Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-303

GENEVA 115 KV

26.4 MW Capacity / 44 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 Mid-Atlantic Interstate Transmission, LLC (MAIT) (PENELEC zone).

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 Crawford County, Pennsylvania. The installed facilities will have a total capability of 44 MW with 26.4 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is September 25, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-303
Project Name	GENEVA 115 KV
State	Pennsylvania
County	Crawford
Transmission Owner	MAIT (PENELEC zone)
MFO	44
MWE	44
MWC	26.4
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 POI

The interconnection of the project at the Primary POI will be accomplished by extending the #2 115 kV bus at Geneva Substation and installing one 115 kV breaker and associated facilities for a new line terminal position. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the new interconnection facilities.

Attachment 1 shows a one-line diagram of the proposed interconnection facilities for the AG1-303 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 interconnection facilities.

4.2 Secondary POI

The interconnection of the project at a Secondary POI can be accomplished by constructing a new 115 kV three (3) breaker ring bus substation and looping the Geneva - Wayne 115 kV line into the new station. The new substation would be located approximately 0.9 miles from Geneva Substation. A full scope of work or estimated cost is not provided for the proposed Secondary POI.

5 Cost Summary

The AG1-303 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 1,820,000
Total System Network Upgrade Costs	$411,146,586[1]
Total Costs	**$412,966,586**

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 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 by extending the #2 115 kV bus at Geneva Substation and installing 1-115 kV breaker and associated facilities for a new line terminal position. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the new interconnection facilities.

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

Description	Total Cost
At Geneva Substation, extend the #2 115 kV bus and install a new 115 kV line terminal with one 115 kV breaker and associated facilities.	$1,820,000
Total Physical Interconnection Costs	$1,820,000

7 Schedule

Based on the scope of work for the interconnection facilities, it is expected to take a minimum of **14 months** after the signing of an Interconnection Construction Service Agreement and construction kickoff call to complete the installation. 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 interconnection facilities 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 AG1-303 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 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.

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 115 kV circuit breaker to protect the AG1-303 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 AG1-303 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 - Primary POI

The Queue Project AG1-303 was evaluated as a 44.0 MW (Capacity 26.4 MW) injection at the Geneva 115 kV substation in the PENELEC area. Project AG1-303 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-303 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)

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
167925635	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	228.0	99.63	100.48	DC	1.94
167925636	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	PN-P1-2-PN-345-107T	single	228.0	99.63	100.48	DC	1.94

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
164496214	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-2-PN-230-007T	bus	1900.0	115.51	116.58	DC	20.22
164496418	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-3-PN-230-14CT	breaker	1900.0	115.57	116.64	DC	20.22
164496419	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-3-PN-230-14BT	breaker	1900.0	115.51	116.57	DC	20.22
167521773	200795	26SHELOCTA	230.0	PENELEC	200810	26KEYSTONE	230.0	PENELEC	1	ATSI-P2-3-CEI-345-004D	breaker	923.0	192.12	192.59	DC	9.69
167521774	200795	26SHELOCTA	230.0	PENELEC	200810	26KEYSTONE	230.0	PENELEC	1	ATSI-P2-3-CEI-345-004C	breaker	923.0	191.0	191.47	DC	9.53
167521811	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	228.0	112.65	113.3	DC	3.31

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
167521795	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	123.64	124.53	DC	2.97
167925588	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	151.0	110.37	111.52	DC	1.74
167925589	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	110.37	111.52	DC	1.74
167376267	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	179.0	234.86	235.95	DC	4.34
167925305	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	PN-P1-2-PN-345-107T	single	179.0	184.22	185.65	DC	2.55
167925306	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	179.0	184.22	185.65	DC	2.55
167925327	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	PN-P1-2-PN-345-107T	single	268.0	141.55	142.55	DC	2.69
167925328	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	268.0	141.55	142.55	DC	2.69
167376408	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	119.16	120.05	DC	2.97
167925601	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	151.0	105.85	107.0	DC	1.74
167925602	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	105.85	107.0	DC	1.74
167376279	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	177.3	178.36	DC	3.58
167925351	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	151.0	157.99	159.38	DC	2.09

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
167925352	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	157.99	159.38	DC	2.09
167376277	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	179.61	180.68	DC	3.58
167925339	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	ATSI-P1-2-CEI-345-700T	single	151.0	160.31	161.7	DC	2.09
167925340	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	160.31	161.7	DC	2.09
164496482	238547	02AT	345.0	ATSI	239036	02PERRY	345.0	ATSI	1	ATSI-P2-4-CEI-138-125B	breaker	1891.0	100.8	101.82	DC	19.24

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	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
166213701	200575	26MRGANST	115.0	PENELEC	200573	26VENGOJT	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	149.0	126.21	137.18	DC	16.34
166213789	200590	26GENEVA	115.0	PENELEC	200822	26PPGAPI	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	239.0	109.26	116.38	DC	17.02
164496691	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	Base Case	operation	1560.0	126.52	127.79	DC	19.83
164496692	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PJM_GEN_P1-1: UNIT02PERRG1	operation	1900.0	115.41	116.46	DC	19.83
166213824	200822	26PPGAPI	115.0	PENELEC	200920	26FRANKLNA	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	245.0	103.64	110.59	DC	17.02
166213821	200920	26FRANKLNA	115.0	PENELEC	200575	26MRGANST	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	239.0	106.16	113.28	DC	17.02
167925633	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	PN-P1-2-PN-345-107T	operation	228.0	112.01	112.65	DC	3.23

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
167925634	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	228.0	112.01	112.65	DC	3.23
167925586	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	119.28	120.14	DC	2.89
167925587	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	151.0	119.28	120.14	DC	2.89
167925303	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	PN-P1-2-PN-345-107T	operation	179.0	233.67	234.75	DC	4.26
167925304	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	179.0	233.67	234.75	DC	4.26
167925325	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	268.0	178.83	180.5	DC	4.49
167925326	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	PN-P1-2-PN-345-107T	operation	268.0	178.83	180.5	DC	4.49
167925599	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	114.73	115.59	DC	2.9
167925600	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	151.0	114.73	115.59	DC	2.9
167925349	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	173.45	174.49	DC	3.48
167925350	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	151.0	173.45	174.49	DC	3.48
167925337	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	175.77	176.81	DC	3.48
167925338	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	ATSI-P1-2-CEI-345-700T	operation	151.0	175.77	176.81	DC	3.48
164496844	238547	02AT	345.0	ATSI	239036	02PERRY	345.0	ATSI	1	ATSI-P1-3-CEI-345-722	operation	1891.0	99.5	100.51	DC	19.26

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
167925339,167376277,167925340	9	01GAR RN 138.0 kV - 01COLMBGPN 138.0 kV Ckt 1	APS WP-AG1-F-0017 (1225) : Reconductor 10.4 miles of 4/0 CU from Columbia Big Pine - Garretts Run Jct 138 kV (99 spans). Project Type : FAC Cost : $27,092,520 Time Estimate : 48.0 Months	$27,092,520
167925635,167925636,167521811	1	01ARMSTR 138.0 kV - 01KITTAN 138.0 kV Ckt 1	APS WP-AG1-F-0001 (1172) : Replace relaying (WT, RT) at Kittaning substation. Project Type : FAC Cost : $455,884 Time Estimate : 12.0 Months	$455,884
167925328,167925327	6	01KISSNG 138.0 kV - 01KARNSC 138.0 kV Ckt 1	APS WP-AG1-F-0003A (1175) : Reconductor 7.5 miles of 556.5 ACSR from Karns City to Kissinger Jct (47 spans). Project Type : FAC Cost : $19,537,875 Time Estimate : 42.0 Months WP-AG1-F-0003B (1176) : Replace relaying (RT, WT, MT, ZR, OR) at Karns City substation. Project Type : FAC Cost : $455,884 Time Estimate : 12.0 Months WP-AG1-F-0003C (1177) : Replace 954 ACSR & 1024.5 ACAR bus conductor at Karns City substation. Project Type : FAC Cost : $130,252 Time Estimate : 12.0 Months WP-AG1-F-0003D (1178) : Replace 1200 A circuit breaker at Karns City substation. Project Type : FAC Cost : $911,768 Time Estimate : 12.0 Months WP-AG1-F-0003E (1179) : Replace 954 ACSR risers at Karns City substation. Project Type : FAC Cost : $130,252 Time Estimate : 12.0 Months	$21,166,031

ID	Idx	Facility	Upgrade Description	Cost
164496482	10	**02AT 345.0 kV - 02PERRY 345.0 kV Ckt 1**	**ATSI** **CEI-004A (699) : Replace the substation conductor at Perry on the Ashtabula - Eastlake - Perry 345 S8 line to exceed 2241 MVA (SN)/ 2578 MVA (SE).** **Project Type : Facility** **Cost : $188,400** **Time Estimate : 12.0 Months** **CEI-004B (700) : Replace the substation conductor at Perry on the Ashtabula - Eastlake - Perry 345 S8 line to exceed 2241 MVA (SN)/ 2578 MVA (SE).** **Project Type : Facility** **Cost : $188,400** **Time Estimate : 12.0 Months** **CEI-004C (701) : Reconductor the ATSI owned portion of the Perry-Ashtabula 3-point tap 345 kV Line.** **Project Type : Facility** **Cost : $148,836,000** **Time Estimate : 96.0 Months**	$149,212,800
167925588,167521795,167925589	4	**01AL&D6T 138.0 kV - 01AL 4J 138.0 kV Ckt 1**	**APS** **WP-AG1-F-0002A (1173) : Replace 4/0 CU line exit at All Dam 6 Tap.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0002B (1174) : Reconductor 7.6 miles of 4/0 CU from All Dam 6 Tap to structure 84 (66 spans).** **Project Type : FAC** **Cost : $19,928,632** **Time Estimate : 42.0 Months**	$20,058,885

ID	Idx	Facility	Upgrade Description	Cost
167376267,167925305,167925306	5	01KARNSC 138.0 kV - 01BUTLER 138.0 kV Ckt 1	**APS** **WP-AG1-F-0008A (1190) : Replace 336 ACSR, 954 ACSR, & 1024.5 ACAR bus conductor at Karns City substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0008B (1191) : Replace 350 CU, 1.00 IPS CU, & 954 ACSR bus conductor at Butler substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0008C (1192) : Replace 336 ACSR line risers at Butler substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0008D (1193) : Replace 336 ACSR line risers at Karns City substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0008E (1194) : Reconductor 15.6 miles of 336 ACSR on the Butler - Karns City 138 kV line (102 spans).** **Project Type : FAC** **Cost : $40,638,780** **Time Estimate : 60.0 Months** **WP-AG1-F-0008F (1195) : Replace 600 A line side and bus side disconnects at Butler substation.** **Project Type : FAC** **Cost : $390,758** **Time Estimate : 12.0 Months** **WP-AG1-F-0008G (1196) : Replace 350 CU wire to WT at Butler substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0008H (1197) : Replace relaying (WT, ZR) at Butler substation.** **Project Type : FAC** **Cost : $455,884** **Time Estimate : 12.0 Months** **WP-AG1-F-0008I (1198) : Replace relaying (RT, OR, WT, MT) at Karns City substation.** **Project Type : FAC** **Cost : $455,884** **Time Estimate : 12.0 Months** **WP-AG1-F-0008J (1199) : Replace 1200 A circuit breaker at Karns City substation.** **Project Type : FAC** **Cost : $781,515** **Time Estimate : 12.0 Months**	$44,025,345

ID	Idx	Facility	Upgrade Description	Cost
167376267,167925305,167925306	5	01KARNSC 138.0 kV - 01BUTLER 138.0 kV Ckt 1	**Continued:** **WP-AG1-F-0008K (1200) : Replace 1200 A bus & line side disconnects at Karns City substation.** **Project Type : FAC** **Cost : $521,010** **Time Estimate : 12.0 Months** **WP-AG1-F-0008L (1201) : Replace 1272 ACSR 45/7 SCCIR bus taps at Butler Substation.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months**	
167521773,167521774	3	26SHELOCTA 230.0 kV - 26KEYSTONE 230.0 kV Ckt 1	**PENELEC** **PN-AF2-F-0005 (1358) : Construct 500 kV yard consisting of three-500 kV breakers configured in a breaker-and-a-half layout (initially a ring bus)** **Tap the Keystone - Conemaugh 500 kV line and loop into the new Homer City 500 kV yard** **Install one 500/345 kV transformer** **Install a new 345 kV breaker-and-a-half string using three new breakers** **Project Type : CON** **Cost : $85,600,000** **Time Estimate : 48.0 Months**	$85,600,000
164496418,164496419,164496214	2	26ERIE W 345.0 kV - 02AT 345.0 kV Ckt 1	**ATSI** **CEI-001G (664) : Reconductor the ATSI owned portion of the Erie West-Ashtabula 3-point tap 345 kV Line.** **Project Type : Facility** **Cost : $37,680,000** **Time Estimate : 30.0 Months** **PENELEC** **Note: It should be noted that some of the contingencies taken in the analysis may not be valid due to system condition changes that were not captured in the model. This will be re-evaluated for validity in the System Impact phase.**	$37,680,000
167925352,167925351,167376279	8	01COLMBGPN 138.0 kV - 01KISKIV 138.0 kV Ckt 1	**APS** **WP-AG1-F-0018A (1226) : Reconductor 3.7 miles of 4/0 CU.** **Project Type : FAC** **Cost : $9,638,685** **Time Estimate : 36.0 Months** **WP-AG1-F-0018B (1227) : Replace relays (RT) at Kiski Valley substation.** **Project Type : FAC** **Cost : $455,884** **Time Estimate : 12.0 Months**	$10,094,569

ID	Idx	Facility	Upgrade Description	Cost
167376408,167925601,167925602	7	01KITTAN 138.0 kV - 01AL&D6T 138.0 kV Ckt 1	**APS** **WP-AG1-F-0005A (1186) : Replace 4/0 CU line exit at All Dam 6 Tap.** **Project Type : FAC** **Cost : $130,252** **Time Estimate : 12.0 Months** **WP-AG1-F-0005B (1187) : Reconductor 6 miles of 4/0 CU from All Dam 6 Tap to Kittaning (49 spans).** **Project Type : FAC** **Cost : $15,630,300** **Time Estimate : 42.0 Months**	$15,760,552
			TOTAL COST	**$411,146,586**[1]

11.6 Flow Gate Details - Primary POI

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
167521811	235121	01ARMSTR	AP	235204	01KITTAN	AP	1	ATSI-P2-3-CEI-345-004D	breaker	228.0	112.65	113.3	DC	3.31

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
915951	Y3-092 FTIR	76.5100	Merchant Transmission	76.5100
935191	AD1-154	1.0537	Adder	1.24
936881	AD2-112 C	-3.1312	Adder	-3.68
936882	AD2-112 E	-1.2425	Adder	-1.46
938951	AE1-123	1.2676	Adder	1.49
939291	AE1-160 C	0.8040	Adder	0.95
939292	AE1-160 E	0.4621	Adder	0.54
942811	AE2-299 C	1.5501	Adder	1.82
942812	AE2-299 E	6.2005	Adder	7.29
942961	AE2-316 C	3.1940	Adder	3.76
942962	AE2-316 E	4.5546	Adder	5.36
943151	AE2-344 C	4.0313	Adder	4.74
943152	AE2-344 E	2.6875	Adder	3.16
943351	AF1-006 C	0.7135	Adder	0.84
943352	AF1-006 E	0.4013	Adder	0.47
944261	AF1-094 C	0.6703	Adder	0.79
944262	AF1-094 E	0.4469	Adder	0.53
944281	AF1-096 C	0.7597	Adder	0.89
944282	AF1-096 E	0.5065	Adder	0.6
944301	AF1-098 C	2.4027	Adder	2.83
944302	AF1-098 E	1.6018	Adder	1.88
944381	AF1-103 O1	0.9289	Adder	1.09
944391	AF1-104 O1	1.2413	Adder	1.46
944881	AF1-153 C O1	0.6129	Adder	0.72
944882	AF1-153 E O1	0.4086	Adder	0.48
944901	AF1-155 C	0.6173	Adder	0.73
944902	AF1-155 E	0.4115	Adder	0.48
945021	AF1-167 C	0.4633	Adder	0.55
945022	AF1-167 E	0.3094	Adder	0.36
945051	AF1-170 C	2.7948	Adder	3.29
945052	AF1-170 E	1.8632	Adder	2.19
945751	AF1-240 C O1	0.6322	Adder	0.74
945752	AF1-240 E O1	0.4215	Adder	0.5
946111	AF1-276 C	2.8794	Adder	3.39
946112	AF1-276 E	1.4182	Adder	1.67
946121	AF1-277 C	2.8794	Adder	3.39
946122	AF1-277 E	1.4182	Adder	1.67
946131	AF1-278 C	2.2966	Adder	2.7
946132	AF1-278 E	1.1414	Adder	1.34
946221	AF1-287 C	0.6924	Adder	0.81
946222	AF1-287 E	0.4616	Adder	0.54

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946381	AF1-302 C	1.3947	Adder	1.64
946382	AF1-302 E	1.8597	Adder	2.19
946401	AF1-304 C	3.9698	Adder	4.67
946402	AF1-304 E	2.6466	Adder	3.11
946421	AF1-306 C	2.2469	Adder	2.64
946422	AF1-306 E	8.9878	Adder	10.57
946771	AF1-217 C	0.6925	Adder	0.81
946772	AF1-217 E	0.4617	Adder	0.54
957161	AF2-010 C	2.5857	Adder	3.04
957162	AF2-010 E	1.7425	Adder	2.05
957571	AF2-051 C	2.1133	Adder	2.49
957572	AF2-051 E	1.0887	Adder	1.28
958361	AF2-130 C	0.8255	Adder	0.97
958362	AF2-130 E	0.5503	Adder	0.65
958731	AF2-164 C O1	3.3733	Adder	3.97
958732	AF2-164 E O1	2.2489	Adder	2.65
958741	AF2-165 C	0.8070	Adder	0.95
958742	AF2-165 E	0.5380	Adder	0.63
958751	AF2-166 C	0.8255	Adder	0.97
958752	AF2-166 E	0.5503	Adder	0.65
959441	AF2-235 C	0.3798	Adder	0.45
959442	AF2-235 E	0.2532	Adder	0.3
959521	AF2-243 C	0.6053	Adder	0.71
959522	AF2-243 E	0.4035	Adder	0.47
960041	AF2-295 C	0.6173	Adder	0.73
960042	AF2-295 E	0.4115	Adder	0.48
961971	AG1-040 C	0.3866	Adder	0.86
961972	AG1-040 E	0.2578	Adder	0.57
962511	AG1-100 C	0.3757	Adder	0.83
962512	AG1-100 E	0.2505	Adder	0.56
962891	AG1-138 C	0.1732	Adder	0.38
962892	AG1-138 E	0.0091	Adder	0.02
962901	AG1-139 C	0.1693	Adder	0.38
962902	AG1-139 E	0.0089	Adder	0.02
962911	AG1-140 C	0.0462	Adder	0.1
962912	AG1-140 E	0.0211	Adder	0.05
963281	AG1-177 C O1	0.3553	Adder	0.79
963282	AG1-177 E O1	0.2369	Adder	0.53
963441	AG1-193 C	0.4288	Adder	0.95
963442	AG1-193 E	0.2859	Adder	0.63
963481	AG1-197 C	0.2933	Adder	0.65
963482	AG1-197 E	0.1956	Adder	0.43
963491	AG1-198 C	0.2132	Adder	0.47
963492	AG1-198 E	0.1421	Adder	0.32
963531	AG1-202 C	0.2122	Adder	0.47
963532	AG1-202 E	0.1093	Adder	0.24
963991	AG1-253 C	0.0693	Adder	0.15
963992	AG1-253 E	0.0334	Adder	0.07
964341	AG1-296 C	0.2926	Adder	0.65
964342	AG1-296 E	0.1576	Adder	0.35
964411	AG1-303 C O1	0.8960	Adder	1.99
964412	AG1-303 E O1	0.5974	Adder	1.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965201	AG1-385 C	0.4177	Adder	0.93
965202	AG1-385 E	0.1237	Adder	0.27
965861	AG1-455	1.1149	Adder	2.47
966121	AG1-481	0.3823	Adder	0.85
966453	AG1-514 BAT	0.3888	Merchant Transmission	0.3888
966771	AG1-548 C	3.3737	Adder	7.49
966772	AG1-548 E	1.0268	Adder	2.28
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0054	Confirmed LTF	4.0054
CALDERWOOD	CALDERWOOD	0.2008	Confirmed LTF	0.2008
PRAIRIE	PRAIRIE	1.1469	Confirmed LTF	1.1469
CHEOAH	CHEOAH	0.2012	Confirmed LTF	0.2012
CBM-N	CBM-N	0.7956	Confirmed LTF	0.7956
COTTONWOOD	COTTONWOOD	0.8841	Confirmed LTF	0.8841
HAMLET	HAMLET	0.1946	Confirmed LTF	0.1946
GIBSON	GIBSON	0.2490	Confirmed LTF	0.2490
BLUEG	BLUEG	0.7916	Confirmed LTF	0.7916
TRIMBLE	TRIMBLE	0.2543	Confirmed LTF	0.2543
CATAWBA	CATAWBA	0.1257	Confirmed LTF	0.1257

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
164496419	200599	26ERIE W	PENELEC	238547	02AT	ATSI	1	PN-P2-3-PN-230-14BT	breaker	1900.0	115.51	116.57	DC	20.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200662	26SCRUB GR	4.6470	50/50	4.6470
200828	26HNSMLK 1	3.1097	50/50	3.1097
200829	26HNSMLK 2	3.1097	50/50	3.1097
200830	26HNSMLK 3	3.1097	50/50	3.1097
200831	26HNSMLK 4	3.1097	50/50	3.1097
200832	26HNSMLK 5	3.1097	50/50	3.1097
200849	26LAKVU GN	0.4122	50/50	0.4122
200894	26K02	8.3700	Adder	9.85
201201	26WRREN CT	3.3716	50/50	3.3716
203999	P-047 E	12.0202	Adder	14.14
235003	AC1-025 E	0.2648	Adder	0.31
236828	01GRAYMONT	0.7088	Adder	0.83
290086	Q-036 E	5.5896	Adder	6.58
915951	Y3-092 FTIR	592.0700	50/50	592.0700
916202	Z1-069 E	10.2699	Adder	12.08
920341	**AA2-132 (Withdrawn : 12/07/2020)**	**2.8033**	**Adder**	**3.3**
921642	AA2-000	76.6203	Adder	90.14
930511	AB2-092	2.8133	Adder	3.31
931092	AB1-160 E	2.9342	Adder	3.45
935191	AD1-154	3.3509	Adder	3.94
936421	AD2-055	5.7920	Adder	6.81
936991	AD2-133 C	2.5153	Adder	2.96
936992	AD2-133 E	11.5048	Adder	13.54
938951	AE1-123	3.6036	Adder	4.24
939171	AE1-147 C	2.1276	Adder	2.5
939172	AE1-147 E	1.4184	Adder	1.67
939291	AE1-160 C	4.7558	50/50	4.7558
939292	AE1-160 E	2.7336	50/50	2.7336
940201	AE2-001 C	2.1270	Adder	2.5
940202	AE2-001 E	1.4180	Adder	1.67
940681	**AE2-055 C (Suspended)**	**2.1162**	**Adder**	**2.49**
940682	**AE2-055 E (Suspended)**	**1.4108**	**Adder**	**1.66**
940861	AE2-074 C	2.9573	Adder	3.48
940862	AE2-074 E	3.8929	Adder	4.58
941191	AE2-113 C	13.0790	Adder	15.39
941192	AE2-113 E	14.0819	Adder	16.57
941261	AE2-120 C	2.1266	Adder	2.5
941262	AE2-120 E	1.4177	Adder	1.67
941271	AE2-121 C	1.1318	Adder	1.33
941272	AE2-121 E	0.7557	Adder	0.89

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
941321	AE2-126 C	2.2829	Adder	2.69
941322	AE2-126 E	1.5219	Adder	1.79
941331	AE2-129 C	1.8517	Adder	2.18
941332	AE2-129 E	1.2345	Adder	1.45
941351	AE2-131 C (Suspended)	1.8517	Adder	2.18
941352	AE2-131 E (Suspended)	1.2345	Adder	1.45
942351	AE2-248 C	1.6965	Adder	2.0
942352	AE2-248 E	1.1310	Adder	1.33
942491	AE2-262 C	9.0134	Adder	10.6
942492	AE2-262 E	6.0570	Adder	7.13
942501	AE2-263 C	8.4726	Adder	9.97
942502	AE2-263 E	5.6568	Adder	6.66
942811	AE2-299 C	15.9571	50/50	15.9571
942812	AE2-299 E	63.8285	50/50	63.8285
942961	AE2-316 C	7.4990	Adder	8.82
942962	AE2-316 E	10.6936	Adder	12.58
943151	AE2-344 C	35.8014	50/50	35.8014
943152	AE2-344 E	23.8676	50/50	23.8676
943351	AF1-006 C	6.8550	50/50	6.8550
943352	AF1-006 E	3.8560	50/50	3.8560
943751	AF1-043	17.3761	Adder	20.44
944001	AF1-068 C O1 (Withdrawn : 12/15/2020)	2.2606	Adder	2.66
944002	AF1-068 E O1 (Withdrawn : 12/15/2020)	1.2716	Adder	1.5
944181	AF1-086 C O1	2.8177	Adder	3.31
944182	AF1-086 E O1	12.2585	Adder	14.42
944261	AF1-094 C	5.5565	50/50	5.5565
944262	AF1-094 E	3.7043	50/50	3.7043
944281	AF1-096 C	4.4936	50/50	4.4936
944282	AF1-096 E	2.9958	50/50	2.9958
944301	AF1-098 C	23.3381	50/50	23.3381
944302	AF1-098 E	15.5587	50/50	15.5587
944311	AF1-099 C	13.6823	Adder	16.1
944312	AF1-099 E	9.1216	Adder	10.73
944321	AF1-100 C	27.3513	Adder	32.18
944322	AF1-100 E	18.2342	Adder	21.45
944381	AF1-103 O1	7.4984	50/50	7.4984
944391	AF1-104 O1	11.3678	50/50	11.3678
944411	AF1-106 O1	2.9869	Adder	3.51
944471	AF1-112 C	2.1219	Adder	2.5
944472	AF1-112 E	1.4146	Adder	1.66
944671	AF1-132 C O1 (Withdrawn : 12/15/2020)	2.1186	Adder	2.49
944672	AF1-132 E O1 (Withdrawn : 12/15/2020)	1.4124	Adder	1.66
944691	AF1-134 C	1.8268	Adder	2.15
944692	AF1-134 E	1.2179	Adder	1.43
944771	AF1-142 C	21.8917	Adder	25.75
944772	AF1-142 E	14.5945	Adder	17.17
944881	AF1-153 C O1	2.3209	Adder	2.73

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944882	AF1-153 E O1	1.5473	Adder	1.82
944901	AF1-155 C	2.3189	Adder	2.73
944902	AF1-155 E	1.5459	Adder	1.82
945021	AF1-167 C	1.3325	Adder	1.57
945022	AF1-167 E	0.8899	Adder	1.05
945051	AF1-170 C	24.7138	50/50	24.7138
945052	AF1-170 E	16.4759	50/50	16.4759
945121	AF1-177	0.2958	50/50	0.2958
945451	AF1-210 C	1.4561	Adder	1.71
945452	AF1-210 E	0.9707	Adder	1.14
945491	**AF1-214 C (Withdrawn : 12/03/2020)**	**2.1266**	**Adder**	**2.5**
945492	**AF1-214 E (Withdrawn : 12/03/2020)**	**1.4177**	**Adder**	**1.67**
945751	AF1-240 C O1	2.0105	Adder	2.37
945752	AF1-240 E O1	1.3403	Adder	1.58
946111	AF1-276 C	15.5530	Adder	18.3
946112	AF1-276 E	7.6605	Adder	9.01
946121	AF1-277 C	15.5530	Adder	18.3
946122	AF1-277 E	7.6605	Adder	9.01
946131	AF1-278 C	12.4053	Adder	14.59
946132	AF1-278 E	6.1655	Adder	7.25
946211	AF1-286 C	1.2097	Adder	1.42
946212	AF1-286 E	0.8214	Adder	0.97
946221	AF1-287 C	6.1184	50/50	6.1184
946222	AF1-287 E	4.0790	50/50	4.0790
946381	AF1-302 C	3.2747	Adder	3.85
946382	AF1-302 E	4.3662	Adder	5.14
946401	AF1-304 C	20.4282	50/50	20.4282
946402	AF1-304 E	13.6188	50/50	13.6188
946421	AF1-306 C	9.9244	Adder	11.68
946422	AF1-306 E	39.6974	Adder	46.7
946771	AF1-217 C	6.1183	50/50	6.1183
946772	AF1-217 E	4.0789	50/50	4.0789
957161	AF2-010 C	21.1057	50/50	21.1057
957162	AF2-010 E	14.2234	50/50	14.2234
957451	AF2-039 C	1.3949	Adder	1.64
957452	AF2-039 E	0.9299	Adder	1.09
957571	AF2-051 C	15.1635	50/50	15.1635
957572	AF2-051 E	7.8115	50/50	7.8115
957941	AF2-088 C	0.6716	Adder	0.79
957942	AF2-088 E	0.4477	Adder	0.53
958271	AF2-121 C	1.8517	Adder	2.18
958272	AF2-121 E	1.2345	Adder	1.45
958361	AF2-130 C	2.8677	Adder	3.37
958362	AF2-130 E	1.9118	Adder	2.25
958731	AF2-164 C O1	17.6842	50/50	17.6842
958732	AF2-164 E O1	11.7894	50/50	11.7894
958741	AF2-165 C	4.0072	50/50	4.0072
958742	AF2-165 E	2.6714	50/50	2.6714
958751	AF2-166 C	2.8677	Adder	3.37
958752	AF2-166 E	1.9118	Adder	2.25
959441	AF2-235 C	2.2468	50/50	2.2468

