



**Generation Interconnection
Feasibility Study Report
for
Queue Project AG1-504
GLEN BROOK – SALEM 69 KV
41.1 MW Capacity / 68 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 PPL.

2 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

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 Luzerne County, Pennsylvania. The installed facilities will have a total capability of 68 MW with 41.1 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-504
Project Name	GLEN BROOK-SALEM 69 KV
State	Pennsylvania
County	Luzerne
Transmission Owner	PPL
MFO	68
MWE	68
MWC	41.1
Fuel	Solar
Basecase Study Year	2024

Any new service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

4 Point of Interconnection

AG1-504 will interconnect with the PPL Transmission system via one of the following options:

Option 1: Tapping into the 69 kV Glen Brook - Columbia #1 Circuit between Glen Brook and Salem Tap 1 buses. The Point of Interconnection (POI) will be at the PPL EU owned termination structure where the Interconnection Customer's transmission line terminates (with insulators).

Option 2: Via a direct connection into the Glen Brook 69 kV substation

Note: As part of Baseline Project b2838, PPL EU is rebuilding a portion of the Harwood – Berwick 69 kV line to double circuit Columbia – Glen Brook #1 and #2 69 kV lines. This request seeks to interconnect from the Glen Brook 69 kV substation to the proposed POI via the Columbia – Glen Brook #1 69 kV line.

5 Cost Summary

The AG1-504 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$ 1,631,016
Total System Network Upgrade Costs	\$ 201,300,000
Total Costs	\$ 202,931,016

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.

6 Transmission Owner Scope of Work

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

Description	Total Cost
Attachment Facilities	\$ 893,364
Direct Connection Network Upgrade	\$ 0
Non-Direct Connection Network Upgrades	\$ 737,652
Total Physical Interconnection Costs	\$ 1,631,016

PPL EU can accommodate this interconnection by constructing a new transmission line tap off the Columbia – Glen Brook #1 69 kV line and completing associated remote end relay work.

Risks and Assumptions

- No major environmental, real estate, or permitting issues.
- IC is responsible for acquisition of easements, permits, and right of way for any Direct Connection Network Upgrades and Attachment Facilities per PPL EU standards and requirements.
- PPL EU will perform all grading, site preparation, and establish access roads for the PPL EU owned Attachment Facilities per PPL EU standards and requirements.
- B2838 will be complete prior to this project's interconnection to the PPL EU Transmission System.

6.1 Attachment Facilities

69 kV Transmission Line Tap

PPL EU will tap the Columbia – Glen Brook #1 69 kV line at or near GPS Coordinates: 41.096667, -76.214467. PPL EU will extend the tap towards the IC substation. PPL EU will install a motor operated switch and POI structure. The IC must build the remainder of the Attachment Facilities from the POI termination structure to the IC substation. The IC is responsible for procuring 100 ft. ROW for these facilities. For the purposes of this Feasibility Study Report cost estimate, PPL EU is assuming all engineering and construction responsibility for land development activities, including grading, site preparation, and new access road. During the Facilities Study phase, PPL EU and the IC will review land development activities, and the IC may choose to perform some, or all, of these activities. The cost estimate will be updated accordingly and included in the Facilities Study Report.

PPL EU work will consist of installing the following:

- Intersperse new tap structure on the Columbia – Glen Brook #1 69 kV line.
- Install one (1) new direct-embed, steel, motor operated switch structure.
- Install one (1) new direct-embed, steel, dead-end tension structure (POI structure).
- Install three (3) phase conductors and 48-count Optical Ground Wire (OPGW) from the new tap structure to the POI structure.
- Install one (1) fiber splice box on the tap structure and one (1) fiber splice box on the POI structure in which to terminate the OPGW.

The total preliminary cost estimate for the Attachment work is given in the table below.

Description	Total Cost
69 kV Tap line, Motor Operated Switch, structures, and foundations	\$ 868,964
IC substation facility acceptance, testing, commissioning, & telemetry coordination	\$ 24,400
Total Attachment Facility Costs	\$ 893,364

6.2 Direct Connection Cost Estimate

None.

6.3 Non-Direct Connection Cost Estimate

Remote End Relay Work – Glen Brook kV Substation

- Complete remote end relay work at the Glen Brook 69 kV substation for Direct Transfer Trip.
- Model IC in CAPE and conduct a wide area short circuit study two busses away from the IC facilities. Identify affected relays and revise settings as needed.

- Conduct a review of the IC relay settings and engineering package (submitted by IC to PPL EU).
- PPL EU currently has OPGW on the Columbia – Glen Brook #1 69 kV line available as the communication circuit for DTT to the Glen Brook 69 kV substation.

Note: The IC may obtain DTT via the Columbia – Glen Brook #2 69 kV line by completing upgrades at the Glen Brook 69 kV substation. This would enable this project to generate on the Columbia – Glen Brook #2 69 kV line in the event that the POI is ever sourced from this line.

Columbia – Glen Brook #1 69 kV line Modifications to tie in the project Attachment Facilities

- Reframe the structures on either side of the new tap structure to tension.
- Add fiber throw & two (2) splice boxes on the Columbia – Glen Brook #1 69 kV line.
- Install motor operated switch structure on each side of the new tap.

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below.

Description	Total Cost
Modifications to the Columbia – Glen Brook #1 69 kV Line to tie in the AG1-504 Attachment Facilities	\$ 96,552
Install Motor Operated Switches on the Columbia – Glen Brook #1 69 kV line, one on each side of new tap	\$ 289,000
Remote End Relay Work – Glen Brook 69 kV Substation	\$ 352,100
Total Non-Direct Connection Facility Costs	\$ 737,652

7 Schedule

The estimated time to complete the scope of work is **12-18 months** after the PJM three-party Interconnection Service Agreement (ISA) and Interconnection Construction Service Agreement (ICSA) are signed and PPL EU receives Notice to Proceed from the IC.

8 Interconnection Customer Requirements

PPL EU applicable technical standards that address requirements for interconnection of generation, transmission, and end user facilities can be found at the following link:

<https://pjm.com/planning/design-engineering/to-tech-standards/private-ppl.aspx>

9 Revenue Metering and SCADA Requirements

9.1 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.

9.2 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)

9.3 Interconnected Transmission Owner Requirements

Installation of revenue grade Bi-directional Metering Equipment will be required in the vicinity of the POI to measure kWh and kVARh. PPL EU will design and supply the required metering equipment; all installation costs would be borne by the IC including CTs/PTs. All metering equipment must meet applicable PPL EU tariff requirements as well as being compliant with all applicable requirements of the PJM agreements. The equipment must provide bidirectional revenue metering (kWh and kVARh) and real-time data (kW, kVAR, circuit breaker status, and generator bus voltages) for the IC's generating resource. The metering equipment should be housed in a control cabinet or similar enclosure and must be accessible to PPL EU metering personnel.

10 Summer Peak - Load Flow Analysis - Primary POI

The Queue Project AG1-504 was evaluated as a 68.0 MW (Capacity 41.1 MW) injection Tapping the 69 kV Glen Brook - Columbia #1 Circuit between Glenbrook and Salem Tap 1 in the PPL area. Project AG1-504 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-504 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

10.1 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
167754467	207915	GLBR	230	PPL	208120	SU10	230.0	PPL	1	PL:48:P12:101741	single	801.0	99.72	103.22	DC	28.07
167754481	207915	GLBR	230	PPL	208113	SUSQ	230.0	PPL	1	PL:08:P12:101740	single	801.0	97.61	101.07	DC	27.74

10.2 Multiple Facility Contingency

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

None

10.3 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
165151332	207915	GLBR	230.0	PPL	208120	SU10	230.0	PPL	1	PL:48:P71:102649	tower	801.0	144.36	150.01	DC	46.37
165151374	207968	ELIM	230.0	PPL	208109	SUNB	230.0	PPL	1	PL:08:P71:102899	tower	537.0	134.29	134.86	DC	6.59
165151375	207968	ELIM	230.0	PPL	208109	SUNB	230.0	PPL	1	PL:08:P71:102900	tower	537.0	131.22	131.78	DC	6.58
165151414	207973	FRAC	230.0	PPL	938390	AE1-058_TAP	230.0	PPL	1	PL:48:P71:101752	tower	628.0	114.6	115.41	DC	11.25
165151395	208120	SU10	230.0	PPL	208113	SUSQ	230.0	PPL	1	PL:48:P71:102649	tower	801.0	119.85	124.63	DC	39.08
165151361	938390	AE1-058_TAP	230.0	PPL	208072	SIEG	230.0	PPL	1	PL:48:P71:101752	tower	628.0	141.46	142.27	DC	11.25

10.4 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
167754466	207915	GLBR	230	PPL	208120	SU10	230.0	PPL	1	PL:48:P12:101741	operation	801.0	123.5	129.16	DC	46.44
167754480	207915	GLBR	230	PPL	208113	SUSQ	230.0	PPL	1	PL:08:P12:101740	operation	801.0	121.05	126.64	DC	45.89
167754588	208034	MILT	230	PPL	208109	SUNB	230.0	PPL	2	PL:08:P12:001347	operation	730.0	110.09	111.25	DC	8.42
167754590	208034	MILT	230	PPL	208109	SUNB	230.0	PPL	1	PL:08:P12:102876	operation	730.0	110.09	111.25	DC	8.42
167754662	208040	MONT	230	PPL	208034	MILT	230.0	PPL	1	PL:08:P12:102877	operation	801.0	101.56	102.6	DC	8.23
167754664	208040	MONT	230	PPL	208034	MILT	230.0	PPL	2	PL:08:P12:001346	operation	801.0	101.56	102.6	DC	8.23
167754525	208109	SUNB	230	PPL	200021	SUNBURY	500.0	PPL	24	PL:08:P13:101349	operation	1097.0	119.21	119.63	DC	15.24
167754526	208109	SUNB	230	PPL	200021	SUNBURY	500.0	PPL	24	Base Case	operation	771.0	103.32	103.68	DC	9.28
167754571	208109	SUNB	230	PPL	200021	SUNBURY	500.0	PPL	25	PL:08:P13:100456	operation	1165.0	112.31	112.7	DC	15.25
167754674	208116	SUSQTR21	230	PPL	200022	SUSQUEHANNA	500.0	PPL	21	Base Case	operation	771.0	99.65	102.2	DC	19.48

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Index	Facility	Upgrade Description	Cost
165151361	6	AE1-058 TAP 230.0 kV - SIEG 230.0 kV Ckt 1	R-PL-0003C (497): Rebuild 35.5 miles of the SIEG-FRAC 230kV line from AE1-058 switchyard cut-in to Siegfried substation as 230kV single circuit (ACSS). Project Type : FAC Cost : \$78,200,000 Time Estimate : 72.0 Months	\$ 78,200,000
165151374, 165151375	3	ELIM 230.0 kV - SUNB 230.0 kV Ckt 1	R-PL-0005 (498): Rebuild SUNB-ELIM 230kV line. Project Type : FAC Cost : \$66,200,000 Time Estimate : 48.0 Months	\$ 66,200,000
165151332, 167754467	1	GLBR 230.0 kV - SU10 230.0 kV Ckt 1	R-PL-0014 (503): Construct a new (4 miles) 230kV single circuit line from GLBR to SU10 yard. Re-terminate GLBR-SUSQ 230kV line into SU10 yard and rebuild the GLBR-SUSQ line (2.7 miles) from the new termination in T10 yard to Susquehanna 230kV yard. Project Type : CON Cost : \$22,400,000 Time Estimate : 36.0 Months	\$ 22,400,000
165151395	5	SU10 230.0 kV - SUSQ 230.0 kV Ckt 1	R-PL-0018 (507): Rebuild SUSQ-SU10 230kV line. Project Type : FAC Cost : \$22,300,000 Time Estimate : 36.0 Months	\$ 22,300,000
167754481	2	GLBR 230.0 kV - SUSQ 230.0 kV Ckt 1	R-PL-0014 (503): Construct a new (4 miles) 230kV single circuit line from GLBR to SU10 yard. Re-terminate GLBR-SUSQ 230kV line into SU10 yard and rebuild the GLBR-SUSQ line (2.7 miles) from the new termination in T10 yard to Susquehanna 230kV yard. Project Type : CON Cost : \$22,400,000 Time Estimate : 36.0 Months	\$0 (SEE ABOVE)
165151414	4	FRAC 230.0 kV - AE1-058 TAP 230.0 kV Ckt 1	R-PL-0003B (496): Rebuild FRAC-AE1-058 yard 230kV line. Project Type : FAC Cost : \$12,200,000 Time Estimate : 30.0 Months	\$ 12,200,000
			TOTAL COST	\$ 201,300,000

10.6 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".

10.6.1 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
165151332	207915	GLBR	PPL	208120	SU10	PPL	1	PL:48:P71:102649	tower	801.0	144.36	150.01	DC	46.37

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	41.5535	50/50	41.5535
208912	MONT G2 (Deactivation : 18/02/2019)	41.5207	50/50	41.5207
208945	LOHA CT	0.5863	50/50	0.5863
208948	WILL CT	1.2207	50/50	1.2207
209013	SCEN IPP	2.4754	50/50	2.4754
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	6.6682	Adder	7.84
211375	BEAC	-2.0879	Adder	-2.46
212005	ALWD	0.1426	50/50	0.1426
212369	PATRIOT 1	18.9247	50/50	18.9247
212370	PATRIOT 2	18.9247	50/50	18.9247
212435	SMIL	0.0768	50/50	0.0768
923674	AB1-182 BAT	2.5706	Merchant Transmission	2.5706
938392	AE1-058_GEN1	34.4442	Adder	40.52
938393	AE1-058_GEN2	34.4442	Adder	40.52
939891	AE1-225 C O1	1.2561	Adder	1.48
939892	AE1-225 E O1	1.3897	Adder	1.63
940561	AE2-042 C	11.3850	50/50	11.3850
940562	AE2-042 E	5.6439	50/50	5.6439
940593	AE2-046 BAT	3.6846	Merchant Transmission	3.6846
940721	AE2-059 C	2.0435	50/50	2.0435

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
940722	AE2-059 E	2.8219	50/50	2.8219
940941	AE2-084 C	2.0435	50/50	2.0435
940942	AE2-084 E	2.8219	50/50	2.8219
941161	AE2-110 C	2.5161	50/50	2.5161
941162	AE2-110 E	3.4747	50/50	3.4747
941171	AE2-111 C	1.1225	Adder	1.32
941172	AE2-111 E	1.5501	Adder	1.82
941371	AE2-133 C	1.1225	Adder	1.32
941372	AE2-133 E	1.5501	Adder	1.82
942281	AE2-241 C	2.5161	50/50	2.5161
942282	AE2-241 E	3.4747	50/50	3.4747
942561	AE2-271 C	21.1678	50/50	21.1678
942562	AE2-271 E	14.1118	50/50	14.1118
942771	AE2-295 C	3.7506	Adder	4.41
942772	AE2-295 E	21.7591	Adder	25.6
943721	AF1-040 C	0.1336	Adder	0.16
943722	AF1-040 E	2.5389	Adder	2.99
945511	AF1-216 C1O1	11.7954	50/50	11.7954
945512	AF1-216 E1O1	7.8544	50/50	7.8544
945521	AF1-216 C2O1	11.7949	50/50	11.7949
945522	AF1-216 E2O1	7.8541	50/50	7.8541
945611	AF1-226 C	4.4032	50/50	4.4032
945612	AF1-226 E	6.0807	50/50	6.0807
946471	AF1-311 C O1	19.7927	50/50	19.7927
946472	AF1-311 E O1	32.2933	50/50	32.2933
946691	AF1-333 C O1	2.3514	50/50	2.3514
946692	AF1-333 E O1	1.5676	50/50	1.5676
946731	AF1-337 C	2.3514	50/50	2.3514
946732	AF1-337 E	1.5676	50/50	1.5676
946741	AF1-338 C	2.3514	50/50	2.3514
946742	AF1-338 E	1.5676	50/50	1.5676
946751	AF1-339 C O1	2.3514	50/50	2.3514
946752	AF1-339 E O1	1.5676	50/50	1.5676
946761	AF1-271AC	1.3630	Adder	1.6
946762	AF1-271AE	0.9087	Adder	1.07
957621	AF2-056 C	5.1174	Adder	6.02
957622	AF2-056 E	2.6363	Adder	3.1
957881	AF2-082 C	4.4097	Adder	5.19
957882	AF2-082 E	2.9398	Adder	3.46
957921	AF2-086 C	3.5945	50/50	3.5945
957922	AF2-086 E	2.3963	50/50	2.3963
958461	AF2-140	9.4080	50/50	9.4080
958511	AF2-145 C1	4.2018	50/50	4.2018
958512	AF2-145 E1	2.8012	50/50	2.8012
958521	AF2-145 C2	4.2017	50/50	4.2017
958522	AF2-145 E2	2.8011	50/50	2.8011
959121	AF2-203 C	3.5945	50/50	3.5945
959122	AF2-203 E	2.3963	50/50	2.3963
959411	AF2-232 C	7.1890	50/50	7.1890
959412	AF2-232 E	4.7926	50/50	4.7926
959421	AF2-233 C	1.6035	Adder	1.89
959422	AF2-233 E	1.0690	Adder	1.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959431	AF2-234 C	3.2071	Adder	3.77
959432	AF2-234 E	2.1381	Adder	2.52
959932	AF2-284 E	0.6154	50/50	0.6154
959982	AF2-289 E	0.9231	50/50	0.9231
959992	AF2-290 E	0.4865	50/50	0.4865
960401	AF2-331 C	10.4172	50/50	10.4172
960402	AF2-331 E	6.9448	50/50	6.9448
960411	AF2-332 C	10.4172	50/50	10.4172
960412	AF2-332 E	6.9448	50/50	6.9448
960421	AF2-333 C	4.1669	50/50	4.1669
960422	AF2-333 E	2.7779	50/50	2.7779
960431	AF2-334 C	4.1669	50/50	4.1669
960432	AF2-334 E	2.7779	50/50	2.7779
961271	AF2-418 C	3.5945	50/50	3.5945
961272	AF2-418 E	2.3963	50/50	2.3963
961331	AF2-424 C	1.7512	Adder	2.06
961332	AF2-424 E	1.1675	Adder	1.37
961341	AF2-425 C	1.7512	Adder	2.06
961342	AF2-425 E	1.1675	Adder	1.37
961362	AF2-427 E	0.9231	50/50	0.9231
961412	AF2-432 E	0.5991	50/50	0.5991
961421	AF2-433 C O1	3.5945	50/50	3.5945
961422	AF2-433 E O1	2.3963	50/50	2.3963
961431	AF2-434 C O1	3.5945	50/50	3.5945
961432	AF2-434 E O1	2.3963	50/50	2.3963
961531	AF2-444 C	1.7221	Adder	2.03
961532	AF2-444 E	1.1675	Adder	1.37
961541	AF2-445AC	1.8299	Adder	2.15
961542	AF2-445AE	1.2406	Adder	1.46
962061	AG1-050	4.8654	50/50	4.8654
962151	AG1-060 C	1.9878	Adder	4.41
962152	AG1-060 E	11.5323	Adder	25.6
963551	AG1-204 C	4.4321	50/50	4.4321
963552	AG1-204 E	2.3865	50/50	2.3865
963751	AG1-227 C	0.9863	Adder	2.19
963752	AG1-227 E	0.6575	Adder	1.46
963761	AG1-228 C	0.9863	Adder	2.19
963762	AG1-228 E	0.6575	Adder	1.46
963911	AG1-244 C	0.4604	Adder	1.02
963912	AG1-244 E	0.2479	Adder	0.55
964051	AG1-259 C	0.5878	Adder	1.3
964052	AG1-259 E	0.8215	Adder	1.82
964061	AG1-260 C	0.5878	Adder	1.3
964062	AG1-260 E	0.8215	Adder	1.82
964163	AG1-277 BAT	1.3019	Merchant Transmission	1.3019
964173	AG1-278 BAT	0.2226	Merchant Transmission	0.2226
964183	AG1-279 BAT	0.2226	Merchant Transmission	0.2226
964671	AG1-330 C	0.3187	Adder	0.71
964672	AG1-330 E	0.0354	Adder	0.08
964731	AG1-336 C	0.2762	Adder	0.61
964732	AG1-336 E	0.0779	Adder	0.17
964741	AG1-337 C	0.2691	Adder	0.6

