified Network Impacts to Distribution Facilities

Potential TO identified network impacts to Transmission Owner distribution facilities were as follows:

None

8.2 Transmission Owner Identified Network Impacts to Sub-Regional Facilities

Potential TO identified network impacts to Transmission Owner Sub-Regional facilities were as follows:

Idx	Overloaded Element	Contingency	Rating [MVA]	Loading Before %	Loading After %	Contribution [MW]
33	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	53	203.42%	211.00%	4.02
47	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-A	53	122.35%	128.39%	3.20
44	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-B	53	131.20%	137.24%	3.20
51	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	ATSI-P1-2-OEE-69-027-A	53	110.89%	121.07%	5.39
39	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	Base Case	32	140.25%	147.19%	2.22
30	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	43	263.74%	273.14%	4.04
42	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-B	43	111.42%	120.82%	4.04
35	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	ATSI-P1-2-OEE-69-024	43	166.81%	174.29%	3.21
36	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	ATSI-P1-2-OEE-69-027-A	43	156.19%	168.80%	5.42

[2] For TO Distribution Facilities that need upgrades, the TO has applied their cost allocation rules. For TO Sub-Regional Facilities in need of upgrades, PJM Cost Allocation Criteria has been applied.

Idx	Overloaded Element	Contingency	Rating [MVA]	Loading Before %	Loading After %	Contribution [MW]
32	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	Base Case	27	199.58%	207.85%	2.23
43	239861 02CP.REYN+ 69.0 239104 02SHARON 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	72	142.18%	147.79%	4.04
48	239893 02Y299+ 69.0 239104 02SHARON 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	76	128.46%	133.74%	4.02
41	239941 02HNDERSN 69.0 238955 02MCDOWL 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	48	133.40%	158.28%	11.94
56	239941 02HNDERSN 69.0 238955 02MCDOWL 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-A	48	84.59%	108.43%	11.44
53	239941 02HNDERSN 69.0 238955 02MCDOWL 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-B	48	91.00%	114.84%	11.44
54	239941 02HNDERSN 69.0 238955 02MCDOWL 69.0 Ckt 1	ATSI-P1-2-OEE-69-024	48	87.51%	111.35%	11.44
29	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	43	280.34%	289.74%	4.04
37	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-B	43	128.02%	137.42%	4.04
34	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	ATSI-P1-2-OEE-69-024	43	179.75%	187.23%	3.21
45	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	ATSI-P1-2-OEE-69-026	43	141.01%	146.21%	2.23
31	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	Base Case	27	212.08%	220.35%	2.23
49	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	ATSI-P1-2-OEE-138-012-A	56	126.51%	147.84%	11.94
65	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-A	56	84.67%	105.11%	11.44
60	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	ATSI-P1-2-OEE-69-022-B	56	90.17%	110.61%	11.44
63	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	ATSI-P1-2-OEE-69-024	56	87.18%	107.61%	11.44
61	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	Base Case	47	86.79%	110.55%	11.17

8.3 System Reinforcements on Distribution Facilities

None

8.4 System Reinforcements on Sub-Regional Facilities

Idx	Facility	Upgrade ID	Upgrade Description	Cost
33,47,44, 51,39	238949 02MAYSVL 69.0 239893 02Y299+ 69.0 Ckt 1	OEE-014B	**ATSI** **OEE-014B:** Reconductor the Maysville-Sharon Tap 69 kV Line segment (9.4 miles). Upgrade remote ends so that the TL is the most limiting element of the circuit. Time Estimate: 48 Cost: $23,707,472 Ratings: 177.0/203.0/203.0 MVA	$23,707,472

Idx	Facility	Upgrade ID	Upgrade Description	Cost
30,42,35, 36,32	238949 02MAYSVL 69.0 938580 AE1-079 TAP 69.0 Ckt 1	OEE-012A, OEE-012B, OEE-012C	**ATSI** **OEE-012A:** Reconductor the portion of the Maysville-AE1-079 Tap 69 kV Line segment. The AE1-079 generator is roughly 1.25 miles from Maysville and 2.35 from Camp Raynolds (near structure 62 of the Maysville-Sharon Y-301 69 kV Line). Time Estimate: 30 Cost: $3,234,264 Ratings: 69.0/83.0/83.0 MVA **OEE-012B:** Reconductor the Maysville-AE1-079 Tap 69 kV Line segment (1.25 miles) . The AE1-079 generator is roughly 1.25 miles from Maysville and 2.35 from Camp Raynolds (near structure 62 of the Maysville-Sharon Y-301 69 kV Line). Time Estimate: 30 Cost: $3,140,063 Ratings: 111.0/134.0/134.0 MVA	$6,374,327
43	239861 02CP.REYN+ 69.0 239104 02SHARON 69.0 Ckt 1	OEE-013A, OEE-013C	**ATSI** **OEE-013A:** Upgrade the RT at Sharon so that the TL is limiting the circuit. Time Estimate: 12 Cost: $502,410 Ratings: 69.0/83.0/83.0 MVA **OEE-013C:** Reconductor the Camp Reynolds-Sharon 69 kV Line segment. Time Estimate: 54 Cost: $27,381,345 Ratings: 121.0/146.0/146.0 MVA	$27,883,755
48	239893 02Y299+ 69.0 239104 02SHARON 69.0 Ckt 1	OEE-015AA, OEE-015A	**ATSI** **OEE-015AA:** Upgrade RT at Sharon to exceed TL ratings Time Estimate: 12 Cost: $502,410 Ratings: 72.0/91.0/91.0 MVA **OEE-015A:** Reconductor the Sharon-Sharon Tap 69 kV Line segment (3.3 miles). Upgrade remote ends so that the TL is the most limiting element of the circuit. Time Estimate: 36 Cost: $9,074,781 Ratings: 111.0/134.0/134.0 MVA	$9,577,191
41,56,53 54	239941 02HNDERSN 69.0 238955 02MCDOWL 69.0 Ckt 1	OEE-018A, OEE-018C	**ATSI** **OEE-018A:** Replace the metering ay McDowell so that the TL is the most limiting element Time Estimate: 12 Cost: $376,808 Ratings: 47.0/56.0/56.0 MVA **OEE-018C:** Reconductor the Henderson-McDowell 69 kV Line segment. Upgrade remote ends so that the TL is the most limiting element of the circuit. Time Estimate: 42 Cost: $16,077,120 Ratings: 80.0/96.0/96.0 MVA	$16,453,928