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959442	AF2-235 E	1.4979	50/50	1.4979
959471	AF2-238 C	1.7638	Adder	2.08
959472	AF2-238 E	1.1759	Adder	1.38
959491	AF2-240 C	0.5645	Adder	0.66
959492	AF2-240 E	0.4809	Adder	0.57
959501	AF2-241 C	1.6876	Adder	1.99
959502	AF2-241 E	1.2993	Adder	1.53
959521	AF2-243 C	3.0054	50/50	3.0054
959522	AF2-243 E	2.0036	50/50	2.0036
959741	AF2-265 C	1.2640	Adder	1.49
959742	AF2-265 E	0.9407	Adder	1.11
959822	AF2-273 E	0.5842	Adder	0.69
960022	AF2-293 E	0.2068	Adder	0.24
960031	AF2-294 C	1.6904	Adder	1.99
960032	AF2-294 E	1.1270	Adder	1.33
960041	AF2-295 C	2.3189	Adder	2.73
960042	AF2-295 E	1.5459	Adder	1.82
960051	AF2-296 C	1.8268	Adder	2.15
960052	AF2-296 E	1.2179	Adder	1.43
961141	AF2-405	1.4934	Adder	1.76
961151	AF2-406	11.2009	Adder	13.18
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**46.9710**	**Adder**	**55.26**
961211	AF2-412	20.2569	Adder	23.83
961971	AG1-040 C	5.8858	50/50	5.8858
961972	AG1-040 E	3.9238	50/50	3.9238
962411	AG1-090 C O1	4.9070	Adder	10.89
962412	AG1-090 E O1	3.2714	Adder	7.26
962511	AG1-100 C	6.1441	50/50	6.1441
962512	AG1-100 E	4.0961	50/50	4.0961
962891	AG1-138 C	0.6016	Adder	1.34
962892	AG1-138 E	0.0317	Adder	0.07
962901	AG1-139 C	1.5862	50/50	1.5862
962902	AG1-139 E	0.0835	50/50	0.0835
962911	AG1-140 C	0.8976	50/50	0.8976
962912	AG1-140 E	0.4089	50/50	0.4089
962951	AG1-144 C	0.9814	Adder	2.18
962952	AG1-144 E	0.6543	Adder	1.45
963281	AG1-177 C O1	5.5565	50/50	5.5565
963282	AG1-177 E O1	3.7043	50/50	3.7043
963441	AG1-193 C	4.6628	50/50	4.6628
963442	AG1-193 E	3.1086	50/50	3.1086
963481	AG1-197 C	4.3745	50/50	4.3745
963482	AG1-197 E	2.9164	50/50	2.9164
963491	AG1-198 C	3.3339	50/50	3.3339
963492	AG1-198 E	2.2226	50/50	2.2226
963531	AG1-202 C	3.5769	50/50	3.5769
963532	AG1-202 E	1.8426	50/50	1.8426
963571	AG1-206 C	0.6710	Adder	1.49
963572	AG1-206 E	0.3613	Adder	0.8
963891	AG1-242 C	0.5244	Adder	1.16
963892	AG1-242 E	0.2824	Adder	0.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963941	AG1-247 C	0.3878	Adder	0.86
963942	AG1-247 E	0.2058	Adder	0.46
963991	AG1-253 C	1.3464	50/50	1.3464
963992	AG1-253 E	0.6483	50/50	0.6483
964031	AG1-257 C	0.7782	Adder	1.73
964032	AG1-257 E	1.0876	Adder	2.41
964041	AG1-258 C	0.7782	Adder	1.73
964042	AG1-258 E	1.0876	Adder	2.41
964341	AG1-296 C	0.6136	Adder	1.36
964342	AG1-296 E	0.3304	Adder	0.73
964411	AG1-303 C O1	12.1308	50/50	12.1308
964412	AG1-303 E O1	8.0872	50/50	8.0872
964451	AG1-308 C O1	0.7027	Adder	1.56
964452	AG1-308 E O1	0.9821	Adder	2.18
964701	AG1-333 C	0.3285	Adder	0.73
964702	AG1-333 E	0.0448	Adder	0.1
965121	AG1-377 C O1	0.9814	Adder	2.18
965122	AG1-377 E O1	0.6543	Adder	1.45
965131	AG1-378 C O1	0.9814	Adder	2.18
965132	AG1-378 E O1	0.6543	Adder	1.45
965201	AG1-385 C	1.5817	Adder	3.51
965202	AG1-385 E	0.4685	Adder	1.04
965241	AG1-389 C O1	1.1740	Adder	2.61
965242	AG1-389 E O1	0.7826	Adder	1.74
965251	AG1-390 C O1	1.1740	Adder	2.61
965252	AG1-390 E O1	0.7826	Adder	1.74
965261	AG1-391 C O1	1.1740	Adder	2.61
965262	AG1-391 E O1	0.7826	Adder	1.74
965271	AG1-392 C O1	2.3479	Adder	5.21
965272	AG1-392 E O1	1.5653	Adder	3.47
965301	AG1-395 C	1.2611	Adder	2.8
965302	AG1-395 E	0.3746	Adder	0.83
965861	AG1-455	18.6018	50/50	18.6018
966041	AG1-473 C	2.9468	Adder	6.54
966042	AG1-473 E	1.9645	Adder	4.36
966121	AG1-481	5.8225	50/50	5.8225
966771	AG1-548 C	53.9430	50/50	53.9430
966772	AG1-548 E	16.4174	50/50	16.4174
G-007A	G-007A	9.7027	Confirmed LTF	9.7027
VFT	VFT	26.5804	Confirmed LTF	26.5804
CALDERWOOD	CALDERWOOD	1.2703	Confirmed LTF	1.2703
PRAIRIE	PRAIRIE	8.3922	Confirmed LTF	8.3922
CHEOAH	CHEOAH	1.2693	Confirmed LTF	1.2693
CBM-N	CBM-N	5.1816	Confirmed LTF	5.1816
COTTONWOOD	COTTONWOOD	6.0333	Confirmed LTF	6.0333
HAMLET	HAMLET	0.9893	Confirmed LTF	0.9893
GIBSON	GIBSON	1.8515	Confirmed LTF	1.8515
BLUEG	BLUEG	5.7791	Confirmed LTF	5.7791
TRIMBLE	TRIMBLE	1.8559	Confirmed LTF	1.8559
CATAWBA	CATAWBA	0.6891	Confirmed LTF	0.6891

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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
167521773	200795	26SHELOCTA	PENELEC	200810	26KEYSTONE	PENELEC	1	ATSI-P2-3-CEI-345-004D	breaker	923.0	192.12	192.59	DC	9.69

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200636	26IUP CO-G	0.6646	50/50	0.6646
200805	**26COLVER13 (Deactivation : 01/09/2020)**	**4.5894**	**50/50**	**4.5894**
200809	26SITHE	2.0742	50/50	2.0742
200835	26ARN_Z1-066	1.3692	Adder	1.61
200837	26HOMER C1	35.7218	50/50	35.7218
200838	26HOMER C2	30.7825	50/50	30.7825
200839	26HOMER C3	32.5873	50/50	32.5873
200846	26FORWARD	0.1356	50/50	0.1356
200852	26WARR RDG	0.3980	Adder	0.47
200864	K-013 E	6.2294	50/50	6.2294
200883	Q-053 E	9.8263	Adder	11.56
200894	26K02	7.0491	Adder	8.29
202158	26CON.GEN1	0.1138	50/50	0.1138
203915	26BF_Z2-108	3.0808	Adder	3.62
203932	AA2-133 GEN	2.1346	Adder	2.51
203999	P-047 E	12.2344	Adder	14.39
235003	AC1-025 E	0.1776	Adder	0.21
236828	01GRAYMONT	0.4823	Adder	0.57
290086	Q-036 E	7.1437	Adder	8.4
292350	K-023	5.6310	Adder	6.62
292542	L-013 1	5.4770	Adder	6.44
293301	N-039 E	13.0930	Adder	15.4
293393	V3-030E	6.0349	Adder	7.1
293432	R-040 E	0.3081	Adder	0.36
293603	O-018 E	11.5711	Adder	13.61
293902	O-048 E	4.9293	Adder	5.8
294515	O38_P22	11.4564	Adder	13.48
294903	P-060 E	8.8350	Adder	10.39
296332	R-032 E	13.3513	Adder	15.71
913142	Y1-033 E OP1	4.4072	Adder	5.18
915951	Y3-092 FTIR	223.8400	Merchant Transmission	223.8400
916202	Z1-069 E	9.9831	Adder	11.74
919201	AA1-144 OP	19.3180	Adder	22.73
920341	**AA2-132 (Withdrawn : 12/07/2020)**	**2.6210**	**Adder**	**3.08**
921642	AA2-000	61.0711	Adder	71.85
930511	AB2-092	2.2424	Adder	2.64
931092	AB1-160 E	2.8523	Adder	3.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
935191	AD1-154	3.8588	Adder	4.54
936421	AD2-055	4.6166	Adder	5.43
936991	AD2-133 C	3.2147	Adder	3.78
936992	AD2-133 E	14.7036	Adder	17.3
938351	AE1-053	1.7116	Adder	2.01
938881	AE1-116	0.9208	Adder	1.08
938951	AE1-123	3.0346	Adder	3.57
938993	AE1-128 C	15.6317	Adder	18.39
938994	AE1-128 E	10.4211	Adder	12.26
939171	AE1-147 C	1.4512	Adder	1.71
939172	AE1-147 E	0.9674	Adder	1.14
939291	AE1-160 C	2.2092	Adder	2.6
939292	AE1-160 E	1.2699	Adder	1.49
940201	AE2-001 C	1.4488	Adder	1.7
940202	AE2-001 E	0.9659	Adder	1.14
940681	**AE2-055 C (Suspended)**	**1.4132**	**Adder**	**1.66**
940682	**AE2-055 E (Suspended)**	**0.9421**	**Adder**	**1.11**
940861	AE2-074 C	2.7658	Adder	3.25
940862	AE2-074 E	3.6408	Adder	4.28
941191	AE2-113 C	11.0656	Adder	13.02
941192	AE2-113 E	11.9140	Adder	14.02
941231	AE2-117 C	1.9341	Adder	2.28
941232	AE2-117 E	1.2894	Adder	1.52
941241	AE2-118 C	2.0112	Adder	2.37
941242	AE2-118 E	1.3408	Adder	1.58
941261	AE2-120 C	1.4475	Adder	1.7
941262	AE2-120 E	0.9650	Adder	1.14
941271	AE2-121 C	0.7736	Adder	0.91
941272	AE2-121 E	0.5166	Adder	0.61
941321	AE2-126 C	1.9141	Adder	2.25
941322	AE2-126 E	1.2761	Adder	1.5
941331	AE2-129 C	2.0311	Adder	2.39
941332	AE2-129 E	1.3541	Adder	1.59
941351	**AE2-131 C (Suspended)**	**2.0311**	**Adder**	**2.39**
941352	**AE2-131 E (Suspended)**	**1.3541**	**Adder**	**1.59**
941421	AE2-139 C	3.8159	Adder	8.47
941422	AE2-139 E	2.5439	Adder	5.65
942121	AE2-224 C	12.8301	Adder	15.09
942122	AE2-224 E	8.5534	Adder	10.06
942351	AE2-248 C	1.1425	Adder	1.34
942352	AE2-248 E	0.7617	Adder	0.9
942361	AE2-249 C	1.7586	Adder	2.07
942362	AE2-249 E	1.1724	Adder	1.38
942491	AE2-262 C	6.5378	Adder	7.69
942492	AE2-262 E	4.3934	Adder	5.17
942501	AE2-263 C	6.1455	Adder	7.23
942502	AE2-263 E	4.1031	Adder	4.83
942511	AE2-264 C	7.8222	Adder	9.2
942512	AE2-264 E	5.2148	Adder	6.14
942811	AE2-299 C	5.3081	Adder	6.24
942812	AE2-299 E	21.2323	Adder	24.98
942961	AE2-316 C	6.2569	Adder	7.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942962	AE2-316 E	8.9224	Adder	10.5
943151	AE2-344 C	12.4284	Adder	14.62
943152	AE2-344 E	8.2856	Adder	9.75
943351	AF1-006 C	2.2417	Adder	2.64
943352	AF1-006 E	1.2610	Adder	1.48
943711	AF1-039 C O1	1.1659	Adder	1.37
943712	AF1-039 E O1	0.7773	Adder	0.91
943751	AF1-043	13.8498	Adder	16.29
944001	**AF1-068 C O1 (Withdrawn : 12/15/2020)**	**1.5185**	**Adder**	**1.79**
944002	**AF1-068 E O1 (Withdrawn : 12/15/2020)**	**0.8542**	**Adder**	**1.0**
944181	AF1-086 C O1	4.2272	Adder	4.97
944182	AF1-086 E O1	18.3905	Adder	21.64
944261	AF1-094 C	2.0435	Adder	2.4
944262	AF1-094 E	1.3623	Adder	1.6
944281	AF1-096 C	2.0874	Adder	2.46
944282	AF1-096 E	1.3916	Adder	1.64
944301	AF1-098 C	8.0804	Adder	9.51
944302	AF1-098 E	5.3870	Adder	6.34
944311	AF1-099 C	9.9243	Adder	11.68
944312	AF1-099 E	6.6162	Adder	7.78
944321	AF1-100 C	21.0745	Adder	24.79
944322	AF1-100 E	14.0496	Adder	16.53
944381	AF1-103 O1	3.4221	Adder	4.03
944391	AF1-104 O1	3.7072	Adder	4.36
944411	AF1-106 O1	2.8506	Adder	3.35
944471	AF1-112 C	1.4320	Adder	1.68
944472	AF1-112 E	0.9547	Adder	1.12
944671	**AF1-132 C O1 (Withdrawn : 12/15/2020)**	**1.4211**	**Adder**	**1.67**
944672	**AF1-132 E O1 (Withdrawn : 12/15/2020)**	**0.9474**	**Adder**	**1.11**
944691	AF1-134 C	2.2226	Adder	2.61
944692	AF1-134 E	1.4817	Adder	1.74
944751	AF1-140 C	2.0998	Adder	2.47
944752	AF1-140 E	1.3999	Adder	1.65
944771	AF1-142 C	15.8789	Adder	18.68
944772	AF1-142 E	10.5860	Adder	12.45
944781	AF1-143 C	10.2694	Adder	12.08
944782	AF1-143 E	5.4770	Adder	6.44
944881	AF1-153 C O1	1.7866	Adder	2.1
944882	AF1-153 E O1	1.1911	Adder	1.4
944901	AF1-155 C	1.7872	Adder	2.1
944902	AF1-155 E	1.1915	Adder	1.4
945021	AF1-167 C	1.1677	Adder	1.37
945022	AF1-167 E	0.7799	Adder	0.92
945051	AF1-170 C	8.4564	Adder	9.95
945052	AF1-170 E	5.6376	Adder	6.63
945451	AF1-210 C	1.2813	Adder	1.51
945452	AF1-210 E	0.8542	Adder	1.0

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945491	AF1-214 C (Withdrawn : 12/03/2020)	1.4476	Adder	1.7
945492	AF1-214 E (Withdrawn : 12/03/2020)	0.9651	Adder	1.14
945671	AF1-232 C (Withdrawn : 01/19/2021)	21.6677	Adder	25.49
945672	AF1-232 E (Withdrawn : 01/19/2021)	11.6672	Adder	13.73
945751	AF1-240 C O1	2.3153	Adder	2.72
945752	AF1-240 E O1	1.5435	Adder	1.82
946071	AF1-272 C O1	22.6670	50/50	22.6670
946072	AF1-272 E O1	15.1114	50/50	15.1114
946111	AF1-276 C	12.7727	Adder	15.03
946112	AF1-276 E	6.2911	Adder	7.4
946121	AF1-277 C	12.7727	Adder	15.03
946122	AF1-277 E	6.2911	Adder	7.4
946131	AF1-278 C	10.1877	Adder	11.99
946132	AF1-278 E	5.0633	Adder	5.96
946211	AF1-286 C	1.1545	Adder	1.36
946212	AF1-286 E	0.7839	Adder	0.92
946221	AF1-287 C	2.1338	Adder	2.51
946222	AF1-287 E	1.4226	Adder	1.67
946381	AF1-302 C	2.7323	Adder	3.21
946382	AF1-302 E	3.6430	Adder	4.29
946401	AF1-304 C	10.5218	Adder	12.38
946402	AF1-304 E	7.0145	Adder	8.25
946421	AF1-306 C	7.4222	Adder	8.73
946422	AF1-306 E	29.6889	Adder	34.93
946571	AF1-321 C O1	3.2539	50/50	3.2539
946572	AF1-321 E O1	2.1693	50/50	2.1693
946771	AF1-217 C	2.1338	Adder	2.51
946772	AF1-217 E	1.4226	Adder	1.67
957001	AF2-001 C O1	3.2539	50/50	3.2539
957002	AF2-001 E O1	2.1693	50/50	2.1693
957011	AF2-002 C O1	1.6270	50/50	1.6270
957012	AF2-002 E O1	1.0846	50/50	1.0846
957161	AF2-010 C	7.8411	Adder	9.22
957162	AF2-010 E	5.2842	Adder	6.22
957451	AF2-039 C	1.2786	Adder	1.5
957452	AF2-039 E	0.8524	Adder	1.0
957512	AF2-045 E	3.9422	Adder	4.64
957561	AF2-050 C	6.4150	Adder	7.55
957562	AF2-050 E	4.2767	Adder	5.03
957571	AF2-051 C	6.1800	Adder	7.27
957572	AF2-051 E	3.1836	Adder	3.75
957931	AF2-087 C (Suspended)	0.5746	Adder	0.68
957932	AF2-087 E (Suspended)	0.7912	Adder	0.93
957941	AF2-088 C	0.6156	Adder	0.72
957942	AF2-088 E	0.4104	Adder	0.48
957981	AF2-092 C	1.5593	Adder	1.83
957982	AF2-092 E	1.0395	Adder	1.22
958101	AF2-104 C (Withdrawn : 12/08/2020)	0.4911	Adder	0.58

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958102	AF2-104 E (Withdrawn : 12/08/2020)	0.3274	Adder	0.39
958271	AF2-121 C	2.0311	Adder	2.39
958272	AF2-121 E	1.3541	Adder	1.59
958361	AF2-130 C	2.0649	Adder	2.43
958362	AF2-130 E	1.3766	Adder	1.62
958471	AF2-141	1.3692	Adder	1.61
958731	AF2-164 C O1	9.7993	Adder	11.53
958732	AF2-164 E O1	6.5329	Adder	7.69
958741	AF2-165 C	2.1235	Adder	2.5
958742	AF2-165 E	1.4157	Adder	1.67
958751	AF2-166 C	2.0649	Adder	2.43
958752	AF2-166 E	1.3766	Adder	1.62
959061	AF2-197 C O1	4.8988	Adder	5.76
959062	AF2-197 E O1	7.3483	Adder	8.65
959441	AF2-235 C	1.0437	Adder	1.23
959442	AF2-235 E	0.6958	Adder	0.82
959471	AF2-238 C	1.7410	Adder	2.05
959472	AF2-238 E	1.1607	Adder	1.37
959481	AF2-239 C	1.3189	Adder	1.55
959482	AF2-239 E	1.0575	Adder	1.24
959491	AF2-240 C	0.5388	Adder	0.63
959492	AF2-240 E	0.4589	Adder	0.54
959501	AF2-241 C	1.6106	Adder	1.89
959502	AF2-241 E	1.2400	Adder	1.46
959521	AF2-243 C	1.5927	Adder	1.87
959522	AF2-243 E	1.0618	Adder	1.25
959741	AF2-265 C	1.2477	Adder	1.47
959742	AF2-265 E	0.9286	Adder	1.09
959792	AF2-270 E	0.8079	Adder	0.95
959802	AF2-271 E	0.5015	Adder	0.59
959822	AF2-273 E	0.5133	Adder	0.6
960022	AF2-293 E	0.1411	Adder	0.17
960031	AF2-294 C	1.5805	Adder	1.86
960032	AF2-294 E	1.0537	Adder	1.24
960041	AF2-295 C	1.7872	Adder	2.1
960042	AF2-295 E	1.1915	Adder	1.4
960051	AF2-296 C	2.2226	Adder	2.61
960052	AF2-296 E	1.4817	Adder	1.74
960271	AF2-318 C	1.4259	Adder	1.68
960272	AF2-318 E	0.9506	Adder	1.12
960451	AF2-336 C	2.5989	Adder	3.06
960452	AF2-336 E	1.7326	Adder	2.04
960461	AF2-337 C	2.5989	Adder	3.06
960462	AF2-337 E	1.7326	Adder	2.04
960471	AF2-338 C	2.5989	Adder	3.06
960472	AF2-338 E	1.7326	Adder	2.04
960481	AF2-339 C	2.5989	Adder	3.06
960482	AF2-339 E	1.7326	Adder	2.04
960901	AF2-381 C	21.6798	50/50	21.6798
960902	AF2-381 E	11.4090	50/50	11.4090
961141	AF2-405	1.4253	Adder	1.68

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961151	AF2-406	10.6896	Adder	12.58
961201	AF2-411 O1 (Withdrawn : 12/08/2020)	52.8437	Adder	62.17
961211	AF2-412	21.3486	Adder	25.12
961451	AF2-436	0.1610	Adder	0.19
961911	AG1-033 C	0.8602	50/50	0.8602
961912	AG1-033 E	0.4838	50/50	0.4838
961971	AG1-040 C	1.1606	Adder	2.58
961972	AG1-040 E	0.7737	Adder	1.72
961981	AG1-041 C	0.8249	Adder	1.83
961982	AG1-041 E	0.5500	Adder	1.22
962292	AG1-077 E	0.4430	Adder	0.98
962411	AG1-090 C O1	5.3825	Adder	11.95
962412	AG1-090 E O1	3.5883	Adder	7.97
962511	AG1-100 C	1.1449	Adder	2.54
962512	AG1-100 E	0.7633	Adder	1.69
962641	AG1-113	0.3904	Adder	0.87
962651	AG1-114	0.9071	Adder	2.01
962891	AG1-138 C	0.4332	Adder	0.96
962892	AG1-138 E	0.0228	Adder	0.05
962901	AG1-139 C	0.4455	Adder	0.99
962902	AG1-139 E	0.0234	Adder	0.05
962911	AG1-140 C	0.1582	Adder	0.35
962912	AG1-140 E	0.0721	Adder	0.16
962951	AG1-144 C	1.0765	Adder	2.39
962952	AG1-144 E	0.7177	Adder	1.59
963281	AG1-177 C O1	1.0830	Adder	2.4
963282	AG1-177 E O1	0.7220	Adder	1.6
963441	AG1-193 C	1.1848	Adder	2.63
963442	AG1-193 E	0.7899	Adder	1.75
963481	AG1-197 C	0.8755	Adder	1.94
963482	AG1-197 E	0.5837	Adder	1.3
963491	AG1-198 C	0.6498	Adder	1.44
963492	AG1-198 E	0.4332	Adder	0.96
963531	AG1-202 C	0.6396	Adder	1.42
963532	AG1-202 E	0.3295	Adder	0.73
963541	AG1-203 C	0.7199	Adder	1.6
963542	AG1-203 E	0.3877	Adder	0.86
963561	AG1-205 C	0.5896	Adder	1.31
963562	AG1-205 E	0.3175	Adder	0.7
963571	AG1-206 C	0.5510	Adder	1.22
963572	AG1-206 E	0.2967	Adder	0.66
963881	AG1-241 C	1.7472	50/50	1.7472
963882	AG1-241 E	0.9408	50/50	0.9408
963891	AG1-242 C	0.6381	Adder	1.42
963892	AG1-242 E	0.3436	Adder	0.76
963941	AG1-247 C	0.3701	Adder	0.82
963942	AG1-247 E	0.1964	Adder	0.44
963991	AG1-253 C	0.2374	Adder	0.53
963992	AG1-253 E	0.1143	Adder	0.25
964031	AG1-257 C	0.5261	Adder	1.17
964032	AG1-257 E	0.7353	Adder	1.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964041	AG1-258 C	0.5261	Adder	1.17
964042	AG1-258 E	0.7353	Adder	1.63
964191	AG1-280 C	1.2954	Adder	2.88
964192	AG1-280 E	0.8636	Adder	1.92
964201	AG1-281 C	1.2937	Adder	2.87
964202	AG1-281 E	0.8624	Adder	1.91
964331	AG1-295 C	0.5652	Adder	1.25
964332	AG1-295 E	0.2999	Adder	0.67
964341	AG1-296 C	0.5250	Adder	1.17
964342	AG1-296 E	0.2827	Adder	0.63
964391	AG1-301 C	1.0124	Adder	2.25
964392	AG1-301 E	0.6750	Adder	1.5
964411	AG1-303 C O1	2.6203	Adder	5.82
964412	AG1-303 E O1	1.7469	Adder	3.88
964451	AG1-308 C O1	0.7292	Adder	1.62
964452	AG1-308 E O1	1.0191	Adder	2.26
964701	AG1-333 C	0.3071	Adder	0.68
964702	AG1-333 E	0.0419	Adder	0.09
964751	AG1-338 C	0.5014	Adder	1.11
964752	AG1-338 E	0.0684	Adder	0.15
964761	AG1-339 C	0.5242	Adder	1.16
964762	AG1-339 E	0.0456	Adder	0.1
964771	AG1-340 C	0.5014	Adder	1.11
964772	AG1-340 E	0.0684	Adder	0.15
964911	AG1-355 C	8.7681	50/50	8.7681
964912	AG1-355 E	5.8454	50/50	5.8454
964921	AG1-356 C	2.3765	Adder	5.28
964922	AG1-356 E	1.5843	Adder	3.52
965121	AG1-377 C O1	1.0765	Adder	2.39
965122	AG1-377 E O1	0.7177	Adder	1.59
965131	AG1-378 C O1	1.0765	Adder	2.39
965132	AG1-378 E O1	0.7177	Adder	1.59
965171	AG1-382 C	1.3685	Adder	3.04
965172	AG1-382 E	0.9123	Adder	2.03
965201	AG1-385 C	1.2176	Adder	2.7
965202	AG1-385 E	0.3606	Adder	0.8
965221	AG1-387 C	1.3685	Adder	3.04
965222	AG1-387 E	0.9123	Adder	2.03
965241	AG1-389 C O1	1.1303	Adder	2.51
965242	AG1-389 E O1	0.7535	Adder	1.67
965251	AG1-390 C O1	1.1303	Adder	2.51
965252	AG1-390 E O1	0.7535	Adder	1.67
965261	AG1-391 C O1	1.1303	Adder	2.51
965262	AG1-391 E O1	0.7535	Adder	1.67
965271	AG1-392 C O1	2.2606	Adder	5.02
965272	AG1-392 E O1	1.5070	Adder	3.35
965301	AG1-395 C	1.3833	Adder	3.07
965302	AG1-395 E	0.4109	Adder	0.91
965861	AG1-455	3.3735	Adder	7.49
965881	AG1-457 C	3.1370	Adder	6.96
965882	AG1-457 E	2.0913	Adder	4.64
966121	AG1-481	1.4083	Adder	3.13

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966512	AG1-520 E	1.0846	50/50	1.0846
966771	AG1-548 C	10.3636	Adder	23.0
966772	AG1-548 E	3.1541	Adder	7.0
966781	AG1-549 C O1	45.4434	50/50	45.4434
966782	AG1-549 E O1	13.8306	50/50	13.8306
G-007A	G-007A	2.0523	Confirmed LTF	2.0523
VFT	VFT	5.9533	Confirmed LTF	5.9533
CALDERWOOD	CALDERWOOD	0.6247	Confirmed LTF	0.6247
PRAIRIE	PRAIRIE	3.3889	Confirmed LTF	3.3889
CHEOAH	CHEOAH	0.6281	Confirmed LTF	0.6281
CBM-N	CBM-N	1.3320	Confirmed LTF	1.3320
COTTONWOOD	COTTONWOOD	2.6880	Confirmed LTF	2.6880
HAMLET	HAMLET	0.6653	Confirmed LTF	0.6653
GIBSON	GIBSON	0.7267	Confirmed LTF	0.7267
BLUEG	BLUEG	2.3158	Confirmed LTF	2.3158
TRIMBLE	TRIMBLE	0.7429	Confirmed LTF	0.7429
CATAWBA	CATAWBA	0.4158	Confirmed LTF	0.4158