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964742	AG1-337 E	0.0850	Adder	0.19
965311	AG1-396 C	0.2833	Adder	0.63
965312	AG1-396 E	0.2479	Adder	0.55
966351	AG1-504 C O1	28.0244	50/50	28.0244
966352	AG1-504 E O1	18.3420	50/50	18.3420
CALDERWOOD	CALDERWOOD	0.0477	Confirmed LTF	0.0477
NY	NY	1.3007	Confirmed LTF	1.3007
PRAIRIE	PRAIRIE	0.2299	Confirmed LTF	0.2299
O-066	O-066	12.7870	Confirmed LTF	12.7870
SIGE	SIGE	0.1904	Confirmed LTF	0.1904
CHEOAH	CHEOAH	0.0480	Confirmed LTF	0.0480
COTTONWOOD	COTTONWOOD	0.1953	Confirmed LTF	0.1953
G-007	G-007	1.7241	Confirmed LTF	1.7241
HAMLET	HAMLET	0.0635	Confirmed LTF	0.0635
GIBSON	GIBSON	0.0470	Confirmed LTF	0.0470
BLUEG	BLUEG	0.1493	Confirmed LTF	0.1493
TRIMBLE	TRIMBLE	0.0473	Confirmed LTF	0.0473
CATAWBA	CATAWBA	0.0367	Confirmed LTF	0.0367

10.6.2 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
167754481	207915	GLBR	PPL	208113	SUSQ	PPL	1	PL:08:P12:101740	single	801.0	97.61	101.07	DC	27.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	41.1024	80/20	41.1024
208912	MONT G2 (Deactivation : 18/02/2019)	41.0699	80/20	41.0699
208941	FISH CT	0.7959	80/20	0.7959
208945	LOHA CT	0.5798	80/20	0.5798
208948	WILL CT	1.2071	80/20	1.2071
208981	FOWH IPP	1.1422	80/20	1.1422
208982	GLBT IPP	2.3309	80/20	2.3309
209013	SCEN IPP	2.4446	80/20	2.4446
209018	SUNBIPCT	0.8819	80/20	0.8819
209021	WEST IPP	0.8694	80/20	0.8694
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	7.7473	80/20	7.7473
209027	LOR2_Q27	0.3240	80/20	0.3240
212005	ALWD	0.1410	80/20	0.1410
212099	COLA IPP	0.2140	80/20	0.2140
212174	INGE	0.1632	80/20	0.1632
212266	LOR1	0.0995	80/20	0.0995
212345	PENS	0.0735	80/20	0.0735
212369	PATRIOT 1	18.7172	80/20	18.7172
212370	PATRIOT 2	18.7172	80/20	18.7172
212435	SMIL	0.0759	80/20	0.0759
938392	AE1-058_GEN1	39.9897	80/20	39.9897
938393	AE1-058_GEN2	39.9897	80/20	39.9897
939891	AE1-225 C O1	1.4595	80/20	1.4595
940561	AE2-042 C	11.2559	80/20	11.2559
940721	AE2-059 C	2.0203	80/20	2.0203
940941	AE2-084 C	2.0203	80/20	2.0203
941161	AE2-110 C	2.4881	80/20	2.4881
941171	AE2-111 C	1.3043	80/20	1.3043
941371	AE2-133 C	1.3043	80/20	1.3043
942281	AE2-241 C	2.4881	80/20	2.4881
942561	AE2-271 C	20.9379	80/20	20.9379
942771	AE2-295 C	4.3574	80/20	4.3574
943721	AF1-040 C	0.1553	80/20	0.1553
945511	AF1-216 C1O1	11.6639	80/20	11.6639
945521	AF1-216 C2O1	11.6635	80/20	11.6635
945611	AF1-226 C	4.3541	80/20	4.3541
946471	AF1-311 C O1	19.5778	80/20	19.5778
946691	AF1-333 C O1	2.3237	80/20	2.3237
946731	AF1-337 C	2.3237	80/20	2.3237
946741	AF1-338 C	2.3237	80/20	2.3237

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946751	AF1-339 C O1	2.3237	80/20	2.3237
946761	AF1-271AC	1.5838	80/20	1.5838
957621	AF2-056 C	5.9456	80/20	5.9456
957881	AF2-082 C	5.1239	80/20	5.1239
957921	AF2-086 C	3.5544	80/20	3.5544
958461	AF2-140	9.3048	80/20	9.3048
958511	AF2-145 C1	4.1550	80/20	4.1550
958521	AF2-145 C2	4.1549	80/20	4.1549
959121	AF2-203 C	3.5544	80/20	3.5544
959411	AF2-232 C	7.1088	80/20	7.1088
959421	AF2-233 C	1.8632	80/20	1.8632
959431	AF2-234 C	3.7265	80/20	3.7265
960401	AF2-331 C	10.3041	80/20	10.3041
960411	AF2-332 C	10.3041	80/20	10.3041
960421	AF2-333 C	4.1216	80/20	4.1216
960431	AF2-334 C	4.1216	80/20	4.1216
961271	AF2-418 C	3.5544	80/20	3.5544
961331	AF2-424 C	2.0346	80/20	2.0346
961341	AF2-425 C	2.0346	80/20	2.0346
961421	AF2-433 C O1	3.5544	80/20	3.5544
961431	AF2-434 C O1	3.5544	80/20	3.5544
961531	AF2-444 C	2.0007	80/20	2.0007
961541	AF2-445AC	2.1260	80/20	2.1260
962061	AG1-050	4.8102	80/20	4.8102
962151	AG1-060 C	4.3574	80/20	4.3574
963551	AG1-204 C	4.3869	80/20	4.3869
963751	AG1-227 C	2.1620	80/20	2.1620
963761	AG1-228 C	2.1620	80/20	2.1620
963911	AG1-244 C	1.0093	80/20	1.0093
964051	AG1-259 C	1.2887	80/20	1.2887
964061	AG1-260 C	1.2887	80/20	1.2887
964671	AG1-330 C	0.6987	80/20	0.6987
964731	AG1-336 C	0.6056	80/20	0.6056
964741	AG1-337 C	0.5900	80/20	0.5900
965311	AG1-396 C	0.6211	80/20	0.6211
966351	AG1-504 C O1	27.7388	80/20	27.7388
WEC	WEC	0.0072	Confirmed LTF	0.0072
LGEE	LGEE	0.0145	Confirmed LTF	0.0145
CBM-W2	CBM-W2	0.1613	Confirmed LTF	0.1613
NY	NY	1.1818	Confirmed LTF	1.1818
TVA	TVA	0.0210	Confirmed LTF	0.0210
SIGE	SIGE	0.1882	Confirmed LTF	0.1882
CBM-S1	CBM-S1	0.0061	Confirmed LTF	0.0061
HAMLET	HAMLET	0.0023	Confirmed LTF	0.0023
MEC	MEC	0.0334	Confirmed LTF	0.0334
LAGN	LAGN	0.0263	Confirmed LTF	0.0263
CBM-W1	CBM-W1	0.3084	Confirmed LTF	0.3084

10.6.3 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
165151374	207968	ELIM	PPL	208109	SUNB	PPL	1	PL:08:P71:102899	tower	537.0	134.29	134.86	DC	6.59

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	28.3015	50/50	28.3015
208912	MONT G2 (Deactivation : 18/02/2019)	28.2791	50/50	28.2791
208943	HARW CT	1.2811	Adder	1.51
208945	LOHA CT	0.7423	50/50	0.7423
208948	WILL CT	1.7287	50/50	1.7287
209006	NEPC IPP (Deactivation : 24/10/2018)	1.1304	Adder	1.33
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	2.8180	Adder	3.32
211369	W1-111 BAT	0.0047	Adder	0.01
211375	BEAC	0.9420	Adder	1.11
212005	ALWD	0.2019	50/50	0.2019
212369	PATRIOT 1	20.6899	50/50	20.6899
212370	PATRIOT 2	20.6899	50/50	20.6899
938392	AE1-058_GEN1	15.8300	Adder	18.62
938393	AE1-058_GEN2	15.8300	Adder	18.62
939521	AE1-181 C	1.2717	Adder	1.5
939522	AE1-181 E	0.8478	Adder	1.0
940592	AE2-046 E	1.2246	Adder	1.44
941161	AE2-110 C	1.6001	50/50	1.6001
941162	AE2-110 E	2.2097	50/50	2.2097
942281	AE2-241 C	1.6001	50/50	1.6001
942282	AE2-241 E	2.2097	50/50	2.2097
942561	AE2-271 C	14.4170	50/50	14.4170
942562	AE2-271 E	9.6114	50/50	9.6114
943723	AF1-040 BAT	1.4480	Merchant Transmission	1.4480
945511	AF1-216 C1O1	15.9207	50/50	15.9207
945512	AF1-216 E1O1	10.6014	50/50	10.6014
945521	AF1-216 C2O1	15.9190	50/50	15.9190
945522	AF1-216 E2O1	10.6003	50/50	10.6003
945611	AF1-226 C	2.8002	50/50	2.8002
945612	AF1-226 E	3.8669	50/50	3.8669
946471	AF1-311 C O1	13.4805	50/50	13.4805
946472	AF1-311 E O1	21.9945	50/50	21.9945
946691	AF1-333 C O1	0.7525	Adder	0.89
946692	AF1-333 E O1	0.5016	Adder	0.59
946731	AF1-337 C	0.7525	Adder	0.89
946732	AF1-337 E	0.5016	Adder	0.59
946741	AF1-338 C	0.7525	Adder	0.89
946742	AF1-338 E	0.5016	Adder	0.59
946751	AF1-339 C O1	0.7525	Adder	0.89

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946752	AF1-339 E O1	0.5016	Adder	0.59
957621	AF2-056 C	2.1627	Adder	2.54
957622	AF2-056 E	1.1141	Adder	1.31
957921	AF2-086 C	2.2859	50/50	2.2859
957922	AF2-086 E	1.5239	50/50	1.5239
958461	AF2-140	10.2855	50/50	10.2855
958511	AF2-145 C1	5.6714	50/50	5.6714
958512	AF2-145 E1	3.7809	50/50	3.7809
958521	AF2-145 C2	5.6708	50/50	5.6708
958522	AF2-145 E2	3.7805	50/50	3.7805
959121	AF2-203 C	2.2859	50/50	2.2859
959122	AF2-203 E	1.5239	50/50	1.5239
959411	AF2-232 C	4.5718	50/50	4.5718
959412	AF2-232 E	3.0478	50/50	3.0478
959602	AF2-251 E	2.6792	Adder	3.15
959932	AF2-284 E	0.7231	50/50	0.7231
959982	AF2-289 E	1.0847	50/50	1.0847
959993	AF2-290 BAT	0.1435	Merchant Transmission	0.1435
960401	AF2-331 C	7.0950	50/50	7.0950
960402	AF2-331 E	4.7300	50/50	4.7300
960411	AF2-332 C	7.0950	50/50	7.0950
960412	AF2-332 E	4.7300	50/50	4.7300
960421	AF2-333 C	2.8380	50/50	2.8380
960422	AF2-333 E	1.8920	50/50	1.8920
960431	AF2-334 C	2.8380	50/50	2.8380
960432	AF2-334 E	1.8920	50/50	1.8920
961271	AF2-418 C	2.2859	50/50	2.2859
961272	AF2-418 E	1.5239	50/50	1.5239
961301	AF2-421 C	0.5652	Adder	0.66
961302	AF2-421 E	0.3768	Adder	0.44
961362	AF2-427 E	1.0847	50/50	1.0847
961412	AF2-432 E	0.3810	50/50	0.3810
961421	AF2-433 C O1	2.2859	50/50	2.2859
961422	AF2-433 E O1	1.5239	50/50	1.5239
961431	AF2-434 C O1	2.2859	50/50	2.2859
961432	AF2-434 E O1	1.5239	50/50	1.5239
961541	AF2-445AC	0.7733	Adder	0.91
961542	AF2-445AE	0.5243	Adder	0.62
962062	AG1-050 BAT	1.0141	Merchant Transmission	1.0141
963151	AG1-164 C	0.2995	Adder	0.66
963152	AG1-164 E	0.1997	Adder	0.44
963161	AG1-165 C	0.2995	Adder	0.66
963162	AG1-165 E	0.1997	Adder	0.44
963551	AG1-204 C	0.2836	Adder	0.63
963552	AG1-204 E	0.1527	Adder	0.34
963751	AG1-227 C	0.4168	Adder	0.93
963752	AG1-227 E	0.2779	Adder	0.62
963761	AG1-228 C	0.4168	Adder	0.93
963762	AG1-228 E	0.2779	Adder	0.62
964161	AG1-277 C	0.7988	Adder	1.77
964162	AG1-277 E	0.1997	Adder	0.44
964171	AG1-278 C	0.3844	Adder	0.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964172	AG1-278 E	0.1148	Adder	0.25
964181	AG1-279 C	0.3844	Adder	0.85
964182	AG1-279 E	0.1148	Adder	0.25
964673	AG1-330 BAT	0.1727	Merchant Transmission	0.1727
964733	AG1-336 BAT	0.1209	Merchant Transmission	0.1209
964743	AG1-337 BAT	0.1209	Merchant Transmission	0.1209
966351	AG1-504 C O1	1.7930	Adder	3.98
966352	AG1-504 E O1	1.1736	Adder	2.61
G-007A	G-007A	1.1484	Confirmed LTF	1.1484
VFT	VFT	3.8442	Confirmed LTF	3.8442
CALDERWOOD	CALDERWOOD	0.3126	Confirmed LTF	0.3126
PRAIRIE	PRAIRIE	1.6454	Confirmed LTF	1.6454
CHEOAH	CHEOAH	0.3143	Confirmed LTF	0.3143
CBM-N	CBM-N	0.8232	Confirmed LTF	0.8232
COTTONWOOD	COTTONWOOD	1.3272	Confirmed LTF	1.3272
HAMLET	HAMLET	0.3540	Confirmed LTF	0.3540
GIBSON	GIBSON	0.3494	Confirmed LTF	0.3494
BLUEG	BLUEG	1.1110	Confirmed LTF	1.1110
TRIMBLE	TRIMBLE	0.3562	Confirmed LTF	0.3562
CATAWBA	CATAWBA	0.2163	Confirmed LTF	0.2163