Idx	Facility	Upgrade ID	Upgrade Description	Cost
29,37,34, 45,31	938580 AE1-079 TAP 69.0 239861 02CP.REYN+ 69.0 Ckt 1	OEE-011C	**ATSI** **OEE-011C:** Reconductor the AE1-079 Tap-Camp Reynolds 69 kV Line segment (2.35 miles). The AE1-079 generator is roughly 1.25 miles from Maysville and 2.35 from Camp Raynolds (near structure 62 of the Maysville-Sharon Y-301 69 kV Line) Time Estimate: 30 Cost: $5,903,318 Ratings: 177.0/203.0/203.0 MVA	$5,903,318
49,65,60, 63,61	939540 AE1-183 TAP 69.0 239941 02HNDERSN 69.0 Ckt 1	OEE-016B	**ATSI** **OEE-016B:** Reconductor the AE1-183 Tap-Henderson Tap 69 kV Line segment. The AE1-183 generator is roughly 8.1 miles from McDowell (near structure 108 of the Maysville-McDowell 69 kV Line) . Time Estimate: 30 Cost: $5,024,100 Ratings: 111.0/134.0/134.0 MVA	$5,024,100
			TOTAL COST	**$94,924,091**

9 Interconnection Customer Requirements

9.1 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.

The IC has requested a non-standard GSU transformer winding configuration. This transformer is in violation of section 14.2.6 of FE's "Requirements for Transmission Connected Facilities" document and will not be accepted. The GSU transformer must have a grounded wye connection on the high (utility) side and a delta connection on the low (generator) side. Inverter-based generation that is UL1741 certified for anti-islanding protection connected to the FE Transmission System at <100 kV shall have a delta or ungrounded wye winding on the transmission side. The Customer one line diagram shows a transformer with a grounded wye winding on the transmission side.

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 69 kV circuit breaker to protect the AG1-192 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 AG1-192 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 Transmission 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 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/

11 Summer Peak - Load Flow Analysis

The Queue Project AG1-192 was evaluated as a 20.0 MW (Capacity 12.0 MW) injection tapping the Stoneboro to Perry 69 kV line in the ATSI area. Project AG1-192 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-192 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)

None

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.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONTNAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
16787423 3	238944	02MASURY	138.0	ATSI	239120	02SSPRNG	138.0	ATSI	1	ATSI-P1-2-OEE-345-874	operation	165.0	104.77	106.67	DC	3.13
16787417 8	238948	02MAYSVL	138.0	ATSI	958850	AF2-176 TAP	138.0	ATSI	1	ATSI-P1-2-OEE-69-022-B	operation	124.0	104.35	108.67	DC	5.35
16991597 4	958850	AF2-176 TAP	138.0	ATSI	238944	02MASURY	138.0	ATSI	1	ATSI-P1-2-OEE-69-022-B	operation	124.0	143.11	147.43	DC	5.35
16991597 6	958850	AF2-176 TAP	138.0	ATSI	238944	02MASURY	138.0	ATSI	1	Base Case	operation	124.0	123.04	126.57	DC	4.38

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
			TOTAL COST	**$0**

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".

None.

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.

None

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
Base Case	
ATSI-P1-2-OEE-69-022-B	CONTINGENCY 'ATSI-P1-2-OEE-69-022-B' /* MAYSVILLE - SHARON 69 [Y-301] DISCONNECT BRANCH FROM BUS 938580 TO BUS 239861 CKT 1 /* AE1-079 TAP 69 02CP.REYN+ 69 DISCONNECT BRANCH FROM BUS 239104 TO BUS 239861 CKT 1 /* 02SHARON 69 02CP.REYN+ 69 DISCONNECT BUS 239894 /* 02CP.REYNL 69 DISCONNECT BUS 239890 /* 02GRNV MTL 69 END
ATSI-P1-2-OEE-345-874	CONTINGENCY 'ATSI-P1-2-OEE-345-874' /* LINE 02SHNAGO TO 02NILES 345 CK 1 DISCONNECT BRANCH FROM BUS 239106 TO BUS 239303 CKT 1 /* 02SHNAGO 345 02NILES 345 END

12 Short Circuit Analysis

The following Breakers are overdutied:

None.

12.1 System Reinforcements - Short Circuit

None.

13 Affected Systems

13.1 NYISO

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

13.2 MISO

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

14 Attachment 1: One Line Diagram