11.6.4 Index 4

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
167521795	235139	01AL&D6T	AP	235138	01AL 4J	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	123.64	124.53	DC	2.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1499	50/50	0.1499
235134	01AL&D6	0.5185	50/50	0.5185
915951	Y3-092 FTIR	68.1900	Merchant Transmission	68.1900
935191	AD1-154	0.9920	Adder	1.17
936881	AD2-112 C	-4.2604	Adder	-5.01
936882	AD2-112 E	-1.6906	Adder	-1.99
938951	AE1-123	1.1749	Adder	1.38
939291	AE1-160 C	0.7330	Adder	0.86
939292	AE1-160 E	0.4213	Adder	0.5
942811	AE2-299 C	1.3973	Adder	1.64
942812	AE2-299 E	5.5891	Adder	6.58
942961	AE2-316 C	2.8212	Adder	3.32
942962	AE2-316 E	4.0230	Adder	4.73
943151	AE2-344 C	3.6160	Adder	4.25
943152	AE2-344 E	2.4107	Adder	2.84
943351	AF1-006 C	0.6401	Adder	0.75
943352	AF1-006 E	0.3600	Adder	0.42
944261	AF1-094 C	0.6067	Adder	0.71
944262	AF1-094 E	0.4045	Adder	0.48
944281	AF1-096 C	0.6926	Adder	0.81
944282	AF1-096 E	0.4617	Adder	0.54
944301	AF1-098 C	2.1648	Adder	2.55
944302	AF1-098 E	1.4432	Adder	1.7
944391	AF1-104 O1	1.1087	Adder	1.3
944881	AF1-153 C O1	0.5584	Adder	0.66
944882	AF1-153 E O1	0.3723	Adder	0.44
944901	AF1-155 C	0.5625	Adder	0.66
944902	AF1-155 E	0.3750	Adder	0.44
945021	AF1-167 C	0.6632	Adder	0.78
945022	AF1-167 E	0.4430	Adder	0.52
945051	AF1-170 C	2.5019	Adder	2.94
945052	AF1-170 E	1.6680	Adder	1.96
945451	AF1-210 C	1.0352	50/50	1.0352
945452	AF1-210 E	0.6901	50/50	0.6901
945751	AF1-240 C O1	0.5952	Adder	0.7
945752	AF1-240 E O1	0.3968	Adder	0.47
946221	AF1-287 C	0.6211	Adder	0.73
946222	AF1-287 E	0.4141	Adder	0.49
946381	AF1-302 C	1.2320	Adder	1.45
946382	AF1-302 E	1.6426	Adder	1.93
946401	AF1-304 C	3.6276	Adder	4.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946402	AF1-304 E	2.4184	Adder	2.85
946771	AF1-217 C	0.6211	Adder	0.73
946772	AF1-217 E	0.4141	Adder	0.49
957161	AF2-010 C	2.3413	Adder	2.75
957162	AF2-010 E	1.5778	Adder	1.86
957571	AF2-051 C	1.8925	Adder	2.23
957572	AF2-051 E	0.9749	Adder	1.15
958361	AF2-130 C	0.7603	Adder	0.89
958362	AF2-130 E	0.5069	Adder	0.6
958731	AF2-164 C O1	2.9919	Adder	3.52
958732	AF2-164 E O1	1.9946	Adder	2.35
958741	AF2-165 C	0.7371	Adder	0.87
958742	AF2-165 E	0.4914	Adder	0.58
958751	AF2-166 C	0.7603	Adder	0.89
958752	AF2-166 E	0.5069	Adder	0.6
959441	AF2-235 C	0.3463	Adder	0.41
959442	AF2-235 E	0.2309	Adder	0.27
959521	AF2-243 C	0.5528	Adder	0.65
959522	AF2-243 E	0.3685	Adder	0.43
959822	AF2-273 E	0.3870	50/50	0.3870
960041	AF2-295 C	0.5625	Adder	0.66
960042	AF2-295 E	0.3750	Adder	0.44
960891	AF2-380 C	0.4209	Adder	0.5
960892	AF2-380 E	0.2806	Adder	0.33
961971	AG1-040 C	0.3465	Adder	0.77
961972	AG1-040 E	0.2310	Adder	0.51
962511	AG1-100 C	0.3367	Adder	0.75
962512	AG1-100 E	0.2245	Adder	0.5
962891	AG1-138 C	0.1595	Adder	0.35
962892	AG1-138 E	0.0084	Adder	0.02
962901	AG1-139 C	0.1546	Adder	0.34
962902	AG1-139 E	0.0081	Adder	0.02
962911	AG1-140 C	0.0417	Adder	0.09
962912	AG1-140 E	0.0190	Adder	0.04
963281	AG1-177 C O1	0.3215	Adder	0.71
963282	AG1-177 E O1	0.2144	Adder	0.48
963441	AG1-193 C	0.3869	Adder	0.86
963442	AG1-193 E	0.2579	Adder	0.57
963481	AG1-197 C	0.2628	Adder	0.58
963482	AG1-197 E	0.1752	Adder	0.39
963491	AG1-198 C	0.1929	Adder	0.43
963492	AG1-198 E	0.1286	Adder	0.29
963531	AG1-202 C	0.1898	Adder	0.42
963532	AG1-202 E	0.0978	Adder	0.22
963991	AG1-253 C	0.0625	Adder	0.14
963992	AG1-253 E	0.0301	Adder	0.07
964341	AG1-296 C	0.2575	Adder	0.57
964342	AG1-296 E	0.1386	Adder	0.31
964411	AG1-303 C O1	0.8024	Adder	1.78
964412	AG1-303 E O1	0.5350	Adder	1.19
965201	AG1-385 C	0.3806	Adder	0.84
965202	AG1-385 E	0.1127	Adder	0.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965861	AG1-455	0.9981	Adder	2.22
966453	AG1-514 BAT	1.0000	50/50	1.0000
966771	AG1-548 C	3.0520	Adder	6.77
966772	AG1-548 E	0.9289	Adder	2.06
G-007A	G-007A	1.3929	Confirmed LTF	1.3929
VFT	VFT	3.8442	Confirmed LTF	3.8442
CALDERWOOD	CALDERWOOD	0.1854	Confirmed LTF	0.1854
PRAIRIE	PRAIRIE	1.0539	Confirmed LTF	1.0539
CHEOAH	CHEOAH	0.1862	Confirmed LTF	0.1862
CBM-N	CBM-N	0.7608	Confirmed LTF	0.7608
COTTONWOOD	COTTONWOOD	0.8148	Confirmed LTF	0.8148
HAMLET	HAMLET	0.1808	Confirmed LTF	0.1808
GIBSON	GIBSON	0.2288	Confirmed LTF	0.2288
BLUEG	BLUEG	0.7291	Confirmed LTF	0.7291
TRIMBLE	TRIMBLE	0.2337	Confirmed LTF	0.2337
CATAWBA	CATAWBA	0.1165	Confirmed LTF	0.1165

11.6.5 Index 5

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
167376267	235197	01KARNSC	AP	235152	01BUTLER	AP	1	ATSI-P2-3-CEI-345-004D	breaker	179.0	234.86	235.95	DC	4.34

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200608	26PINEY #1	0.7388	50/50	0.7388
200662	26SCRUB GR	1.6803	50/50	1.6803
235030	01MHNG-T155	0.1596	50/50	0.1596
236828	01GRAYMONT	0.1716	Adder	0.2
290086	Q-036 E	1.7010	Adder	2.0
293393	V3-030E	1.2402	Adder	1.46
915951	Y3-092 FTIR	95.0500	Merchant Transmission	95.0500
916202	Z1-069 E	2.6874	Adder	3.16
921642	AA2-000	21.5351	Adder	25.34
930511	AB2-092	0.7907	Adder	0.93
931092	AB1-160 E	0.7678	Adder	0.9
935191	AD1-154	2.3032	50/50	2.3032
936421	AD2-055	1.6279	Adder	1.92
936991	AD2-133 C	0.7655	Adder	0.9
936992	AD2-133 E	3.5011	Adder	4.12
938951	AE1-123	2.7911	50/50	2.7911
939171	AE1-147 C	0.5172	Adder	0.61
939172	AE1-147 E	0.3448	Adder	0.41
939291	AE1-160 C	1.4995	50/50	1.4995
939292	AE1-160 E	0.8619	50/50	0.8619
940201	AE2-001 C	0.5159	Adder	0.61
940202	AE2-001 E	0.3439	Adder	0.4
940861	AE2-074 C	0.7659	Adder	0.9
940862	AE2-074 E	1.0081	Adder	1.19
941191	AE2-113 C	3.5353	Adder	4.16
941192	AE2-113 E	3.8063	Adder	4.48
941261	AE2-120 C	0.5152	Adder	0.61
941262	AE2-120 E	0.3435	Adder	0.4
941271	AE2-121 C	0.2762	Adder	0.32
941272	AE2-121 E	0.1844	Adder	0.22
941321	AE2-126 C	0.6680	Adder	0.79
941322	AE2-126 E	0.4453	Adder	0.52
941331	AE2-129 C	0.5598	Adder	0.66
941332	AE2-129 E	0.3732	Adder	0.44
941351	**AE2-131 C (Suspended)**	**0.5598**	**Adder**	**0.66**
941352	**AE2-131 E (Suspended)**	**0.3732**	**Adder**	**0.44**
942491	AE2-262 C	2.4259	Adder	2.85
942492	AE2-262 E	1.6302	Adder	1.92
942501	AE2-263 C	2.2803	Adder	2.68
942502	AE2-263 E	1.5225	Adder	1.79
942811	AE2-299 C	2.0656	Adder	2.43

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942812	AE2-299 E	8.2623	Adder	9.72
942961	AE2-316 C	4.3499	50/50	4.3499
942962	AE2-316 E	6.2031	50/50	6.2031
943151	AE2-344 C	5.2796	Adder	6.21
943152	AE2-344 E	3.5197	Adder	4.14
943351	AF1-006 C	0.9302	Adder	1.09
943352	AF1-006 E	0.5233	Adder	0.62
943751	AF1-043	4.8838	Adder	5.75
944181	AF1-086 C O1	1.0729	Adder	1.26
944182	AF1-086 E O1	4.6675	Adder	5.49
944261	AF1-094 C	0.9660	Adder	1.14
944262	AF1-094 E	0.6440	Adder	0.76
944281	AF1-096 C	1.4168	50/50	1.4168
944282	AF1-096 E	0.9446	50/50	0.9446
944301	AF1-098 C	3.2077	Adder	3.77
944302	AF1-098 E	2.1385	Adder	2.52
944311	AF1-099 C	3.6825	Adder	4.33
944312	AF1-099 E	2.4550	Adder	2.89
944321	AF1-100 C	7.9114	Adder	9.31
944322	AF1-100 E	5.2742	Adder	6.2
944381	AF1-103 O1	1.2386	Adder	1.46
944391	AF1-104 O1	1.5677	Adder	1.84
944691	AF1-134 C	0.6241	Adder	0.73
944692	AF1-134 E	0.4161	Adder	0.49
944771	AF1-142 C	5.8920	Adder	6.93
944772	AF1-142 E	3.9280	Adder	4.62
944881	AF1-153 C O1	0.9010	Adder	1.06
944882	AF1-153 E O1	0.6006	Adder	0.71
944901	AF1-155 C	0.9096	Adder	1.07
944902	AF1-155 E	0.6064	Adder	0.71
945021	AF1-167 C	1.5046	50/50	1.5046
945022	AF1-167 E	1.0049	50/50	1.0049
945051	AF1-170 C	3.6027	Adder	4.24
945052	AF1-170 E	2.4018	Adder	2.83
945451	AF1-210 C	1.7061	50/50	1.7061
945452	AF1-210 E	1.1374	50/50	1.1374
945491	**AF1-214 C (Withdrawn : 12/03/2020)**	**0.5153**	**Adder**	**0.61**
945492	**AF1-214 E (Withdrawn : 12/03/2020)**	**0.3435**	**Adder**	**0.4**
945751	AF1-240 C O1	1.3819	50/50	1.3819
945752	AF1-240 E O1	0.9213	50/50	0.9213
946111	AF1-276 C	3.7393	Adder	4.4
946112	AF1-276 E	1.8418	Adder	2.17
946121	AF1-277 C	3.7393	Adder	4.4
946122	AF1-277 E	1.8418	Adder	2.17
946131	AF1-278 C	2.9825	Adder	3.51
946132	AF1-278 E	1.4823	Adder	1.74
946221	AF1-287 C	0.9076	Adder	1.07
946222	AF1-287 E	0.6051	Adder	0.71
946381	AF1-302 C	1.8995	50/50	1.8995
946382	AF1-302 E	2.5327	50/50	2.5327
946401	AF1-304 C	7.6224	50/50	7.6224

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946402	AF1-304 E	5.0816	50/50	5.0816
946421	AF1-306 C	3.1031	Adder	3.65
946422	AF1-306 E	12.4123	Adder	14.6
946771	AF1-217 C	0.9076	Adder	1.07
946772	AF1-217 E	0.6051	Adder	0.71
957161	AF2-010 C	3.7466	Adder	4.41
957162	AF2-010 E	2.5249	Adder	2.97
957451	AF2-039 C	0.4190	Adder	0.49
957452	AF2-039 E	0.2793	Adder	0.33
957571	AF2-051 C	2.7680	Adder	3.26
957572	AF2-051 E	1.4259	Adder	1.68
957941	AF2-088 C	0.2017	Adder	0.24
957942	AF2-088 E	0.1345	Adder	0.16
958271	AF2-121 C	0.5598	Adder	0.66
958272	AF2-121 E	0.3732	Adder	0.44
958361	AF2-130 C	1.7143	50/50	1.7143
958362	AF2-130 E	1.1429	50/50	1.1429
958731	AF2-164 C O1	3.9772	Adder	4.68
958732	AF2-164 E O1	2.6515	Adder	3.12
958741	AF2-165 C	1.5448	50/50	1.5448
958742	AF2-165 E	1.0298	50/50	1.0298
958751	AF2-166 C	1.7143	50/50	1.7143
958752	AF2-166 E	1.1429	50/50	1.1429
959441	AF2-235 C	0.7084	50/50	0.7084
959442	AF2-235 E	0.4723	50/50	0.4723
959521	AF2-243 C	1.1586	50/50	1.1586
959522	AF2-243 E	0.7724	50/50	0.7724
959822	AF2-273 E	0.6750	50/50	0.6750
960022	AF2-293 E	0.0503	Adder	0.06
960041	AF2-295 C	0.9096	Adder	1.07
960042	AF2-295 E	0.6064	Adder	0.71
960051	AF2-296 C	0.6241	Adder	0.73
960052	AF2-296 E	0.4161	Adder	0.49
960891	AF2-380 C	3.6836	50/50	3.6836
960892	AF2-380 E	2.4557	50/50	2.4557
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**12.7653**	**Adder**	**15.02**
961971	AG1-040 C	0.5056	Adder	1.12
961972	AG1-040 E	0.3370	Adder	0.75
962411	AG1-090 C O1	1.4834	Adder	3.29
962412	AG1-090 E O1	0.9889	Adder	2.2
962511	AG1-100 C	0.4897	Adder	1.09
962512	AG1-100 E	0.3265	Adder	0.72
962891	AG1-138 C	0.6786	50/50	0.6786
962892	AG1-138 E	0.0357	50/50	0.0357
962901	AG1-139 C	0.6115	50/50	0.6115
962902	AG1-139 E	0.0322	50/50	0.0322
962911	AG1-140 C	0.0616	Adder	0.14
962912	AG1-140 E	0.0281	Adder	0.06
962951	AG1-144 C	0.2967	Adder	0.66
962952	AG1-144 E	0.1978	Adder	0.44
963281	AG1-177 C O1	0.5120	Adder	1.14

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963282	AG1-177 E O1	0.3413	Adder	0.76
963441	AG1-193 C	1.3675	50/50	1.3675
963442	AG1-193 E	0.9117	50/50	0.9117
963481	AG1-197 C	0.3834	Adder	0.85
963482	AG1-197 E	0.2556	Adder	0.57
963491	AG1-198 C	0.3072	Adder	0.68
963492	AG1-198 E	0.2048	Adder	0.45
963531	AG1-202 C	0.2719	Adder	0.6
963532	AG1-202 E	0.1401	Adder	0.31
963571	AG1-206 C	0.1952	Adder	0.43
963572	AG1-206 E	0.1051	Adder	0.23
963891	AG1-242 C	0.1792	Adder	0.4
963892	AG1-242 E	0.0965	Adder	0.21
963991	AG1-253 C	0.0924	Adder	0.21
963992	AG1-253 E	0.0445	Adder	0.1
964341	AG1-296 C	0.7284	50/50	0.7284
964342	AG1-296 E	0.3922	50/50	0.3922
964411	AG1-303 C O1	1.1736	Adder	2.61
964412	AG1-303 E O1	0.7824	Adder	1.74
964451	AG1-308 C O1	0.2120	Adder	0.47
964452	AG1-308 E O1	0.2963	Adder	0.66
965121	AG1-377 C O1	0.2967	Adder	0.66
965122	AG1-377 E O1	0.1978	Adder	0.44
965131	AG1-378 C O1	0.2967	Adder	0.66
965132	AG1-378 E O1	0.1978	Adder	0.44
965201	AG1-385 C	0.6140	Adder	1.36
965202	AG1-385 E	0.1819	Adder	0.4
965241	AG1-389 C O1	0.3064	Adder	0.68
965242	AG1-389 E O1	0.2043	Adder	0.45
965251	AG1-390 C O1	0.3064	Adder	0.68
965252	AG1-390 E O1	0.2043	Adder	0.45
965261	AG1-391 C O1	0.3064	Adder	0.68
965262	AG1-391 E O1	0.2043	Adder	0.45
965271	AG1-392 C O1	0.6128	Adder	1.36
965272	AG1-392 E O1	0.4085	Adder	0.91
965301	AG1-395 C	0.3812	Adder	0.85
965302	AG1-395 E	0.1132	Adder	0.25
965861	AG1-455	1.4372	Adder	3.19
966121	AG1-481	0.5097	Adder	1.13
966771	AG1-548 C	4.8243	Adder	10.71
966772	AG1-548 E	1.4683	Adder	3.26
G-007A	G-007A	1.8820	Confirmed LTF	1.8820
VFT	VFT	5.1923	Confirmed LTF	5.1923
CALDERWOOD	CALDERWOOD	0.2798	Confirmed LTF	0.2798
PRAIRIE	PRAIRIE	1.6660	Confirmed LTF	1.6660
CHEOAH	CHEOAH	0.2803	Confirmed LTF	0.2803
CBM-N	CBM-N	1.0296	Confirmed LTF	1.0296
COTTONWOOD	COTTONWOOD	1.2579	Confirmed LTF	1.2579
HAMLET	HAMLET	0.2535	Confirmed LTF	0.2535
GIBSON	GIBSON	0.3647	Confirmed LTF	0.3647
BLUEG	BLUEG	1.1562	Confirmed LTF	1.1562
TRIMBLE	TRIMBLE	0.3712	Confirmed LTF	0.3712

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CATAWBA	CATAWBA	0.1677	Confirmed LTF	0.1677

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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
167925328	235203	01KISSNG	AP	235197	01KARNSC	AP	1	ATSI-P1-2-CEI-345-700T	single	268.0	141.55	142.55	DC	2.69

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200608	26PINEY #1	0.7758	80/20	0.7758
200642	26SENECA#1	2.8936	80/20	2.8936
200643	26SENECA#2	2.7329	80/20	2.7329
200644	26SENECA#3	0.2986	80/20	0.2986
200649	26PENNTECH	0.5029	80/20	0.5029
200662	26SCRUB GR	1.7506	80/20	1.7506
200665	26SHAWVL 3	1.8285	80/20	1.8285
200666	26SHAWVL 4	1.7954	80/20	1.7954
200805	**26COLVER13 (Deactivation : 01/09/2020)**	**1.1511**	**80/20**	**1.1511**
200828	26HNSMLK 1	0.8374	80/20	0.8374
200829	26HNSMLK 2	0.8374	80/20	0.8374
200830	26HNSMLK 3	0.8374	80/20	0.8374
200831	26HNSMLK 4	0.8374	80/20	0.8374
200832	26HNSMLK 5	0.8374	80/20	0.8374
200849	26LAKVU GN	0.0712	80/20	0.0712
201201	26WRREN CT	0.7342	80/20	0.7342
235030	01MHNG-T155	0.0751	80/20	0.0751
235134	01AL&D6	0.0844	80/20	0.0844
915951	Y3-092 FTIR	92.3700	80/20	92.3700
921642	AA2-000	23.1250	Adder	27.21
930511	AB2-092	0.8491	Adder	1.0
935191	AD1-154	2.4200	80/20	2.4200
936421	AD2-055	1.7481	Adder	2.06
936991	AD2-133 C	0.8153	Adder	0.96
938951	AE1-123	2.9308	80/20	2.9308
939171	AE1-147 C	0.5544	Adder	0.65
939291	AE1-160 C	1.5949	80/20	1.5949
940201	AE2-001 C	0.5529	Adder	0.65
940681	**AE2-055 C (Suspended)**	**0.5319**	**Adder**	**0.63**
940861	AE2-074 C	0.8292	Adder	0.98
941191	AE2-113 C	4.4991	80/20	4.4991
941261	AE2-120 C	0.5522	Adder	0.65
941271	AE2-121 C	0.2960	Adder	0.35
941321	AE2-126 C	0.8448	80/20	0.8448
941331	AE2-129 C	0.5975	Adder	0.7
941351	**AE2-131 C (Suspended)**	**0.5975**	**Adder**	**0.7**
942351	AE2-248 C	0.4326	Adder	0.51
942491	AE2-262 C	2.6006	Adder	3.06
942501	AE2-263 C	2.4445	Adder	2.88

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942811	AE2-299 C	2.8198	80/20	2.8198
942961	AE2-316 C	4.5989	80/20	4.5989
943151	AE2-344 C	6.6468	80/20	6.6468
943351	AF1-006 C	1.1808	80/20	1.1808
943751	AF1-043	5.2443	Adder	6.17
944001	**AF1-068 C O1 (Withdrawn : 12/15/2020)**	**0.5739**	**Adder**	**0.68**
944181	AF1-086 C O1	1.1348	Adder	1.34
944261	AF1-094 C	1.2530	80/20	1.2530
944281	AF1-096 C	1.5070	80/20	1.5070
944301	AF1-098 C	4.2893	80/20	4.2893
944311	AF1-099 C	3.9477	Adder	4.64
944321	AF1-100 C	9.9765	80/20	9.9765
944381	AF1-103 O1	1.6328	80/20	1.6328
944391	AF1-104 O1	1.8556	80/20	1.8556
944471	AF1-112 C	0.5429	Adder	0.64
944671	**AF1-132 C O1 (Withdrawn : 12/15/2020)**	**0.5365**	**Adder**	**0.63**
944691	AF1-134 C	0.6635	Adder	0.78
944771	AF1-142 C	6.3163	Adder	7.43
944881	AF1-153 C O1	1.1297	80/20	1.1297
944901	AF1-155 C	1.1402	80/20	1.1402
945021	AF1-167 C	1.4331	80/20	1.4331
945051	AF1-170 C	4.4040	80/20	4.4040
945121	AF1-177	0.0644	80/20	0.0644
945161	AF1-181	0.0084	80/20	0.0084
945171	AF1-182	0.0420	80/20	0.0420
945451	AF1-210 C	1.2796	80/20	1.2796
945491	**AF1-214 C (Withdrawn : 12/03/2020)**	**0.5522**	**Adder**	**0.65**
945751	AF1-240 C O1	1.4520	80/20	1.4520
946111	AF1-276 C	4.8046	80/20	4.8046
946121	AF1-277 C	4.8046	80/20	4.8046
946131	AF1-278 C	3.8322	80/20	3.8322
946221	AF1-287 C	1.1434	80/20	1.1434
946381	AF1-302 C	2.0083	80/20	2.0083
946401	AF1-304 C	8.0226	80/20	8.0226
946421	AF1-306 C	3.9208	80/20	3.9208
946771	AF1-217 C	1.1434	80/20	1.1434
957161	AF2-010 C	4.8493	80/20	4.8493
957451	AF2-039 C	0.4483	Adder	0.53
957571	AF2-051 C	3.3653	80/20	3.3653
957941	AF2-088 C	0.2158	Adder	0.25
958271	AF2-121 C	0.5975	Adder	0.7
958361	AF2-130 C	1.7996	80/20	1.7996
958731	AF2-164 C O1	4.7621	80/20	4.7621
958741	AF2-165 C	1.6175	80/20	1.6175
958751	AF2-166 C	1.7996	80/20	1.7996
959441	AF2-235 C	0.7535	80/20	0.7535
959521	AF2-243 C	1.2131	80/20	1.2131
960041	AF2-295 C	1.1402	80/20	1.1402

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960051	AF2-296 C	0.6635	Adder	0.78
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**13.7037**	**Adder**	**16.12**
961211	AF2-412	5.8311	Adder	6.86
961971	AG1-040 C	1.1778	80/20	1.1778
962411	AG1-090 C O1	1.5834	Adder	3.51
962511	AG1-100 C	1.1488	80/20	1.1488
962891	AG1-138 C	0.7124	80/20	0.7124
962901	AG1-139 C	0.6403	80/20	0.6403
962911	AG1-140 C	0.1586	80/20	0.1586
962951	AG1-144 C	0.3167	Adder	0.7
963281	AG1-177 C O1	1.2530	80/20	1.2530
963441	AG1-193 C	1.4104	80/20	1.4104
963481	AG1-197 C	0.8893	80/20	0.8893
963491	AG1-198 C	0.7518	80/20	0.7518
963531	AG1-202 C	0.6215	80/20	0.6215
963571	AG1-206 C	0.4663	80/20	0.4663
963891	AG1-242 C	0.1905	Adder	0.42
963991	AG1-253 C	0.2379	80/20	0.2379
964031	AG1-257 C	0.1997	Adder	0.44
964041	AG1-258 C	0.1997	Adder	0.44
964341	AG1-296 C	0.7684	80/20	0.7684
964411	AG1-303 C O1	2.6923	80/20	2.6923
964451	AG1-308 C O1	0.2264	Adder	0.5
965121	AG1-377 C O1	0.3167	Adder	0.7
965131	AG1-378 C O1	0.3167	Adder	0.7
965201	AG1-385 C	1.4526	80/20	1.4526
965241	AG1-389 C O1	0.3312	Adder	0.74
965251	AG1-390 C O1	0.3312	Adder	0.74
965261	AG1-391 C O1	0.3312	Adder	0.74
965271	AG1-392 C O1	0.6623	Adder	1.47
965301	AG1-395 C	0.4069	Adder	0.9
965861	AG1-455	3.3148	80/20	3.3148
966121	AG1-481	1.2679	80/20	1.2679
966771	AG1-548 C	11.8415	80/20	11.8415
G-007A	G-007A	2.0547	Confirmed LTF	2.0547
VFT	VFT	5.6696	Confirmed LTF	5.6696
CALDERWOOD	CALDERWOOD	0.3012	Confirmed LTF	0.3012
PRAIRIE	PRAIRIE	1.8004	Confirmed LTF	1.8004
CHEOAH	CHEOAH	0.3018	Confirmed LTF	0.3018
CBM-N	CBM-N	1.1232	Confirmed LTF	1.1232
COTTONWOOD	COTTONWOOD	1.3566	Confirmed LTF	1.3566
HAMLET	HAMLET	0.2720	Confirmed LTF	0.2720
GIBSON	GIBSON	0.3937	Confirmed LTF	0.3937
BLUEG	BLUEG	1.2499	Confirmed LTF	1.2499
TRIMBLE	TRIMBLE	0.4012	Confirmed LTF	0.4012
CATAWBA	CATAWBA	0.1803	Confirmed LTF	0.1803