10.6.4 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
165151414	207973	FRAC	PPL	938390	AE1-058_TAP	PPL	1	PL:48:P71:101752	tower	628.0	114.6	115.41	DC	11.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208941	FISH CT	1.5434	50/50	1.5434
208981	FOWH IPP	1.8216	50/50	1.8216
208982	GLBT IPP	4.5201	50/50	4.5201
209013	SCEN IPP	4.7406	50/50	4.7406
209021	WEST IPP	1.3864	50/50	1.3864
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	15.0238	50/50	15.0238
209027	LOR2_Q27	0.6284	50/50	0.6284
212099	COLA IPP	0.3413	50/50	0.3413
212174	INGE	0.2602	50/50	0.2602
212266	LOR1	0.1929	50/50	0.1929
935083	AD1-143 BAT1 (Suspended)	0.5352	Merchant Transmission	0.5352
935103	AD1-143 BAT2 (Suspended)	0.5352	Merchant Transmission	0.5352
939891	AE1-225 C O1	0.8791	Adder	1.03
939892	AE1-225 E O1	0.9727	Adder	1.14
940561	AE2-042 C	5.3743	Adder	6.32
940562	AE2-042 E	2.6642	Adder	3.13
940721	AE2-059 C	0.9646	Adder	1.13
940722	AE2-059 E	1.3321	Adder	1.57
940941	AE2-084 C	0.9646	Adder	1.13
940942	AE2-084 E	1.3321	Adder	1.57
941161	AE2-110 C	1.8386	50/50	1.8386
941162	AE2-110 E	2.5390	50/50	2.5390
941171	AE2-111 C	0.7856	Adder	0.92
941172	AE2-111 E	1.0849	Adder	1.28
941371	AE2-133 C	0.7856	Adder	0.92
941372	AE2-133 E	1.0849	Adder	1.28
942281	AE2-241 C	1.8386	50/50	1.8386
942282	AE2-241 E	2.5390	50/50	2.5390
942561	AE2-271 C	8.5693	Adder	10.08
942562	AE2-271 E	5.7129	Adder	6.72
942771	AE2-295 C	6.9490	50/50	6.9490
942772	AE2-295 E	40.3152	50/50	40.3152
943721	AF1-040 C	0.0935	Adder	0.11
943722	AF1-040 E	1.7770	Adder	2.09
945511	AF1-216 C1O1	5.2655	Adder	6.19
945512	AF1-216 E1O1	3.5062	Adder	4.12
945521	AF1-216 C2O1	5.2655	Adder	6.19
945522	AF1-216 E2O1	3.5062	Adder	4.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945611	AF1-226 C	3.2175	50/50	3.2175
945612	AF1-226 E	4.4433	50/50	4.4433
946471	AF1-311 C O1	8.0127	Adder	9.43
946472	AF1-311 E O1	13.0733	Adder	15.38
946691	AF1-333 C O1	1.2375	Adder	1.46
946692	AF1-333 E O1	0.8250	Adder	0.97
946731	AF1-337 C	1.2375	Adder	1.46
946732	AF1-337 E	0.8250	Adder	0.97
946741	AF1-338 C	1.2375	Adder	1.46
946742	AF1-338 E	0.8250	Adder	0.97
946751	AF1-339 C O1	1.2375	Adder	1.46
946752	AF1-339 E O1	0.8250	Adder	0.97
946761	AF1-271AC	0.9540	Adder	1.12
946762	AF1-271AE	0.6360	Adder	0.75
957621	AF2-056 C	11.5299	50/50	11.5299
957622	AF2-056 E	5.9396	50/50	5.9396
957881	AF2-082 C	3.0863	Adder	3.63
957882	AF2-082 E	2.0576	Adder	2.42
957921	AF2-086 C	2.6266	50/50	2.6266
957922	AF2-086 E	1.7510	50/50	1.7510
958461	AF2-140	3.9673	Adder	4.67
958511	AF2-145 C1	1.8757	Adder	2.21
958512	AF2-145 E1	1.2505	Adder	1.47
958521	AF2-145 C2	1.8757	Adder	2.21
958522	AF2-145 E2	1.2505	Adder	1.47
959121	AF2-203 C	2.6266	50/50	2.6266
959122	AF2-203 E	1.7510	50/50	1.7510
959411	AF2-232 C	5.2531	50/50	5.2531
959412	AF2-232 E	3.5021	50/50	3.5021
959421	AF2-233 C	1.1223	Adder	1.32
959422	AF2-233 E	0.7482	Adder	0.88
959431	AF2-234 C	2.2446	Adder	2.64
959432	AF2-234 E	1.4964	Adder	1.76
959932	AF2-284 E	0.2616	Adder	0.31
959982	AF2-289 E	0.3923	Adder	0.46
959992	AF2-290 E	0.2297	Adder	0.27
960401	AF2-331 C	4.2172	Adder	4.96
960402	AF2-331 E	2.8115	Adder	3.31
960411	AF2-332 C	4.2172	Adder	4.96
960412	AF2-332 E	2.8115	Adder	3.31
960421	AF2-333 C	1.6869	Adder	1.98
960422	AF2-333 E	1.1246	Adder	1.32
960431	AF2-334 C	1.6869	Adder	1.98
960432	AF2-334 E	1.1246	Adder	1.32
961271	AF2-418 C	2.6266	50/50	2.6266
961272	AF2-418 E	1.7510	50/50	1.7510
961331	AF2-424 C	3.2447	50/50	3.2447
961332	AF2-424 E	2.1631	50/50	2.1631
961341	AF2-425 C	3.2447	50/50	3.2447
961342	AF2-425 E	2.1631	50/50	2.1631
961362	AF2-427 E	0.3923	Adder	0.46
961412	AF2-432 E	0.4378	50/50	0.4378

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961421	AF2-433 C O1	2.6266	50/50	2.6266
961422	AF2-433 E O1	1.7510	50/50	1.7510
961431	AF2-434 C O1	2.6266	50/50	2.6266
961432	AF2-434 E O1	1.7510	50/50	1.7510
961531	AF2-444 C	3.1906	50/50	3.1906
961532	AF2-444 E	2.1631	50/50	2.1631
961541	AF2-445AC	4.1228	50/50	4.1228
961542	AF2-445AE	2.7951	50/50	2.7951
962061	AG1-050	1.2173	Adder	2.7
962151	AG1-060 C	6.9490	50/50	6.9490
962152	AG1-060 E	40.3152	50/50	40.3152
963551	AG1-204 C	0.4842	Adder	1.07
963552	AG1-204 E	0.2607	Adder	0.58
963751	AG1-227 C	4.1927	50/50	4.1927
963752	AG1-227 E	2.7951	50/50	2.7951
963761	AG1-228 C	4.1927	50/50	4.1927
963762	AG1-228 E	2.7951	50/50	2.7951
963911	AG1-244 C	0.3222	Adder	0.72
963912	AG1-244 E	0.1735	Adder	0.39
964051	AG1-259 C	0.4114	Adder	0.91
964052	AG1-259 E	0.5750	Adder	1.28
964061	AG1-260 C	0.4114	Adder	0.91
964062	AG1-260 E	0.5750	Adder	1.28
964671	AG1-330 C	0.2231	Adder	0.5
964672	AG1-330 E	0.0248	Adder	0.06
964731	AG1-336 C	0.1933	Adder	0.43
964732	AG1-336 E	0.0545	Adder	0.12
964741	AG1-337 C	0.1884	Adder	0.42
964742	AG1-337 E	0.0595	Adder	0.13
965311	AG1-396 C	0.1983	Adder	0.44
965312	AG1-396 E	0.1735	Adder	0.39
966351	AG1-504 C O1	3.0619	Adder	6.8
966352	AG1-504 E O1	2.0040	Adder	4.45
WEC	WEC	0.0441	Confirmed LTF	0.0441
LGEE	LGEE	0.0854	Confirmed LTF	0.0854
CPL	CPL	0.0430	Confirmed LTF	0.0430
CBM-W2	CBM-W2	1.1200	Confirmed LTF	1.1200
NY	NY	0.5923	Confirmed LTF	0.5923
TVA	TVA	0.1624	Confirmed LTF	0.1624
O-066	O-066	14.1667	Confirmed LTF	14.1667
SIGE	SIGE	0.2352	Confirmed LTF	0.2352
CBM-S2	CBM-S2	0.8248	Confirmed LTF	0.8248
CBM-S1	CBM-S1	0.0456	Confirmed LTF	0.0456
G-007	G-007	1.8669	Confirmed LTF	1.8669
MEC	MEC	0.2145	Confirmed LTF	0.2145
LAGN	LAGN	0.2047	Confirmed LTF	0.2047
CBM-W1	CBM-W1	2.0189	Confirmed LTF	2.0189

10.6.5 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
165151395	208120	SU10	PPL	208113	SUSQ	PPL	1	PL:48:P71:102649	tower	801.0	119.85	124.63	DC	39.08

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	33.7153	50/50	33.7153
208912	MONT G2 (Deactivation : 18/02/2019)	33.6886	50/50	33.6886
208945	LOHA CT	0.4645	50/50	0.4645
208948	WILL CT	0.9730	50/50	0.9730
209013	SCEN IPP	1.8500	50/50	1.8500
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	4.9836	Adder	5.86
211375	BEAC	-3.0374	Adder	-3.57
212005	ALWD	0.1136	50/50	0.1136
212369	PATRIOT 1	15.2285	50/50	15.2285
212370	PATRIOT 2	15.2285	50/50	15.2285
212435	SMIL	0.0602	50/50	0.0602
234311	HUN GEN5	1.3591	50/50	1.3591
234312	HUN GEN6	1.3507	50/50	1.3507
938392	AE1-058_GEN1	24.8707	Adder	29.26
938393	AE1-058_GEN2	24.8707	Adder	29.26
939891	AE1-225 C O1	0.9245	Adder	1.09
939892	AE1-225 E O1	1.0229	Adder	1.2
940561	AE2-042 C	8.9346	50/50	8.9346
940562	AE2-042 E	4.4291	50/50	4.4291
940593	AE2-046 BAT	5.3601	50/50	5.3601
940721	AE2-059 C	1.6036	50/50	1.6036
940722	AE2-059 E	2.2146	50/50	2.2146
940941	AE2-084 C	1.6036	50/50	1.6036
940942	AE2-084 E	2.2146	50/50	2.2146
941161	AE2-110 C	2.0131	50/50	2.0131
941162	AE2-110 E	2.7801	50/50	2.7801
941171	AE2-111 C	0.8262	Adder	0.97
941172	AE2-111 E	1.1409	Adder	1.34
941371	AE2-133 C	0.8262	Adder	0.97
941372	AE2-133 E	1.1409	Adder	1.34
942281	AE2-241 C	2.0131	50/50	2.0131
942282	AE2-241 E	2.7801	50/50	2.7801
942561	AE2-271 C	17.1749	50/50	17.1749
942562	AE2-271 E	11.4499	50/50	11.4499
942771	AE2-295 C	2.7833	Adder	3.27
942772	AE2-295 E	16.1473	Adder	19.0
943721	AF1-040 C	0.0984	Adder	0.12
943722	AF1-040 E	1.8687	Adder	2.2
945511	AF1-216 C1O1	9.3764	50/50	9.3764
945512	AF1-216 E1O1	6.2437	50/50	6.2437

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945521	AF1-216 C2O1	9.3760	50/50	9.3760
945522	AF1-216 E2O1	6.2434	50/50	6.2434
945611	AF1-226 C	3.5230	50/50	3.5230
945612	AF1-226 E	4.8651	50/50	4.8651
946471	AF1-311 C O1	16.0592	50/50	16.0592
946472	AF1-311 E O1	26.2018	50/50	26.2018
946691	AF1-333 C O1	1.7947	50/50	1.7947
946692	AF1-333 E O1	1.1965	50/50	1.1965
946731	AF1-337 C	1.7947	50/50	1.7947
946732	AF1-337 E	1.1965	50/50	1.1965
946741	AF1-338 C	1.7947	50/50	1.7947
946742	AF1-338 E	1.1965	50/50	1.1965
946751	AF1-339 C O1	1.7947	50/50	1.7947
946752	AF1-339 E O1	1.1965	50/50	1.1965
946761	AF1-271AC	1.0032	Adder	1.18
946762	AF1-271AE	0.6688	Adder	0.79
957621	AF2-056 C	3.8246	Adder	4.5
957622	AF2-056 E	1.9703	Adder	2.32
957881	AF2-082 C	3.2457	Adder	3.82
957882	AF2-082 E	2.1638	Adder	2.55
957921	AF2-086 C	2.8759	50/50	2.8759
957922	AF2-086 E	1.9173	50/50	1.9173
958461	AF2-140	7.5705	50/50	7.5705
958511	AF2-145 C1	3.3401	50/50	3.3401
958512	AF2-145 E1	2.2268	50/50	2.2268
958521	AF2-145 C2	3.3400	50/50	3.3400
958522	AF2-145 E2	2.2267	50/50	2.2267
959121	AF2-203 C	2.8759	50/50	2.8759
959122	AF2-203 E	1.9173	50/50	1.9173
959411	AF2-232 C	5.7518	50/50	5.7518
959412	AF2-232 E	3.8346	50/50	3.8346
959421	AF2-233 C	1.1802	Adder	1.39
959422	AF2-233 E	0.7868	Adder	0.93
959431	AF2-234 C	2.3605	Adder	2.78
959432	AF2-234 E	1.5737	Adder	1.85
959932	AF2-284 E	0.4944	50/50	0.4944
959982	AF2-289 E	0.7415	50/50	0.7415
959992	AF2-290 E	0.3818	50/50	0.3818
960401	AF2-331 C	8.4522	50/50	8.4522
960402	AF2-331 E	5.6348	50/50	5.6348
960411	AF2-332 C	8.4522	50/50	8.4522
960412	AF2-332 E	5.6348	50/50	5.6348
960421	AF2-333 C	3.3809	50/50	3.3809
960422	AF2-333 E	2.2539	50/50	2.2539
960431	AF2-334 C	3.3809	50/50	3.3809
960432	AF2-334 E	2.2539	50/50	2.2539
961271	AF2-418 C	2.8759	50/50	2.8759
961272	AF2-418 E	1.9173	50/50	1.9173
961331	AF2-424 C	1.2996	Adder	1.53
961332	AF2-424 E	0.8664	Adder	1.02
961341	AF2-425 C	1.2996	Adder	1.53
961342	AF2-425 E	0.8664	Adder	1.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961362	AF2-427 E	0.7415	50/50	0.7415
961412	AF2-432 E	0.4793	50/50	0.4793
961421	AF2-433 C O1	2.8759	50/50	2.8759
961422	AF2-433 E O1	1.9173	50/50	1.9173
961431	AF2-434 C O1	2.8759	50/50	2.8759
961432	AF2-434 E O1	1.9173	50/50	1.9173
961531	AF2-444 C	1.2779	Adder	1.5
961532	AF2-444 E	0.8664	Adder	1.02
961541	AF2-445AC	1.3676	Adder	1.61
961542	AF2-445AE	0.9272	Adder	1.09
962061	AG1-050	3.8182	50/50	3.8182
962151	AG1-060 C	1.4751	Adder	3.27
962152	AG1-060 E	8.5581	Adder	19.0
963551	AG1-204 C	3.7355	50/50	3.7355
963552	AG1-204 E	2.0114	50/50	2.0114
963751	AG1-227 C	0.7371	Adder	1.64
963752	AG1-227 E	0.4914	Adder	1.09
963761	AG1-228 C	0.7371	Adder	1.64
963762	AG1-228 E	0.4914	Adder	1.09
963911	AG1-244 C	0.3388	Adder	0.75
963912	AG1-244 E	0.1824	Adder	0.4
964051	AG1-259 C	0.4327	Adder	0.96
964052	AG1-259 E	0.6047	Adder	1.34
964061	AG1-260 C	0.4327	Adder	0.96
964062	AG1-260 E	0.6047	Adder	1.34
964163	AG1-277 BAT	3.5734	50/50	3.5734
964173	AG1-278 BAT	0.6111	50/50	0.6111
964183	AG1-279 BAT	0.6111	50/50	0.6111
964671	AG1-330 C	0.2346	Adder	0.52
964672	AG1-330 E	0.0261	Adder	0.06
964731	AG1-336 C	0.2033	Adder	0.45
964732	AG1-336 E	0.0573	Adder	0.13
964741	AG1-337 C	0.1981	Adder	0.44
964742	AG1-337 E	0.0626	Adder	0.14
965311	AG1-396 C	0.2085	Adder	0.46
965312	AG1-396 E	0.1824	Adder	0.4
966351	AG1-504 C O1	23.6202	50/50	23.6202
966352	AG1-504 E O1	15.4594	50/50	15.4594
CALDERWOOD	CALDERWOOD	0.0507	Confirmed LTF	0.0507
NY	NY	0.4623	Confirmed LTF	0.4623
PRAIRIE	PRAIRIE	0.2092	Confirmed LTF	0.2092
O-066	O-066	10.8689	Confirmed LTF	10.8689
SIGE	SIGE	0.1616	Confirmed LTF	0.1616
CHEOAH	CHEOAH	0.0516	Confirmed LTF	0.0516
COTTONWOOD	COTTONWOOD	0.1953	Confirmed LTF	0.1953
G-007	G-007	1.5550	Confirmed LTF	1.5550
HAMLET	HAMLET	0.0785	Confirmed LTF	0.0785
GIBSON	GIBSON	0.0409	Confirmed LTF	0.0409
BLUEG	BLUEG	0.1302	Confirmed LTF	0.1302
TRIMBLE	TRIMBLE	0.0417	Confirmed LTF	0.0417
CATAWBA	CATAWBA	0.0437	Confirmed LTF	0.0437