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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
167376408	235204	01KITTAN	AP	235139	01AL&D6T	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	119.16	120.05	DC	2.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1500	50/50	0.1500
915951	Y3-092 FTIR	68.2300	Merchant Transmission	68.2300
935191	AD1-154	0.9926	Adder	1.17
936881	AD2-112 C	-4.2587	Adder	-5.01
936882	AD2-112 E	-1.6900	Adder	-1.99
938951	AE1-123	1.1755	Adder	1.38
939291	AE1-160 C	0.7334	Adder	0.86
939292	AE1-160 E	0.4216	Adder	0.5
942811	AE2-299 C	1.3984	Adder	1.65
942812	AE2-299 E	5.5934	Adder	6.58
942961	AE2-316 C	2.8226	Adder	3.32
942962	AE2-316 E	4.0250	Adder	4.74
943151	AE2-344 C	3.6184	Adder	4.26
943152	AE2-344 E	2.4122	Adder	2.84
943351	AF1-006 C	0.6405	Adder	0.75
943352	AF1-006 E	0.3603	Adder	0.42
944261	AF1-094 C	0.6071	Adder	0.71
944262	AF1-094 E	0.4047	Adder	0.48
944281	AF1-096 C	0.6930	Adder	0.82
944282	AF1-096 E	0.4620	Adder	0.54
944301	AF1-098 C	2.1665	Adder	2.55
944302	AF1-098 E	1.4443	Adder	1.7
944391	AF1-104 O1	1.1094	Adder	1.31
944881	AF1-153 C O1	0.5589	Adder	0.66
944882	AF1-153 E O1	0.3726	Adder	0.44
944901	AF1-155 C	0.5629	Adder	0.66
944902	AF1-155 E	0.3753	Adder	0.44
945021	AF1-167 C	0.6635	Adder	0.78
945022	AF1-167 E	0.4432	Adder	0.52
945051	AF1-170 C	2.5035	Adder	2.95
945052	AF1-170 E	1.6690	Adder	1.96
945451	AF1-210 C	1.0356	50/50	1.0356
945452	AF1-210 E	0.6904	50/50	0.6904
945751	AF1-240 C O1	0.5956	Adder	0.7
945752	AF1-240 E O1	0.3971	Adder	0.47
946221	AF1-287 C	0.6215	Adder	0.73
946222	AF1-287 E	0.4143	Adder	0.49
946381	AF1-302 C	1.2326	Adder	1.45
946382	AF1-302 E	1.6434	Adder	1.93
946401	AF1-304 C	3.6297	Adder	4.27
946402	AF1-304 E	2.4198	Adder	2.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946771	AF1-217 C	0.6215	Adder	0.73
946772	AF1-217 E	0.4143	Adder	0.49
957161	AF2-010 C	2.3429	Adder	2.76
957162	AF2-010 E	1.5789	Adder	1.86
957571	AF2-051 C	1.8937	Adder	2.23
957572	AF2-051 E	0.9755	Adder	1.15
958361	AF2-130 C	0.7607	Adder	0.89
958362	AF2-130 E	0.5071	Adder	0.6
958731	AF2-164 C O1	2.9935	Adder	3.52
958732	AF2-164 E O1	1.9957	Adder	2.35
958741	AF2-165 C	0.7375	Adder	0.87
958742	AF2-165 E	0.4916	Adder	0.58
958751	AF2-166 C	0.7607	Adder	0.89
958752	AF2-166 E	0.5071	Adder	0.6
959441	AF2-235 C	0.3465	Adder	0.41
959442	AF2-235 E	0.2310	Adder	0.27
959521	AF2-243 C	0.5531	Adder	0.65
959522	AF2-243 E	0.3687	Adder	0.43
959822	AF2-273 E	0.3872	50/50	0.3872
960041	AF2-295 C	0.5629	Adder	0.66
960042	AF2-295 E	0.3753	Adder	0.44
960891	AF2-380 C	0.4212	Adder	0.5
960892	AF2-380 E	0.2808	Adder	0.33
961971	AG1-040 C	0.3467	Adder	0.77
961972	AG1-040 E	0.2311	Adder	0.51
962511	AG1-100 C	0.3370	Adder	0.75
962512	AG1-100 E	0.2246	Adder	0.5
962891	AG1-138 C	0.1596	Adder	0.35
962892	AG1-138 E	0.0084	Adder	0.02
962901	AG1-139 C	0.1547	Adder	0.34
962902	AG1-139 E	0.0081	Adder	0.02
962911	AG1-140 C	0.0417	Adder	0.09
962912	AG1-140 E	0.0190	Adder	0.04
963281	AG1-177 C O1	0.3218	Adder	0.71
963282	AG1-177 E O1	0.2145	Adder	0.48
963441	AG1-193 C	0.3871	Adder	0.86
963442	AG1-193 E	0.2581	Adder	0.57
963481	AG1-197 C	0.2630	Adder	0.58
963482	AG1-197 E	0.1753	Adder	0.39
963491	AG1-198 C	0.1931	Adder	0.43
963492	AG1-198 E	0.1287	Adder	0.29
963531	AG1-202 C	0.1899	Adder	0.42
963532	AG1-202 E	0.0978	Adder	0.22
963991	AG1-253 C	0.0625	Adder	0.14
963992	AG1-253 E	0.0301	Adder	0.07
964341	AG1-296 C	0.2576	Adder	0.57
964342	AG1-296 E	0.1387	Adder	0.31
964411	AG1-303 C O1	0.8029	Adder	1.78
964412	AG1-303 E O1	0.5353	Adder	1.19
965201	AG1-385 C	0.3809	Adder	0.85
965202	AG1-385 E	0.1128	Adder	0.25
965861	AG1-455	0.9987	Adder	2.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966453	AG1-514 BAT	0.5298	Merchant Transmission	0.5298
966771	AG1-548 C	3.0541	Adder	6.78
966772	AG1-548 E	0.9295	Adder	2.06
G-007A	G-007A	1.4025	Confirmed LTF	1.4025
VFT	VFT	3.8700	Confirmed LTF	3.8700
CALDERWOOD	CALDERWOOD	0.1834	Confirmed LTF	0.1834
PRAIRIE	PRAIRIE	1.0435	Confirmed LTF	1.0435
CHEOAH	CHEOAH	0.1842	Confirmed LTF	0.1842
CBM-N	CBM-N	0.7656	Confirmed LTF	0.7656
COTTONWOOD	COTTONWOOD	0.8064	Confirmed LTF	0.8064
HAMLET	HAMLET	0.1784	Confirmed LTF	0.1784
GIBSON	GIBSON	0.2266	Confirmed LTF	0.2266
BLUEG	BLUEG	0.7222	Confirmed LTF	0.7222
TRIMBLE	TRIMBLE	0.2315	Confirmed LTF	0.2315
CATAWBA	CATAWBA	0.1151	Confirmed LTF	0.1151

11.6.8 Index 8

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
167376279	235240	01COLMBGPN	AP	235202	01KISKIV	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	177.3	178.36	DC	3.58

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1762	50/50	0.1762
235134	01AL&D6	0.1825	50/50	0.1825
915951	Y3-092 FTIR	82.2700	Merchant Transmission	82.2700
935191	AD1-154	1.1432	Adder	1.34
936881	AD2-112 C	-2.1694	Adder	-2.55
936882	AD2-112 E	-0.8609	Adder	-1.01
938951	AE1-123	1.4097	Adder	1.66
939291	AE1-160 C	0.8797	Adder	1.03
939292	AE1-160 E	0.5056	Adder	0.59
941191	AE2-113 C	2.8350	Adder	3.34
941192	AE2-113 E	3.0524	Adder	3.59
942811	AE2-299 C	1.6660	Adder	1.96
942812	AE2-299 E	6.6640	Adder	7.84
942961	AE2-316 C	3.4396	Adder	4.05
942962	AE2-316 E	4.9049	Adder	5.77
943151	AE2-344 C	4.3415	Adder	5.11
943152	AE2-344 E	2.8943	Adder	3.41
943351	AF1-006 C	0.7677	Adder	0.9
943352	AF1-006 E	0.4318	Adder	0.51
944261	AF1-094 C	0.7265	Adder	0.85
944262	AF1-094 E	0.4844	Adder	0.57
944281	AF1-096 C	0.8312	Adder	0.98
944282	AF1-096 E	0.5541	Adder	0.65
944301	AF1-098 C	2.5835	Adder	3.04
944302	AF1-098 E	1.7223	Adder	2.03
944381	AF1-103 O1	0.9957	Adder	1.17
944391	AF1-104 O1	1.3352	Adder	1.57
944881	AF1-153 C O1	0.6661	Adder	0.78
944882	AF1-153 E O1	0.4440	Adder	0.52
944901	AF1-155 C	0.6712	Adder	0.79
944902	AF1-155 E	0.4474	Adder	0.53
945021	AF1-167 C	0.9419	50/50	0.9419
945022	AF1-167 E	0.6291	50/50	0.6291
945051	AF1-170 C	3.0090	Adder	3.54
945052	AF1-170 E	2.0060	Adder	2.36
945451	AF1-210 C	1.2366	50/50	1.2366
945452	AF1-210 E	0.8244	50/50	0.8244
945751	AF1-240 C O1	0.6859	Adder	0.81
945752	AF1-240 E O1	0.4573	Adder	0.54
946111	AF1-276 C	3.0650	Adder	3.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946112	AF1-276 E	1.5097	Adder	1.78
946121	AF1-277 C	3.0650	Adder	3.61
946122	AF1-277 E	1.5097	Adder	1.78
946131	AF1-278 C	2.4447	Adder	2.88
946132	AF1-278 E	1.2150	Adder	1.43
946221	AF1-287 C	0.7457	Adder	0.88
946222	AF1-287 E	0.4971	Adder	0.58
946381	AF1-302 C	1.5020	Adder	1.77
946382	AF1-302 E	2.0027	Adder	2.36
946401	AF1-304 C	4.3569	Adder	5.13
946402	AF1-304 E	2.9046	Adder	3.42
946421	AF1-306 C	2.4158	Adder	2.84
946422	AF1-306 E	9.6633	Adder	11.37
946771	AF1-217 C	0.7457	Adder	0.88
946772	AF1-217 E	0.4971	Adder	0.58
957161	AF2-010 C	2.8043	Adder	3.3
957162	AF2-010 E	1.8898	Adder	2.22
957571	AF2-051 C	2.2793	Adder	2.68
957572	AF2-051 E	1.1742	Adder	1.38
958361	AF2-130 C	0.9128	Adder	1.07
958362	AF2-130 E	0.6085	Adder	0.72
958731	AF2-164 C O1	3.6169	Adder	4.26
958732	AF2-164 E O1	2.4113	Adder	2.84
958741	AF2-165 C	0.8858	Adder	1.04
958742	AF2-165 E	0.5905	Adder	0.69
958751	AF2-166 C	0.9128	Adder	1.07
958752	AF2-166 E	0.6085	Adder	0.72
959441	AF2-235 C	0.4156	Adder	0.49
959442	AF2-235 E	0.2771	Adder	0.33
959521	AF2-243 C	0.6643	Adder	0.78
959522	AF2-243 E	0.4429	Adder	0.52
959822	AF2-273 E	0.4640	50/50	0.4640
960041	AF2-295 C	0.6712	Adder	0.79
960042	AF2-295 E	0.4474	Adder	0.53
960891	AF2-380 C	0.4951	Adder	0.58
960892	AF2-380 E	0.3301	Adder	0.39
961971	AG1-040 C	0.4167	Adder	0.92
961972	AG1-040 E	0.2778	Adder	0.62
962511	AG1-100 C	0.4046	Adder	0.9
962512	AG1-100 E	0.2698	Adder	0.6
962891	AG1-138 C	0.1915	Adder	0.43
962892	AG1-138 E	0.0101	Adder	0.02
962901	AG1-139 C	0.1858	Adder	0.41
962902	AG1-139 E	0.0098	Adder	0.02
962911	AG1-140 C	0.0497	Adder	0.11
962912	AG1-140 E	0.0226	Adder	0.05
963281	AG1-177 C O1	0.3851	Adder	0.85
963282	AG1-177 E O1	0.2567	Adder	0.57
963441	AG1-193 C	0.4659	Adder	1.03
963442	AG1-193 E	0.3106	Adder	0.69
963481	AG1-197 C	0.3162	Adder	0.7
963482	AG1-197 E	0.2108	Adder	0.47

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963491	AG1-198 C	0.2310	Adder	0.51
963492	AG1-198 E	0.1540	Adder	0.34
963531	AG1-202 C	0.2284	Adder	0.51
963532	AG1-202 E	0.1176	Adder	0.26
963571	AG1-206 C	0.1499	Adder	0.33
963572	AG1-206 E	0.0807	Adder	0.18
963991	AG1-253 C	0.0745	Adder	0.17
963992	AG1-253 E	0.0359	Adder	0.08
964341	AG1-296 C	0.6993	50/50	0.6993
964342	AG1-296 E	0.3765	50/50	0.3765
964411	AG1-303 C O1	0.9664	Adder	2.15
964412	AG1-303 E O1	0.6443	Adder	1.43
965201	AG1-385 C	0.4539	Adder	1.01
965202	AG1-385 E	0.1344	Adder	0.3
965861	AG1-455	1.2004	Adder	2.66
966121	AG1-481	0.4098	Adder	0.91
966453	AG1-514 BAT	0.2684	Merchant Transmission	0.2684
966771	AG1-548 C	3.6540	Adder	8.11
966772	AG1-548 E	1.1121	Adder	2.47
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0119	Confirmed LTF	4.0119
CALDERWOOD	CALDERWOOD	0.2112	Confirmed LTF	0.2112
PRAIRIE	PRAIRIE	1.2063	Confirmed LTF	1.2063
CHEOAH	CHEOAH	0.2122	Confirmed LTF	0.2122
CBM-N	CBM-N	0.8004	Confirmed LTF	0.8004
COTTONWOOD	COTTONWOOD	0.9303	Confirmed LTF	0.9303
HAMLET	HAMLET	0.2050	Confirmed LTF	0.2050
GIBSON	GIBSON	0.2621	Confirmed LTF	0.2621
BLUEG	BLUEG	0.8333	Confirmed LTF	0.8333
TRIMBLE	TRIMBLE	0.2677	Confirmed LTF	0.2677
CATAWBA	CATAWBA	0.1326	Confirmed LTF	0.1326

11.6.9 Index 9

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
167376277	235282	01GARRN	AP	235240	01COLMBGPN	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	179.61	180.68	DC	3.58

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1762	50/50	0.1762
235134	01AL&D6	0.1825	50/50	0.1825
915951	Y3-092 FTIR	82.2700	Merchant Transmission	82.2700
935191	AD1-154	1.1432	Adder	1.34
936881	AD2-112 C	-2.1694	Adder	-2.55
936882	AD2-112 E	-0.8609	Adder	-1.01
938951	AE1-123	1.4097	Adder	1.66
939291	AE1-160 C	0.8797	Adder	1.03
939292	AE1-160 E	0.5056	Adder	0.59
941191	AE2-113 C	2.8350	Adder	3.34
941192	AE2-113 E	3.0524	Adder	3.59
942811	AE2-299 C	1.6660	Adder	1.96
942812	AE2-299 E	6.6640	Adder	7.84
942961	AE2-316 C	3.4396	Adder	4.05
942962	AE2-316 E	4.9049	Adder	5.77
943151	AE2-344 C	4.3415	Adder	5.11
943152	AE2-344 E	2.8943	Adder	3.41
943351	AF1-006 C	0.7677	Adder	0.9
943352	AF1-006 E	0.4318	Adder	0.51
944261	AF1-094 C	0.7265	Adder	0.85
944262	AF1-094 E	0.4844	Adder	0.57
944281	AF1-096 C	0.8312	Adder	0.98
944282	AF1-096 E	0.5541	Adder	0.65
944301	AF1-098 C	2.5835	Adder	3.04
944302	AF1-098 E	1.7223	Adder	2.03
944381	AF1-103 O1	0.9957	Adder	1.17
944391	AF1-104 O1	1.3352	Adder	1.57
944881	AF1-153 C O1	0.6661	Adder	0.78
944882	AF1-153 E O1	0.4440	Adder	0.52
944901	AF1-155 C	0.6712	Adder	0.79
944902	AF1-155 E	0.4474	Adder	0.53
945021	AF1-167 C	0.9419	50/50	0.9419
945022	AF1-167 E	0.6291	50/50	0.6291
945051	AF1-170 C	3.0090	Adder	3.54
945052	AF1-170 E	2.0060	Adder	2.36
945451	AF1-210 C	1.2366	50/50	1.2366
945452	AF1-210 E	0.8244	50/50	0.8244
945751	AF1-240 C O1	0.6859	Adder	0.81
945752	AF1-240 E O1	0.4573	Adder	0.54
946111	AF1-276 C	3.0650	Adder	3.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946112	AF1-276 E	1.5097	Adder	1.78
946121	AF1-277 C	3.0650	Adder	3.61
946122	AF1-277 E	1.5097	Adder	1.78
946131	AF1-278 C	2.4447	Adder	2.88
946132	AF1-278 E	1.2150	Adder	1.43
946221	AF1-287 C	0.7457	Adder	0.88
946222	AF1-287 E	0.4971	Adder	0.58
946381	AF1-302 C	1.5020	Adder	1.77
946382	AF1-302 E	2.0027	Adder	2.36
946401	AF1-304 C	4.3569	Adder	5.13
946402	AF1-304 E	2.9046	Adder	3.42
946421	AF1-306 C	2.4158	Adder	2.84
946422	AF1-306 E	9.6633	Adder	11.37
946771	AF1-217 C	0.7457	Adder	0.88
946772	AF1-217 E	0.4971	Adder	0.58
957161	AF2-010 C	2.8043	Adder	3.3
957162	AF2-010 E	1.8898	Adder	2.22
957571	AF2-051 C	2.2793	Adder	2.68
957572	AF2-051 E	1.1742	Adder	1.38
958361	AF2-130 C	0.9128	Adder	1.07
958362	AF2-130 E	0.6085	Adder	0.72
958731	AF2-164 C O1	3.6169	Adder	4.26
958732	AF2-164 E O1	2.4113	Adder	2.84
958741	AF2-165 C	0.8858	Adder	1.04
958742	AF2-165 E	0.5905	Adder	0.69
958751	AF2-166 C	0.9128	Adder	1.07
958752	AF2-166 E	0.6085	Adder	0.72
959441	AF2-235 C	0.4156	Adder	0.49
959442	AF2-235 E	0.2771	Adder	0.33
959521	AF2-243 C	0.6643	Adder	0.78
959522	AF2-243 E	0.4429	Adder	0.52
959822	AF2-273 E	0.4640	50/50	0.4640
960041	AF2-295 C	0.6712	Adder	0.79
960042	AF2-295 E	0.4474	Adder	0.53
960891	AF2-380 C	0.4951	Adder	0.58
960892	AF2-380 E	0.3301	Adder	0.39
961971	AG1-040 C	0.4167	Adder	0.92
961972	AG1-040 E	0.2778	Adder	0.62
962511	AG1-100 C	0.4046	Adder	0.9
962512	AG1-100 E	0.2698	Adder	0.6
962891	AG1-138 C	0.1915	Adder	0.43
962892	AG1-138 E	0.0101	Adder	0.02
962901	AG1-139 C	0.1858	Adder	0.41
962902	AG1-139 E	0.0098	Adder	0.02
962911	AG1-140 C	0.0497	Adder	0.11
962912	AG1-140 E	0.0226	Adder	0.05
963281	AG1-177 C O1	0.3851	Adder	0.85
963282	AG1-177 E O1	0.2567	Adder	0.57
963441	AG1-193 C	0.4659	Adder	1.03
963442	AG1-193 E	0.3106	Adder	0.69
963481	AG1-197 C	0.3162	Adder	0.7
963482	AG1-197 E	0.2108	Adder	0.47

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963491	AG1-198 C	0.2310	Adder	0.51
963492	AG1-198 E	0.1540	Adder	0.34
963531	AG1-202 C	0.2284	Adder	0.51
963532	AG1-202 E	0.1176	Adder	0.26
963571	AG1-206 C	0.1499	Adder	0.33
963572	AG1-206 E	0.0807	Adder	0.18
963991	AG1-253 C	0.0745	Adder	0.17
963992	AG1-253 E	0.0359	Adder	0.08
964341	AG1-296 C	0.6993	50/50	0.6993
964342	AG1-296 E	0.3765	50/50	0.3765
964411	AG1-303 C O1	0.9664	Adder	2.15
964412	AG1-303 E O1	0.6443	Adder	1.43
965201	AG1-385 C	0.4539	Adder	1.01
965202	AG1-385 E	0.1344	Adder	0.3
965861	AG1-455	1.2004	Adder	2.66
966121	AG1-481	0.4098	Adder	0.91
966453	AG1-514 BAT	0.2684	Merchant Transmission	0.2684
966771	AG1-548 C	3.6540	Adder	8.11
966772	AG1-548 E	1.1121	Adder	2.47
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0119	Confirmed LTF	4.0119
CALDERWOOD	CALDERWOOD	0.2112	Confirmed LTF	0.2112
PRAIRIE	PRAIRIE	1.2063	Confirmed LTF	1.2063
CHEOAH	CHEOAH	0.2122	Confirmed LTF	0.2122
CBM-N	CBM-N	0.8004	Confirmed LTF	0.8004
COTTONWOOD	COTTONWOOD	0.9303	Confirmed LTF	0.9303
HAMLET	HAMLET	0.2050	Confirmed LTF	0.2050
GIBSON	GIBSON	0.2621	Confirmed LTF	0.2621
BLUEG	BLUEG	0.8333	Confirmed LTF	0.8333
TRIMBLE	TRIMBLE	0.2677	Confirmed LTF	0.2677
CATAWBA	CATAWBA	0.1326	Confirmed LTF	0.1326

11.6.10 Index 10

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
164496482	238547	02AT	ATSI	239036	02PERRY	ATSI	1	ATSI-P2-4-CEI-138-125B	breaker	1891.0	100.8	101.82	DC	19.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200662	26SCRUB GR	4.3801	50/50	4.3801
200828	26HNSMLK 1	2.9468	50/50	2.9468
200829	26HNSMLK 2	2.9468	50/50	2.9468
200830	26HNSMLK 3	2.9468	50/50	2.9468
200831	26HNSMLK 4	2.9468	50/50	2.9468
200832	26HNSMLK 5	2.9468	50/50	2.9468
200849	26LAKVU GN	0.3924	50/50	0.3924
200894	26K02	7.0496	Adder	8.29
201201	26WRREN CT	3.1174	50/50	3.1174
203999	P-047 E	10.8618	Adder	12.78
915951	Y3-092 FTIR	567.0700	50/50	567.0700
916202	Z1-069 E	9.2727	Adder	10.91
920341	**AA2-132 (Withdrawn : 12/07/2020)**	**2.5575**	**Adder**	**3.01**
921642	AA2-000	61.6614	Adder	72.54
930511	AB2-092	2.2640	Adder	2.66
931092	AB1-160 E	2.6493	Adder	3.12
935191	AD1-154	3.0649	Adder	3.61
936421	AD2-055	4.6612	Adder	5.48
938951	AE1-123	3.3322	Adder	3.92
939291	AE1-160 C	4.4895	50/50	4.4895
939292	AE1-160 E	2.5805	50/50	2.5805
940861	AE2-074 C	2.6662	Adder	3.14
940862	AE2-074 E	3.5096	Adder	4.13
941191	AE2-113 C	11.4731	Adder	13.5
941192	AE2-113 E	12.3529	Adder	14.53
941321	AE2-126 C	1.8861	Adder	2.22
941322	AE2-126 E	1.2574	Adder	1.48
942491	AE2-262 C	6.5629	Adder	7.72
942492	AE2-262 E	4.4102	Adder	5.19
942501	AE2-263 C	6.1691	Adder	7.26
942502	AE2-263 E	4.1188	Adder	4.85
942811	AE2-299 C	15.1680	50/50	15.1680
942812	AE2-299 E	60.6720	50/50	60.6720
942961	AE2-316 C	6.4542	Adder	7.59
942962	AE2-316 E	9.2037	Adder	10.83
943151	AE2-344 C	34.1133	50/50	34.1133
943152	AE2-344 E	22.7422	50/50	22.7422
943351	AF1-006 C	6.5362	50/50	6.5362
943352	AF1-006 E	3.6766	50/50	3.6766
943751	AF1-043	13.9837	Adder	16.45

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944261	AF1-094 C	5.2748	50/50	5.2748
944262	AF1-094 E	3.5166	50/50	3.5166
944281	AF1-096 C	4.2420	50/50	4.2420
944282	AF1-096 E	2.8280	50/50	2.8280
944301	AF1-098 C	22.1078	50/50	22.1078
944302	AF1-098 E	14.7386	50/50	14.7386
944311	AF1-099 C	9.9624	Adder	11.72
944312	AF1-099 E	6.6416	Adder	7.81
944321	AF1-100 C	21.0681	Adder	24.79
944322	AF1-100 E	14.0454	Adder	16.52
944381	AF1-103 O1	6.9330	50/50	6.9330
944391	AF1-104 O1	10.8708	50/50	10.8708
944411	AF1-106 O1	2.7074	Adder	3.19
944691	AF1-134 C	1.5138	Adder	1.78
944692	AF1-134 E	1.0092	Adder	1.19
944771	AF1-142 C	15.9399	Adder	18.75
944772	AF1-142 E	10.6266	Adder	12.5
944881	AF1-153 C O1	1.9300	Adder	2.27
944882	AF1-153 E O1	1.2867	Adder	1.51
944901	AF1-155 C	1.9302	Adder	2.27
944902	AF1-155 E	1.2868	Adder	1.51
945021	AF1-167 C	1.2162	Adder	1.43
945022	AF1-167 E	0.8123	Adder	0.96
945051	AF1-170 C	23.5843	50/50	23.5843
945052	AF1-170 E	15.7229	50/50	15.7229
945121	AF1-177	0.2735	50/50	0.2735
945451	AF1-210 C	1.3295	Adder	1.56
945452	AF1-210 E	0.8863	Adder	1.04
945751	AF1-240 C O1	1.8390	Adder	2.16
945752	AF1-240 E O1	1.2260	Adder	1.44
946111	AF1-276 C	14.1350	Adder	16.63
946112	AF1-276 E	6.9620	Adder	8.19
946121	AF1-277 C	14.1350	Adder	16.63
946122	AF1-277 E	6.9620	Adder	8.19
946131	AF1-278 C	11.2742	Adder	13.26
946132	AF1-278 E	5.6034	Adder	6.59
946211	AF1-286 C	1.0965	Adder	1.29
946212	AF1-286 E	0.7445	Adder	0.88
946221	AF1-287 C	5.8292	50/50	5.8292
946222	AF1-287 E	3.8862	50/50	3.8862
946381	AF1-302 C	2.8184	Adder	3.32
946382	AF1-302 E	3.7579	Adder	4.42
946401	AF1-304 C	19.2276	50/50	19.2276
946402	AF1-304 E	12.8184	50/50	12.8184
946421	AF1-306 C	8.2247	Adder	9.68
946422	AF1-306 E	32.8988	Adder	38.7
946771	AF1-217 C	5.8292	50/50	5.8292
946772	AF1-217 E	3.8862	50/50	3.8862
957161	AF2-010 C	20.0321	50/50	20.0321
957162	AF2-010 E	13.4999	50/50	13.4999
957451	AF2-039 C	1.1106	Adder	1.31
957452	AF2-039 E	0.7404	Adder	0.87

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957571	AF2-051 C	14.4279	50/50	14.4279
957572	AF2-051 E	7.4326	50/50	7.4326
957941	AF2-088 C	0.5347	Adder	0.63
957942	AF2-088 E	0.3565	Adder	0.42
958361	AF2-130 C	2.6771	Adder	3.15
958362	AF2-130 E	1.7847	Adder	2.1
958731	AF2-164 C O1	16.7578	50/50	16.7578
958732	AF2-164 E O1	11.1718	50/50	11.1718
958741	AF2-165 C	3.7702	50/50	3.7702
958742	AF2-165 E	2.5134	50/50	2.5134
958751	AF2-166 C	2.6771	Adder	3.15
958752	AF2-166 E	1.7847	Adder	2.1
959441	AF2-235 C	2.1210	50/50	2.1210
959442	AF2-235 E	1.4140	50/50	1.4140
959471	AF2-238 C	1.5818	Adder	1.86
959472	AF2-238 E	1.0545	Adder	1.24
959491	AF2-240 C	0.5117	Adder	0.6
959492	AF2-240 E	0.4359	Adder	0.51
959501	AF2-241 C	1.5297	Adder	1.8
959502	AF2-241 E	1.1777	Adder	1.39
959521	AF2-243 C	2.8276	50/50	2.8276
959522	AF2-243 E	1.8851	50/50	1.8851
959741	AF2-265 C	1.1336	Adder	1.33
959742	AF2-265 E	0.8436	Adder	0.99
959822	AF2-273 E	0.5334	Adder	0.63
960031	AF2-294 C	1.5422	Adder	1.81
960032	AF2-294 E	1.0282	Adder	1.21
960041	AF2-295 C	1.9302	Adder	2.27
960042	AF2-295 E	1.2868	Adder	1.51
960051	AF2-296 C	1.5138	Adder	1.78
960052	AF2-296 E	1.0092	Adder	1.19
961141	AF2-405	1.3537	Adder	1.59
961151	AF2-406	10.1528	Adder	11.94
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**42.7839**	**Adder**	**50.33**
961211	AF2-412	18.3563	Adder	21.6
961971	AG1-040 C	5.6059	50/50	5.6059
961972	AG1-040 E	3.7373	50/50	3.7373
962511	AG1-100 C	5.8564	50/50	5.8564
962512	AG1-100 E	3.9042	50/50	3.9042
962891	AG1-138 C	0.5616	Adder	1.25
962892	AG1-138 E	0.0296	Adder	0.07
962901	AG1-139 C	1.4924	50/50	1.4924
962902	AG1-139 E	0.0785	50/50	0.0785
962911	AG1-140 C	0.8532	50/50	0.8532
962912	AG1-140 E	0.3887	50/50	0.3887
963281	AG1-177 C O1	5.2748	50/50	5.2748
963282	AG1-177 E O1	3.5166	50/50	3.5166
963441	AG1-193 C	4.4159	50/50	4.4159
963442	AG1-193 E	2.9439	50/50	2.9439
963481	AG1-197 C	4.1663	50/50	4.1663
963482	AG1-197 E	2.7775	50/50	2.7775

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963491	AG1-198 C	3.1649	50/50	3.1649
963492	AG1-198 E	2.1099	50/50	2.1099
963531	AG1-202 C	3.4156	50/50	3.4156
963532	AG1-202 E	1.7595	50/50	1.7595
963571	AG1-206 C	0.5589	Adder	1.24
963572	AG1-206 E	0.3010	Adder	0.67
963891	AG1-242 C	0.4346	Adder	0.96
963892	AG1-242 E	0.2340	Adder	0.52
963941	AG1-247 C	0.3516	Adder	0.78
963942	AG1-247 E	0.1865	Adder	0.41
963991	AG1-253 C	1.2798	50/50	1.2798
963992	AG1-253 E	0.6162	50/50	0.6162
964341	AG1-296 C	0.5337	Adder	1.18
964342	AG1-296 E	0.2874	Adder	0.64
964411	AG1-303 C O1	11.5423	50/50	11.5423
964412	AG1-303 E O1	7.6949	50/50	7.6949
964451	AG1-308 C O1	0.5652	Adder	1.25
964452	AG1-308 E O1	0.7900	Adder	1.75
964701	AG1-333 C	0.2997	Adder	0.67
964702	AG1-333 E	0.0409	Adder	0.09
965201	AG1-385 C	1.3153	Adder	2.92
965202	AG1-385 E	0.3896	Adder	0.86
965241	AG1-389 C O1	1.0596	Adder	2.35
965242	AG1-389 E O1	0.7064	Adder	1.57
965251	AG1-390 C O1	1.0596	Adder	2.35
965252	AG1-390 E O1	0.7064	Adder	1.57
965261	AG1-391 C O1	1.0596	Adder	2.35
965262	AG1-391 E O1	0.7064	Adder	1.57
965271	AG1-392 C O1	2.1192	Adder	4.7
965272	AG1-392 E O1	1.4128	Adder	3.14
965861	AG1-455	17.7516	50/50	17.7516
966121	AG1-481	5.3835	50/50	5.3835
966771	AG1-548 C	51.2256	50/50	51.2256
966772	AG1-548 E	15.5904	50/50	15.5904
G-007A	G-007A	10.2157	Confirmed LTF	10.2157
VFT	VFT	27.9221	Confirmed LTF	27.9221
CALDERWOOD	CALDERWOOD	1.2862	Confirmed LTF	1.2862
PRAIRIE	PRAIRIE	8.5058	Confirmed LTF	8.5058
CHEOAH	CHEOAH	1.2853	Confirmed LTF	1.2853
CBM-N	CBM-N	5.4048	Confirmed LTF	5.4048
COTTONWOOD	COTTONWOOD	6.1089	Confirmed LTF	6.1089
HAMLET	HAMLET	0.9962	Confirmed LTF	0.9962
GIBSON	GIBSON	1.8766	Confirmed LTF	1.8766
BLUEG	BLUEG	5.8607	Confirmed LTF	5.8607
TRIMBLE	TRIMBLE	1.8821	Confirmed LTF	1.8821
CATAWBA	CATAWBA	0.6958	Confirmed LTF	0.6958

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
AA1-144	East Towanda-Grover 230kV	Engineering and Procurement
AA2-000	N/A	N/A
AA2-132	Thompson 34.5kV	Withdrawn
AA2-133	Wyalusing 34.5kV	In Service
AB1-160	Gold-Sabinsville 115kV	In Service
AB2-092	Bergen 138kV	Partially in Service - Under Construction
AC1-025	Dale Summit	In Service
AD1-154	Timblin 34.5 kV	Active
AD2-055	Moshannon-East Towanda 230 kV	Active
AD2-112	Springdale CC II 138kV	Engineering and Procurement
AD2-133	Eagle Valley 115kV	Active
AE1-053	Meyersdale North	Active
AE1-116	Somerset Windpower 23 kV	Active
AE1-123	Emlenton 34.5 kV	Engineering and Procurement
AE1-128	Bedford North-Wills Mounain 115 kV	Active
AE1-147	Bellefonte 46 kV	Engineering and Procurement
AE1-160	Venango 34.5 kV	Engineering and Procurement
AE2-001	Nittany-Zion 46 kV	Active
AE2-055	Shingletown-Boalsburg 46 kV	Suspended
AE2-074	Potter 46 kV	Active
AE2-113	Farmers Valley-Ridgeway 115 kV	Active
AE2-117	ABW Tap-Alexandria 46 kV	Active
AE2-118	ABW Tap-Williamsburg 46 kV	Active
AE2-120	Graymont-Zion 46 kV	Active
AE2-121	Milesburg-Tanney Junction 46 kV	Active
AE2-126	Dubois-Curwensville 34.5 kV	Engineering and Procurement
AE2-129	Philipsburg-Clarence 34.5 kV	Engineering and Procurement
AE2-131	Philipsburg-Karthaus 34.5	Suspended
AE2-139	East Towanda-Grover 230 kV	Active
AE2-224	Bearrock-Johnstown 230 kV	Active
AE2-248	Fillmore-Thompson Farm 46 kV	Active
AE2-249	Bedford North-Pennsylvania Hollow 23 kV	Engineering and Procurement
AE2-262	Moshannon-Milesburg 230 kV	Active
AE2-263	Moshannon-Milesburg 230 kV	Active
AE2-264	Altoona-Raystown 230 kV	Active
AE2-299	Erie East 230 kV	Active
AE2-316	Brookville-Squab Hollow 138 kV	Active
AE2-344	Edinboro South-Venango Junction 115 kV	Active
AF1-006	Fairview East 34.5 kV	Active

Queue Number	Project Name	Status
AF1-039	Listonburg-Highpoint 24.9 kV	Active
AF1-043	Moshannon-East Towanda 230 kV	Active
AF1-068	Boalsburg-Centre Hall 46 kV	Withdrawn
AF1-086	Madera-Westover South 115 kV	Active
AF1-094	Union City-Cambridge Springs 34.5 kV	Active
AF1-096	Titusville-Oil Creek 34.5 kV	Active
AF1-098	Four Mile Jct-Corry East 115 kV	Active
AF1-099	Moshannon-Milesburg 230 kV	Active
AF1-100	Shawville-Moshannon 230 kV	Active
AF1-103	Warren 34.5 kV	Active
AF1-104	Erie West 34.5 kV	Active
AF1-106	East Sayre 34.5 kV	Active
AF1-112	Centre Hall-Boalsburg 46 kV	Active
AF1-132	Shingletown-Boalsburg 46 kV	Withdrawn
AF1-134	Philipsburg-Madera 34.5 kV	Active
AF1-140	Claysburg 23 kV	Engineering and Procurement
AF1-142	Moshannon-Milesburg 230 kV	Active
AF1-143	Lick Run 115 kV	Active
AF1-153	Motion-Ridgeway 46 kV	Active
AF1-155	Paper City-Wilcox 46 kV	Engineering and Procurement
AF1-167	West Freedom-C&K Coal 25 kV	Active
AF1-170	Springboro-Venango Junction 115 kV	Active
AF1-177	Warren 115 kV	Partially in Service - Under Construction
AF1-181	Shawville 3 230 kV	Partially in Service - Under Construction
AF1-182	Shawville 4 230 kV	Partially in Service - Under Construction
AF1-210	Burma 23 kV	Engineering and Procurement
AF1-214	Nittany-Zion 46 kV	Withdrawn
AF1-217	Edinboro -Cambridge Springs 34.5 kV	Active
AF1-232	Allegheny-Somerset 115 kV	Withdrawn
AF1-240	Timblin 34.5 kV	Active
AF1-272	Lucerne 115 kV	Active
AF1-276	Lewis Run-Pierce Brook 230 kV	Active
AF1-277	Lewis Run-Pierce Brook 2 230 kV	Active
AF1-278	Lewis Run-Pierce Brook 3 230 kV	Active
AF1-286	East Sayre 34.5 kV II	Active
AF1-287	Edinboro South 34.5 kV II	Active
AF1-302	Brookville-Squab Hollow 138 kV	Active
AF1-304	Titusville-Grandview 115 kV	Active
AF1-306	Squab Hollow 230 kV	Active
AF1-321	Hooversville 115 kV I	Active
AF2-001	Hooversville 115 kV II	Active
AF2-002	Hooversville 115 kV III	Active
AF2-010	Union City-Titusville 115 kV	Active
AF2-039	Shawville-Clearfield 34.5 kV	Active
AF2-045	Cambria Nug 115 kV	Engineering and Procurement
AF2-050	Bearrock-Johnstown 230 kV	Active
AF2-051	Geneva 115 kV	Active
AF2-087	East Altoona-Pinecroft 12.47 kV	Suspended
AF2-088	Shawville-Clearfield 34.5 kV II	Active
AF2-092	Snake Spring-Bedford Area 23 kV	Active
AF2-104	Somerset 23 kV	Withdrawn
AF2-121	Philipsburg-Shawville 34.5 kV	Active

Queue Number	Project Name	Status
AF2-130	Wolfs Corners 34.5 kV	Active
AF2-141	Lick Run 115 kV	Active
AF2-164	Handsome Lake 345 kV	Active
AF2-165	Clark Summit-Emlenton 34.5 kV	Active
AF2-166	Clark Summit-Emlenton 34 kV	Active
AF2-197	East Towanda 115 kV	Active
AF2-235	Titusville-Oil Creek 34.5 kV	Active
AF2-238	Mansfield-South Troy 34.5 kV	Active
AF2-239	Wyalusing-Hollenback WRC 34.5 kV	Active
AF2-240	North Orwell 12.47 kV	Active
AF2-241	Athens-Milan 34.5 kV	Active
AF2-243	Clark Summit 34.5 kV	Active
AF2-265	South Troy-Athens 34.5 kV	Active
AF2-270	Bedford South RCB-Bedford Area 23 kV	Engineering and Procurement
AF2-271	Pemberton-Sinking Valley 12.47 kV	Engineering and Procurement
AF2-273	Sligo 25 kV	Engineering and Procurement
AF2-293	Beech Creek 12.47 kV	Active
AF2-294	Thompson 34.5 kV	Active
AF2-295	Wilcox-Paper City 46 kV	Active
AF2-296	Madera 34.5 kV	Active
AF2-318	East Towanda-New Albany 34.5 kV	Active
AF2-336	Snake Spring 115 kV I	Active
AF2-337	Snake Spring 115 kV II	Active
AF2-338	Snake Spring 115 kV III	Active
AF2-339	Snake Spring 115 kV IV	Active
AF2-380	Karns City-Bear Creek 25 kV	Active
AF2-381	Bedford North-Central City West 115 kV	Active
AF2-405	East Sayre 34.5 kV III	Active
AF2-406	Sayre 115 kV	Active
AF2-411	Mainesburg 345 kV	Withdrawn
AF2-412	Mainesburg 115 kV	Active
AF2-436	Wyalusing 34.5 kV II	Engineering and Procurement
AG1-033	Scalp Level 23 kV	Active
AG1-040	Morgan Street-Mount Hope 34.5 kV	Active
AG1-041	Osterburg-Bedford North 23 kV	Active
AG1-077	Allegheny Tunnel 23 kV	Active
AG1-090	Philipsburg 115 kV	Active
AG1-100	Venango-Saegertown 34.5 kV	Active
AG1-113	Somerset Windpower 22.86 kV	Active
AG1-114	Meyersdale North 115 kV	Active
AG1-138	Wolfs Corners 34.5 kV	Active
AG1-139	Clark Summit-Emlenton 34.5 kV	Active
AG1-140	Union City 34.5 kV	Active
AG1-144	Phillipsburg 34.5 kV	Active
AG1-177	Union City 34.5 kV	Active
AG1-193	Utica Junction 34.5 kV	Active
AG1-197	Morgan Street-Cochranton 34.5 kV	Active
AG1-198	Union City 34.5 kV	Active
AG1-202	Springboro 12.47 kV	Active
AG1-203	Reels Corner 23 kV	Active
AG1-205	Rockwood 23 kV	Active
AG1-206	Snyder Twp 34.5 kV	Active

Queue Number	Project Name	Status
AG1-241	Scalp Level 23 kV	Active
AG1-242	Beccaria 34.5 kV	Active
AG1-247	North Orwell 12.47 kV	Active
AG1-253	Erie East-Union City 34.5 kV	Active
AG1-257	Madisonburg Jct-Millheim 46 kV	Active
AG1-258	Madisonburg Jct-Millheim 46 kV	Active
AG1-280	Claysburg-Puzzletown 46 kV	Active
AG1-281	Claysburg-HCR Tap 46 kV	Active
AG1-295	Blairsville East 23 kV	Active
AG1-296	Snyder Township 34.5 kV	Active
AG1-301	Miller REC-Warrior Ridge 46 kV	Active
AG1-303	Geneva 115 kV	Active
AG1-308	Shawville-Philipsburg 115 kV	Active
AG1-333	Lake Como-Pine Mills 12.47 kV	Active
AG1-338	Curryville-RKB-Yellow Creek 23 kV I	Active
AG1-339	Curryville-RKB-Yellow Creek 23 kV II	Active
AG1-340	Curryville 23 kV	Active
AG1-355	Scalp Level-Hooversville 115 kV	Active
AG1-356	Somerset-Allegheny 115 kV	Active
AG1-377	Philipsburg 115 kV	Active
AG1-378	Philipsburg 115 kV	Active
AG1-382	SGC Tap-Reese REC 46 kV	Active
AG1-385	Motion-Ridgeway 46 kV	Active
AG1-387	Beth 33-Lilly 46 kV	Active
AG1-389	Gold 115 kV I	Active
AG1-390	Gold 115 kV II	Active
AG1-391	Gold 115 kV III	Active
AG1-392	Gold 115 kV IV	Active
AG1-395	Philipsburg-Karthaus 34.5 kV 2	Active
AG1-455	Springboro-Venango Junction 115 kV	Active
AG1-457	Somerset-Rockwood 115 kV	Active
AG1-473	Shingletown-Lewistown 230 kV	Active
AG1-481	Warren 34.5 kV	Active
AG1-514	Springdale CT III 138 kV	Active
AG1-520	Hooversville-Rockingham 23 kV	Active
AG1-548	Erie South-Union City 115 kV	Active
AG1-549	Shelocta 115 kV	Active
V3-030	St. Benedict-Patton 46kV	In Service
Y1-033	Penn Mar-Rock Wood 115kV	In Service
Y3-092	Erie West 345kV	Engineering and Procurement
Z1-066	Arnold 34.5kV	In Service
Z1-069	Gold-Sabinsville 115kV	In Service
Z2-108	Meyersdale North 115kV	In Service

11.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
ATSI-P2-3-CEI-345-004D	CONTINGENCY 'ATSI-P2-3-CEI-345-004D' /* ERIE WEST 345KV BKR 8 DISCONNECT BRANCH FROM BUS 200599 TO BUS 200600 CKT 1 /* 26ERIE W 345 26ERIE SO 345 DISCONNECT BRANCH FROM BUS 200599 TO BUS 238547 CKT 1 /* 26ERIE W 345 02AT 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239036 CKT 1 /* 02AT 345 02PERRY 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 /* 02AT 345 02S8-ATT 345 DISCONNECT BUS 200600 /* 26ERIE SO 345 DISCONNECT BUS 238547 /* 02AT 345 END
ATSI-P1-3-CEI-345-722	CONTINGENCY 'ATSI-P1-3-CEI-345-722' /* TRAN 02S8-ATT 345 TO 02ASH_3 138 CK 8 DISCONNECT BRANCH FROM BUS 239082 TO BUS 238544 CKT 8 /* 02S8-ATT 345 02ASH_3 138 END
PN-P1-2-PN-345-001	CONTINGENCY 'PN-P1-2-PN-345-001' /* ERIE WEST - WAYNE 345KV DISCONNECT BRANCH FROM BUS 200599 TO BUS 200595 CKT 1 /* 26ERIE W 345 26WAYNE 345 END
ATSI-P1-2-CEI-345-700T	CONTINGENCY 'ATSI-P1-2-CEI-345-700T' /* PN/ATSI ERIE WEST - ASHTABULA - PERRY 345KV DISCONNECT BRANCH FROM BUS 239036 TO BUS 238547 CKT 1 /* 02PERRY 345 02AT 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 /* 02AT 345 02S8-ATT 345 DISCONNECT BRANCH FROM BUS 239082 TO BUS 238544 CKT 8 /* 02S8-ATT 345 02ASH_3 138 DISCONNECT BRANCH FROM BUS 238547 TO BUS 200599 CKT 1 /* 02AT 345 26ERIE W 345 END
ATSI-P2-3-CEI-345-004C	CONTINGENCY 'ATSI-P2-3-CEI-345-004C' /* ERIE WEST 345KV BKR 7 DISCONNECT BRANCH FROM BUS 200599 TO BUS 238547 CKT 1 /* 26ERIE W 345 02AT 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239036 CKT 1 /* 02AT 345 02PERRY 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 /* 02AT 345 02S8-ATT 345 DISCONNECT BUS 238547 /* 02AT 345 END

Contingency Name	Contingency Definition
PN-P2-2-PN-230-007T	CONTINGENCY 'PN-P2-2-PN-230-007T' /* LEWISTOWN #2 230KV BUS DISCONNECT BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 /* 26LEWISTWN 230 26YEAGRTWN 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 /* 26LEWISTWN 230 AG1-473 TAP 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 /* 26LEWISTWN 230 26RAYSTOWN 230 END
PN-P2-3-PN-230-14CT	CONTINGENCY 'PN-P2-3-PN-230-14CT' /* LEWISTOWN STUCK 230KV BREAKER - SHINGLETOWN DISCONNECT BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 /* 26LEWISTWN 230 26RAYSTOWN 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 /* 26LEWISTWN 230 AG1-473 TAP 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 /* 26LEWISTWN 230 26YEAGRTWN 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200548 CKT 2 /* 26LEWISTWN 230 26LEWISTWN 46.00 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200512 CKT 3 /* 26LEWISTWN 230 26LEWISTWN 115 END
PJM_GEN_P1-1: UNIT02PERRG1	CONTINGENCY 'PJM_GEN_P1-1: UNIT02PERRG1' REMOVE MACHINE 1 FROM BUS 239035 END
PN-P2-3-PN-230-14BT	CONTINGENCY 'PN-P2-3-PN-230-14BT' /* LEWISTOWN STUCK 230KV BREAKER B5 (RAYSTOWN) DISCONNECT BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 /* 26LEWISTWN 230 26RAYSTOWN 230 DISCONNECT BRANCH FROM BUS 200517 TO BUS 200539 CKT 1 /* 26RAYSTOWN 230 26RAYSTOWN 46 DISCONNECT BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 /* 26LEWISTWN 230 AG1-473 TAP 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 /* 26LEWISTWN 230 26YEAGRTWN 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200548 CKT 1 /* 26LEWISTWN 230 26LEWISTWN 46.00 END
Base Case	

Contingency Name	Contingency Definition
PN-P1-2-PN-345-107T	CONTINGENCY 'PN-P1-2-PN-345-107T' /* ERIE WEST - ASHTABULA - PERRY 345KV DISCONNECT BRANCH FROM BUS 200599 TO BUS 238547 CKT 1 /* 26ERIE W 345 02AT 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 /* 02AT 345 02S8-ATT 345 DISCONNECT BRANCH FROM BUS 238547 TO BUS 239036 CKT 1 /* 02AT 345 02PERRY 345 DISCONNECT BUS 238547 /* 02AT 345 END
ATSI-P2-4-CEI-138-125B	CONTINGENCY 'ATSI-P2-4-CEI-138-125B' /* AT BUS 138KV_ BRKR FAILURE - Q-2-3-AT-TIE (B155) DISCONNECT BRANCH FROM BUS 238544 TO BUS 239082 CKT 8 /* 02ASH_3 138 02S8-ATT 345 DISCONNECT BRANCH FROM BUS 238544 TO BUS 238543 CKT ZB /* 02ASH_3 138 02ASH_2 138 DISCONNECT BRANCH FROM BUS 238544 TO BUS 239098 CKT 1 /* 02ASH_3 138 02SBRNQ4 138 DISCONNECT BRANCH FROM BUS 238544 TO BUS 239182 CKT 1 /* 02ASH_3 138 02ZNQ-16 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 238542 CKT ZB /* 02ASH_2 138 02ASH_1 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 239096 CKT 1 /* 02ASH_2 138 02SBRNQ2 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 239097 CKT 1 /* 02ASH_2 138 02SBRNQ3 138 DISCONNECT BUS 238543 /* 02ASH_2 138 DISCONNECT BUS 238544 /* 02ASH_3 138 DISCONNECT BUS 238692 /* 02ELKEM 138 DISCONNECT BUS 238548 /* 02ATCQ31 138 DISCONNECT BUS 241936 /* 02PETMIN 138 DISCONNECT BUS 239182 /* 02ZNQ-16 138 END

12 Short Circuit Analysis - Primary POI

The following Breakers are overdutied:

None

12.1 System Reinforcements - Short Circuit

None

13 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-303 was evaluated as a 44.0 MW (Capacity 26.4 MW) injection tapping the Geneva to Franklin 115 kV line in the PENELEC area. Project AG1-303 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-303 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

13.1 Generation Deliverability

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

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
167925636	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	PN-P1-2-PN-345-107T	single	228.0	99.63	100.48	DC	1.94

13.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

13.3 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
164496214	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-2-PN-230-007T	bus	1900.0	115.63	116.69	DC	20.12
164496418	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-3-PN-230-14CT	breaker	1900.0	115.69	116.75	DC	20.12
164496419	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PN-P2-3-PN-230-14BT	breaker	1900.0	115.62	116.68	DC	20.12
167521811	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	228.0	112.66	113.31	DC	3.33
167521795	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	123.65	124.54	DC	2.98
167925589	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	110.36	111.52	DC	1.74
167376267	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	179.0	234.77	235.87	DC	4.36

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
16792530 5	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	PN-P1-2-PN-345-107T	single	179.0	184.07	185.5	DC	2.56
16792532 7	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	PN-P1-2-PN-345-107T	single	268.0	141.48	142.49	DC	2.7
16737640 8	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	119.17	120.06	DC	2.98
16792560 2	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	105.84	106.99	DC	1.74
16737627 9	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	177.31	178.38	DC	3.59
16792535 2	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	157.98	159.37	DC	2.09
16737627 7	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	179.62	180.7	DC	3.59
16792534 0	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	PN-P1-2-PN-345-107T	single	151.0	160.3	161.69	DC	2.09
16449648 2	238547	02AT	345.0	ATSI	239036	02PERRY	345.0	ATSI	1	ATSI-P2-4-CEI-138-125B	breaker	1891.0	100.48	101.49	DC	19.15

13.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
166213701	200575	26MRGANST	115.0	PENELEC	200573	26VENGOJT	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	149.0	126.21	136.77	DC	15.73
166213789	200590	26GENEVA	115.0	PENELEC	200822	26PPGAPI	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	239.0	109.26	116.12	DC	16.39
164496691	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	Base Case	operation	1560.0	126.11	127.37	DC	19.73
164496692	200599	26ERIE W	345.0	PENELEC	238547	02AT	345.0	ATSI	1	PJM_GEN_P1-1: UNIT02PERRG1	operation	1900.0	115.46	116.5	DC	19.73
175485612	200795	26SHELOCTA	230.0	PENELEC	200810	26KEYSTONE	230.0	PENELEC	1	PN-P1-2-PN-345-107T	operation	923.0	190.77	191.24	DC	9.54
166213824	200822	26PPGAPI	115.0	PENELEC	200920	26FRANKLNA	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	245.0	103.64	110.33	DC	16.39
166213821	200920	26FRANKLNA	115.0	PENELEC	200575	26MRGANST	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	239.0	106.16	113.02	DC	16.39
167925633	235121	01ARMSTR	138.0	AP	235204	01KITTAN	138.0	AP	1	PN-P1-2-PN-345-107T	operation	228.0	112.01	112.64	DC	3.23
167925586	235139	01AL&D6T	138.0	AP	235138	01AL 4J	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	119.27	120.13	DC	2.9
167925303	235197	01KARNSC	138.0	AP	235152	01BUTLER	138.0	AP	1	PN-P1-2-PN-345-107T	operation	179.0	233.52	234.6	DC	4.27
167925326	235203	01KISSNG	138.0	AP	235197	01KARNSC	138.0	AP	1	PN-P1-2-PN-345-107T	operation	268.0	178.33	180.01	DC	4.5
167925599	235204	01KITTAN	138.0	AP	235139	01AL&D6T	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	114.72	115.59	DC	2.9
167925349	235240	01COLMBGPN	138.0	AP	235202	01KISKIV	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	173.44	174.48	DC	3.49
167925337	235282	01GAR RN	138.0	AP	235240	01COLMBGPN	138.0	AP	1	PN-P1-2-PN-345-107T	operation	151.0	175.76	176.8	DC	3.49
164496844	238547	02AT	345.0	ATSI	239036	02PERRY	345.0	ATSI	1	ATSI-P1-3-CEI-345-722	operation	1891.0	99.54	100.56	DC	19.17
176226883	964410	AG1-303 TAP	115.0	PENELEC	200590	26GENEVA	115.0	PENELEC	1	PN-P1-2-PN-345-001	operation	245.0	106.04	112.72	DC	16.39

13.5 Flow Gate Details - Secondary POI

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".