10.6.6 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
165151361	938390	AE1-058_TAP	PPL	208072	SIEG	PPL	1	PL:48:P71:101752	tower	628.0	141.46	142.27	DC	11.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208941	FISH CT	1.5434	50/50	1.5434
208981	FOWH IPP	1.8216	50/50	1.8216
208982	GLBT IPP	4.5201	50/50	4.5201
209013	SCEN IPP	4.7406	50/50	4.7406
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	15.0238	50/50	15.0238
209027	LOR2_Q27	0.6284	50/50	0.6284
212266	LOR1	0.1929	50/50	0.1929
935083	AD1-143 BAT1 (Suspended)	0.5352	Merchant Transmission	0.5352
935103	AD1-143 BAT2 (Suspended)	0.5352	Merchant Transmission	0.5352
938392	AE1-058_GEN1	109.6648	50/50	109.6648
938393	AE1-058_GEN2	109.6648	50/50	109.6648
939891	AE1-225 C O1	0.8791	Adder	1.03
939892	AE1-225 E O1	0.9727	Adder	1.14
940561	AE2-042 C	5.3743	Adder	6.32
940562	AE2-042 E	2.6642	Adder	3.13
940721	AE2-059 C	0.9646	Adder	1.13
940722	AE2-059 E	1.3321	Adder	1.57
940941	AE2-084 C	0.9646	Adder	1.13
940942	AE2-084 E	1.3321	Adder	1.57
941161	AE2-110 C	1.5628	Adder	1.84
941162	AE2-110 E	2.1582	Adder	2.54
941171	AE2-111 C	0.7856	Adder	0.92
941172	AE2-111 E	1.0849	Adder	1.28
941371	AE2-133 C	0.7856	Adder	0.92
941372	AE2-133 E	1.0849	Adder	1.28
942281	AE2-241 C	1.5628	Adder	1.84
942282	AE2-241 E	2.1582	Adder	2.54
942561	AE2-271 C	8.5693	Adder	10.08
942562	AE2-271 E	5.7129	Adder	6.72
942771	AE2-295 C	5.9067	Adder	6.95
942772	AE2-295 E	34.2679	Adder	40.32
943721	AF1-040 C	0.0935	Adder	0.11
943722	AF1-040 E	1.7770	Adder	2.09
945511	AF1-216 C1O1	5.2655	Adder	6.19
945512	AF1-216 E1O1	3.5062	Adder	4.12
945521	AF1-216 C2O1	5.2655	Adder	6.19
945522	AF1-216 E2O1	3.5062	Adder	4.12
945611	AF1-226 C	2.7349	Adder	3.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945612	AF1-226 E	3.7768	Adder	4.44
946471	AF1-311 C O1	8.0127	Adder	9.43
946472	AF1-311 E O1	13.0733	Adder	15.38
946691	AF1-333 C O1	1.2375	Adder	1.46
946692	AF1-333 E O1	0.8250	Adder	0.97
946731	AF1-337 C	1.2375	Adder	1.46
946732	AF1-337 E	0.8250	Adder	0.97
946741	AF1-338 C	1.2375	Adder	1.46
946742	AF1-338 E	0.8250	Adder	0.97
946751	AF1-339 C O1	1.2375	Adder	1.46
946752	AF1-339 E O1	0.8250	Adder	0.97
946761	AF1-271AC	0.9540	Adder	1.12
946762	AF1-271AE	0.6360	Adder	0.75
957621	AF2-056 C	11.5299	50/50	11.5299
957622	AF2-056 E	5.9396	50/50	5.9396
957881	AF2-082 C	3.0863	Adder	3.63
957882	AF2-082 E	2.0576	Adder	2.42
957921	AF2-086 C	2.2326	Adder	2.63
957922	AF2-086 E	1.4884	Adder	1.75
958461	AF2-140	3.9673	Adder	4.67
958511	AF2-145 C1	1.8757	Adder	2.21
958512	AF2-145 E1	1.2505	Adder	1.47
958521	AF2-145 C2	1.8757	Adder	2.21
958522	AF2-145 E2	1.2505	Adder	1.47
959121	AF2-203 C	2.2326	Adder	2.63
959122	AF2-203 E	1.4884	Adder	1.75
959411	AF2-232 C	4.4652	Adder	5.25
959412	AF2-232 E	2.9768	Adder	3.5
959421	AF2-233 C	1.1223	Adder	1.32
959422	AF2-233 E	0.7482	Adder	0.88
959431	AF2-234 C	2.2446	Adder	2.64
959432	AF2-234 E	1.4964	Adder	1.76
959932	AF2-284 E	0.2616	Adder	0.31
959982	AF2-289 E	0.3923	Adder	0.46
959992	AF2-290 E	0.2297	Adder	0.27
960401	AF2-331 C	4.2172	Adder	4.96
960402	AF2-331 E	2.8115	Adder	3.31
960411	AF2-332 C	4.2172	Adder	4.96
960412	AF2-332 E	2.8115	Adder	3.31
960421	AF2-333 C	1.6869	Adder	1.98
960422	AF2-333 E	1.1246	Adder	1.32
960431	AF2-334 C	1.6869	Adder	1.98
960432	AF2-334 E	1.1246	Adder	1.32
961271	AF2-418 C	2.2326	Adder	2.63
961272	AF2-418 E	1.4884	Adder	1.75
961331	AF2-424 C	2.7580	Adder	3.24
961332	AF2-424 E	1.8387	Adder	2.16
961341	AF2-425 C	2.7580	Adder	3.24
961342	AF2-425 E	1.8387	Adder	2.16
961362	AF2-427 E	0.3923	Adder	0.46
961412	AF2-432 E	0.3721	Adder	0.44
961421	AF2-433 C O1	2.2326	Adder	2.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961422	AF2-433 E O1	1.4884	Adder	1.75
961431	AF2-434 C O1	2.2326	Adder	2.63
961432	AF2-434 E O1	1.4884	Adder	1.75
961531	AF2-444 C	2.7120	Adder	3.19
961532	AF2-444 E	1.8387	Adder	2.16
961541	AF2-445AC	4.1228	50/50	4.1228
961542	AF2-445AE	2.7951	50/50	2.7951
962061	AG1-050	1.2173	Adder	2.7
962151	AG1-060 C	3.1305	Adder	6.95
962152	AG1-060 E	18.1620	Adder	40.32
963551	AG1-204 C	0.4842	Adder	1.07
963552	AG1-204 E	0.2607	Adder	0.58
963751	AG1-227 C	4.1927	50/50	4.1927
963752	AG1-227 E	2.7951	50/50	2.7951
963761	AG1-228 C	4.1927	50/50	4.1927
963762	AG1-228 E	2.7951	50/50	2.7951
963911	AG1-244 C	0.3222	Adder	0.72
963912	AG1-244 E	0.1735	Adder	0.39
964051	AG1-259 C	0.4114	Adder	0.91
964052	AG1-259 E	0.5750	Adder	1.28
964061	AG1-260 C	0.4114	Adder	0.91
964062	AG1-260 E	0.5750	Adder	1.28
964671	AG1-330 C	0.2231	Adder	0.5
964672	AG1-330 E	0.0248	Adder	0.06
964731	AG1-336 C	0.1933	Adder	0.43
964732	AG1-336 E	0.0545	Adder	0.12
964741	AG1-337 C	0.1884	Adder	0.42
964742	AG1-337 E	0.0595	Adder	0.13
965311	AG1-396 C	0.1983	Adder	0.44
965312	AG1-396 E	0.1735	Adder	0.39
966351	AG1-504 C O1	3.0619	Adder	6.8
966352	AG1-504 E O1	2.0040	Adder	4.45
WEC	WEC	0.0441	Confirmed LTF	0.0441
LGEE	LGEE	0.0854	Confirmed LTF	0.0854
CPL	CPL	0.0430	Confirmed LTF	0.0430
CBM-W2	CBM-W2	1.1200	Confirmed LTF	1.1200
NY	NY	0.5923	Confirmed LTF	0.5923
TVA	TVA	0.1624	Confirmed LTF	0.1624
O-066	O-066	14.1667	Confirmed LTF	14.1667
SIGE	SIGE	0.2352	Confirmed LTF	0.2352
CBM-S2	CBM-S2	0.8248	Confirmed LTF	0.8248
CBM-S1	CBM-S1	0.0456	Confirmed LTF	0.0456
G-007	G-007	1.8669	Confirmed LTF	1.8669
MEC	MEC	0.2145	Confirmed LTF	0.2145
LAGN	LAGN	0.2047	Confirmed LTF	0.2047
CBM-W1	CBM-W1	2.0189	Confirmed LTF	2.0189

10.7 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
AB1-182	Bear Creek	Engineering and Procurement
AD1-143	Hauto-Siegfried 69 kV	Suspended
AE1-058	Frackville-Siegfried 230 kV	Active
AE1-181	St. Johns-Freeland 69 kV	Active
AE1-225	Columbia-Sunbury 69 kV	Active
AE2-042	Milton 69 kV	Active
AE2-046	Harwood-East Hazelton 69 kV	Active
AE2-059	Derry Tap-Derry Bus 69 kV	Active
AE2-084	Derry Tap-Derry Bus 69 kV	Active
AE2-110	Columbia-West Bloomsburg 69 kV	Active
AE2-111	Beavertown Tap-Beavertown Weaving Tap 69kV	Active
AE2-133	Penns Tap-Richfield Tie 69 kV	Active
AE2-241	Bloomsburg-Columbia 69 kV	Active
AE2-271	Montour 230 kV	Active
AE2-295	Eldred 230 kV	Active
AF1-040	Gratz Tap 69 kV	Active
AF1-216	Lycoming-Lock Haven 69 kV	Active
AF1-226	Bowmans Mill-Scott 69 kV	Active
AF1-271A	Gratz 69 kV	Active
AF1-311	Montour 230 kV	Active
AF1-333	Laurelton-Mifflinburg 69 kV	Active
AF1-337	Laurelton-Mifflinburg 69 kV	Active
AF1-338	Laurelton-Mifflinburg 69 kV	Active
AF1-339	Laurelton-Mifflinburg 69 kV	Active
AF2-056	Shenandoah Tap 1– Mahanoy Tap 2 69 kV	Active
AF2-082	Dauphin PG Tie–Dauphin Juniata Tie 69 k	Active
AF2-086	Scott Tap-Bowmans Mill Tap 69 kV	Active
AF2-140	Saegers 230 kV	Active
AF2-145	Lycoming-Lock Haven 69 kV	Active
AF2-203	Rohrsburg 12.5 kV	Active
AF2-232	Bowmanns Mill Tap-Scott 69 kV	Active
AF2-233	Penns-Richfield Tie #1 69 kV	Active
AF2-234	Sunbury Yard #1-Richfield Tie #2 69 kV	Active
AF2-251	Susquehanna unit 1 230 kV	Active
AF2-284	Watson 12.47 kV	Engineering and Procurement
AF2-289	Watson 12.47 kV	Engineering and Procurement
AF2-290	Derry 12.47 kV	Engineering and Procurement
AF2-331	Montour 230 kV	Active

Queue Number	Project Name	Status
AF2-332	Montour 230 kV	Active
AF2-333	Montour 230 kV	Active
AF2-334	Montour 230 kV	Active
AF2-418	Millville Tap 69 kV	Active
AF2-421	East Hazelton-Weatherly Tap 69	Active
AF2-424	Reed-Reed Tap #1 69 kV	Active
AF2-425	Sunbury-Eldred #2 69 kV	Active
AF2-427	Watson 12.47 kV	Engineering and Procurement
AF2-432	University 12.47 kV	Engineering and Procurement
AF2-433	Columbia-Geisinger Tap #1 69 kV	Active
AF2-434	Columbia-Geisinger Tap #1 69 kV	Active
AF2-444	Reed-Fairview Tap #2 69 kV	Active
AF2-445A	Fishbach-Port Carbon 69 kV	Active
AG1-050	Milton 69 kV	Active
AG1-060	Eldred 69 kV	Active
AG1-164	East Hazelton-Weatherly Tap 69 kV	Active
AG1-165	East Hazelton-Weatherly Tap 69 kV	Active
AG1-204	West Berwick 12.47 kV	Active
AG1-227	Altamont-Tuscarora 69 kV	Active
AG1-228	Alta Haute-Tuscarora 69 kV	Active
AG1-244	Middleburg 12.47 kV	Active
AG1-259	Sunbury-Dalmatia 69 kV	Active
AG1-260	Sunbury-Dalmatia 69 kV	Active
AG1-277	Salem-Beacon Power 69 kV	Active
AG1-278	Salem-Beacon Power 69 kV	Active
AG1-279	Salem-Beacon Power 69 kV	Active
AG1-330	Beavertown 12.47 kV	Active
AG1-336	Hunter 12.47 kV	Active
AG1-337	Elizabethville 12.47 kV	Active
AG1-396	Dauphin-Pine Grove 69 kV	Active
AG1-504	Salem-Harwood 69 kV	Active
W1-111	Harwood-Berwick 69kV	In Service

10.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
PL:48:P71:102649	CONTINGENCY 'PL:48:P71:102649' /* SUSQ-GEN1 230KV & BETA-SUSQ 230KV DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ DISCONNECT BUS 208114 /* SUSQ G1 END
PL:08:P12:102877	CONTINGENCY 'PL:08:P12:102877' /* MONT-MILT 2 230KV LINE DISCONNECT BRANCH FROM BUS 208034 TO BUS 208040 CKT 2 /* MILT-MONT 2 230KV END
PL:08:P12:102876	CONTINGENCY 'PL:08:P12:102876' /* SUNB-MILT 2 230KV LINE DISCONNECT BRANCH FROM BUS 208034 TO BUS 208109 CKT 2 /* MILT-SUNB 2 230KV END
PL:08:P13:100456	CONTINGENCY 'PL:08:P13:100456' /* SUNB TR24 500-230KV DISCONNECT BRANCH FROM BUS 200021 TO BUS 208109 CKT 24 /* SUNBURY-SUNB END
PL:08:P12:001347	CONTINGENCY 'PL:08:P12:001347' /* SUNB-MILT 1 230KV LINE DISCONNECT BRANCH FROM BUS 208034 TO BUS 208109 CKT 1 /* MILT-SUNB 1 230KV END
PL:08:P12:001346	CONTINGENCY 'PL:08:P12:001346' /* MONT-MILT 1 230KV LINE DISCONNECT BRANCH FROM BUS 208034 TO BUS 208040 CKT 1 /* MILT-MONT 1 230KV END
PL:08:P71:102899	CONTINGENCY 'PL:08:P71:102899' /* MONT-MILT 1 & 2 230KV LINE DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 2 /* MONT-MILT 2 230KV DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 1 /* MONT-MILT 1 230KV END
Base Case	
PL:08:P13:101349	CONTINGENCY 'PL:08:P13:101349' /* SUNB TR25 500-230KV DISCONNECT BRANCH FROM BUS 200021 TO BUS 208109 CKT 25 /* SUNBURY-SUNB END
PL:08:P12:101740	CONTINGENCY 'PL:08:P12:101740' /* BETA-SU10 230KV LINE DISCONNECT BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 /* BETA-SU10 END

Contingency Name	Contingency Definition
PL:48:P71:101752	CONTINGENCY 'PL:48:P71:101752' /* BETA-SUSQ 230KV & BETA-SU10 230KV DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ DISCONNECT BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 /* BETA-SU10 END
PL:08:P71:102900	CONTINGENCY 'PL:08:P71:102900' /* MILT-SUNB 1 & 2 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 1 /* SUNB-MILT 1 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 2 /* SUNB-MILT 2 230KV LINE END
PL:48:P12:101741	CONTINGENCY 'PL:48:P12:101741' /* BETA-SUSQ 230KV LINE DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ END

11 Short Circuit Analysis - Primary POI

The following Breakers are overdutied:

None

11.1 System Reinforcements - Short Circuit

None

12 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-504 was evaluated as a 68.0 MW (Capacity 41.1 MW) injection at the 69 kV **Glen Brook substation** in the PPL area. Project AG1-504 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-504 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

12.1 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
167754467	207915	GLBR	230.0	PPL	208120	SU10	230.0	PPL	1	PL:48:P12:101741	single	801.0	99.72	103.22	DC	28.07
167754481	207915	GLBR	230.0	PPL	208113	SUSQ	230.0	PPL	1	PL:08:P12:101740	single	801.0	97.61	101.07	DC	27.74

12.2 Multiple Facility Contingency

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

None

12.3 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
165151332	207915	GLBR	230.0	PPL	208120	SU10	230.0	PPL	1	PL:48:P71:102649	tower	801.0	144.36	150.01	DC	46.37
165151374	207968	ELIM	230.0	PPL	208109	SUNB	230.0	PPL	1	PL:08:P71:102899	tower	537.0	134.29	134.86	DC	6.59
165151375	207968	ELIM	230.0	PPL	208109	SUNB	230.0	PPL	1	PL:08:P71:102900	tower	537.0	131.22	131.78	DC	6.58
165151414	207973	FRAC	230.0	PPL	938390	AE1-058_TAP	230.0	PPL	1	PL:48:P71:101752	tower	628.0	114.6	115.41	DC	11.25
174329863	208109	SUNB	230.0	PPL	200021	SUNBURY	500.0	PPL	24	PL:08:P42:000925	breaker	1097.0	128.19	128.6	DC	15.2
174329909	208109	SUNB	230.0	PPL	200021	SUNBURY	500.0	PPL	25	PL:08:P42:000924	breaker	1165.0	120.76	121.14	DC	15.2
165151395	208120	SU10	230.0	PPL	208113	SUSQ	230.0	PPL	1	PL:48:P71:102649	tower	801.0	119.85	124.63	DC	39.08
165151361	938390	AE1-058_TAP	230.0	PPL	208072	SIEG	230.0	PPL	1	PL:48:P71:101752	tower	628.0	141.46	142.27	DC	11.25

12.4 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
167754466	207915	GLBR	230	PPL	208120	SU10	230	PPL	1	PL:48:P 12:1017 41	operation	801	123.5	129.16	DC	46.44
167754480	207915	GLBR	230	PPL	208113	SUSQ	230	PPL	1	PL:08:P 12:1017 40	operation	801	121.05	126.64	DC	45.89
167754588	208034	MILT	230	PPL	208109	SUNB	230	PPL	2	PL:08:P 12:0013 47	operation	730	110.09	111.25	DC	8.42
167754590	208034	MILT	230	PPL	208109	SUNB	230	PPL	1	PL:08:P 12:1028 76	operation	730	110.09	111.25	DC	8.42
167754662	208040	MONT	230	PPL	208034	MILT	230	PPL	1	PL:08:P 12:1028 77	operation	801	101.56	102.6	DC	8.23
167754664	208040	MONT	230	PPL	208034	MILT	230	PPL	2	PL:08:P 12:0013 46	operation	801	101.56	102.6	DC	8.23
167754525	208109	SUNB	230	PPL	200021	SUNBURY	500	PPL	24	PL:08:P 13:1013 49	operation	1097	119.21	119.63	DC	15.24
167754526	208109	SUNB	230	PPL	200021	SUNBURY	500	PPL	24	Base Case	operation	771	103.32	103.68	DC	9.28
167754571	208109	SUNB	230	PPL	200021	SUNBURY	500	PPL	25	PL:08:P 13:1004 56	operation	1165	112.31	112.7	DC	15.25
167754674	208116	SUSQT R21	230	PPL	200022	SUSQUEH ANNA	500	PPL	21	Base Case	operation	771	99.65	102.2	DC	19.48

12.5 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".