13.5.1 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
167521811	235121	01ARMSTR	AP	235204	01KITTAN	AP	1	ATSI-P2-3-CEI-345-004D	breaker	228.0	112.66	113.31	DC	3.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
915951	Y3-092 FTIR	76.5100	Merchant Transmission	76.5100
935191	AD1-154	1.0537	Adder	1.24
936881	AD2-112 C	-3.1312	Adder	-3.68
936882	AD2-112 E	-1.2425	Adder	-1.46
938951	AE1-123	1.2676	Adder	1.49
939291	AE1-160 C	0.8040	Adder	0.95
939292	AE1-160 E	0.4621	Adder	0.54
942811	AE2-299 C	1.5501	Adder	1.82
942812	AE2-299 E	6.2005	Adder	7.29
942961	AE2-316 C	3.1940	Adder	3.76
942962	AE2-316 E	4.5546	Adder	5.36
943151	AE2-344 C	4.0313	Adder	4.74
943152	AE2-344 E	2.6875	Adder	3.16
943351	AF1-006 C	0.7135	Adder	0.84
943352	AF1-006 E	0.4013	Adder	0.47
944261	AF1-094 C	0.6703	Adder	0.79
944262	AF1-094 E	0.4469	Adder	0.53
944281	AF1-096 C	0.7597	Adder	0.89
944282	AF1-096 E	0.5065	Adder	0.6
944301	AF1-098 C	2.4027	Adder	2.83
944302	AF1-098 E	1.6018	Adder	1.88
944381	AF1-103 O1	0.9289	Adder	1.09
944391	AF1-104 O1	1.2413	Adder	1.46
944881	AF1-153 C O1	0.6129	Adder	0.72
944882	AF1-153 E O1	0.4086	Adder	0.48
944901	AF1-155 C	0.6173	Adder	0.73
944902	AF1-155 E	0.4115	Adder	0.48
945021	AF1-167 C	0.4633	Adder	0.55
945022	AF1-167 E	0.3094	Adder	0.36
945051	AF1-170 C	2.7948	Adder	3.29
945052	AF1-170 E	1.8632	Adder	2.19
945751	AF1-240 C O1	0.6322	Adder	0.74
945752	AF1-240 E O1	0.4215	Adder	0.5
946111	AF1-276 C	2.8794	Adder	3.39
946112	AF1-276 E	1.4182	Adder	1.67
946121	AF1-277 C	2.8794	Adder	3.39
946122	AF1-277 E	1.4182	Adder	1.67
946131	AF1-278 C	2.2966	Adder	2.7
946132	AF1-278 E	1.1414	Adder	1.34
946221	AF1-287 C	0.6924	Adder	0.81
946222	AF1-287 E	0.4616	Adder	0.54

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946381	AF1-302 C	1.3947	Adder	1.64
946382	AF1-302 E	1.8597	Adder	2.19
946401	AF1-304 C	3.9698	Adder	4.67
946402	AF1-304 E	2.6466	Adder	3.11
946421	AF1-306 C	2.2469	Adder	2.64
946422	AF1-306 E	8.9878	Adder	10.57
946771	AF1-217 C	0.6925	Adder	0.81
946772	AF1-217 E	0.4617	Adder	0.54
957161	AF2-010 C	2.5857	Adder	3.04
957162	AF2-010 E	1.7425	Adder	2.05
957571	AF2-051 C	2.1133	Adder	2.49
957572	AF2-051 E	1.0887	Adder	1.28
958361	AF2-130 C	0.8255	Adder	0.97
958362	AF2-130 E	0.5503	Adder	0.65
958731	AF2-164 C O1	3.3733	Adder	3.97
958732	AF2-164 E O1	2.2489	Adder	2.65
958741	AF2-165 C	0.8070	Adder	0.95
958742	AF2-165 E	0.5380	Adder	0.63
958751	AF2-166 C	0.8255	Adder	0.97
958752	AF2-166 E	0.5503	Adder	0.65
959441	AF2-235 C	0.3798	Adder	0.45
959442	AF2-235 E	0.2532	Adder	0.3
959521	AF2-243 C	0.6053	Adder	0.71
959522	AF2-243 E	0.4035	Adder	0.47
960041	AF2-295 C	0.6173	Adder	0.73
960042	AF2-295 E	0.4115	Adder	0.48
961971	AG1-040 C	0.3866	Adder	0.86
961972	AG1-040 E	0.2578	Adder	0.57
962511	AG1-100 C	0.3757	Adder	0.83
962512	AG1-100 E	0.2505	Adder	0.56
962891	AG1-138 C	0.1732	Adder	0.38
962892	AG1-138 E	0.0091	Adder	0.02
962901	AG1-139 C	0.1693	Adder	0.38
962902	AG1-139 E	0.0089	Adder	0.02
962911	AG1-140 C	0.0462	Adder	0.1
962912	AG1-140 E	0.0211	Adder	0.05
963281	AG1-177 C O2	0.3670	Adder	0.81
963282	AG1-177 E O2	0.2447	Adder	0.54
963441	AG1-193 C	0.4288	Adder	0.95
963442	AG1-193 E	0.2859	Adder	0.63
963481	AG1-197 C	0.2933	Adder	0.65
963482	AG1-197 E	0.1956	Adder	0.43
963491	AG1-198 C	0.2132	Adder	0.47
963492	AG1-198 E	0.1421	Adder	0.32
963531	AG1-202 C	0.2122	Adder	0.47
963532	AG1-202 E	0.1093	Adder	0.24
963991	AG1-253 C	0.0693	Adder	0.15
963992	AG1-253 E	0.0334	Adder	0.07
964341	AG1-296 C	0.2926	Adder	0.65
964342	AG1-296 E	0.1576	Adder	0.35
964411	AG1-303 C O2	0.8989	Adder	2.0
964412	AG1-303 E O2	0.5993	Adder	1.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965201	AG1-385 C	0.4177	Adder	0.93
965202	AG1-385 E	0.1237	Adder	0.27
965861	AG1-455	1.1149	Adder	2.47
966121	AG1-481	0.3823	Adder	0.85
966453	AG1-514 BAT	0.3888	Merchant Transmission	0.3888
966771	AG1-548 C	3.3737	Adder	7.49
966772	AG1-548 E	1.0268	Adder	2.28
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0054	Confirmed LTF	4.0054
CALDERWOOD	CALDERWOOD	0.2008	Confirmed LTF	0.2008
PRAIRIE	PRAIRIE	1.1469	Confirmed LTF	1.1469
CHEOAH	CHEOAH	0.2012	Confirmed LTF	0.2012
CBM-N	CBM-N	0.7956	Confirmed LTF	0.7956
COTTONWOOD	COTTONWOOD	0.8841	Confirmed LTF	0.8841
HAMLET	HAMLET	0.1946	Confirmed LTF	0.1946
GIBSON	GIBSON	0.2490	Confirmed LTF	0.2490
BLUEG	BLUEG	0.7916	Confirmed LTF	0.7916
TRIMBLE	TRIMBLE	0.2543	Confirmed LTF	0.2543
CATAWBA	CATAWBA	0.1257	Confirmed LTF	0.1257

13.5.2 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
164496419	200599	26ERIE W	PENELEC	238547	02AT	ATSI	1	PN-P2-3-PN-230-14BT	breaker	1900.0	115.62	116.68	DC	20.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200662	26SCRUB GR	4.6470	50/50	4.6470
200828	26HNSMLK 1	3.1097	50/50	3.1097
200829	26HNSMLK 2	3.1097	50/50	3.1097
200830	26HNSMLK 3	3.1097	50/50	3.1097
200831	26HNSMLK 4	3.1097	50/50	3.1097
200832	26HNSMLK 5	3.1097	50/50	3.1097
200849	26LAKVU GN	0.4122	50/50	0.4122
200894	26K02	8.3700	Adder	9.85
201201	26WRREN CT	3.3716	50/50	3.3716
203999	P-047 E	12.0202	Adder	14.14
235003	AC1-025 E	0.2648	Adder	0.31
236828	01GRAYMONT	0.7088	Adder	0.83
290086	Q-036 E	5.5896	Adder	6.58
915951	Y3-092 FTIR	592.0700	50/50	592.0700
916202	Z1-069 E	10.2699	Adder	12.08
920341	**AA2-132 (Withdrawn : 12/07/2020)**	**2.8033**	**Adder**	**3.3**
921642	AA2-000	76.6203	Adder	90.14
930511	AB2-092	2.8133	Adder	3.31
931092	AB1-160 E	2.9342	Adder	3.45
935191	AD1-154	3.3509	Adder	3.94
936421	AD2-055	5.7920	Adder	6.81
936991	AD2-133 C	2.5153	Adder	2.96
936992	AD2-133 E	11.5048	Adder	13.54
938951	AE1-123	3.6036	Adder	4.24
939171	AE1-147 C	2.1276	Adder	2.5
939172	AE1-147 E	1.4184	Adder	1.67
939291	AE1-160 C	4.7558	50/50	4.7558
939292	AE1-160 E	2.7336	50/50	2.7336
940201	AE2-001 C	2.1270	Adder	2.5
940202	AE2-001 E	1.4180	Adder	1.67
940681	**AE2-055 C (Suspended)**	**2.1162**	**Adder**	**2.49**
940682	**AE2-055 E (Suspended)**	**1.4108**	**Adder**	**1.66**
940861	AE2-074 C	2.9573	Adder	3.48
940862	AE2-074 E	3.8929	Adder	4.58
941191	AE2-113 C	13.0790	Adder	15.39
941192	AE2-113 E	14.0819	Adder	16.57
941261	AE2-120 C	2.1266	Adder	2.5
941262	AE2-120 E	1.4177	Adder	1.67
941271	AE2-121 C	1.1318	Adder	1.33
941272	AE2-121 E	0.7557	Adder	0.89

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
941321	AE2-126 C	2.2829	Adder	2.69
941322	AE2-126 E	1.5219	Adder	1.79
941331	AE2-129 C	1.8517	Adder	2.18
941332	AE2-129 E	1.2345	Adder	1.45
941351	AE2-131 C (Suspended)	1.8517	Adder	2.18
941352	AE2-131 E (Suspended)	1.2345	Adder	1.45
942351	AE2-248 C	1.6965	Adder	2.0
942352	AE2-248 E	1.1310	Adder	1.33
942491	AE2-262 C	9.0134	Adder	10.6
942492	AE2-262 E	6.0570	Adder	7.13
942501	AE2-263 C	8.4726	Adder	9.97
942502	AE2-263 E	5.6568	Adder	6.66
942811	AE2-299 C	15.9571	50/50	15.9571
942812	AE2-299 E	63.8285	50/50	63.8285
942961	AE2-316 C	7.4990	Adder	8.82
942962	AE2-316 E	10.6936	Adder	12.58
943151	AE2-344 C	35.8014	50/50	35.8014
943152	AE2-344 E	23.8676	50/50	23.8676
943351	AF1-006 C	6.8550	50/50	6.8550
943352	AF1-006 E	3.8560	50/50	3.8560
943751	AF1-043	17.3761	Adder	20.44
944001	AF1-068 C O1 (Withdrawn : 12/15/2020)	2.2606	Adder	2.66
944002	AF1-068 E O1 (Withdrawn : 12/15/2020)	1.2716	Adder	1.5
944181	AF1-086 C O1	2.8177	Adder	3.31
944182	AF1-086 E O1	12.2585	Adder	14.42
944261	AF1-094 C	5.5565	50/50	5.5565
944262	AF1-094 E	3.7043	50/50	3.7043
944281	AF1-096 C	4.4936	50/50	4.4936
944282	AF1-096 E	2.9958	50/50	2.9958
944301	AF1-098 C	23.3381	50/50	23.3381
944302	AF1-098 E	15.5587	50/50	15.5587
944311	AF1-099 C	13.6823	Adder	16.1
944312	AF1-099 E	9.1216	Adder	10.73
944321	AF1-100 C	27.3513	Adder	32.18
944322	AF1-100 E	18.2342	Adder	21.45
944381	AF1-103 O1	7.4984	50/50	7.4984
944391	AF1-104 O1	11.3678	50/50	11.3678
944411	AF1-106 O1	2.9869	Adder	3.51
944471	AF1-112 C	2.1219	Adder	2.5
944472	AF1-112 E	1.4146	Adder	1.66
944671	AF1-132 C O1 (Withdrawn : 12/15/2020)	2.1186	Adder	2.49
944672	AF1-132 E O1 (Withdrawn : 12/15/2020)	1.4124	Adder	1.66
944691	AF1-134 C	1.8268	Adder	2.15
944692	AF1-134 E	1.2179	Adder	1.43
944771	AF1-142 C	21.8917	Adder	25.75
944772	AF1-142 E	14.5945	Adder	17.17
944881	AF1-153 C O1	2.3209	Adder	2.73

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944882	AF1-153 E O1	1.5473	Adder	1.82
944901	AF1-155 C	2.3189	Adder	2.73
944902	AF1-155 E	1.5459	Adder	1.82
945021	AF1-167 C	1.3325	Adder	1.57
945022	AF1-167 E	0.8899	Adder	1.05
945051	AF1-170 C	24.7138	50/50	24.7138
945052	AF1-170 E	16.4759	50/50	16.4759
945121	AF1-177	0.2958	50/50	0.2958
945451	AF1-210 C	1.4561	Adder	1.71
945452	AF1-210 E	0.9707	Adder	1.14
945491	AF1-214 C (Withdrawn : 12/03/2020)	2.1266	Adder	2.5
945492	AF1-214 E (Withdrawn : 12/03/2020)	1.4177	Adder	1.67
945751	AF1-240 C O1	2.0105	Adder	2.37
945752	AF1-240 E O1	1.3403	Adder	1.58
946111	AF1-276 C	15.5530	Adder	18.3
946112	AF1-276 E	7.6605	Adder	9.01
946121	AF1-277 C	15.5530	Adder	18.3
946122	AF1-277 E	7.6605	Adder	9.01
946131	AF1-278 C	12.4053	Adder	14.59
946132	AF1-278 E	6.1655	Adder	7.25
946211	AF1-286 C	1.2097	Adder	1.42
946212	AF1-286 E	0.8214	Adder	0.97
946221	AF1-287 C	6.1184	50/50	6.1184
946222	AF1-287 E	4.0790	50/50	4.0790
946381	AF1-302 C	3.2747	Adder	3.85
946382	AF1-302 E	4.3662	Adder	5.14
946401	AF1-304 C	20.4282	50/50	20.4282
946402	AF1-304 E	13.6188	50/50	13.6188
946421	AF1-306 C	9.9244	Adder	11.68
946422	AF1-306 E	39.6974	Adder	46.7
946771	AF1-217 C	6.1183	50/50	6.1183
946772	AF1-217 E	4.0789	50/50	4.0789
957161	AF2-010 C	21.1057	50/50	21.1057
957162	AF2-010 E	14.2234	50/50	14.2234
957451	AF2-039 C	1.3949	Adder	1.64
957452	AF2-039 E	0.9299	Adder	1.09
957571	AF2-051 C	15.1635	50/50	15.1635
957572	AF2-051 E	7.8115	50/50	7.8115
957941	AF2-088 C	0.6716	Adder	0.79
957942	AF2-088 E	0.4477	Adder	0.53
958271	AF2-121 C	1.8517	Adder	2.18
958272	AF2-121 E	1.2345	Adder	1.45
958361	AF2-130 C	2.8677	Adder	3.37
958362	AF2-130 E	1.9118	Adder	2.25
958731	AF2-164 C O1	17.6842	50/50	17.6842
958732	AF2-164 E O1	11.7894	50/50	11.7894
958741	AF2-165 C	4.0072	50/50	4.0072
958742	AF2-165 E	2.6714	50/50	2.6714
958751	AF2-166 C	2.8677	Adder	3.37
958752	AF2-166 E	1.9118	Adder	2.25
959441	AF2-235 C	2.2468	50/50	2.2468

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959442	AF2-235 E	1.4979	50/50	1.4979
959471	AF2-238 C	1.7638	Adder	2.08
959472	AF2-238 E	1.1759	Adder	1.38
959491	AF2-240 C	0.5645	Adder	0.66
959492	AF2-240 E	0.4809	Adder	0.57
959501	AF2-241 C	1.6876	Adder	1.99
959502	AF2-241 E	1.2993	Adder	1.53
959521	AF2-243 C	3.0054	50/50	3.0054
959522	AF2-243 E	2.0036	50/50	2.0036
959741	AF2-265 C	1.2640	Adder	1.49
959742	AF2-265 E	0.9407	Adder	1.11
959822	AF2-273 E	0.5842	Adder	0.69
960022	AF2-293 E	0.2068	Adder	0.24
960031	AF2-294 C	1.6904	Adder	1.99
960032	AF2-294 E	1.1270	Adder	1.33
960041	AF2-295 C	2.3189	Adder	2.73
960042	AF2-295 E	1.5459	Adder	1.82
960051	AF2-296 C	1.8268	Adder	2.15
960052	AF2-296 E	1.2179	Adder	1.43
961141	AF2-405	1.4934	Adder	1.76
961151	AF2-406	11.2009	Adder	13.18
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**46.9710**	**Adder**	**55.26**
961211	AF2-412	20.2569	Adder	23.83
961971	AG1-040 C	5.8858	50/50	5.8858
961972	AG1-040 E	3.9238	50/50	3.9238
962411	AG1-090 C O2	5.6647	Adder	12.57
962412	AG1-090 E O2	3.7765	Adder	8.38
962511	AG1-100 C	6.1441	50/50	6.1441
962512	AG1-100 E	4.0961	50/50	4.0961
962891	AG1-138 C	0.6016	Adder	1.34
962892	AG1-138 E	0.0317	Adder	0.07
962901	AG1-139 C	1.5862	50/50	1.5862
962902	AG1-139 E	0.0835	50/50	0.0835
962911	AG1-140 C	0.8976	50/50	0.8976
962912	AG1-140 E	0.4089	50/50	0.4089
962951	AG1-144 C	0.9814	Adder	2.18
962952	AG1-144 E	0.6543	Adder	1.45
963281	AG1-177 C O2	6.1183	50/50	6.1183
963282	AG1-177 E O2	4.0789	50/50	4.0789
963441	AG1-193 C	4.6628	50/50	4.6628
963442	AG1-193 E	3.1086	50/50	3.1086
963481	AG1-197 C	4.3745	50/50	4.3745
963482	AG1-197 E	2.9164	50/50	2.9164
963491	AG1-198 C	3.3339	50/50	3.3339
963492	AG1-198 E	2.2226	50/50	2.2226
963531	AG1-202 C	3.5769	50/50	3.5769
963532	AG1-202 E	1.8426	50/50	1.8426
963571	AG1-206 C	0.6710	Adder	1.49
963572	AG1-206 E	0.3613	Adder	0.8
963891	AG1-242 C	0.5244	Adder	1.16
963892	AG1-242 E	0.2824	Adder	0.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963941	AG1-247 C	0.3878	Adder	0.86
963942	AG1-247 E	0.2058	Adder	0.46
963991	AG1-253 C	1.3464	50/50	1.3464
963992	AG1-253 E	0.6483	50/50	0.6483
964031	AG1-257 C	0.7782	Adder	1.73
964032	AG1-257 E	1.0876	Adder	2.41
964041	AG1-258 C	0.7782	Adder	1.73
964042	AG1-258 E	1.0876	Adder	2.41
964341	AG1-296 C	0.6136	Adder	1.36
964342	AG1-296 E	0.3304	Adder	0.73
964411	AG1-303 C O2	12.0740	50/50	12.0740
964412	AG1-303 E O2	8.0494	50/50	8.0494
964451	AG1-308 C O2	0.6788	Adder	1.51
964452	AG1-308 E O2	0.9487	Adder	2.11
964701	AG1-333 C	0.3285	Adder	0.73
964702	AG1-333 E	0.0448	Adder	0.1
965121	AG1-377 C O1	0.9814	Adder	2.18
965122	AG1-377 E O1	0.6543	Adder	1.45
965131	AG1-378 C O1	0.9814	Adder	2.18
965132	AG1-378 E O1	0.6543	Adder	1.45
965201	AG1-385 C	1.5817	Adder	3.51
965202	AG1-385 E	0.4685	Adder	1.04
965241	AG1-389 C O1	1.1740	Adder	2.61
965242	AG1-389 E O1	0.7826	Adder	1.74
965251	AG1-390 C O2	1.1753	Adder	2.61
965252	AG1-390 E O2	0.7835	Adder	1.74
965261	AG1-391 C O1	1.1740	Adder	2.61
965262	AG1-391 E O1	0.7826	Adder	1.74
965271	AG1-392 C O1	2.3479	Adder	5.21
965272	AG1-392 E O1	1.5653	Adder	3.47
965301	AG1-395 C	1.2611	Adder	2.8
965302	AG1-395 E	0.3746	Adder	0.83
965861	AG1-455	18.6018	50/50	18.6018
966041	AG1-473 C	2.9468	Adder	6.54
966042	AG1-473 E	1.9645	Adder	4.36
966121	AG1-481	5.8225	50/50	5.8225
966771	AG1-548 C	53.9430	50/50	53.9430
966772	AG1-548 E	16.4174	50/50	16.4174
G-007A	G-007A	9.7027	Confirmed LTF	9.7027
VFT	VFT	26.5804	Confirmed LTF	26.5804
CALDERWOOD	CALDERWOOD	1.2703	Confirmed LTF	1.2703
PRAIRIE	PRAIRIE	8.3922	Confirmed LTF	8.3922
CHEOAH	CHEOAH	1.2693	Confirmed LTF	1.2693
CBM-N	CBM-N	5.1816	Confirmed LTF	5.1816
COTTONWOOD	COTTONWOOD	6.0333	Confirmed LTF	6.0333
HAMLET	HAMLET	0.9893	Confirmed LTF	0.9893
GIBSON	GIBSON	1.8515	Confirmed LTF	1.8515
BLUEG	BLUEG	5.7791	Confirmed LTF	5.7791
TRIMBLE	TRIMBLE	1.8559	Confirmed LTF	1.8559
CATAWBA	CATAWBA	0.6891	Confirmed LTF	0.6891

13.5.3 Index 3

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
167521795	235139	01AL&D6T	AP	235138	01AL 4J	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	123.65	124.54	DC	2.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1499	50/50	0.1499
235134	01AL&D6	0.5185	50/50	0.5185
915951	Y3-092 FTIR	68.1900	Merchant Transmission	68.1900
935191	AD1-154	0.9920	Adder	1.17
936881	AD2-112 C	-4.2604	Adder	-5.01
936882	AD2-112 E	-1.6906	Adder	-1.99
938951	AE1-123	1.1749	Adder	1.38
939291	AE1-160 C	0.7330	Adder	0.86
939292	AE1-160 E	0.4213	Adder	0.5
942811	AE2-299 C	1.3973	Adder	1.64
942812	AE2-299 E	5.5891	Adder	6.58
942961	AE2-316 C	2.8212	Adder	3.32
942962	AE2-316 E	4.0230	Adder	4.73
943151	AE2-344 C	3.6160	Adder	4.25
943152	AE2-344 E	2.4107	Adder	2.84
943351	AF1-006 C	0.6401	Adder	0.75
943352	AF1-006 E	0.3600	Adder	0.42
944261	AF1-094 C	0.6067	Adder	0.71
944262	AF1-094 E	0.4045	Adder	0.48
944281	AF1-096 C	0.6926	Adder	0.81
944282	AF1-096 E	0.4617	Adder	0.54
944301	AF1-098 C	2.1648	Adder	2.55
944302	AF1-098 E	1.4432	Adder	1.7
944391	AF1-104 O1	1.1087	Adder	1.3
944881	AF1-153 C O1	0.5584	Adder	0.66
944882	AF1-153 E O1	0.3723	Adder	0.44
944901	AF1-155 C	0.5625	Adder	0.66
944902	AF1-155 E	0.3750	Adder	0.44
945021	AF1-167 C	0.6632	Adder	0.78
945022	AF1-167 E	0.4430	Adder	0.52
945051	AF1-170 C	2.5019	Adder	2.94
945052	AF1-170 E	1.6680	Adder	1.96
945451	AF1-210 C	1.0352	50/50	1.0352
945452	AF1-210 E	0.6901	50/50	0.6901
945751	AF1-240 C O1	0.5952	Adder	0.7
945752	AF1-240 E O1	0.3968	Adder	0.47
946221	AF1-287 C	0.6211	Adder	0.73
946222	AF1-287 E	0.4141	Adder	0.49
946381	AF1-302 C	1.2320	Adder	1.45
946382	AF1-302 E	1.6426	Adder	1.93
946401	AF1-304 C	3.6276	Adder	4.27

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946402	AF1-304 E	2.4184	Adder	2.85
946771	AF1-217 C	0.6211	Adder	0.73
946772	AF1-217 E	0.4141	Adder	0.49
957161	AF2-010 C	2.3413	Adder	2.75
957162	AF2-010 E	1.5778	Adder	1.86
957571	AF2-051 C	1.8925	Adder	2.23
957572	AF2-051 E	0.9749	Adder	1.15
958361	AF2-130 C	0.7603	Adder	0.89
958362	AF2-130 E	0.5069	Adder	0.6
958731	AF2-164 C O1	2.9919	Adder	3.52
958732	AF2-164 E O1	1.9946	Adder	2.35
958741	AF2-165 C	0.7371	Adder	0.87
958742	AF2-165 E	0.4914	Adder	0.58
958751	AF2-166 C	0.7603	Adder	0.89
958752	AF2-166 E	0.5069	Adder	0.6
959441	AF2-235 C	0.3463	Adder	0.41
959442	AF2-235 E	0.2309	Adder	0.27
959521	AF2-243 C	0.5528	Adder	0.65
959522	AF2-243 E	0.3685	Adder	0.43
959822	AF2-273 E	0.3870	50/50	0.3870
960041	AF2-295 C	0.5625	Adder	0.66
960042	AF2-295 E	0.3750	Adder	0.44
960891	AF2-380 C	0.4209	Adder	0.5
960892	AF2-380 E	0.2806	Adder	0.33
961971	AG1-040 C	0.3465	Adder	0.77
961972	AG1-040 E	0.2310	Adder	0.51
962511	AG1-100 C	0.3367	Adder	0.75
962512	AG1-100 E	0.2245	Adder	0.5
962891	AG1-138 C	0.1595	Adder	0.35
962892	AG1-138 E	0.0084	Adder	0.02
962901	AG1-139 C	0.1546	Adder	0.34
962902	AG1-139 E	0.0081	Adder	0.02
962911	AG1-140 C	0.0417	Adder	0.09
962912	AG1-140 E	0.0190	Adder	0.04
963281	AG1-177 C O2	0.3292	Adder	0.73
963282	AG1-177 E O2	0.2194	Adder	0.49
963441	AG1-193 C	0.3869	Adder	0.86
963442	AG1-193 E	0.2579	Adder	0.57
963481	AG1-197 C	0.2628	Adder	0.58
963482	AG1-197 E	0.1752	Adder	0.39
963491	AG1-198 C	0.1929	Adder	0.43
963492	AG1-198 E	0.1286	Adder	0.29
963531	AG1-202 C	0.1898	Adder	0.42
963532	AG1-202 E	0.0978	Adder	0.22
963991	AG1-253 C	0.0625	Adder	0.14
963992	AG1-253 E	0.0301	Adder	0.07
964341	AG1-296 C	0.2575	Adder	0.57
964342	AG1-296 E	0.1386	Adder	0.31
964411	AG1-303 C O2	0.8051	Adder	1.79
964412	AG1-303 E O2	0.5367	Adder	1.19
965201	AG1-385 C	0.3806	Adder	0.84
965202	AG1-385 E	0.1127	Adder	0.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965861	AG1-455	0.9981	Adder	2.22
966453	AG1-514 BAT	1.0000	50/50	1.0000
966771	AG1-548 C	3.0520	Adder	6.77
966772	AG1-548 E	0.9289	Adder	2.06
G-007A	G-007A	1.3929	Confirmed LTF	1.3929
VFT	VFT	3.8442	Confirmed LTF	3.8442
CALDERWOOD	CALDERWOOD	0.1854	Confirmed LTF	0.1854
PRAIRIE	PRAIRIE	1.0539	Confirmed LTF	1.0539
CHEOAH	CHEOAH	0.1862	Confirmed LTF	0.1862
CBM-N	CBM-N	0.7608	Confirmed LTF	0.7608
COTTONWOOD	COTTONWOOD	0.8148	Confirmed LTF	0.8148
HAMLET	HAMLET	0.1808	Confirmed LTF	0.1808
GIBSON	GIBSON	0.2288	Confirmed LTF	0.2288
BLUEG	BLUEG	0.7291	Confirmed LTF	0.7291
TRIMBLE	TRIMBLE	0.2337	Confirmed LTF	0.2337
CATAWBA	CATAWBA	0.1165	Confirmed LTF	0.1165

13.5.4 Index 4

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
167376267	235197	01KARNSC	AP	235152	01BUTLER	AP	1	ATSI-P2-3-CEI-345-004D	breaker	179.0	234.77	235.87	DC	4.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200608	26PINEY #1	0.7388	50/50	0.7388
200662	26SCRUB GR	1.6803	50/50	1.6803
235030	01MHNG-T155	0.1596	50/50	0.1596
236828	01GRAYMONT	0.1716	Adder	0.2
290086	Q-036 E	1.7010	Adder	2.0
293393	V3-030E	1.2402	Adder	1.46
915951	Y3-092 FTIR	95.0500	Merchant Transmission	95.0500
916202	Z1-069 E	2.6874	Adder	3.16
921642	AA2-000	21.5351	Adder	25.34
930511	AB2-092	0.7907	Adder	0.93
931092	AB1-160 E	0.7678	Adder	0.9
935191	AD1-154	2.3032	50/50	2.3032
936421	AD2-055	1.6279	Adder	1.92
936991	AD2-133 C	0.7655	Adder	0.9
936992	AD2-133 E	3.5011	Adder	4.12
938951	AE1-123	2.7911	50/50	2.7911
939171	AE1-147 C	0.5172	Adder	0.61
939172	AE1-147 E	0.3448	Adder	0.41
939291	AE1-160 C	1.4995	50/50	1.4995
939292	AE1-160 E	0.8619	50/50	0.8619
940201	AE2-001 C	0.5159	Adder	0.61
940202	AE2-001 E	0.3439	Adder	0.4
940861	AE2-074 C	0.7659	Adder	0.9
940862	AE2-074 E	1.0081	Adder	1.19
941191	AE2-113 C	3.5353	Adder	4.16
941192	AE2-113 E	3.8063	Adder	4.48
941261	AE2-120 C	0.5152	Adder	0.61
941262	AE2-120 E	0.3435	Adder	0.4
941271	AE2-121 C	0.2762	Adder	0.32
941272	AE2-121 E	0.1844	Adder	0.22
941321	AE2-126 C	0.6680	Adder	0.79
941322	AE2-126 E	0.4453	Adder	0.52
941331	AE2-129 C	0.5598	Adder	0.66
941332	AE2-129 E	0.3732	Adder	0.44
941351	**AE2-131 C (Suspended)**	**0.5598**	**Adder**	**0.66**
941352	**AE2-131 E (Suspended)**	**0.3732**	**Adder**	**0.44**
942491	AE2-262 C	2.4259	Adder	2.85
942492	AE2-262 E	1.6302	Adder	1.92
942501	AE2-263 C	2.2803	Adder	2.68
942502	AE2-263 E	1.5225	Adder	1.79
942811	AE2-299 C	2.0656	Adder	2.43

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942812	AE2-299 E	8.2623	Adder	9.72
942961	AE2-316 C	4.3499	50/50	4.3499
942962	AE2-316 E	6.2031	50/50	6.2031
943151	AE2-344 C	5.2796	Adder	6.21
943152	AE2-344 E	3.5197	Adder	4.14
943351	AF1-006 C	0.9302	Adder	1.09
943352	AF1-006 E	0.5233	Adder	0.62
943751	AF1-043	4.8838	Adder	5.75
944181	AF1-086 C O1	1.0729	Adder	1.26
944182	AF1-086 E O1	4.6675	Adder	5.49
944261	AF1-094 C	0.9660	Adder	1.14
944262	AF1-094 E	0.6440	Adder	0.76
944281	AF1-096 C	1.4168	50/50	1.4168
944282	AF1-096 E	0.9446	50/50	0.9446
944301	AF1-098 C	3.2077	Adder	3.77
944302	AF1-098 E	2.1385	Adder	2.52
944311	AF1-099 C	3.6825	Adder	4.33
944312	AF1-099 E	2.4550	Adder	2.89
944321	AF1-100 C	7.9114	Adder	9.31
944322	AF1-100 E	5.2742	Adder	6.2
944381	AF1-103 O1	1.2386	Adder	1.46
944391	AF1-104 O1	1.5677	Adder	1.84
944691	AF1-134 C	0.6241	Adder	0.73
944692	AF1-134 E	0.4161	Adder	0.49
944771	AF1-142 C	5.8920	Adder	6.93
944772	AF1-142 E	3.9280	Adder	4.62
944881	AF1-153 C O1	0.9010	Adder	1.06
944882	AF1-153 E O1	0.6006	Adder	0.71
944901	AF1-155 C	0.9096	Adder	1.07
944902	AF1-155 E	0.6064	Adder	0.71
945021	AF1-167 C	1.5046	50/50	1.5046
945022	AF1-167 E	1.0049	50/50	1.0049
945051	AF1-170 C	3.6027	Adder	4.24
945052	AF1-170 E	2.4018	Adder	2.83
945451	AF1-210 C	1.7061	50/50	1.7061
945452	AF1-210 E	1.1374	50/50	1.1374
945491	**AF1-214 C (Withdrawn : 12/03/2020)**	**0.5153**	**Adder**	**0.61**
945492	**AF1-214 E (Withdrawn : 12/03/2020)**	**0.3435**	**Adder**	**0.4**
945751	AF1-240 C O1	1.3819	50/50	1.3819
945752	AF1-240 E O1	0.9213	50/50	0.9213
946111	AF1-276 C	3.7393	Adder	4.4
946112	AF1-276 E	1.8418	Adder	2.17
946121	AF1-277 C	3.7393	Adder	4.4
946122	AF1-277 E	1.8418	Adder	2.17
946131	AF1-278 C	2.9825	Adder	3.51
946132	AF1-278 E	1.4823	Adder	1.74
946221	AF1-287 C	0.9076	Adder	1.07
946222	AF1-287 E	0.6051	Adder	0.71
946381	AF1-302 C	1.8995	50/50	1.8995
946382	AF1-302 E	2.5327	50/50	2.5327
946401	AF1-304 C	7.6224	50/50	7.6224

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946402	AF1-304 E	5.0816	50/50	5.0816
946421	AF1-306 C	3.1031	Adder	3.65
946422	AF1-306 E	12.4123	Adder	14.6
946771	AF1-217 C	0.9076	Adder	1.07
946772	AF1-217 E	0.6051	Adder	0.71
957161	AF2-010 C	3.7466	Adder	4.41
957162	AF2-010 E	2.5249	Adder	2.97
957451	AF2-039 C	0.4190	Adder	0.49
957452	AF2-039 E	0.2793	Adder	0.33
957571	AF2-051 C	2.7680	Adder	3.26
957572	AF2-051 E	1.4259	Adder	1.68
957941	AF2-088 C	0.2017	Adder	0.24
957942	AF2-088 E	0.1345	Adder	0.16
958271	AF2-121 C	0.5598	Adder	0.66
958272	AF2-121 E	0.3732	Adder	0.44
958361	AF2-130 C	1.7143	50/50	1.7143
958362	AF2-130 E	1.1429	50/50	1.1429
958731	AF2-164 C O1	3.9772	Adder	4.68
958732	AF2-164 E O1	2.6515	Adder	3.12
958741	AF2-165 C	1.5448	50/50	1.5448
958742	AF2-165 E	1.0298	50/50	1.0298
958751	AF2-166 C	1.7143	50/50	1.7143
958752	AF2-166 E	1.1429	50/50	1.1429
959441	AF2-235 C	0.7084	50/50	0.7084
959442	AF2-235 E	0.4723	50/50	0.4723
959521	AF2-243 C	1.1586	50/50	1.1586
959522	AF2-243 E	0.7724	50/50	0.7724
959822	AF2-273 E	0.6750	50/50	0.6750
960022	AF2-293 E	0.0503	Adder	0.06
960041	AF2-295 C	0.9096	Adder	1.07
960042	AF2-295 E	0.6064	Adder	0.71
960051	AF2-296 C	0.6241	Adder	0.73
960052	AF2-296 E	0.4161	Adder	0.49
960891	AF2-380 C	3.6836	50/50	3.6836
960892	AF2-380 E	2.4557	50/50	2.4557
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**12.7653**	**Adder**	**15.02**
961971	AG1-040 C	0.5056	Adder	1.12
961972	AG1-040 E	0.3370	Adder	0.75
962411	AG1-090 C O2	1.4234	Adder	3.16
962412	AG1-090 E O2	0.9489	Adder	2.11
962511	AG1-100 C	0.4897	Adder	1.09
962512	AG1-100 E	0.3265	Adder	0.72
962891	AG1-138 C	0.6786	50/50	0.6786
962892	AG1-138 E	0.0357	50/50	0.0357
962901	AG1-139 C	0.6115	50/50	0.6115
962902	AG1-139 E	0.0322	50/50	0.0322
962911	AG1-140 C	0.0616	Adder	0.14
962912	AG1-140 E	0.0281	Adder	0.06
962951	AG1-144 C	0.2967	Adder	0.66
962952	AG1-144 E	0.1978	Adder	0.44
963281	AG1-177 C O2	0.4810	Adder	1.07

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963282	AG1-177 E O2	0.3207	Adder	0.71
963441	AG1-193 C	1.3675	50/50	1.3675
963442	AG1-193 E	0.9117	50/50	0.9117
963481	AG1-197 C	0.3834	Adder	0.85
963482	AG1-197 E	0.2556	Adder	0.57
963491	AG1-198 C	0.3072	Adder	0.68
963492	AG1-198 E	0.2048	Adder	0.45
963531	AG1-202 C	0.2719	Adder	0.6
963532	AG1-202 E	0.1401	Adder	0.31
963571	AG1-206 C	0.1952	Adder	0.43
963572	AG1-206 E	0.1051	Adder	0.23
963891	AG1-242 C	0.1792	Adder	0.4
963892	AG1-242 E	0.0965	Adder	0.21
963991	AG1-253 C	0.0924	Adder	0.21
963992	AG1-253 E	0.0445	Adder	0.1
964341	AG1-296 C	0.7284	50/50	0.7284
964342	AG1-296 E	0.3922	50/50	0.3922
964411	AG1-303 C O2	1.1777	Adder	2.61
964412	AG1-303 E O2	0.7851	Adder	1.74
964451	AG1-308 C O2	0.2052	Adder	0.46
964452	AG1-308 E O2	0.2868	Adder	0.64
965121	AG1-377 C O1	0.2967	Adder	0.66
965122	AG1-377 E O1	0.1978	Adder	0.44
965131	AG1-378 C O1	0.2967	Adder	0.66
965132	AG1-378 E O1	0.1978	Adder	0.44
965201	AG1-385 C	0.6140	Adder	1.36
965202	AG1-385 E	0.1819	Adder	0.4
965241	AG1-389 C O1	0.3064	Adder	0.68
965242	AG1-389 E O1	0.2043	Adder	0.45
965251	AG1-390 C O2	0.3067	Adder	0.68
965252	AG1-390 E O2	0.2045	Adder	0.45
965261	AG1-391 C O1	0.3064	Adder	0.68
965262	AG1-391 E O1	0.2043	Adder	0.45
965271	AG1-392 C O1	0.6128	Adder	1.36
965272	AG1-392 E O1	0.4085	Adder	0.91
965301	AG1-395 C	0.3812	Adder	0.85
965302	AG1-395 E	0.1132	Adder	0.25
965861	AG1-455	1.4372	Adder	3.19
966121	AG1-481	0.5097	Adder	1.13
966771	AG1-548 C	4.8243	Adder	10.71
966772	AG1-548 E	1.4683	Adder	3.26
G-007A	G-007A	1.8820	Confirmed LTF	1.8820
VFT	VFT	5.1923	Confirmed LTF	5.1923
CALDERWOOD	CALDERWOOD	0.2798	Confirmed LTF	0.2798
PRAIRIE	PRAIRIE	1.6660	Confirmed LTF	1.6660
CHEOAH	CHEOAH	0.2803	Confirmed LTF	0.2803
CBM-N	CBM-N	1.0296	Confirmed LTF	1.0296
COTTONWOOD	COTTONWOOD	1.2579	Confirmed LTF	1.2579
HAMLET	HAMLET	0.2535	Confirmed LTF	0.2535
GIBSON	GIBSON	0.3647	Confirmed LTF	0.3647
BLUEG	BLUEG	1.1562	Confirmed LTF	1.1562
TRIMBLE	TRIMBLE	0.3712	Confirmed LTF	0.3712

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CATAWBA	CATAWBA	0.1677	Confirmed LTF	0.1677

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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
167925327	235203	01KISSNG	AP	235197	01KARNSC	AP	1	PN-P1-2-PN-345-107T	single	268.0	141.48	142.49	DC	2.7

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200608	26PINEY #1	0.7758	80/20	0.7758
200642	26SENECA#1	2.8936	80/20	2.8936
200643	26SENECA#2	2.7329	80/20	2.7329
200644	26SENECA#3	0.2986	80/20	0.2986
200649	26PENNTECH	0.5029	80/20	0.5029
200662	26SCRUB GR	1.7506	80/20	1.7506
200665	26SHAWVL 3	1.8285	80/20	1.8285
200666	26SHAWVL 4	1.7954	80/20	1.7954
200805	**26COLVER13 (Deactivation : 01/09/2020)**	**1.1511**	**80/20**	**1.1511**
200828	26HNSMLK 1	0.8374	80/20	0.8374
200829	26HNSMLK 2	0.8374	80/20	0.8374
200830	26HNSMLK 3	0.8374	80/20	0.8374
200831	26HNSMLK 4	0.8374	80/20	0.8374
200832	26HNSMLK 5	0.8374	80/20	0.8374
200849	26LAKVU GN	0.0712	80/20	0.0712
201201	26WRREN CT	0.7342	80/20	0.7342
235030	01MHNG-T155	0.0751	80/20	0.0751
235134	01AL&D6	0.0844	80/20	0.0844
915951	Y3-092 FTIR	92.3700	80/20	92.3700
921642	AA2-000	23.1250	Adder	27.21
930511	AB2-092	0.8491	Adder	1.0
935191	AD1-154	2.4200	80/20	2.4200
936421	AD2-055	1.7481	Adder	2.06
936991	AD2-133 C	0.8153	Adder	0.96
938951	AE1-123	2.9308	80/20	2.9308
939171	AE1-147 C	0.5544	Adder	0.65
939291	AE1-160 C	1.5949	80/20	1.5949
940201	AE2-001 C	0.5529	Adder	0.65
940681	**AE2-055 C (Suspended)**	**0.5319**	**Adder**	**0.63**
940861	AE2-074 C	0.8292	Adder	0.98
941191	AE2-113 C	4.4991	80/20	4.4991
941261	AE2-120 C	0.5522	Adder	0.65
941271	AE2-121 C	0.2960	Adder	0.35
941321	AE2-126 C	0.8448	80/20	0.8448
941331	AE2-129 C	0.5975	Adder	0.7
941351	**AE2-131 C (Suspended)**	**0.5975**	**Adder**	**0.7**
942351	AE2-248 C	0.4326	Adder	0.51
942491	AE2-262 C	2.6006	Adder	3.06
942501	AE2-263 C	2.4445	Adder	2.88

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942811	AE2-299 C	2.8198	80/20	2.8198
942961	AE2-316 C	4.5989	80/20	4.5989
943151	AE2-344 C	6.6468	80/20	6.6468
943351	AF1-006 C	1.1808	80/20	1.1808
943751	AF1-043	5.2443	Adder	6.17
944001	**AF1-068 C O1 (Withdrawn : 12/15/2020)**	**0.5739**	**Adder**	**0.68**
944181	AF1-086 C O1	1.1348	Adder	1.34
944261	AF1-094 C	1.2530	80/20	1.2530
944281	AF1-096 C	1.5070	80/20	1.5070
944301	AF1-098 C	4.2893	80/20	4.2893
944311	AF1-099 C	3.9477	Adder	4.64
944321	AF1-100 C	9.9765	80/20	9.9765
944381	AF1-103 O1	1.6328	80/20	1.6328
944391	AF1-104 O1	1.8556	80/20	1.8556
944471	AF1-112 C	0.5429	Adder	0.64
944671	**AF1-132 C O1 (Withdrawn : 12/15/2020)**	**0.5365**	**Adder**	**0.63**
944691	AF1-134 C	0.6635	Adder	0.78
944771	AF1-142 C	6.3163	Adder	7.43
944881	AF1-153 C O1	1.1297	80/20	1.1297
944901	AF1-155 C	1.1402	80/20	1.1402
945021	AF1-167 C	1.4331	80/20	1.4331
945051	AF1-170 C	4.4040	80/20	4.4040
945121	AF1-177	0.0644	80/20	0.0644
945161	AF1-181	0.0084	80/20	0.0084
945171	AF1-182	0.0420	80/20	0.0420
945451	AF1-210 C	1.2796	80/20	1.2796
945491	**AF1-214 C (Withdrawn : 12/03/2020)**	**0.5522**	**Adder**	**0.65**
945751	AF1-240 C O1	1.4520	80/20	1.4520
946111	AF1-276 C	4.8046	80/20	4.8046
946121	AF1-277 C	4.8046	80/20	4.8046
946131	AF1-278 C	3.8322	80/20	3.8322
946221	AF1-287 C	1.1434	80/20	1.1434
946381	AF1-302 C	2.0083	80/20	2.0083
946401	AF1-304 C	8.0226	80/20	8.0226
946421	AF1-306 C	3.9208	80/20	3.9208
946771	AF1-217 C	1.1434	80/20	1.1434
957161	AF2-010 C	4.8493	80/20	4.8493
957451	AF2-039 C	0.4483	Adder	0.53
957571	AF2-051 C	3.3653	80/20	3.3653
957941	AF2-088 C	0.2158	Adder	0.25
958271	AF2-121 C	0.5975	Adder	0.7
958361	AF2-130 C	1.7996	80/20	1.7996
958731	AF2-164 C O1	4.7621	80/20	4.7621
958741	AF2-165 C	1.6175	80/20	1.6175
958751	AF2-166 C	1.7996	80/20	1.7996
959441	AF2-235 C	0.7535	80/20	0.7535
959521	AF2-243 C	1.2131	80/20	1.2131
960041	AF2-295 C	1.1402	80/20	1.1402

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960051	AF2-296 C	0.6635	Adder	0.78
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**13.7037**	**Adder**	**16.12**
961211	AF2-412	5.8311	Adder	6.86
961971	AG1-040 C	1.1778	80/20	1.1778
962411	AG1-090 C O2	1.5253	Adder	3.39
962511	AG1-100 C	1.1488	80/20	1.1488
962891	AG1-138 C	0.7124	80/20	0.7124
962901	AG1-139 C	0.6403	80/20	0.6403
962911	AG1-140 C	0.1586	80/20	0.1586
962951	AG1-144 C	0.3167	Adder	0.7
963281	AG1-177 C O2	1.1434	80/20	1.1434
963441	AG1-193 C	1.4104	80/20	1.4104
963481	AG1-197 C	0.8893	80/20	0.8893
963491	AG1-198 C	0.7518	80/20	0.7518
963531	AG1-202 C	0.6215	80/20	0.6215
963571	AG1-206 C	0.4663	80/20	0.4663
963891	AG1-242 C	0.1905	Adder	0.42
963991	AG1-253 C	0.2379	80/20	0.2379
964031	AG1-257 C	0.1997	Adder	0.44
964041	AG1-258 C	0.1997	Adder	0.44
964341	AG1-296 C	0.7684	80/20	0.7684
964411	AG1-303 C O2	2.6989	80/20	2.6989
964451	AG1-308 C O2	0.2190	Adder	0.49
965121	AG1-377 C O1	0.3167	Adder	0.7
965131	AG1-378 C O1	0.3167	Adder	0.7
965201	AG1-385 C	1.4526	80/20	1.4526
965241	AG1-389 C O1	0.3312	Adder	0.74
965251	AG1-390 C O2	0.3315	Adder	0.74
965261	AG1-391 C O1	0.3312	Adder	0.74
965271	AG1-392 C O1	0.6623	Adder	1.47
965301	AG1-395 C	0.4069	Adder	0.9
965861	AG1-455	3.3148	80/20	3.3148
966121	AG1-481	1.2679	80/20	1.2679
966771	AG1-548 C	11.8415	80/20	11.8415
G-007A	G-007A	2.0547	Confirmed LTF	2.0547
VFT	VFT	5.6696	Confirmed LTF	5.6696
CALDERWOOD	CALDERWOOD	0.3012	Confirmed LTF	0.3012
PRAIRIE	PRAIRIE	1.8004	Confirmed LTF	1.8004
CHEOAH	CHEOAH	0.3018	Confirmed LTF	0.3018
CBM-N	CBM-N	1.1232	Confirmed LTF	1.1232
COTTONWOOD	COTTONWOOD	1.3566	Confirmed LTF	1.3566
HAMLET	HAMLET	0.2720	Confirmed LTF	0.2720
GIBSON	GIBSON	0.3937	Confirmed LTF	0.3937
BLUEG	BLUEG	1.2499	Confirmed LTF	1.2499
TRIMBLE	TRIMBLE	0.4012	Confirmed LTF	0.4012
CATAWBA	CATAWBA	0.1803	Confirmed LTF	0.1803

13.5.6 Index 6

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
167376408	235204	01KITTAN	AP	235139	01AL&D6T	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	119.17	120.06	DC	2.98

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1500	50/50	0.1500
915951	Y3-092 FTIR	68.2300	Merchant Transmission	68.2300
935191	AD1-154	0.9926	Adder	1.17
936881	AD2-112 C	-4.2587	Adder	-5.01
936882	AD2-112 E	-1.6900	Adder	-1.99
938951	AE1-123	1.1755	Adder	1.38
939291	AE1-160 C	0.7334	Adder	0.86
939292	AE1-160 E	0.4216	Adder	0.5
942811	AE2-299 C	1.3984	Adder	1.65
942812	AE2-299 E	5.5934	Adder	6.58
942961	AE2-316 C	2.8226	Adder	3.32
942962	AE2-316 E	4.0250	Adder	4.74
943151	AE2-344 C	3.6184	Adder	4.26
943152	AE2-344 E	2.4122	Adder	2.84
943351	AF1-006 C	0.6405	Adder	0.75
943352	AF1-006 E	0.3603	Adder	0.42
944261	AF1-094 C	0.6071	Adder	0.71
944262	AF1-094 E	0.4047	Adder	0.48
944281	AF1-096 C	0.6930	Adder	0.82
944282	AF1-096 E	0.4620	Adder	0.54
944301	AF1-098 C	2.1665	Adder	2.55
944302	AF1-098 E	1.4443	Adder	1.7
944391	AF1-104 O1	1.1094	Adder	1.31
944881	AF1-153 C O1	0.5589	Adder	0.66
944882	AF1-153 E O1	0.3726	Adder	0.44
944901	AF1-155 C	0.5629	Adder	0.66
944902	AF1-155 E	0.3753	Adder	0.44
945021	AF1-167 C	0.6635	Adder	0.78
945022	AF1-167 E	0.4432	Adder	0.52
945051	AF1-170 C	2.5035	Adder	2.95
945052	AF1-170 E	1.6690	Adder	1.96
945451	AF1-210 C	1.0356	50/50	1.0356
945452	AF1-210 E	0.6904	50/50	0.6904
945751	AF1-240 C O1	0.5956	Adder	0.7
945752	AF1-240 E O1	0.3971	Adder	0.47
946221	AF1-287 C	0.6215	Adder	0.73
946222	AF1-287 E	0.4143	Adder	0.49
946381	AF1-302 C	1.2326	Adder	1.45
946382	AF1-302 E	1.6434	Adder	1.93
946401	AF1-304 C	3.6297	Adder	4.27
946402	AF1-304 E	2.4198	Adder	2.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946771	AF1-217 C	0.6215	Adder	0.73
946772	AF1-217 E	0.4143	Adder	0.49
957161	AF2-010 C	2.3429	Adder	2.76
957162	AF2-010 E	1.5789	Adder	1.86
957571	AF2-051 C	1.8937	Adder	2.23
957572	AF2-051 E	0.9755	Adder	1.15
958361	AF2-130 C	0.7607	Adder	0.89
958362	AF2-130 E	0.5071	Adder	0.6
958731	AF2-164 C O1	2.9935	Adder	3.52
958732	AF2-164 E O1	1.9957	Adder	2.35
958741	AF2-165 C	0.7375	Adder	0.87
958742	AF2-165 E	0.4916	Adder	0.58
958751	AF2-166 C	0.7607	Adder	0.89
958752	AF2-166 E	0.5071	Adder	0.6
959441	AF2-235 C	0.3465	Adder	0.41
959442	AF2-235 E	0.2310	Adder	0.27
959521	AF2-243 C	0.5531	Adder	0.65
959522	AF2-243 E	0.3687	Adder	0.43
959822	AF2-273 E	0.3872	50/50	0.3872
960041	AF2-295 C	0.5629	Adder	0.66
960042	AF2-295 E	0.3753	Adder	0.44
960891	AF2-380 C	0.4212	Adder	0.5
960892	AF2-380 E	0.2808	Adder	0.33
961971	AG1-040 C	0.3467	Adder	0.77
961972	AG1-040 E	0.2311	Adder	0.51
962511	AG1-100 C	0.3370	Adder	0.75
962512	AG1-100 E	0.2246	Adder	0.5
962891	AG1-138 C	0.1596	Adder	0.35
962892	AG1-138 E	0.0084	Adder	0.02
962901	AG1-139 C	0.1547	Adder	0.34
962902	AG1-139 E	0.0081	Adder	0.02
962911	AG1-140 C	0.0417	Adder	0.09
962912	AG1-140 E	0.0190	Adder	0.04
963281	AG1-177 C O2	0.3294	Adder	0.73
963282	AG1-177 E O2	0.2196	Adder	0.49
963441	AG1-193 C	0.3871	Adder	0.86
963442	AG1-193 E	0.2581	Adder	0.57
963481	AG1-197 C	0.2630	Adder	0.58
963482	AG1-197 E	0.1753	Adder	0.39
963491	AG1-198 C	0.1931	Adder	0.43
963492	AG1-198 E	0.1287	Adder	0.29
963531	AG1-202 C	0.1899	Adder	0.42
963532	AG1-202 E	0.0978	Adder	0.22
963991	AG1-253 C	0.0625	Adder	0.14
963992	AG1-253 E	0.0301	Adder	0.07
964341	AG1-296 C	0.2576	Adder	0.57
964342	AG1-296 E	0.1387	Adder	0.31
964411	AG1-303 C O2	0.8055	Adder	1.79
964412	AG1-303 E O2	0.5370	Adder	1.19
965201	AG1-385 C	0.3809	Adder	0.85
965202	AG1-385 E	0.1128	Adder	0.25
965861	AG1-455	0.9987	Adder	2.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966453	AG1-514 BAT	0.5298	Merchant Transmission	0.5298
966771	AG1-548 C	3.0541	Adder	6.78
966772	AG1-548 E	0.9295	Adder	2.06
G-007A	G-007A	1.4025	Confirmed LTF	1.4025
VFT	VFT	3.8700	Confirmed LTF	3.8700
CALDERWOOD	CALDERWOOD	0.1834	Confirmed LTF	0.1834
PRAIRIE	PRAIRIE	1.0435	Confirmed LTF	1.0435
CHEOAH	CHEOAH	0.1842	Confirmed LTF	0.1842
CBM-N	CBM-N	0.7656	Confirmed LTF	0.7656
COTTONWOOD	COTTONWOOD	0.8064	Confirmed LTF	0.8064
HAMLET	HAMLET	0.1784	Confirmed LTF	0.1784
GIBSON	GIBSON	0.2266	Confirmed LTF	0.2266
BLUEG	BLUEG	0.7222	Confirmed LTF	0.7222
TRIMBLE	TRIMBLE	0.2315	Confirmed LTF	0.2315
CATAWBA	CATAWBA	0.1151	Confirmed LTF	0.1151

13.5.7 Index 7

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
167376279	235240	01COLMBGPN	AP	235202	01KISKIV	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	177.31	178.38	DC	3.59

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1762	50/50	0.1762
235134	01AL&D6	0.1825	50/50	0.1825
915951	Y3-092 FTIR	82.2700	Merchant Transmission	82.2700
935191	AD1-154	1.1432	Adder	1.34
936881	AD2-112 C	-2.1694	Adder	-2.55
936882	AD2-112 E	-0.8609	Adder	-1.01
938951	AE1-123	1.4097	Adder	1.66
939291	AE1-160 C	0.8797	Adder	1.03
939292	AE1-160 E	0.5056	Adder	0.59
941191	AE2-113 C	2.8350	Adder	3.34
941192	AE2-113 E	3.0524	Adder	3.59
942811	AE2-299 C	1.6660	Adder	1.96
942812	AE2-299 E	6.6640	Adder	7.84
942961	AE2-316 C	3.4396	Adder	4.05
942962	AE2-316 E	4.9049	Adder	5.77
943151	AE2-344 C	4.3415	Adder	5.11
943152	AE2-344 E	2.8943	Adder	3.41
943351	AF1-006 C	0.7677	Adder	0.9
943352	AF1-006 E	0.4318	Adder	0.51
944261	AF1-094 C	0.7265	Adder	0.85
944262	AF1-094 E	0.4844	Adder	0.57
944281	AF1-096 C	0.8312	Adder	0.98
944282	AF1-096 E	0.5541	Adder	0.65
944301	AF1-098 C	2.5835	Adder	3.04
944302	AF1-098 E	1.7223	Adder	2.03
944381	AF1-103 O1	0.9957	Adder	1.17
944391	AF1-104 O1	1.3352	Adder	1.57
944881	AF1-153 C O1	0.6661	Adder	0.78
944882	AF1-153 E O1	0.4440	Adder	0.52
944901	AF1-155 C	0.6712	Adder	0.79
944902	AF1-155 E	0.4474	Adder	0.53
945021	AF1-167 C	0.9419	50/50	0.9419
945022	AF1-167 E	0.6291	50/50	0.6291
945051	AF1-170 C	3.0090	Adder	3.54
945052	AF1-170 E	2.0060	Adder	2.36
945451	AF1-210 C	1.2366	50/50	1.2366
945452	AF1-210 E	0.8244	50/50	0.8244
945751	AF1-240 C O1	0.6859	Adder	0.81
945752	AF1-240 E O1	0.4573	Adder	0.54
946111	AF1-276 C	3.0650	Adder	3.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946112	AF1-276 E	1.5097	Adder	1.78
946121	AF1-277 C	3.0650	Adder	3.61
946122	AF1-277 E	1.5097	Adder	1.78
946131	AF1-278 C	2.4447	Adder	2.88
946132	AF1-278 E	1.2150	Adder	1.43
946221	AF1-287 C	0.7457	Adder	0.88
946222	AF1-287 E	0.4971	Adder	0.58
946381	AF1-302 C	1.5020	Adder	1.77
946382	AF1-302 E	2.0027	Adder	2.36
946401	AF1-304 C	4.3569	Adder	5.13
946402	AF1-304 E	2.9046	Adder	3.42
946421	AF1-306 C	2.4158	Adder	2.84
946422	AF1-306 E	9.6633	Adder	11.37
946771	AF1-217 C	0.7457	Adder	0.88
946772	AF1-217 E	0.4971	Adder	0.58
957161	AF2-010 C	2.8043	Adder	3.3
957162	AF2-010 E	1.8898	Adder	2.22
957571	AF2-051 C	2.2793	Adder	2.68
957572	AF2-051 E	1.1742	Adder	1.38
958361	AF2-130 C	0.9128	Adder	1.07
958362	AF2-130 E	0.6085	Adder	0.72
958731	AF2-164 C O1	3.6169	Adder	4.26
958732	AF2-164 E O1	2.4113	Adder	2.84
958741	AF2-165 C	0.8858	Adder	1.04
958742	AF2-165 E	0.5905	Adder	0.69
958751	AF2-166 C	0.9128	Adder	1.07
958752	AF2-166 E	0.6085	Adder	0.72
959441	AF2-235 C	0.4156	Adder	0.49
959442	AF2-235 E	0.2771	Adder	0.33
959521	AF2-243 C	0.6643	Adder	0.78
959522	AF2-243 E	0.4429	Adder	0.52
959822	AF2-273 E	0.4640	50/50	0.4640
960041	AF2-295 C	0.6712	Adder	0.79
960042	AF2-295 E	0.4474	Adder	0.53
960891	AF2-380 C	0.4951	Adder	0.58
960892	AF2-380 E	0.3301	Adder	0.39
961971	AG1-040 C	0.4167	Adder	0.92
961972	AG1-040 E	0.2778	Adder	0.62
962511	AG1-100 C	0.4046	Adder	0.9
962512	AG1-100 E	0.2698	Adder	0.6
962891	AG1-138 C	0.1915	Adder	0.43
962892	AG1-138 E	0.0101	Adder	0.02
962901	AG1-139 C	0.1858	Adder	0.41
962902	AG1-139 E	0.0098	Adder	0.02
962911	AG1-140 C	0.0497	Adder	0.11
962912	AG1-140 E	0.0226	Adder	0.05
963281	AG1-177 C O2	0.3952	Adder	0.88
963282	AG1-177 E O2	0.2635	Adder	0.58
963441	AG1-193 C	0.4659	Adder	1.03
963442	AG1-193 E	0.3106	Adder	0.69
963481	AG1-197 C	0.3162	Adder	0.7
963482	AG1-197 E	0.2108	Adder	0.47