12.5.1 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
165151332	207915	GLBR	PPL	208120	SU10	PPL	1	PL:48:P71:102649	tower	801.0	144.36	150.01	DC	46.37

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	41.5535	50/50	41.5535
208912	MONT G2 (Deactivation : 18/02/2019)	41.5207	50/50	41.5207
208945	LOHA CT	0.5863	50/50	0.5863
208948	WILL CT	1.2207	50/50	1.2207
209013	SCEN IPP	2.4754	50/50	2.4754
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	6.6682	Adder	7.84
211375	BEAC	-2.0879	Adder	-2.46
212005	ALWD	0.1426	50/50	0.1426
212369	PATRIOT 1	18.9247	50/50	18.9247
212370	PATRIOT 2	18.9247	50/50	18.9247
212435	SMIL	0.0768	50/50	0.0768
923674	AB1-182 BAT	2.5706	Merchant Transmission	2.5706
938392	AE1-058_GEN1	34.4442	Adder	40.52
938393	AE1-058_GEN2	34.4442	Adder	40.52
939891	AE1-225 C O1	1.2561	Adder	1.48
939892	AE1-225 E O1	1.3897	Adder	1.63
940561	AE2-042 C	11.3850	50/50	11.3850
940562	AE2-042 E	5.6439	50/50	5.6439
940593	AE2-046 BAT	3.6846	Merchant Transmission	3.6846
940721	AE2-059 C	2.0435	50/50	2.0435
940722	AE2-059 E	2.8219	50/50	2.8219
940941	AE2-084 C	2.0435	50/50	2.0435
940942	AE2-084 E	2.8219	50/50	2.8219
941161	AE2-110 C	2.5161	50/50	2.5161
941162	AE2-110 E	3.4747	50/50	3.4747
941171	AE2-111 C	1.1225	Adder	1.32
941172	AE2-111 E	1.5501	Adder	1.82
941371	AE2-133 C	1.1225	Adder	1.32
941372	AE2-133 E	1.5501	Adder	1.82
942281	AE2-241 C	2.5161	50/50	2.5161
942282	AE2-241 E	3.4747	50/50	3.4747
942561	AE2-271 C	21.1678	50/50	21.1678
942562	AE2-271 E	14.1118	50/50	14.1118
942771	AE2-295 C	3.7506	Adder	4.41
942772	AE2-295 E	21.7591	Adder	25.6
943721	AF1-040 C	0.1336	Adder	0.16
943722	AF1-040 E	2.5389	Adder	2.99
945511	AF1-216 C1O1	11.7954	50/50	11.7954
945512	AF1-216 E1O1	7.8544	50/50	7.8544
945521	AF1-216 C2O1	11.7949	50/50	11.7949

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945522	AF1-216 E2O1	7.8541	50/50	7.8541
945611	AF1-226 C	4.4032	50/50	4.4032
945612	AF1-226 E	6.0807	50/50	6.0807
946471	AF1-311 C O1	19.7927	50/50	19.7927
946472	AF1-311 E O1	32.2933	50/50	32.2933
946691	AF1-333 C O1	2.3514	50/50	2.3514
946692	AF1-333 E O1	1.5676	50/50	1.5676
946731	AF1-337 C	2.3514	50/50	2.3514
946732	AF1-337 E	1.5676	50/50	1.5676
946741	AF1-338 C	2.3514	50/50	2.3514
946742	AF1-338 E	1.5676	50/50	1.5676
946751	AF1-339 C O1	2.3514	50/50	2.3514
946752	AF1-339 E O1	1.5676	50/50	1.5676
946761	AF1-271AC	1.3630	Adder	1.6
946762	AF1-271AE	0.9087	Adder	1.07
957621	AF2-056 C	5.1174	Adder	6.02
957622	AF2-056 E	2.6363	Adder	3.1
957881	AF2-082 C	4.4097	Adder	5.19
957882	AF2-082 E	2.9398	Adder	3.46
957921	AF2-086 C	3.5945	50/50	3.5945
957922	AF2-086 E	2.3963	50/50	2.3963
958461	AF2-140	9.4080	50/50	9.4080
958511	AF2-145 C1	4.2018	50/50	4.2018
958512	AF2-145 E1	2.8012	50/50	2.8012
958521	AF2-145 C2	4.2017	50/50	4.2017
958522	AF2-145 E2	2.8011	50/50	2.8011
959121	AF2-203 C	3.5945	50/50	3.5945
959122	AF2-203 E	2.3963	50/50	2.3963
959411	AF2-232 C	7.1890	50/50	7.1890
959412	AF2-232 E	4.7926	50/50	4.7926
959421	AF2-233 C	1.6035	Adder	1.89
959422	AF2-233 E	1.0690	Adder	1.26
959431	AF2-234 C	3.2071	Adder	3.77
959432	AF2-234 E	2.1381	Adder	2.52
959932	AF2-284 E	0.6154	50/50	0.6154
959982	AF2-289 E	0.9231	50/50	0.9231
959992	AF2-290 E	0.4865	50/50	0.4865
960401	AF2-331 C	10.4172	50/50	10.4172
960402	AF2-331 E	6.9448	50/50	6.9448
960411	AF2-332 C	10.4172	50/50	10.4172
960412	AF2-332 E	6.9448	50/50	6.9448
960421	AF2-333 C	4.1669	50/50	4.1669
960422	AF2-333 E	2.7779	50/50	2.7779
960431	AF2-334 C	4.1669	50/50	4.1669
960432	AF2-334 E	2.7779	50/50	2.7779
961271	AF2-418 C	3.5945	50/50	3.5945
961272	AF2-418 E	2.3963	50/50	2.3963
961331	AF2-424 C	1.7512	Adder	2.06
961332	AF2-424 E	1.1675	Adder	1.37
961341	AF2-425 C	1.7512	Adder	2.06
961342	AF2-425 E	1.1675	Adder	1.37
961362	AF2-427 E	0.9231	50/50	0.9231

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961412	AF2-432 E	0.5991	50/50	0.5991
961421	AF2-433 C O1	3.5945	50/50	3.5945
961422	AF2-433 E O1	2.3963	50/50	2.3963
961431	AF2-434 C O1	3.5945	50/50	3.5945
961432	AF2-434 E O1	2.3963	50/50	2.3963
961531	AF2-444 C	1.7221	Adder	2.03
961532	AF2-444 E	1.1675	Adder	1.37
961541	AF2-445AC	1.8299	Adder	2.15
961542	AF2-445AE	1.2406	Adder	1.46
962061	AG1-050	4.8654	50/50	4.8654
962151	AG1-060 C	1.9878	Adder	4.41
962152	AG1-060 E	11.5323	Adder	25.6
963551	AG1-204 C	4.4321	50/50	4.4321
963552	AG1-204 E	2.3865	50/50	2.3865
963751	AG1-227 C	0.9863	Adder	2.19
963752	AG1-227 E	0.6575	Adder	1.46
963761	AG1-228 C	0.9863	Adder	2.19
963762	AG1-228 E	0.6575	Adder	1.46
963911	AG1-244 C	0.4604	Adder	1.02
963912	AG1-244 E	0.2479	Adder	0.55
964051	AG1-259 C	0.5878	Adder	1.3
964052	AG1-259 E	0.8215	Adder	1.82
964061	AG1-260 C	0.5878	Adder	1.3
964062	AG1-260 E	0.8215	Adder	1.82
964163	AG1-277 BAT	1.3019	Merchant Transmission	1.3019
964173	AG1-278 BAT	0.2226	Merchant Transmission	0.2226
964183	AG1-279 BAT	0.2226	Merchant Transmission	0.2226
964671	AG1-330 C	0.3187	Adder	0.71
964672	AG1-330 E	0.0354	Adder	0.08
964731	AG1-336 C	0.2762	Adder	0.61
964732	AG1-336 E	0.0779	Adder	0.17
964741	AG1-337 C	0.2691	Adder	0.6
964742	AG1-337 E	0.0850	Adder	0.19
965311	AG1-396 C	0.2833	Adder	0.63
965312	AG1-396 E	0.2479	Adder	0.55
966351	AG1-504 C O2	28.0244	50/50	28.0244
966352	AG1-504 E O2	18.3420	50/50	18.3420
CALDERWOOD	CALDERWOOD	0.0477	Confirmed LTF	0.0477
NY	NY	1.3007	Confirmed LTF	1.3007
PRAIRIE	PRAIRIE	0.2299	Confirmed LTF	0.2299
O-066	O-066	12.7870	Confirmed LTF	12.7870
SIGE	SIGE	0.1904	Confirmed LTF	0.1904
CHEOAH	CHEOAH	0.0480	Confirmed LTF	0.0480
COTTONWOOD	COTTONWOOD	0.1953	Confirmed LTF	0.1953
G-007	G-007	1.7241	Confirmed LTF	1.7241
HAMLET	HAMLET	0.0635	Confirmed LTF	0.0635
GIBSON	GIBSON	0.0470	Confirmed LTF	0.0470
BLUEG	BLUEG	0.1493	Confirmed LTF	0.1493
TRIMBLE	TRIMBLE	0.0473	Confirmed LTF	0.0473
CATAWBA	CATAWBA	0.0367	Confirmed LTF	0.0367

12.5.2 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
167754481	207915	GLBR	PPL	208113	SUSQ	PPL	1	PL:08:P12:101740	single	801.0	97.61	101.07	DC	27.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	41.1024	80/20	41.1024
208912	MONT G2 (Deactivation : 18/02/2019)	41.0699	80/20	41.0699
208941	FISH CT	0.7959	80/20	0.7959
208945	LOHA CT	0.5798	80/20	0.5798
208948	WILL CT	1.2071	80/20	1.2071
208981	FOWH IPP	1.1422	80/20	1.1422
208982	GLBT IPP	2.3309	80/20	2.3309
209013	SCEN IPP	2.4446	80/20	2.4446
209018	SUNBIPCT	0.8819	80/20	0.8819
209021	WEST IPP	0.8694	80/20	0.8694
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	7.7473	80/20	7.7473
209027	LOR2_Q27	0.3240	80/20	0.3240
212005	ALWD	0.1410	80/20	0.1410
212099	COLA IPP	0.2140	80/20	0.2140
212174	INGE	0.1632	80/20	0.1632
212266	LOR1	0.0995	80/20	0.0995
212345	PENS	0.0735	80/20	0.0735
212369	PATRIOT 1	18.7172	80/20	18.7172
212370	PATRIOT 2	18.7172	80/20	18.7172
212435	SMIL	0.0759	80/20	0.0759
938392	AE1-058_GEN1	39.9897	80/20	39.9897
938393	AE1-058_GEN2	39.9897	80/20	39.9897
939891	AE1-225 C O1	1.4595	80/20	1.4595
940561	AE2-042 C	11.2559	80/20	11.2559
940721	AE2-059 C	2.0203	80/20	2.0203
940941	AE2-084 C	2.0203	80/20	2.0203
941161	AE2-110 C	2.4881	80/20	2.4881
941171	AE2-111 C	1.3043	80/20	1.3043
941371	AE2-133 C	1.3043	80/20	1.3043
942281	AE2-241 C	2.4881	80/20	2.4881
942561	AE2-271 C	20.9379	80/20	20.9379
942771	AE2-295 C	4.3574	80/20	4.3574
943721	AF1-040 C	0.1553	80/20	0.1553
945511	AF1-216 C1O1	11.6639	80/20	11.6639
945521	AF1-216 C2O1	11.6635	80/20	11.6635
945611	AF1-226 C	4.3541	80/20	4.3541
946471	AF1-311 C O1	19.5778	80/20	19.5778
946691	AF1-333 C O1	2.3237	80/20	2.3237
946731	AF1-337 C	2.3237	80/20	2.3237
946741	AF1-338 C	2.3237	80/20	2.3237

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946751	AF1-339 C O1	2.3237	80/20	2.3237
946761	AF1-271AC	1.5838	80/20	1.5838
957621	AF2-056 C	5.9456	80/20	5.9456
957881	AF2-082 C	5.1239	80/20	5.1239
957921	AF2-086 C	3.5544	80/20	3.5544
958461	AF2-140	9.3048	80/20	9.3048
958511	AF2-145 C1	4.1550	80/20	4.1550
958521	AF2-145 C2	4.1549	80/20	4.1549
959121	AF2-203 C	3.5544	80/20	3.5544
959411	AF2-232 C	7.1088	80/20	7.1088
959421	AF2-233 C	1.8632	80/20	1.8632
959431	AF2-234 C	3.7265	80/20	3.7265
960401	AF2-331 C	10.3041	80/20	10.3041
960411	AF2-332 C	10.3041	80/20	10.3041
960421	AF2-333 C	4.1216	80/20	4.1216
960431	AF2-334 C	4.1216	80/20	4.1216
961271	AF2-418 C	3.5544	80/20	3.5544
961331	AF2-424 C	2.0346	80/20	2.0346
961341	AF2-425 C	2.0346	80/20	2.0346
961421	AF2-433 C O1	3.5544	80/20	3.5544
961431	AF2-434 C O1	3.5544	80/20	3.5544
961531	AF2-444 C	2.0007	80/20	2.0007
961541	AF2-445AC	2.1260	80/20	2.1260
962061	AG1-050	4.8102	80/20	4.8102
962151	AG1-060 C	4.3574	80/20	4.3574
963551	AG1-204 C	4.3869	80/20	4.3869
963751	AG1-227 C	2.1620	80/20	2.1620
963761	AG1-228 C	2.1620	80/20	2.1620
963911	AG1-244 C	1.0093	80/20	1.0093
964051	AG1-259 C	1.2887	80/20	1.2887
964061	AG1-260 C	1.2887	80/20	1.2887
964671	AG1-330 C	0.6987	80/20	0.6987
964731	AG1-336 C	0.6056	80/20	0.6056
964741	AG1-337 C	0.5900	80/20	0.5900
965311	AG1-396 C	0.6211	80/20	0.6211
966351	AG1-504 C O2	27.7388	80/20	27.7388
WEC	WEC	0.0072	Confirmed LTF	0.0072
LGEE	LGEE	0.0145	Confirmed LTF	0.0145
CBM-W2	CBM-W2	0.1613	Confirmed LTF	0.1613
NY	NY	1.1818	Confirmed LTF	1.1818
TVA	TVA	0.0210	Confirmed LTF	0.0210
SIGE	SIGE	0.1882	Confirmed LTF	0.1882
CBM-S1	CBM-S1	0.0061	Confirmed LTF	0.0061
HAMLET	HAMLET	0.0023	Confirmed LTF	0.0023
MEC	MEC	0.0334	Confirmed LTF	0.0334
LAGN	LAGN	0.0263	Confirmed LTF	0.0263
CBM-W1	CBM-W1	0.3084	Confirmed LTF	0.3084

12.5.3 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
165151374	207968	ELIM	PPL	208109	SUNB	PPL	1	PL:08:P71:102899	tower	537.0	134.29	134.86	DC	6.59

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	28.3015	50/50	28.3015
208912	MONT G2 (Deactivation : 18/02/2019)	28.2791	50/50	28.2791
208943	HARW CT	1.2811	Adder	1.51
208945	LOHA CT	0.7423	50/50	0.7423
208948	WILL CT	1.7287	50/50	1.7287
209006	NEPC IPP (Deactivation : 24/10/2018)	1.1304	Adder	1.33
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	2.8180	Adder	3.32
211369	W1-111 BAT	0.0047	Adder	0.01
211375	BEAC	0.9420	Adder	1.11
212005	ALWD	0.2019	50/50	0.2019
212369	PATRIOT 1	20.6899	50/50	20.6899
212370	PATRIOT 2	20.6899	50/50	20.6899
938392	AE1-058_GEN1	15.8300	Adder	18.62
938393	AE1-058_GEN2	15.8300	Adder	18.62
939521	AE1-181 C	1.2717	Adder	1.5
939522	AE1-181 E	0.8478	Adder	1.0
940592	AE2-046 E	1.2246	Adder	1.44
941161	AE2-110 C	1.6001	50/50	1.6001
941162	AE2-110 E	2.2097	50/50	2.2097
942281	AE2-241 C	1.6001	50/50	1.6001
942282	AE2-241 E	2.2097	50/50	2.2097
942561	AE2-271 C	14.4170	50/50	14.4170
942562	AE2-271 E	9.6114	50/50	9.6114
943723	AF1-040 BAT	1.4480	Merchant Transmission	1.4480
945511	AF1-216 C1O1	15.9207	50/50	15.9207
945512	AF1-216 E1O1	10.6014	50/50	10.6014
945521	AF1-216 C2O1	15.9190	50/50	15.9190
945522	AF1-216 E2O1	10.6003	50/50	10.6003
945611	AF1-226 C	2.8002	50/50	2.8002
945612	AF1-226 E	3.8669	50/50	3.8669
946471	AF1-311 C O1	13.4805	50/50	13.4805
946472	AF1-311 E O1	21.9945	50/50	21.9945
946691	AF1-333 C O1	0.7525	Adder	0.89
946692	AF1-333 E O1	0.5016	Adder	0.59
946731	AF1-337 C	0.7525	Adder	0.89
946732	AF1-337 E	0.5016	Adder	0.59
946741	AF1-338 C	0.7525	Adder	0.89
946742	AF1-338 E	0.5016	Adder	0.59
946751	AF1-339 C O1	0.7525	Adder	0.89

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946752	AF1-339 E O1	0.5016	Adder	0.59
957621	AF2-056 C	2.1627	Adder	2.54
957622	AF2-056 E	1.1141	Adder	1.31
957921	AF2-086 C	2.2859	50/50	2.2859
957922	AF2-086 E	1.5239	50/50	1.5239
958461	AF2-140	10.2855	50/50	10.2855
958511	AF2-145 C1	5.6714	50/50	5.6714
958512	AF2-145 E1	3.7809	50/50	3.7809
958521	AF2-145 C2	5.6708	50/50	5.6708
958522	AF2-145 E2	3.7805	50/50	3.7805
959121	AF2-203 C	2.2859	50/50	2.2859
959122	AF2-203 E	1.5239	50/50	1.5239
959411	AF2-232 C	4.5718	50/50	4.5718
959412	AF2-232 E	3.0478	50/50	3.0478
959602	AF2-251 E	2.6792	Adder	3.15
959932	AF2-284 E	0.7231	50/50	0.7231
959982	AF2-289 E	1.0847	50/50	1.0847
959993	AF2-290 BAT	0.1435	Merchant Transmission	0.1435
960401	AF2-331 C	7.0950	50/50	7.0950
960402	AF2-331 E	4.7300	50/50	4.7300
960411	AF2-332 C	7.0950	50/50	7.0950
960412	AF2-332 E	4.7300	50/50	4.7300
960421	AF2-333 C	2.8380	50/50	2.8380
960422	AF2-333 E	1.8920	50/50	1.8920
960431	AF2-334 C	2.8380	50/50	2.8380
960432	AF2-334 E	1.8920	50/50	1.8920
961271	AF2-418 C	2.2859	50/50	2.2859
961272	AF2-418 E	1.5239	50/50	1.5239
961301	AF2-421 C	0.5652	Adder	0.66
961302	AF2-421 E	0.3768	Adder	0.44
961362	AF2-427 E	1.0847	50/50	1.0847
961412	AF2-432 E	0.3810	50/50	0.3810
961421	AF2-433 C O1	2.2859	50/50	2.2859
961422	AF2-433 E O1	1.5239	50/50	1.5239
961431	AF2-434 C O1	2.2859	50/50	2.2859
961432	AF2-434 E O1	1.5239	50/50	1.5239
961541	AF2-445AC	0.7733	Adder	0.91
961542	AF2-445AE	0.5243	Adder	0.62
962062	AG1-050 BAT	1.0141	Merchant Transmission	1.0141
963151	AG1-164 C	0.2995	Adder	0.66
963152	AG1-164 E	0.1997	Adder	0.44
963161	AG1-165 C	0.2995	Adder	0.66
963162	AG1-165 E	0.1997	Adder	0.44
963551	AG1-204 C	0.2836	Adder	0.63
963552	AG1-204 E	0.1527	Adder	0.34
963751	AG1-227 C	0.4168	Adder	0.93
963752	AG1-227 E	0.2779	Adder	0.62
963761	AG1-228 C	0.4168	Adder	0.93
963762	AG1-228 E	0.2779	Adder	0.62
964161	AG1-277 C	0.7988	Adder	1.77
964162	AG1-277 E	0.1997	Adder	0.44
964171	AG1-278 C	0.3844	Adder	0.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964172	AG1-278 E	0.1148	Adder	0.25
964181	AG1-279 C	0.3844	Adder	0.85
964182	AG1-279 E	0.1148	Adder	0.25
964673	AG1-330 BAT	0.1727	Merchant Transmission	0.1727
964733	AG1-336 BAT	0.1209	Merchant Transmission	0.1209
964743	AG1-337 BAT	0.1209	Merchant Transmission	0.1209
966351	AG1-504 C O2	1.7930	Adder	3.98
966352	AG1-504 E O2	1.1736	Adder	2.61
G-007A	G-007A	1.1484	Confirmed LTF	1.1484
VFT	VFT	3.8442	Confirmed LTF	3.8442
CALDERWOOD	CALDERWOOD	0.3126	Confirmed LTF	0.3126
PRAIRIE	PRAIRIE	1.6454	Confirmed LTF	1.6454
CHEOAH	CHEOAH	0.3143	Confirmed LTF	0.3143
CBM-N	CBM-N	0.8232	Confirmed LTF	0.8232
COTTONWOOD	COTTONWOOD	1.3272	Confirmed LTF	1.3272
HAMLET	HAMLET	0.3540	Confirmed LTF	0.3540
GIBSON	GIBSON	0.3494	Confirmed LTF	0.3494
BLUEG	BLUEG	1.1110	Confirmed LTF	1.1110
TRIMBLE	TRIMBLE	0.3562	Confirmed LTF	0.3562
CATAWBA	CATAWBA	0.2163	Confirmed LTF	0.2163

12.5.4 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
165151414	207973	FRAC	PPL	938390	AE1-058_TAP	PPL	1	PL:48:P71:101752	tower	628.0	114.6	115.41	DC	11.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208941	FISH CT	1.5434	50/50	1.5434
208981	FOWH IPP	1.8216	50/50	1.8216
208982	GLBT IPP	4.5201	50/50	4.5201
209013	SCEN IPP	4.7406	50/50	4.7406
209021	WEST IPP	1.3864	50/50	1.3864
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	15.0238	50/50	15.0238
209027	LOR2_Q27	0.6284	50/50	0.6284
212099	COLA IPP	0.3413	50/50	0.3413
212174	INGE	0.2602	50/50	0.2602
212266	LOR1	0.1929	50/50	0.1929
935083	AD1-143 BAT1 (Suspended)	0.5352	Merchant Transmission	0.5352
935103	AD1-143 BAT2 (Suspended)	0.5352	Merchant Transmission	0.5352
939891	AE1-225 C O1	0.8791	Adder	1.03
939892	AE1-225 E O1	0.9727	Adder	1.14
940561	AE2-042 C	5.3743	Adder	6.32
940562	AE2-042 E	2.6642	Adder	3.13
940721	AE2-059 C	0.9646	Adder	1.13
940722	AE2-059 E	1.3321	Adder	1.57
940941	AE2-084 C	0.9646	Adder	1.13
940942	AE2-084 E	1.3321	Adder	1.57
941161	AE2-110 C	1.8386	50/50	1.8386
941162	AE2-110 E	2.5390	50/50	2.5390
941171	AE2-111 C	0.7856	Adder	0.92
941172	AE2-111 E	1.0849	Adder	1.28
941371	AE2-133 C	0.7856	Adder	0.92
941372	AE2-133 E	1.0849	Adder	1.28
942281	AE2-241 C	1.8386	50/50	1.8386
942282	AE2-241 E	2.5390	50/50	2.5390
942561	AE2-271 C	8.5693	Adder	10.08
942562	AE2-271 E	5.7129	Adder	6.72
942771	AE2-295 C	6.9490	50/50	6.9490
942772	AE2-295 E	40.3152	50/50	40.3152
943721	AF1-040 C	0.0935	Adder	0.11
943722	AF1-040 E	1.7770	Adder	2.09
945511	AF1-216 C1O1	5.2655	Adder	6.19
945512	AF1-216 E1O1	3.5062	Adder	4.12
945521	AF1-216 C2O1	5.2655	Adder	6.19
945522	AF1-216 E2O1	3.5062	Adder	4.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945611	AF1-226 C	3.2175	50/50	3.2175
945612	AF1-226 E	4.4433	50/50	4.4433
946471	AF1-311 C O1	8.0127	Adder	9.43
946472	AF1-311 E O1	13.0733	Adder	15.38
946691	AF1-333 C O1	1.2375	Adder	1.46
946692	AF1-333 E O1	0.8250	Adder	0.97
946731	AF1-337 C	1.2375	Adder	1.46
946732	AF1-337 E	0.8250	Adder	0.97
946741	AF1-338 C	1.2375	Adder	1.46
946742	AF1-338 E	0.8250	Adder	0.97
946751	AF1-339 C O1	1.2375	Adder	1.46
946752	AF1-339 E O1	0.8250	Adder	0.97
946761	AF1-271AC	0.9540	Adder	1.12
946762	AF1-271AE	0.6360	Adder	0.75
957621	AF2-056 C	11.5299	50/50	11.5299
957622	AF2-056 E	5.9396	50/50	5.9396
957881	AF2-082 C	3.0863	Adder	3.63
957882	AF2-082 E	2.0576	Adder	2.42
957921	AF2-086 C	2.6266	50/50	2.6266
957922	AF2-086 E	1.7510	50/50	1.7510
958461	AF2-140	3.9673	Adder	4.67
958511	AF2-145 C1	1.8757	Adder	2.21
958512	AF2-145 E1	1.2505	Adder	1.47
958521	AF2-145 C2	1.8757	Adder	2.21
958522	AF2-145 E2	1.2505	Adder	1.47
959121	AF2-203 C	2.6266	50/50	2.6266
959122	AF2-203 E	1.7510	50/50	1.7510
959411	AF2-232 C	5.2531	50/50	5.2531
959412	AF2-232 E	3.5021	50/50	3.5021
959421	AF2-233 C	1.1223	Adder	1.32
959422	AF2-233 E	0.7482	Adder	0.88
959431	AF2-234 C	2.2446	Adder	2.64
959432	AF2-234 E	1.4964	Adder	1.76
959932	AF2-284 E	0.2616	Adder	0.31
959982	AF2-289 E	0.3923	Adder	0.46
959992	AF2-290 E	0.2297	Adder	0.27
960401	AF2-331 C	4.2172	Adder	4.96
960402	AF2-331 E	2.8115	Adder	3.31
960411	AF2-332 C	4.2172	Adder	4.96
960412	AF2-332 E	2.8115	Adder	3.31
960421	AF2-333 C	1.6869	Adder	1.98
960422	AF2-333 E	1.1246	Adder	1.32
960431	AF2-334 C	1.6869	Adder	1.98
960432	AF2-334 E	1.1246	Adder	1.32
961271	AF2-418 C	2.6266	50/50	2.6266
961272	AF2-418 E	1.7510	50/50	1.7510
961331	AF2-424 C	3.2447	50/50	3.2447
961332	AF2-424 E	2.1631	50/50	2.1631
961341	AF2-425 C	3.2447	50/50	3.2447
961342	AF2-425 E	2.1631	50/50	2.1631
961362	AF2-427 E	0.3923	Adder	0.46
961412	AF2-432 E	0.4378	50/50	0.4378

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961421	AF2-433 C O1	2.6266	50/50	2.6266
961422	AF2-433 E O1	1.7510	50/50	1.7510
961431	AF2-434 C O1	2.6266	50/50	2.6266
961432	AF2-434 E O1	1.7510	50/50	1.7510
961531	AF2-444 C	3.1906	50/50	3.1906
961532	AF2-444 E	2.1631	50/50	2.1631
961541	AF2-445AC	4.1228	50/50	4.1228
961542	AF2-445AE	2.7951	50/50	2.7951
962061	AG1-050	1.2173	Adder	2.7
962151	AG1-060 C	6.9490	50/50	6.9490
962152	AG1-060 E	40.3152	50/50	40.3152
963551	AG1-204 C	0.4842	Adder	1.07
963552	AG1-204 E	0.2607	Adder	0.58
963751	AG1-227 C	4.1927	50/50	4.1927
963752	AG1-227 E	2.7951	50/50	2.7951
963761	AG1-228 C	4.1927	50/50	4.1927
963762	AG1-228 E	2.7951	50/50	2.7951
963911	AG1-244 C	0.3222	Adder	0.72
963912	AG1-244 E	0.1735	Adder	0.39
964051	AG1-259 C	0.4114	Adder	0.91
964052	AG1-259 E	0.5750	Adder	1.28
964061	AG1-260 C	0.4114	Adder	0.91
964062	AG1-260 E	0.5750	Adder	1.28
964671	AG1-330 C	0.2231	Adder	0.5
964672	AG1-330 E	0.0248	Adder	0.06
964731	AG1-336 C	0.1933	Adder	0.43
964732	AG1-336 E	0.0545	Adder	0.12
964741	AG1-337 C	0.1884	Adder	0.42
964742	AG1-337 E	0.0595	Adder	0.13
965311	AG1-396 C	0.1983	Adder	0.44
965312	AG1-396 E	0.1735	Adder	0.39
966351	AG1-504 C O2	3.0619	Adder	6.8
966352	AG1-504 E O2	2.0040	Adder	4.45
WEC	WEC	0.0441	Confirmed LTF	0.0441
LGEE	LGEE	0.0854	Confirmed LTF	0.0854
CPL	CPL	0.0430	Confirmed LTF	0.0430
CBM-W2	CBM-W2	1.1200	Confirmed LTF	1.1200
NY	NY	0.5923	Confirmed LTF	0.5923
TVA	TVA	0.1624	Confirmed LTF	0.1624
O-066	O-066	14.1667	Confirmed LTF	14.1667
SIGE	SIGE	0.2352	Confirmed LTF	0.2352
CBM-S2	CBM-S2	0.8248	Confirmed LTF	0.8248
CBM-S1	CBM-S1	0.0456	Confirmed LTF	0.0456
G-007	G-007	1.8669	Confirmed LTF	1.8669
MEC	MEC	0.2145	Confirmed LTF	0.2145
LAGN	LAGN	0.2047	Confirmed LTF	0.2047
CBM-W1	CBM-W1	2.0189	Confirmed LTF	2.0189

12.5.5 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
174329863	208109	SUNB	PPL	200021	SUNBURY	PPL	24	PL:08:P42:000925	breaker	1097.0	128.19	128.6	DC	15.2

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208943	HARW CT	3.8761	Adder	4.56
208945	LOHA CT	0.9997	50/50	0.9997
208948	WILL CT	1.9053	50/50	1.9053
208981	FOWH IPP	2.8105	50/50	2.8105
209006	NEPC IPP (Deactivation : 24/10/2018)	3.4201	Adder	4.02
209018	SUNBIPCT	3.0023	50/50	3.0023
209021	WEST IPP	2.1391	50/50	2.1391
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	13.1741	Adder	15.5
211369	W1-111 BAT	0.0143	Adder	0.02
211375	BEAC	2.8500	Adder	3.35
212005	ALWD	0.2225	50/50	0.2225
212099	COLA IPP	0.5266	50/50	0.5266
212174	INGE	0.4015	50/50	0.4015
212345	PENS	0.2502	50/50	0.2502
212369	PATRIOT 1	25.2744	50/50	25.2744
212370	PATRIOT 2	25.2744	50/50	25.2744
212435	SMIL	0.1477	50/50	0.1477
938392	AE1-058_GEN1	72.9913	Adder	85.87
938393	AE1-058_GEN2	72.9913	Adder	85.87
939521	AE1-181 C	3.8476	Adder	4.53
939522	AE1-181 E	2.5650	Adder	3.02
939891	AE1-225 C O1	4.9689	50/50	4.9689
939892	AE1-225 E O1	5.4975	50/50	5.4975
940561	AE2-042 C	21.9113	50/50	21.9113
940562	AE2-042 E	10.8620	50/50	10.8620
940592	AE2-046 E	3.7051	Adder	4.36
940721	AE2-059 C	3.9328	50/50	3.9328
940722	AE2-059 E	5.4310	50/50	5.4310
940941	AE2-084 C	3.9328	50/50	3.9328
940942	AE2-084 E	5.4310	50/50	5.4310
941161	AE2-110 C	2.7488	Adder	3.23
941162	AE2-110 E	3.7960	Adder	4.47
941171	AE2-111 C	4.4403	50/50	4.4403
941172	AE2-111 E	6.1319	50/50	6.1319
941371	AE2-133 C	4.4403	50/50	4.4403
941372	AE2-133 E	6.1319	50/50	6.1319
942281	AE2-241 C	2.7488	Adder	3.23
942282	AE2-241 E	3.7960	Adder	4.47
942561	AE2-271 C	20.4777	Adder	24.09
942562	AE2-271 E	13.6518	Adder	16.06

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942771	AE2-295 C	10.7218	50/50	10.7218
942772	AE2-295 E	62.2030	50/50	62.2030
943721	AF1-040 C	0.5286	50/50	0.5286
943722	AF1-040 E	10.0436	50/50	10.0436
945511	AF1-216 C1O1	19.1630	50/50	19.1630
945512	AF1-216 E1O1	12.7605	50/50	12.7605
945521	AF1-216 C2O1	19.1634	50/50	19.1634
945522	AF1-216 E2O1	12.7607	50/50	12.7607
945611	AF1-226 C	4.8105	Adder	5.66
945612	AF1-226 E	6.6430	Adder	7.82
946471	AF1-311 C O1	19.1474	Adder	22.53
946472	AF1-311 E O1	31.2406	Adder	36.75
946691	AF1-333 C O1	6.0169	50/50	6.0169
946692	AF1-333 E O1	4.0113	50/50	4.0113
946731	AF1-337 C	6.0169	50/50	6.0169
946732	AF1-337 E	4.0113	50/50	4.0113
946741	AF1-338 C	6.0169	50/50	6.0169
946742	AF1-338 E	4.0113	50/50	4.0113
946751	AF1-339 C O1	6.0169	50/50	6.0169
946752	AF1-339 E O1	4.0113	50/50	4.0113
946761	AF1-271AC	5.3918	50/50	5.3918
946762	AF1-271AE	3.5945	50/50	3.5945
957621	AF2-056 C	10.1103	Adder	11.89
957622	AF2-056 E	5.2084	Adder	6.13
957881	AF2-082 C	17.4441	50/50	17.4441
957882	AF2-082 E	11.6294	50/50	11.6294
957921	AF2-086 C	3.9269	Adder	4.62
957922	AF2-086 E	2.6179	Adder	3.08
958461	AF2-140	12.5646	50/50	12.5646
958511	AF2-145 C1	6.8264	50/50	6.8264
958512	AF2-145 E1	4.5509	50/50	4.5509
958521	AF2-145 C2	6.8266	50/50	6.8266
958522	AF2-145 E2	4.5510	50/50	4.5510
959121	AF2-203 C	3.9269	Adder	4.62
959122	AF2-203 E	2.6179	Adder	3.08
959411	AF2-232 C	7.8538	Adder	9.24
959412	AF2-232 E	5.2359	Adder	6.16
959421	AF2-233 C	6.3433	50/50	6.3433
959422	AF2-233 E	4.2289	50/50	4.2289
959431	AF2-234 C	12.6866	50/50	12.6866
959432	AF2-234 E	8.4578	50/50	8.4578
959602	AF2-251 E	7.7975	Adder	9.17
959932	AF2-284 E	0.8459	50/50	0.8459
959982	AF2-289 E	1.2689	50/50	1.2689
959992	AF2-290 E	0.9364	50/50	0.9364
960401	AF2-331 C	10.0776	Adder	11.86
960402	AF2-331 E	6.7184	Adder	7.9
960411	AF2-332 C	10.0776	Adder	11.86
960412	AF2-332 E	6.7184	Adder	7.9
960421	AF2-333 C	4.0310	Adder	4.74
960422	AF2-333 E	2.6874	Adder	3.16
960431	AF2-334 C	4.0310	Adder	4.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960432	AF2-334 E	2.6874	Adder	3.16
961271	AF2-418 C	3.9269	Adder	4.62
961272	AF2-418 E	2.6179	Adder	3.08
961301	AF2-421 C	1.7100	Adder	2.01
961302	AF2-421 E	1.1400	Adder	1.34
961331	AF2-424 C	5.0063	50/50	5.0063
961332	AF2-424 E	3.3375	50/50	3.3375
961341	AF2-425 C	5.0063	50/50	5.0063
961342	AF2-425 E	3.3375	50/50	3.3375
961362	AF2-427 E	1.2689	50/50	1.2689
961412	AF2-432 E	0.6545	Adder	0.77
961421	AF2-433 C O1	3.9269	Adder	4.62
961422	AF2-433 E O1	2.6179	Adder	3.08
961431	AF2-434 C O1	3.9269	Adder	4.62
961432	AF2-434 E O1	2.6179	Adder	3.08
961531	AF2-444 C	4.9228	50/50	4.9228
961532	AF2-444 E	3.3375	50/50	3.3375
961541	AF2-445AC	3.6152	Adder	4.25
961542	AF2-445AE	2.4510	Adder	2.88
962061	AG1-050	9.3638	50/50	9.3638
962151	AG1-060 C	10.7218	50/50	10.7218
962152	AG1-060 E	62.2030	50/50	62.2030
963151	AG1-164 C	0.9063	Adder	2.01
963152	AG1-164 E	0.6042	Adder	1.34
963161	AG1-165 C	0.9063	Adder	2.01
963162	AG1-165 E	0.6042	Adder	1.34
963551	AG1-204 C	0.6545	Adder	1.45
963552	AG1-204 E	0.3524	Adder	0.78
963751	AG1-227 C	1.9485	Adder	4.33
963752	AG1-227 E	1.2990	Adder	2.88
963761	AG1-228 C	1.9485	Adder	4.33
963762	AG1-228 E	1.2990	Adder	2.88
963911	AG1-244 C	3.4360	50/50	3.4360
963912	AG1-244 E	1.8501	50/50	1.8501
964051	AG1-259 C	4.3875	50/50	4.3875
964052	AG1-259 E	6.1319	50/50	6.1319
964061	AG1-260 C	4.3875	50/50	4.3875
964062	AG1-260 E	6.1319	50/50	6.1319
964161	AG1-277 C	2.4168	Adder	5.36
964162	AG1-277 E	0.6042	Adder	1.34
964171	AG1-278 C	1.1631	Adder	2.58
964172	AG1-278 E	0.3474	Adder	0.77
964181	AG1-279 C	1.1631	Adder	2.58
964182	AG1-279 E	0.3474	Adder	0.77
964671	AG1-330 C	2.3787	50/50	2.3787
964672	AG1-330 E	0.2643	50/50	0.2643
964731	AG1-336 C	2.0616	50/50	2.0616
964732	AG1-336 E	0.5815	50/50	0.5815
964741	AG1-337 C	2.0087	50/50	2.0087
964742	AG1-337 E	0.6343	50/50	0.6343
965311	AG1-396 C	2.1144	50/50	2.1144
965312	AG1-396 E	1.8501	50/50	1.8501