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963491	AG1-198 C	0.2310	Adder	0.51
963492	AG1-198 E	0.1540	Adder	0.34
963531	AG1-202 C	0.2284	Adder	0.51
963532	AG1-202 E	0.1176	Adder	0.26
963571	AG1-206 C	0.1499	Adder	0.33
963572	AG1-206 E	0.0807	Adder	0.18
963991	AG1-253 C	0.0745	Adder	0.17
963992	AG1-253 E	0.0359	Adder	0.08
964341	AG1-296 C	0.6993	50/50	0.6993
964342	AG1-296 E	0.3765	50/50	0.3765
964411	AG1-303 C O2	0.9697	Adder	2.15
964412	AG1-303 E O2	0.6464	Adder	1.43
965201	AG1-385 C	0.4539	Adder	1.01
965202	AG1-385 E	0.1344	Adder	0.3
965861	AG1-455	1.2004	Adder	2.66
966121	AG1-481	0.4098	Adder	0.91
966453	AG1-514 BAT	0.2684	Merchant Transmission	0.2684
966771	AG1-548 C	3.6540	Adder	8.11
966772	AG1-548 E	1.1121	Adder	2.47
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0119	Confirmed LTF	4.0119
CALDERWOOD	CALDERWOOD	0.2112	Confirmed LTF	0.2112
PRAIRIE	PRAIRIE	1.2063	Confirmed LTF	1.2063
CHEOAH	CHEOAH	0.2122	Confirmed LTF	0.2122
CBM-N	CBM-N	0.8004	Confirmed LTF	0.8004
COTTONWOOD	COTTONWOOD	0.9303	Confirmed LTF	0.9303
HAMLET	HAMLET	0.2050	Confirmed LTF	0.2050
GIBSON	GIBSON	0.2621	Confirmed LTF	0.2621
BLUEG	BLUEG	0.8333	Confirmed LTF	0.8333
TRIMBLE	TRIMBLE	0.2677	Confirmed LTF	0.2677
CATAWBA	CATAWBA	0.1326	Confirmed LTF	0.1326

13.5.8 Index 8

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
167376277	235282	01GARRN	AP	235240	01COLMBGPN	AP	1	ATSI-P2-3-CEI-345-004D	breaker	151.0	179.62	180.7	DC	3.59

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
235030	01MHNG-T155	0.1762	50/50	0.1762
235134	01AL&D6	0.1825	50/50	0.1825
915951	Y3-092 FTIR	82.2700	Merchant Transmission	82.2700
935191	AD1-154	1.1432	Adder	1.34
936881	AD2-112 C	-2.1694	Adder	-2.55
936882	AD2-112 E	-0.8609	Adder	-1.01
938951	AE1-123	1.4097	Adder	1.66
939291	AE1-160 C	0.8797	Adder	1.03
939292	AE1-160 E	0.5056	Adder	0.59
941191	AE2-113 C	2.8350	Adder	3.34
941192	AE2-113 E	3.0524	Adder	3.59
942811	AE2-299 C	1.6660	Adder	1.96
942812	AE2-299 E	6.6640	Adder	7.84
942961	AE2-316 C	3.4396	Adder	4.05
942962	AE2-316 E	4.9049	Adder	5.77
943151	AE2-344 C	4.3415	Adder	5.11
943152	AE2-344 E	2.8943	Adder	3.41
943351	AF1-006 C	0.7677	Adder	0.9
943352	AF1-006 E	0.4318	Adder	0.51
944261	AF1-094 C	0.7265	Adder	0.85
944262	AF1-094 E	0.4844	Adder	0.57
944281	AF1-096 C	0.8312	Adder	0.98
944282	AF1-096 E	0.5541	Adder	0.65
944301	AF1-098 C	2.5835	Adder	3.04
944302	AF1-098 E	1.7223	Adder	2.03
944381	AF1-103 O1	0.9957	Adder	1.17
944391	AF1-104 O1	1.3352	Adder	1.57
944881	AF1-153 C O1	0.6661	Adder	0.78
944882	AF1-153 E O1	0.4440	Adder	0.52
944901	AF1-155 C	0.6712	Adder	0.79
944902	AF1-155 E	0.4474	Adder	0.53
945021	AF1-167 C	0.9419	50/50	0.9419
945022	AF1-167 E	0.6291	50/50	0.6291
945051	AF1-170 C	3.0090	Adder	3.54
945052	AF1-170 E	2.0060	Adder	2.36
945451	AF1-210 C	1.2366	50/50	1.2366
945452	AF1-210 E	0.8244	50/50	0.8244
945751	AF1-240 C O1	0.6859	Adder	0.81
945752	AF1-240 E O1	0.4573	Adder	0.54
946111	AF1-276 C	3.0650	Adder	3.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946112	AF1-276 E	1.5097	Adder	1.78
946121	AF1-277 C	3.0650	Adder	3.61
946122	AF1-277 E	1.5097	Adder	1.78
946131	AF1-278 C	2.4447	Adder	2.88
946132	AF1-278 E	1.2150	Adder	1.43
946221	AF1-287 C	0.7457	Adder	0.88
946222	AF1-287 E	0.4971	Adder	0.58
946381	AF1-302 C	1.5020	Adder	1.77
946382	AF1-302 E	2.0027	Adder	2.36
946401	AF1-304 C	4.3569	Adder	5.13
946402	AF1-304 E	2.9046	Adder	3.42
946421	AF1-306 C	2.4158	Adder	2.84
946422	AF1-306 E	9.6633	Adder	11.37
946771	AF1-217 C	0.7457	Adder	0.88
946772	AF1-217 E	0.4971	Adder	0.58
957161	AF2-010 C	2.8043	Adder	3.3
957162	AF2-010 E	1.8898	Adder	2.22
957571	AF2-051 C	2.2793	Adder	2.68
957572	AF2-051 E	1.1742	Adder	1.38
958361	AF2-130 C	0.9128	Adder	1.07
958362	AF2-130 E	0.6085	Adder	0.72
958731	AF2-164 C O1	3.6169	Adder	4.26
958732	AF2-164 E O1	2.4113	Adder	2.84
958741	AF2-165 C	0.8858	Adder	1.04
958742	AF2-165 E	0.5905	Adder	0.69
958751	AF2-166 C	0.9128	Adder	1.07
958752	AF2-166 E	0.6085	Adder	0.72
959441	AF2-235 C	0.4156	Adder	0.49
959442	AF2-235 E	0.2771	Adder	0.33
959521	AF2-243 C	0.6643	Adder	0.78
959522	AF2-243 E	0.4429	Adder	0.52
959822	AF2-273 E	0.4640	50/50	0.4640
960041	AF2-295 C	0.6712	Adder	0.79
960042	AF2-295 E	0.4474	Adder	0.53
960891	AF2-380 C	0.4951	Adder	0.58
960892	AF2-380 E	0.3301	Adder	0.39
961971	AG1-040 C	0.4167	Adder	0.92
961972	AG1-040 E	0.2778	Adder	0.62
962511	AG1-100 C	0.4046	Adder	0.9
962512	AG1-100 E	0.2698	Adder	0.6
962891	AG1-138 C	0.1915	Adder	0.43
962892	AG1-138 E	0.0101	Adder	0.02
962901	AG1-139 C	0.1858	Adder	0.41
962902	AG1-139 E	0.0098	Adder	0.02
962911	AG1-140 C	0.0497	Adder	0.11
962912	AG1-140 E	0.0226	Adder	0.05
963281	AG1-177 C O2	0.3952	Adder	0.88
963282	AG1-177 E O2	0.2635	Adder	0.58
963441	AG1-193 C	0.4659	Adder	1.03
963442	AG1-193 E	0.3106	Adder	0.69
963481	AG1-197 C	0.3162	Adder	0.7
963482	AG1-197 E	0.2108	Adder	0.47

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963491	AG1-198 C	0.2310	Adder	0.51
963492	AG1-198 E	0.1540	Adder	0.34
963531	AG1-202 C	0.2284	Adder	0.51
963532	AG1-202 E	0.1176	Adder	0.26
963571	AG1-206 C	0.1499	Adder	0.33
963572	AG1-206 E	0.0807	Adder	0.18
963991	AG1-253 C	0.0745	Adder	0.17
963992	AG1-253 E	0.0359	Adder	0.08
964341	AG1-296 C	0.6993	50/50	0.6993
964342	AG1-296 E	0.3765	50/50	0.3765
964411	AG1-303 C O2	0.9697	Adder	2.15
964412	AG1-303 E O2	0.6464	Adder	1.43
965201	AG1-385 C	0.4539	Adder	1.01
965202	AG1-385 E	0.1344	Adder	0.3
965861	AG1-455	1.2004	Adder	2.66
966121	AG1-481	0.4098	Adder	0.91
966453	AG1-514 BAT	0.2684	Merchant Transmission	0.2684
966771	AG1-548 C	3.6540	Adder	8.11
966772	AG1-548 E	1.1121	Adder	2.47
G-007A	G-007A	1.4505	Confirmed LTF	1.4505
VFT	VFT	4.0119	Confirmed LTF	4.0119
CALDERWOOD	CALDERWOOD	0.2112	Confirmed LTF	0.2112
PRAIRIE	PRAIRIE	1.2063	Confirmed LTF	1.2063
CHEOAH	CHEOAH	0.2122	Confirmed LTF	0.2122
CBM-N	CBM-N	0.8004	Confirmed LTF	0.8004
COTTONWOOD	COTTONWOOD	0.9303	Confirmed LTF	0.9303
HAMLET	HAMLET	0.2050	Confirmed LTF	0.2050
GIBSON	GIBSON	0.2621	Confirmed LTF	0.2621
BLUEG	BLUEG	0.8333	Confirmed LTF	0.8333
TRIMBLE	TRIMBLE	0.2677	Confirmed LTF	0.2677
CATAWBA	CATAWBA	0.1326	Confirmed LTF	0.1326

13.5.9 Index 9

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
164496482	238547	02AT	ATSI	239036	02PERRY	ATSI	1	ATSI-P2-4-CEI-138-125B	breaker	1891.0	100.48	101.49	DC	19.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
200662	26SCRUB GR	4.3801	50/50	4.3801
200828	26HNSMLK 1	2.9468	50/50	2.9468
200829	26HNSMLK 2	2.9468	50/50	2.9468
200830	26HNSMLK 3	2.9468	50/50	2.9468
200831	26HNSMLK 4	2.9468	50/50	2.9468
200832	26HNSMLK 5	2.9468	50/50	2.9468
200849	26LAKVU GN	0.3924	50/50	0.3924
201201	26WRREN CT	3.1174	50/50	3.1174
203999	P-047 E	10.8618	Adder	12.78
915951	Y3-092 FTIR	567.0700	50/50	567.0700
916202	Z1-069 E	9.2727	Adder	10.91
920341	**AA2-132 (Withdrawn : 12/07/2020)**	**2.5575**	**Adder**	**3.01**
921642	AA2-000	61.6614	Adder	72.54
930511	AB2-092	2.2640	Adder	2.66
931092	AB1-160 E	2.6493	Adder	3.12
935191	AD1-154	3.0649	Adder	3.61
936421	AD2-055	4.6612	Adder	5.48
938951	AE1-123	3.3322	Adder	3.92
939291	AE1-160 C	4.4895	50/50	4.4895
939292	AE1-160 E	2.5805	50/50	2.5805
940861	AE2-074 C	2.6662	Adder	3.14
940862	AE2-074 E	3.5096	Adder	4.13
941191	AE2-113 C	11.4731	Adder	13.5
941192	AE2-113 E	12.3529	Adder	14.53
941321	AE2-126 C	1.8861	Adder	2.22
941322	AE2-126 E	1.2574	Adder	1.48
942491	AE2-262 C	6.5629	Adder	7.72
942492	AE2-262 E	4.4102	Adder	5.19
942501	AE2-263 C	6.1691	Adder	7.26
942502	AE2-263 E	4.1188	Adder	4.85
942811	AE2-299 C	15.1680	50/50	15.1680
942812	AE2-299 E	60.6720	50/50	60.6720
942961	AE2-316 C	6.4542	Adder	7.59
942962	AE2-316 E	9.2037	Adder	10.83
943151	AE2-344 C	34.1133	50/50	34.1133
943152	AE2-344 E	22.7422	50/50	22.7422
943351	AF1-006 C	6.5362	50/50	6.5362
943352	AF1-006 E	3.6766	50/50	3.6766
943751	AF1-043	13.9837	Adder	16.45
944261	AF1-094 C	5.2748	50/50	5.2748

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944262	AF1-094 E	3.5166	50/50	3.5166
944281	AF1-096 C	4.2420	50/50	4.2420
944282	AF1-096 E	2.8280	50/50	2.8280
944301	AF1-098 C	22.1078	50/50	22.1078
944302	AF1-098 E	14.7386	50/50	14.7386
944311	AF1-099 C	9.9624	Adder	11.72
944312	AF1-099 E	6.6416	Adder	7.81
944321	AF1-100 C	21.0681	Adder	24.79
944322	AF1-100 E	14.0454	Adder	16.52
944381	AF1-103 O1	6.9330	50/50	6.9330
944391	AF1-104 O1	10.8708	50/50	10.8708
944411	AF1-106 O1	2.7074	Adder	3.19
944691	AF1-134 C	1.5138	Adder	1.78
944692	AF1-134 E	1.0092	Adder	1.19
944771	AF1-142 C	15.9399	Adder	18.75
944772	AF1-142 E	10.6266	Adder	12.5
944881	AF1-153 C O1	1.9300	Adder	2.27
944882	AF1-153 E O1	1.2867	Adder	1.51
944901	AF1-155 C	1.9302	Adder	2.27
944902	AF1-155 E	1.2868	Adder	1.51
945021	AF1-167 C	1.2162	Adder	1.43
945022	AF1-167 E	0.8123	Adder	0.96
945051	AF1-170 C	23.5843	50/50	23.5843
945052	AF1-170 E	15.7229	50/50	15.7229
945121	AF1-177	0.2735	50/50	0.2735
945451	AF1-210 C	1.3295	Adder	1.56
945452	AF1-210 E	0.8863	Adder	1.04
945751	AF1-240 C O1	1.8390	Adder	2.16
945752	AF1-240 E O1	1.2260	Adder	1.44
946111	AF1-276 C	14.1350	Adder	16.63
946112	AF1-276 E	6.9620	Adder	8.19
946121	AF1-277 C	14.1350	Adder	16.63
946122	AF1-277 E	6.9620	Adder	8.19
946131	AF1-278 C	11.2742	Adder	13.26
946132	AF1-278 E	5.6034	Adder	6.59
946211	AF1-286 C	1.0965	Adder	1.29
946212	AF1-286 E	0.7445	Adder	0.88
946221	AF1-287 C	5.8292	50/50	5.8292
946222	AF1-287 E	3.8862	50/50	3.8862
946381	AF1-302 C	2.8184	Adder	3.32
946382	AF1-302 E	3.7579	Adder	4.42
946401	AF1-304 C	19.2276	50/50	19.2276
946402	AF1-304 E	12.8184	50/50	12.8184
946421	AF1-306 C	8.2247	Adder	9.68
946422	AF1-306 E	32.8988	Adder	38.7
946771	AF1-217 C	5.8292	50/50	5.8292
946772	AF1-217 E	3.8862	50/50	3.8862
957161	AF2-010 C	20.0321	50/50	20.0321
957162	AF2-010 E	13.4999	50/50	13.4999
957451	AF2-039 C	1.1106	Adder	1.31
957452	AF2-039 E	0.7404	Adder	0.87
957571	AF2-051 C	14.4279	50/50	14.4279

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957572	AF2-051 E	7.4326	50/50	7.4326
957941	AF2-088 C	0.5347	Adder	0.63
957942	AF2-088 E	0.3565	Adder	0.42
958361	AF2-130 C	2.6771	Adder	3.15
958362	AF2-130 E	1.7847	Adder	2.1
958731	AF2-164 C O1	16.7578	50/50	16.7578
958732	AF2-164 E O1	11.1718	50/50	11.1718
958741	AF2-165 C	3.7702	50/50	3.7702
958742	AF2-165 E	2.5134	50/50	2.5134
958751	AF2-166 C	2.6771	Adder	3.15
958752	AF2-166 E	1.7847	Adder	2.1
959441	AF2-235 C	2.1210	50/50	2.1210
959442	AF2-235 E	1.4140	50/50	1.4140
959471	AF2-238 C	1.5818	Adder	1.86
959472	AF2-238 E	1.0545	Adder	1.24
959491	AF2-240 C	0.5117	Adder	0.6
959492	AF2-240 E	0.4359	Adder	0.51
959501	AF2-241 C	1.5297	Adder	1.8
959502	AF2-241 E	1.1777	Adder	1.39
959521	AF2-243 C	2.8276	50/50	2.8276
959522	AF2-243 E	1.8851	50/50	1.8851
959741	AF2-265 C	1.1336	Adder	1.33
959742	AF2-265 E	0.8436	Adder	0.99
959822	AF2-273 E	0.5334	Adder	0.63
960031	AF2-294 C	1.5422	Adder	1.81
960032	AF2-294 E	1.0282	Adder	1.21
960041	AF2-295 C	1.9302	Adder	2.27
960042	AF2-295 E	1.2868	Adder	1.51
960051	AF2-296 C	1.5138	Adder	1.78
960052	AF2-296 E	1.0092	Adder	1.19
961141	AF2-405	1.3537	Adder	1.59
961151	AF2-406	10.1528	Adder	11.94
961201	**AF2-411 O1 (Withdrawn : 12/08/2020)**	**42.7839**	**Adder**	**50.33**
961211	AF2-412	18.3563	Adder	21.6
961971	AG1-040 C	5.6059	50/50	5.6059
961972	AG1-040 E	3.7373	50/50	3.7373
962511	AG1-100 C	5.8564	50/50	5.8564
962512	AG1-100 E	3.9042	50/50	3.9042
962891	AG1-138 C	0.5616	Adder	1.25
962892	AG1-138 E	0.0296	Adder	0.07
962901	AG1-139 C	1.4924	50/50	1.4924
962902	AG1-139 E	0.0785	50/50	0.0785
962911	AG1-140 C	0.8532	50/50	0.8532
962912	AG1-140 E	0.3887	50/50	0.3887
963281	AG1-177 C O2	5.8292	50/50	5.8292
963282	AG1-177 E O2	3.8862	50/50	3.8862
963441	AG1-193 C	4.4159	50/50	4.4159
963442	AG1-193 E	2.9439	50/50	2.9439
963481	AG1-197 C	4.1663	50/50	4.1663
963482	AG1-197 E	2.7775	50/50	2.7775
963491	AG1-198 C	3.1649	50/50	3.1649

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963492	AG1-198 E	2.1099	50/50	2.1099
963531	AG1-202 C	3.4156	50/50	3.4156
963532	AG1-202 E	1.7595	50/50	1.7595
963571	AG1-206 C	0.5589	Adder	1.24
963572	AG1-206 E	0.3010	Adder	0.67
963891	AG1-242 C	0.4346	Adder	0.96
963892	AG1-242 E	0.2340	Adder	0.52
963941	AG1-247 C	0.3516	Adder	0.78
963942	AG1-247 E	0.1865	Adder	0.41
963991	AG1-253 C	1.2798	50/50	1.2798
963992	AG1-253 E	0.6162	50/50	0.6162
964341	AG1-296 C	0.5337	Adder	1.18
964342	AG1-296 E	0.2874	Adder	0.64
964411	AG1-303 C O2	11.4874	50/50	11.4874
964412	AG1-303 E O2	7.6583	50/50	7.6583
964701	AG1-333 C	0.2997	Adder	0.67
964702	AG1-333 E	0.0409	Adder	0.09
965201	AG1-385 C	1.3153	Adder	2.92
965202	AG1-385 E	0.3896	Adder	0.86
965241	AG1-389 C O1	1.0596	Adder	2.35
965242	AG1-389 E O1	0.7064	Adder	1.57
965251	AG1-390 C O2	1.0608	Adder	2.35
965252	AG1-390 E O2	0.7072	Adder	1.57
965261	AG1-391 C O1	1.0596	Adder	2.35
965262	AG1-391 E O1	0.7064	Adder	1.57
965271	AG1-392 C O1	2.1192	Adder	4.7
965272	AG1-392 E O1	1.4128	Adder	3.14
965861	AG1-455	17.7516	50/50	17.7516
966121	AG1-481	5.3835	50/50	5.3835
966771	AG1-548 C	51.2256	50/50	51.2256
966772	AG1-548 E	15.5904	50/50	15.5904
G-007A	G-007A	10.2157	Confirmed LTF	10.2157
VFT	VFT	27.9221	Confirmed LTF	27.9221
CALDERWOOD	CALDERWOOD	1.2862	Confirmed LTF	1.2862
PRAIRIE	PRAIRIE	8.5058	Confirmed LTF	8.5058
CHEOAH	CHEOAH	1.2853	Confirmed LTF	1.2853
CBM-N	CBM-N	5.4048	Confirmed LTF	5.4048
COTTONWOOD	COTTONWOOD	6.1089	Confirmed LTF	6.1089
HAMLET	HAMLET	0.9962	Confirmed LTF	0.9962
GIBSON	GIBSON	1.8766	Confirmed LTF	1.8766
BLUEG	BLUEG	5.8607	Confirmed LTF	5.8607
TRIMBLE	TRIMBLE	1.8821	Confirmed LTF	1.8821
CATAWBA	CATAWBA	0.6958	Confirmed LTF	0.6958

13.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
ATSI-P2-3-CEI-345-004D	CONTINGENCY 'ATSI-P2-3-CEI-345-004D' / 911 OPEN BRANCH FROM BUS 200599 TO BUS 200600 CKT 1 / 200599 26ERIE W 345 200600 26ERIE SO 345 1 OPEN BRANCH FROM BUS 200599 TO BUS 238547 CKT 1 / 200599 26ERIE W 345 238547 02AT 345 1 OPEN BRANCH FROM BUS 238547 TO BUS 239036 CKT 1 / 238547 02AT 345 239036 02PERRY 345 1 OPEN BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 / 238547 02AT 345 239082 02S8-ATT 345 1 OPEN BRANCH FROM BUS 200568 TO BUS 200600 CKT 5 / 200568 26ERIE SO. 230 200600 26ERIE SO 345 5 OPEN BRANCH FROM BUS 200819 TO BUS 200600 CKT 8 / 200819 26ERIE SE 230 200600 26ERIE SO 345 8 END
PN-P1-2-PN-345-001	CONTINGENCY 'PN-P1-2-PN-345-001' /* ERIE WEST - WAYNE 345KV DISCONNECT BRANCH FROM BUS 200599 TO BUS 200595 CKT 1 /* 26ERIE W 345 26WAYNE 345 END
ATSI-P1-3-CEI-345-722	CONTINGENCY 'ATSI-P1-3-CEI-345-722' /* TRAN 02S8-ATT 345 TO 02ASH_3 138 CK 8 DISCONNECT BRANCH FROM BUS 239082 TO BUS 238544 CKT 8 /* 02S8-ATT 345 02ASH_3 138 END
PN-P2-2-PN-230-007T	CONTINGENCY 'PN-P2-2-PN-230-007T' /* LEWISTOWN #2 230KV BUS DISCONNECT BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 /* 26LEWISTWN 230 26YEAGRTWN 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 /* 26LEWISTWN 230 AG1-473 TAP 230 DISCONNECT BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 /* 26LEWISTWN 230 26RAYSTOWN 230 END
PN-P2-3-PN-230-14CT	CONTINGENCY 'PN-P2-3-PN-230-14CT' / 1533 OPEN BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 / 200513 26LEWISTWN 230 200517 26RAYSTOWN 230 1 OPEN BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 / 200513 26LEWISTWN 230 966040 AG1-473 TAP 230 1 OPEN BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 / 200513 26LEWISTWN 230 200531 26YEAGRTWN 230 2 OPEN BRANCH FROM BUS 200513 TO BUS 200548 CKT 2 / 200513 26LEWISTWN 230 200548 26LEWISTWN 46.0 2 OPEN BRANCH FROM BUS 200513 TO BUS 200512 CKT 3 / 200513 26LEWISTWN 230 200512 26LEWISTWN 115 3 END

Contingency Name	Contingency Definition
PJM_GEN_P1-1: UNIT02PERRG1	CONTINGENCY 'PJM_GEN_P1-1: UNIT02PERRG1' REMOVE MACHINE 1 FROM BUS 239035 END
PN-P2-3-PN-230-14BT	CONTINGENCY 'PN-P2-3-PN-230-14BT' / 1571 OPEN BRANCH FROM BUS 200513 TO BUS 200517 CKT 1 / 200513 26LEWISTWN 230 200517 26RAYSTOWN 230 1 OPEN BRANCH FROM BUS 200517 TO BUS 200539 CKT 1 / 200517 26RAYSTOWN 230 200539 26RAYSTOWN 46.0 1 OPEN BRANCH FROM BUS 200513 TO BUS 966040 CKT 1 / 200513 26LEWISTWN 230 966040 AG1-473 TAP 230 1 OPEN BRANCH FROM BUS 200513 TO BUS 200531 CKT 2 / 200513 26LEWISTWN 230 200531 26YEAGRTWN 230 2 OPEN BRANCH FROM BUS 200513 TO BUS 200548 CKT 1 / 200513 26LEWISTWN 230 200548 26LEWISTWN 46.0 1 END
Base Case	
PN-P1-2-PN-345-107T	CONTINGENCY 'PN-P1-2-PN-345-107T' / 866 OPEN BRANCH FROM BUS 200599 TO BUS 238547 CKT 1 / 200599 26ERIE W 345 238547 02AT 345 1 OPEN BRANCH FROM BUS 238547 TO BUS 239082 CKT 1 / 238547 02AT 345 239082 02S8-ATT 345 1 OPEN BRANCH FROM BUS 238547 TO BUS 239036 CKT 1 / 238547 02AT 345 239036 02PERRY 345 1 END
ATSI-P2-4-CEI-138-125B	CONTINGENCY 'ATSI-P2-4-CEI-138-125B' /* AT BUS 138KV_ BRKR FAILURE - Q-2-3-AT-TIE (B155) DISCONNECT BRANCH FROM BUS 238544 TO BUS 239082 CKT 8 /* 02ASH_3 138 02S8-ATT 345 DISCONNECT BRANCH FROM BUS 238544 TO BUS 238543 CKT ZB /* 02ASH_3 138 02ASH_2 138 DISCONNECT BRANCH FROM BUS 238544 TO BUS 239098 CKT 1 /* 02ASH_3 138 02SBRNQ4 138 DISCONNECT BRANCH FROM BUS 238544 TO BUS 239182 CKT 1 /* 02ASH_3 138 02ZNQ-16 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 238542 CKT ZB /* 02ASH_2 138 02ASH_1 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 239096 CKT 1 /* 02ASH_2 138 02SBRNQ2 138 DISCONNECT BRANCH FROM BUS 238543 TO BUS 239097 CKT 1 /* 02ASH_2 138 02SBRNQ3 138 DISCONNECT BUS 238543 /* 02ASH_2 138 DISCONNECT BUS 238544 /* 02ASH_3 138 DISCONNECT BUS 238692 /* 02ELKEM 138 DISCONNECT BUS 238548 /* 02ATCQ31 138 DISCONNECT BUS 241936 /* 02PETMIN 138 DISCONNECT BUS 239182 /* 02ZNQ-16 138 END

14 Affected Systems

14.1 NYISO

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

14.2 MISO

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

15 Attachment 1: One Line Diagram