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966351	AG1-504 C O2	4.1382	Adder	9.19
966352	AG1-504 E O2	2.7085	Adder	6.01
G-007A	G-007A	4.8046	Confirmed LTF	4.8046
VFT	VFT	15.2929	Confirmed LTF	15.2929
CALDERWOOD	CALDERWOOD	0.7455	Confirmed LTF	0.7455
PRAIRIE	PRAIRIE	3.9520	Confirmed LTF	3.9520
CHEOAH	CHEOAH	0.7502	Confirmed LTF	0.7502
CBM-N	CBM-N	3.0252	Confirmed LTF	3.0252
COTTONWOOD	COTTONWOOD	3.1752	Confirmed LTF	3.1752
HAMLET	HAMLET	0.8362	Confirmed LTF	0.8362
GIBSON	GIBSON	0.8403	Confirmed LTF	0.8403
BLUEG	BLUEG	2.6717	Confirmed LTF	2.6717
TRIMBLE	TRIMBLE	0.8570	Confirmed LTF	0.8570
CATAWBA	CATAWBA	0.5128	Confirmed LTF	0.5128

12.5.6 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
174329909	208109	SUNB	PPL	200021	SUNBURY	PPL	25	PL:08:P42:000924	breaker	1165.0	120.76	121.14	DC	15.2

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208943	HARW CT	3.8777	Adder	4.56
208945	LOHA CT	1.0001	50/50	1.0001
208948	WILL CT	1.9060	50/50	1.9060
208981	FOWH IPP	2.8116	50/50	2.8116
209006	NEPC IPP (Deactivation : 24/10/2018)	3.4215	Adder	4.03
209018	SUNBIPCT	3.0034	50/50	3.0034
209021	WEST IPP	2.1400	50/50	2.1400
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	13.1788	Adder	15.5
211369	W1-111 BAT	0.0143	Adder	0.02
211375	BEAC	2.8512	Adder	3.35
212005	ALWD	0.2226	50/50	0.2226
212099	COLA IPP	0.5268	50/50	0.5268
212174	INGE	0.4017	50/50	0.4017
212345	PENS	0.2503	50/50	0.2503
212369	PATRIOT 1	25.2835	50/50	25.2835
212370	PATRIOT 2	25.2835	50/50	25.2835
212435	SMIL	0.1478	50/50	0.1478
938392	AE1-058_GEN1	73.0179	Adder	85.9
938393	AE1-058_GEN2	73.0179	Adder	85.9
939521	AE1-181 C	3.8492	Adder	4.53
939522	AE1-181 E	2.5661	Adder	3.02
939891	AE1-225 C O1	4.9707	50/50	4.9707
939892	AE1-225 E O1	5.4995	50/50	5.4995
940561	AE2-042 C	21.9192	50/50	21.9192
940562	AE2-042 E	10.8660	50/50	10.8660
940592	AE2-046 E	3.7066	Adder	4.36
940721	AE2-059 C	3.9342	50/50	3.9342
940722	AE2-059 E	5.4330	50/50	5.4330
940941	AE2-084 C	3.9342	50/50	3.9342
940942	AE2-084 E	5.4330	50/50	5.4330
941161	AE2-110 C	2.7498	Adder	3.24
941162	AE2-110 E	3.7974	Adder	4.47
941171	AE2-111 C	4.4419	50/50	4.4419
941172	AE2-111 E	6.1341	50/50	6.1341
941371	AE2-133 C	4.4419	50/50	4.4419
941372	AE2-133 E	6.1341	50/50	6.1341
942281	AE2-241 C	2.7498	Adder	3.24
942282	AE2-241 E	3.7974	Adder	4.47
942561	AE2-271 C	20.4855	Adder	24.1
942562	AE2-271 E	13.6570	Adder	16.07

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942771	AE2-295 C	10.7259	50/50	10.7259
942772	AE2-295 E	62.2269	50/50	62.2269
943721	AF1-040 C	0.5288	50/50	0.5288
943722	AF1-040 E	10.0472	50/50	10.0472
945511	AF1-216 C1O1	19.1703	50/50	19.1703
945512	AF1-216 E1O1	12.7653	50/50	12.7653
945521	AF1-216 C2O1	19.1707	50/50	19.1707
945522	AF1-216 E2O1	12.7656	50/50	12.7656
945611	AF1-226 C	4.8122	Adder	5.66
945612	AF1-226 E	6.6454	Adder	7.82
946471	AF1-311 C O1	19.1547	Adder	22.53
946472	AF1-311 E O1	31.2524	Adder	36.77
946691	AF1-333 C O1	6.0192	50/50	6.0192
946692	AF1-333 E O1	4.0128	50/50	4.0128
946731	AF1-337 C	6.0192	50/50	6.0192
946732	AF1-337 E	4.0128	50/50	4.0128
946741	AF1-338 C	6.0192	50/50	6.0192
946742	AF1-338 E	4.0128	50/50	4.0128
946751	AF1-339 C O1	6.0192	50/50	6.0192
946752	AF1-339 E O1	4.0128	50/50	4.0128
946761	AF1-271AC	5.3938	50/50	5.3938
946762	AF1-271AE	3.5958	50/50	3.5958
957621	AF2-056 C	10.1140	Adder	11.9
957622	AF2-056 E	5.2102	Adder	6.13
957881	AF2-082 C	17.4504	50/50	17.4504
957882	AF2-082 E	11.6336	50/50	11.6336
957921	AF2-086 C	3.9283	Adder	4.62
957922	AF2-086 E	2.6189	Adder	3.08
958461	AF2-140	12.5691	50/50	12.5691
958511	AF2-145 C1	6.8290	50/50	6.8290
958512	AF2-145 E1	4.5527	50/50	4.5527
958521	AF2-145 C2	6.8292	50/50	6.8292
958522	AF2-145 E2	4.5528	50/50	4.5528
959121	AF2-203 C	3.9283	Adder	4.62
959122	AF2-203 E	2.6189	Adder	3.08
959411	AF2-232 C	7.8567	Adder	9.24
959412	AF2-232 E	5.2378	Adder	6.16
959421	AF2-233 C	6.3456	50/50	6.3456
959422	AF2-233 E	4.2304	50/50	4.2304
959431	AF2-234 C	12.6912	50/50	12.6912
959432	AF2-234 E	8.4608	50/50	8.4608
959602	AF2-251 E	7.8005	Adder	9.18
959932	AF2-284 E	0.8463	50/50	0.8463
959982	AF2-289 E	1.2694	50/50	1.2694
959992	AF2-290 E	0.9367	50/50	0.9367
960401	AF2-331 C	10.0814	Adder	11.86
960402	AF2-331 E	6.7210	Adder	7.91
960411	AF2-332 C	10.0814	Adder	11.86
960412	AF2-332 E	6.7210	Adder	7.91
960421	AF2-333 C	4.0326	Adder	4.74
960422	AF2-333 E	2.6884	Adder	3.16
960431	AF2-334 C	4.0326	Adder	4.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960432	AF2-334 E	2.6884	Adder	3.16
961271	AF2-418 C	3.9283	Adder	4.62
961272	AF2-418 E	2.6189	Adder	3.08
961301	AF2-421 C	1.7107	Adder	2.01
961302	AF2-421 E	1.1405	Adder	1.34
961331	AF2-424 C	5.0082	50/50	5.0082
961332	AF2-424 E	3.3388	50/50	3.3388
961341	AF2-425 C	5.0082	50/50	5.0082
961342	AF2-425 E	3.3388	50/50	3.3388
961362	AF2-427 E	1.2694	50/50	1.2694
961412	AF2-432 E	0.6547	Adder	0.77
961421	AF2-433 C O1	3.9283	Adder	4.62
961422	AF2-433 E O1	2.6189	Adder	3.08
961431	AF2-434 C O1	3.9283	Adder	4.62
961432	AF2-434 E O1	2.6189	Adder	3.08
961531	AF2-444 C	4.9247	50/50	4.9247
961532	AF2-444 E	3.3388	50/50	3.3388
961541	AF2-445AC	3.6165	Adder	4.25
961542	AF2-445AE	2.4519	Adder	2.88
962061	AG1-050	9.3672	50/50	9.3672
962151	AG1-060 C	10.7259	50/50	10.7259
962152	AG1-060 E	62.2269	50/50	62.2269
963151	AG1-164 C	0.9067	Adder	2.01
963152	AG1-164 E	0.6045	Adder	1.34
963161	AG1-165 C	0.9067	Adder	2.01
963162	AG1-165 E	0.6045	Adder	1.34
963551	AG1-204 C	0.6547	Adder	1.45
963552	AG1-204 E	0.3525	Adder	0.78
963751	AG1-227 C	1.9492	Adder	4.33
963752	AG1-227 E	1.2995	Adder	2.88
963761	AG1-228 C	1.9492	Adder	4.33
963762	AG1-228 E	1.2995	Adder	2.88
963911	AG1-244 C	3.4372	50/50	3.4372
963912	AG1-244 E	1.8508	50/50	1.8508
964051	AG1-259 C	4.3890	50/50	4.3890
964052	AG1-259 E	6.1341	50/50	6.1341
964061	AG1-260 C	4.3890	50/50	4.3890
964062	AG1-260 E	6.1341	50/50	6.1341
964161	AG1-277 C	2.4179	Adder	5.37
964162	AG1-277 E	0.6045	Adder	1.34
964171	AG1-278 C	1.1636	Adder	2.58
964172	AG1-278 E	0.3476	Adder	0.77
964181	AG1-279 C	1.1636	Adder	2.58
964182	AG1-279 E	0.3476	Adder	0.77
964671	AG1-330 C	2.3796	50/50	2.3796
964672	AG1-330 E	0.2644	50/50	0.2644
964731	AG1-336 C	2.0623	50/50	2.0623
964732	AG1-336 E	0.5817	50/50	0.5817
964741	AG1-337 C	2.0094	50/50	2.0094
964742	AG1-337 E	0.6346	50/50	0.6346
965311	AG1-396 C	2.1152	50/50	2.1152
965312	AG1-396 E	1.8508	50/50	1.8508

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966351	AG1-504 C O2	4.1397	Adder	9.19
966352	AG1-504 E O2	2.7094	Adder	6.01
G-007A	G-007A	4.8070	Confirmed LTF	4.8070
VFT	VFT	15.2994	Confirmed LTF	15.2994
CALDERWOOD	CALDERWOOD	0.7455	Confirmed LTF	0.7455
PRAIRIE	PRAIRIE	3.9520	Confirmed LTF	3.9520
CHEOAH	CHEOAH	0.7502	Confirmed LTF	0.7502
CBM-N	CBM-N	3.0276	Confirmed LTF	3.0276
COTTONWOOD	COTTONWOOD	3.1752	Confirmed LTF	3.1752
HAMLET	HAMLET	0.8362	Confirmed LTF	0.8362
GIBSON	GIBSON	0.8403	Confirmed LTF	0.8403
BLUEG	BLUEG	2.6717	Confirmed LTF	2.6717
TRIMBLE	TRIMBLE	0.8570	Confirmed LTF	0.8570
CATAWBA	CATAWBA	0.5128	Confirmed LTF	0.5128

12.5.7 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
165151395	208120	SU10	PPL	208113	SUSQ	PPL	1	PL:48:P71:102649	tower	801.0	119.85	124.63	DC	39.08

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	33.7153	50/50	33.7153
208912	MONT G2 (Deactivation : 18/02/2019)	33.6886	50/50	33.6886
208945	LOHA CT	0.4645	50/50	0.4645
208948	WILL CT	0.9730	50/50	0.9730
209013	SCEN IPP	1.8500	50/50	1.8500
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	4.9836	Adder	5.86
211375	BEAC	-3.0374	Adder	-3.57
212005	ALWD	0.1136	50/50	0.1136
212369	PATRIOT 1	15.2285	50/50	15.2285
212370	PATRIOT 2	15.2285	50/50	15.2285
212435	SMIL	0.0602	50/50	0.0602
234311	HUN GEN5	1.3591	50/50	1.3591
234312	HUN GEN6	1.3507	50/50	1.3507
938392	AE1-058_GEN1	24.8707	Adder	29.26
938393	AE1-058_GEN2	24.8707	Adder	29.26
939891	AE1-225 C O1	0.9245	Adder	1.09
939892	AE1-225 E O1	1.0229	Adder	1.2
940561	AE2-042 C	8.9346	50/50	8.9346
940562	AE2-042 E	4.4291	50/50	4.4291
940593	AE2-046 BAT	5.3601	50/50	5.3601
940721	AE2-059 C	1.6036	50/50	1.6036
940722	AE2-059 E	2.2146	50/50	2.2146
940941	AE2-084 C	1.6036	50/50	1.6036
940942	AE2-084 E	2.2146	50/50	2.2146
941161	AE2-110 C	2.0131	50/50	2.0131
941162	AE2-110 E	2.7801	50/50	2.7801
941171	AE2-111 C	0.8262	Adder	0.97
941172	AE2-111 E	1.1409	Adder	1.34
941371	AE2-133 C	0.8262	Adder	0.97
941372	AE2-133 E	1.1409	Adder	1.34
942281	AE2-241 C	2.0131	50/50	2.0131
942282	AE2-241 E	2.7801	50/50	2.7801
942561	AE2-271 C	17.1749	50/50	17.1749
942562	AE2-271 E	11.4499	50/50	11.4499
942771	AE2-295 C	2.7833	Adder	3.27
942772	AE2-295 E	16.1473	Adder	19.0
943721	AF1-040 C	0.0984	Adder	0.12
943722	AF1-040 E	1.8687	Adder	2.2
945511	AF1-216 C1O1	9.3764	50/50	9.3764
945512	AF1-216 E1O1	6.2437	50/50	6.2437

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945521	AF1-216 C2O1	9.3760	50/50	9.3760
945522	AF1-216 E2O1	6.2434	50/50	6.2434
945611	AF1-226 C	3.5230	50/50	3.5230
945612	AF1-226 E	4.8651	50/50	4.8651
946471	AF1-311 C O1	16.0592	50/50	16.0592
946472	AF1-311 E O1	26.2018	50/50	26.2018
946691	AF1-333 C O1	1.7947	50/50	1.7947
946692	AF1-333 E O1	1.1965	50/50	1.1965
946731	AF1-337 C	1.7947	50/50	1.7947
946732	AF1-337 E	1.1965	50/50	1.1965
946741	AF1-338 C	1.7947	50/50	1.7947
946742	AF1-338 E	1.1965	50/50	1.1965
946751	AF1-339 C O1	1.7947	50/50	1.7947
946752	AF1-339 E O1	1.1965	50/50	1.1965
946761	AF1-271AC	1.0032	Adder	1.18
946762	AF1-271AE	0.6688	Adder	0.79
957621	AF2-056 C	3.8246	Adder	4.5
957622	AF2-056 E	1.9703	Adder	2.32
957881	AF2-082 C	3.2457	Adder	3.82
957882	AF2-082 E	2.1638	Adder	2.55
957921	AF2-086 C	2.8759	50/50	2.8759
957922	AF2-086 E	1.9173	50/50	1.9173
958461	AF2-140	7.5705	50/50	7.5705
958511	AF2-145 C1	3.3401	50/50	3.3401
958512	AF2-145 E1	2.2268	50/50	2.2268
958521	AF2-145 C2	3.3400	50/50	3.3400
958522	AF2-145 E2	2.2267	50/50	2.2267
959121	AF2-203 C	2.8759	50/50	2.8759
959122	AF2-203 E	1.9173	50/50	1.9173
959411	AF2-232 C	5.7518	50/50	5.7518
959412	AF2-232 E	3.8346	50/50	3.8346
959421	AF2-233 C	1.1802	Adder	1.39
959422	AF2-233 E	0.7868	Adder	0.93
959431	AF2-234 C	2.3605	Adder	2.78
959432	AF2-234 E	1.5737	Adder	1.85
959932	AF2-284 E	0.4944	50/50	0.4944
959982	AF2-289 E	0.7415	50/50	0.7415
959992	AF2-290 E	0.3818	50/50	0.3818
960401	AF2-331 C	8.4522	50/50	8.4522
960402	AF2-331 E	5.6348	50/50	5.6348
960411	AF2-332 C	8.4522	50/50	8.4522
960412	AF2-332 E	5.6348	50/50	5.6348
960421	AF2-333 C	3.3809	50/50	3.3809
960422	AF2-333 E	2.2539	50/50	2.2539
960431	AF2-334 C	3.3809	50/50	3.3809
960432	AF2-334 E	2.2539	50/50	2.2539
961271	AF2-418 C	2.8759	50/50	2.8759
961272	AF2-418 E	1.9173	50/50	1.9173
961331	AF2-424 C	1.2996	Adder	1.53
961332	AF2-424 E	0.8664	Adder	1.02
961341	AF2-425 C	1.2996	Adder	1.53
961342	AF2-425 E	0.8664	Adder	1.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961362	AF2-427 E	0.7415	50/50	0.7415
961412	AF2-432 E	0.4793	50/50	0.4793
961421	AF2-433 C O1	2.8759	50/50	2.8759
961422	AF2-433 E O1	1.9173	50/50	1.9173
961431	AF2-434 C O1	2.8759	50/50	2.8759
961432	AF2-434 E O1	1.9173	50/50	1.9173
961531	AF2-444 C	1.2779	Adder	1.5
961532	AF2-444 E	0.8664	Adder	1.02
961541	AF2-445AC	1.3676	Adder	1.61
961542	AF2-445AE	0.9272	Adder	1.09
962061	AG1-050	3.8182	50/50	3.8182
962151	AG1-060 C	1.4751	Adder	3.27
962152	AG1-060 E	8.5581	Adder	19.0
963551	AG1-204 C	3.7355	50/50	3.7355
963552	AG1-204 E	2.0114	50/50	2.0114
963751	AG1-227 C	0.7371	Adder	1.64
963752	AG1-227 E	0.4914	Adder	1.09
963761	AG1-228 C	0.7371	Adder	1.64
963762	AG1-228 E	0.4914	Adder	1.09
963911	AG1-244 C	0.3388	Adder	0.75
963912	AG1-244 E	0.1824	Adder	0.4
964051	AG1-259 C	0.4327	Adder	0.96
964052	AG1-259 E	0.6047	Adder	1.34
964061	AG1-260 C	0.4327	Adder	0.96
964062	AG1-260 E	0.6047	Adder	1.34
964163	AG1-277 BAT	3.5734	50/50	3.5734
964173	AG1-278 BAT	0.6111	50/50	0.6111
964183	AG1-279 BAT	0.6111	50/50	0.6111
964671	AG1-330 C	0.2346	Adder	0.52
964672	AG1-330 E	0.0261	Adder	0.06
964731	AG1-336 C	0.2033	Adder	0.45
964732	AG1-336 E	0.0573	Adder	0.13
964741	AG1-337 C	0.1981	Adder	0.44
964742	AG1-337 E	0.0626	Adder	0.14
965311	AG1-396 C	0.2085	Adder	0.46
965312	AG1-396 E	0.1824	Adder	0.4
966351	AG1-504 C O2	23.6202	50/50	23.6202
966352	AG1-504 E O2	15.4594	50/50	15.4594
CALDERWOOD	CALDERWOOD	0.0507	Confirmed LTF	0.0507
NY	NY	0.4623	Confirmed LTF	0.4623
PRAIRIE	PRAIRIE	0.2092	Confirmed LTF	0.2092
O-066	O-066	10.8689	Confirmed LTF	10.8689
SIGE	SIGE	0.1616	Confirmed LTF	0.1616
CHEOAH	CHEOAH	0.0516	Confirmed LTF	0.0516
COTTONWOOD	COTTONWOOD	0.1953	Confirmed LTF	0.1953
G-007	G-007	1.5550	Confirmed LTF	1.5550
HAMLET	HAMLET	0.0785	Confirmed LTF	0.0785
GIBSON	GIBSON	0.0409	Confirmed LTF	0.0409
BLUEG	BLUEG	0.1302	Confirmed LTF	0.1302
TRIMBLE	TRIMBLE	0.0417	Confirmed LTF	0.0417
CATAWBA	CATAWBA	0.0437	Confirmed LTF	0.0437

12.5.8 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
165151361	938390	AE1-058_TAP	PPL	208072	SIEG	PPL	1	PL:48:P71:101752	tower	628.0	141.46	142.27	DC	11.25

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208941	FISH CT	1.5434	50/50	1.5434
208981	FOWH IPP	1.8216	50/50	1.8216
208982	GLBT IPP	4.5201	50/50	4.5201
209013	SCEN IPP	4.7406	50/50	4.7406
209022	WHFR IPP (Deactivation : 03/03/2020 WD - 01/03/2020)	15.0238	50/50	15.0238
209027	LOR2_Q27	0.6284	50/50	0.6284
212266	LOR1	0.1929	50/50	0.1929
935083	AD1-143 BAT1 (Suspended)	0.5352	Merchant Transmission	0.5352
935103	AD1-143 BAT2 (Suspended)	0.5352	Merchant Transmission	0.5352
938392	AE1-058_GEN1	109.6648	50/50	109.6648
938393	AE1-058_GEN2	109.6648	50/50	109.6648
939891	AE1-225 C O1	0.8791	Adder	1.03
939892	AE1-225 E O1	0.9727	Adder	1.14
940561	AE2-042 C	5.3743	Adder	6.32
940562	AE2-042 E	2.6642	Adder	3.13
940721	AE2-059 C	0.9646	Adder	1.13
940722	AE2-059 E	1.3321	Adder	1.57
940941	AE2-084 C	0.9646	Adder	1.13
940942	AE2-084 E	1.3321	Adder	1.57
941161	AE2-110 C	1.5628	Adder	1.84
941162	AE2-110 E	2.1582	Adder	2.54
941171	AE2-111 C	0.7856	Adder	0.92
941172	AE2-111 E	1.0849	Adder	1.28
941371	AE2-133 C	0.7856	Adder	0.92
941372	AE2-133 E	1.0849	Adder	1.28
942281	AE2-241 C	1.5628	Adder	1.84
942282	AE2-241 E	2.1582	Adder	2.54
942561	AE2-271 C	8.5693	Adder	10.08
942562	AE2-271 E	5.7129	Adder	6.72
942771	AE2-295 C	5.9067	Adder	6.95
942772	AE2-295 E	34.2679	Adder	40.32
943721	AF1-040 C	0.0935	Adder	0.11
943722	AF1-040 E	1.7770	Adder	2.09
945511	AF1-216 C1O1	5.2655	Adder	6.19
945512	AF1-216 E1O1	3.5062	Adder	4.12
945521	AF1-216 C2O1	5.2655	Adder	6.19
945522	AF1-216 E2O1	3.5062	Adder	4.12
945611	AF1-226 C	2.7349	Adder	3.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945612	AF1-226 E	3.7768	Adder	4.44
946471	AF1-311 C O1	8.0127	Adder	9.43
946472	AF1-311 E O1	13.0733	Adder	15.38
946691	AF1-333 C O1	1.2375	Adder	1.46
946692	AF1-333 E O1	0.8250	Adder	0.97
946731	AF1-337 C	1.2375	Adder	1.46
946732	AF1-337 E	0.8250	Adder	0.97
946741	AF1-338 C	1.2375	Adder	1.46
946742	AF1-338 E	0.8250	Adder	0.97
946751	AF1-339 C O1	1.2375	Adder	1.46
946752	AF1-339 E O1	0.8250	Adder	0.97
946761	AF1-271AC	0.9540	Adder	1.12
946762	AF1-271AE	0.6360	Adder	0.75
957621	AF2-056 C	11.5299	50/50	11.5299
957622	AF2-056 E	5.9396	50/50	5.9396
957881	AF2-082 C	3.0863	Adder	3.63
957882	AF2-082 E	2.0576	Adder	2.42
957921	AF2-086 C	2.2326	Adder	2.63
957922	AF2-086 E	1.4884	Adder	1.75
958461	AF2-140	3.9673	Adder	4.67
958511	AF2-145 C1	1.8757	Adder	2.21
958512	AF2-145 E1	1.2505	Adder	1.47
958521	AF2-145 C2	1.8757	Adder	2.21
958522	AF2-145 E2	1.2505	Adder	1.47
959121	AF2-203 C	2.2326	Adder	2.63
959122	AF2-203 E	1.4884	Adder	1.75
959411	AF2-232 C	4.4652	Adder	5.25
959412	AF2-232 E	2.9768	Adder	3.5
959421	AF2-233 C	1.1223	Adder	1.32
959422	AF2-233 E	0.7482	Adder	0.88
959431	AF2-234 C	2.2446	Adder	2.64
959432	AF2-234 E	1.4964	Adder	1.76
959932	AF2-284 E	0.2616	Adder	0.31
959982	AF2-289 E	0.3923	Adder	0.46
959992	AF2-290 E	0.2297	Adder	0.27
960401	AF2-331 C	4.2172	Adder	4.96
960402	AF2-331 E	2.8115	Adder	3.31
960411	AF2-332 C	4.2172	Adder	4.96
960412	AF2-332 E	2.8115	Adder	3.31
960421	AF2-333 C	1.6869	Adder	1.98
960422	AF2-333 E	1.1246	Adder	1.32
960431	AF2-334 C	1.6869	Adder	1.98
960432	AF2-334 E	1.1246	Adder	1.32
961271	AF2-418 C	2.2326	Adder	2.63
961272	AF2-418 E	1.4884	Adder	1.75
961331	AF2-424 C	2.7580	Adder	3.24
961332	AF2-424 E	1.8387	Adder	2.16
961341	AF2-425 C	2.7580	Adder	3.24
961342	AF2-425 E	1.8387	Adder	2.16
961362	AF2-427 E	0.3923	Adder	0.46
961412	AF2-432 E	0.3721	Adder	0.44
961421	AF2-433 C O1	2.2326	Adder	2.63

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961422	AF2-433 E O1	1.4884	Adder	1.75
961431	AF2-434 C O1	2.2326	Adder	2.63
961432	AF2-434 E O1	1.4884	Adder	1.75
961531	AF2-444 C	2.7120	Adder	3.19
961532	AF2-444 E	1.8387	Adder	2.16
961541	AF2-445AC	4.1228	50/50	4.1228
961542	AF2-445AE	2.7951	50/50	2.7951
962061	AG1-050	1.2173	Adder	2.7
962151	AG1-060 C	3.1305	Adder	6.95
962152	AG1-060 E	18.1620	Adder	40.32
963551	AG1-204 C	0.4842	Adder	1.07
963552	AG1-204 E	0.2607	Adder	0.58
963751	AG1-227 C	4.1927	50/50	4.1927
963752	AG1-227 E	2.7951	50/50	2.7951
963761	AG1-228 C	4.1927	50/50	4.1927
963762	AG1-228 E	2.7951	50/50	2.7951
963911	AG1-244 C	0.3222	Adder	0.72
963912	AG1-244 E	0.1735	Adder	0.39
964051	AG1-259 C	0.4114	Adder	0.91
964052	AG1-259 E	0.5750	Adder	1.28
964061	AG1-260 C	0.4114	Adder	0.91
964062	AG1-260 E	0.5750	Adder	1.28
964671	AG1-330 C	0.2231	Adder	0.5
964672	AG1-330 E	0.0248	Adder	0.06
964731	AG1-336 C	0.1933	Adder	0.43
964732	AG1-336 E	0.0545	Adder	0.12
964741	AG1-337 C	0.1884	Adder	0.42
964742	AG1-337 E	0.0595	Adder	0.13
965311	AG1-396 C	0.1983	Adder	0.44
965312	AG1-396 E	0.1735	Adder	0.39
966351	AG1-504 C O2	3.0619	Adder	6.8
966352	AG1-504 E O2	2.0040	Adder	4.45
WEC	WEC	0.0441	Confirmed LTF	0.0441
LGEE	LGEE	0.0854	Confirmed LTF	0.0854
CPL	CPL	0.0430	Confirmed LTF	0.0430
CBM-W2	CBM-W2	1.1200	Confirmed LTF	1.1200
NY	NY	0.5923	Confirmed LTF	0.5923
TVA	TVA	0.1624	Confirmed LTF	0.1624
O-066	O-066	14.1667	Confirmed LTF	14.1667
SIGE	SIGE	0.2352	Confirmed LTF	0.2352
CBM-S2	CBM-S2	0.8248	Confirmed LTF	0.8248
CBM-S1	CBM-S1	0.0456	Confirmed LTF	0.0456
G-007	G-007	1.8669	Confirmed LTF	1.8669
MEC	MEC	0.2145	Confirmed LTF	0.2145
LAGN	LAGN	0.2047	Confirmed LTF	0.2047
CBM-W1	CBM-W1	2.0189	Confirmed LTF	2.0189

12.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
PL:48:P71:102649	CONTINGENCY 'PL:48:P71:102649' /* SUSQ-GEN1 230KV & BETA-SUSQ 230KV DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ DISCONNECT BUS 208114 /* SUSQ G1 END
PL:08:P12:102877	CONTINGENCY 'PL:08:P12:102877' / 1032 OPEN BRANCH FROM BUS 208034 TO BUS 208040 CKT 2 / 208034 MILT 230 208040 MONT 230 2 END
PL:08:P12:102876	CONTINGENCY 'PL:08:P12:102876' / 915 OPEN BRANCH FROM BUS 208034 TO BUS 208109 CKT 2 / 208034 MILT 230 208109 SUNB 230 2 END
PL:08:P13:100456	CONTINGENCY 'PL:08:P13:100456' / 1291 OPEN BRANCH FROM BUS 200021 TO BUS 208109 CKT 24 / 200021 SUNBURY 500 208109 SUNB 230 24 END
PL:08:P12:001347	CONTINGENCY 'PL:08:P12:001347' / 916 OPEN BRANCH FROM BUS 208034 TO BUS 208109 CKT 1 / 208034 MILT 230 208109 SUNB 230 1 END
PL:08:P12:001346	CONTINGENCY 'PL:08:P12:001346' / 1031 OPEN BRANCH FROM BUS 208034 TO BUS 208040 CKT 1 / 208034 MILT 230 208040 MONT 230 1 END
PL:08:P71:102899	CONTINGENCY 'PL:08:P71:102899' /* MONT-MILT 1 & 2 230KV LINE DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 2 /* MONT-MILT 2 230KV DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 1 /* MONT-MILT 1 230KV END

Contingency Name	Contingency Definition
PL:08:P42:000925	CONTINGENCY 'PL:08:P42:000925' / 1202 OPEN BRANCH FROM BUS 200021 TO BUS 208109 CKT 25 / 200021 SUNBURY 500 208109 SUNB 230 25 OPEN BRANCH FROM BUS 200021 TO BUS 200080 CKT 1 / 200021 SUNBURY 500 200080 HUMMEL STN 500 1 OPEN BRANCH FROM BUS 200080 TO BUS 208930 CKT 11 / 200080 HUMMEL STN 500 208930 HUST CT11 18.0 11 OPEN BRANCH FROM BUS 200080 TO BUS 208931 CKT 12 / 200080 HUMMEL STN 500 208931 HUST CT12 18.0 12 OPEN BRANCH FROM BUS 200080 TO BUS 208932 CKT 13 / 200080 HUMMEL STN 500 208932 HUST CT13 18.0 13 OPEN BRANCH FROM BUS 200080 TO BUS 208933 CKT 10 / 200080 HUMMEL STN 500 208933 HUST ST10 22.0 10 END
PL:08:P42:000924	CONTINGENCY 'PL:08:P42:000924' / 1270 OPEN BRANCH FROM BUS 200021 TO BUS 208109 CKT 24 / 200021 SUNBURY 500 208109 SUNB 230 24 OPEN BRANCH FROM BUS 200021 TO BUS 200080 CKT 1 / 200021 SUNBURY 500 200080 HUMMEL STN 500 1 OPEN BRANCH FROM BUS 200080 TO BUS 208930 CKT 11 / 200080 HUMMEL STN 500 208930 HUST CT11 18.0 11 OPEN BRANCH FROM BUS 200080 TO BUS 208931 CKT 12 / 200080 HUMMEL STN 500 208931 HUST CT12 18.0 12 OPEN BRANCH FROM BUS 200080 TO BUS 208932 CKT 13 / 200080 HUMMEL STN 500 208932 HUST CT13 18.0 13 OPEN BRANCH FROM BUS 200080 TO BUS 208933 CKT 10 / 200080 HUMMEL STN 500 208933 HUST ST10 22.0 10 END
Base Case	
PL:08:P13:101349	CONTINGENCY 'PL:08:P13:101349' / 1237 OPEN BRANCH FROM BUS 200021 TO BUS 208109 CKT 25 / 200021 SUNBURY 500 208109 SUNB 230 25 END
PL:08:P12:101740	CONTINGENCY 'PL:08:P12:101740' / 849 OPEN BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 / 207915 GLBR 230 208120 SU10 230 1 END
PL:48:P71:101752	CONTINGENCY 'PL:48:P71:101752' /* BETA-SUSQ 230KV & BETA-SU10 230KV DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ DISCONNECT BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 /* BETA-SU10 END

Contingency Name	Contingency Definition
PL:08:P71:102900	CONTINGENCY 'PL:08:P71:102900' /* MILT-SUNB 1 & 2 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 1 /* SUNB-MILT 1 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 2 /* SUNB-MILT 2 230KV LINE END
PL:48:P12:101741	CONTINGENCY 'PL:48:P12:101741' / 818 OPEN BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 / 207915 GLBR 230 208113 SUSQ 230 1 END

13 Affected Systems

13.1 NYISO

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