



**Generation Interconnection
Feasibility Study Report
For
Queue Project AF2-331
MONTOUR 230 KV
30 MW Capacity / 50 MW Energy**

July 2020

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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 Montour County, Pennsylvania. The installed facilities will have a total capability of 50 MW with 30 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	AF2-331
Project Name	MONTOUR 230 KV
State	Pennsylvania
County	Montour
Transmission Owner	PPL
MFO	50
MWE	50
MWC	30
Fuel	Solar
Basecase Study Year	2023

New Service Customers proposing queue projects that 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

AF2-331 will interconnect with the PPL transmission system via one of the following options:

Option 1: a direct connection at the Montour 230 kV substation

Option 2: a tap of the Montour – Saegers 230 kV line

5 Cost Summary

The AF2-331 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$ 1,801,000
Total System Network Upgrade Costs	\$ 49,000,000
Total Costs	\$ 50,801,000

These costs exclude CIAC Tax Gross-up. Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

6 Transmission Owner Scope of Work

AF2-331 will interconnect with the PPL EU transmission system via new breaker-and-a-half bay position in Montour 230 kV substation. The Point of Interconnection (POI) will be at the PPL EU owned termination structure onto which the Interconnection Customer's transmission line terminates (with insulators) outside the Montour 230 kV substation.

NOTE: For the purposes of this study report, PPL EU is assuming that Supplemental Project s1106 is in service prior to the interconnection of AF2-331. The scope of s1106 is to create a new bay 7 at Montour and terminate a future Montour-Milton #2 230 kV line into the bay. This will leave a spare terminal position for AF2-331. If AF2-331 seeks to come in service prior to completion of s1106, some substation upgrade scope would need to be shifted from s1106 to AF2-331 and additional analyses may need to be performed.

PPL EU will populate existing Montour 230 kV Bay 7 with one circuit breaker and associated equipment to complete a full breaker-and-a-half bay to accommodate a new line position for AF2-331.

Risks and Assumptions

- No major environmental, real estate, siting, geotechnical, 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.
- PPL EU Supplemental Project s1106 is in service prior to construction of the AF2-331 interconnection facilities.
- Pennsylvania Public Utility Commission will approve the PPL EU-prepared/submitted Letter of Notification for the PPL EU owned Attachment Facilities.

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

Description	Total Cost
Attachment Facilities	\$ 325,000
Direct Connection Network Upgrade	\$ 0
Non Direct Connection Network Upgrades	\$ 1,476,000
Total Physical Interconnection Costs	\$ 1,801,000

6.1 Attachment Facilities Cost Estimates

230 kV Transmission Line Tap

PPL EU will construct the Attachment Facilities from the dead-end structure inside the Montour Substation to a PPL EU owned termination structure (POI structure) outside the Montour Substation. The IC will be responsible for constructing the Attachment Facilities from the POI structure to their collector substation.

PPL EU and the IC will need to consider the required spacing and easements for AE2-271 and AF1-311 which are connecting adjacent to AF2-331 in Bays 5 and 6, respectively. Each request will have a POI as an H-frame dead-end structure outside the Montour Substation.

For the purposes of this report, PPL EU is assuming the conductor spacing and clearances is sufficient to accommodate AF2-331. If during detailed design, spacing is determined not to be adequate, PPL EU will need to design an underground solution and/or relocate existing PPL EU assets. This evaluation will occur during the Facilities Study.

PPL EU will perform the following work for the Attachment Facilities:

- Install one (1) H-frame terminal tension structure with custom foundation and fiber splice box outside the Montour Substation.
- Route 48-ct fiber ADSS from the splice box on the above structure underground to the control cubicle inside the Montour Substation.
- 260 ft. of 1590 ACSR conductor from the substation dead-end structure to the H-frame structure outside the Montour Substation.
- Submit a Letter of Notification to, and receive approval from, the Pennsylvania Public Utility Commission for siting of the PPL EU owned Attachment Facilities.

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

Description	Total Cost
230 kV Transmission Line Tap	\$ 325,000
Total Attachment Facility Costs	\$ 325,000

6.2 Direct Connection Cost Estimate

None.

6.3 Non-Direct Connection Cost Estimate

Montour 230 kV Substation- Populate Existing Bay 7

- Populate the existing Bay 7 by adding one (1) new circuit breakers and associated equipment to complete a full breaker and a half bay. The Attachment Facilities will terminate in Bay 7 at the newly created line position dead-end structure.
- Route 48-count fiber terminated on the new A-frame structure in the substation and route it into the control cubicle.

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

Description	Total Cost
Montour Substation – Populate Existing Bay 7	\$ 1,476,000
Total Non-Direct Connection Facility Costs	\$ 1,476,000

7 Schedule

The estimated time to complete the scope of work is 18-24 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

8.1 PPL EU Interconnection 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:

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

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 AF2-331 was evaluated as a 50.0 MW (Capacity 30.0 MW) injection at the **Montour 230 kV substation** in the PPL area. Project AF2-331 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-331 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)

None

10.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
9959952 2	20794 2	COLU TR1	230. 0	PPL	20793 5	CWS A	230. 0	PPL	1	PL_P71_10175 2	tower	1195. 0	98.03	100.07	DC	24.28
9959953 1	20794 3	COLU TR2	230. 0	PPL	20794 2	COLU TR1	230. 0	PPL	1	PL_P71_10175 2	tower	1195. 0	98.23	100.26	DC	24.22

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
9959952 1	20794 2	COLU TR1	23 0	PPL	20793 5	CWS A	23 0	PPL	1	PL_P71_10175 1	tower	1195. 0	100.57	102.6	DC	24.28
9959953 0	20794 3	COLU TR2	23 0	PPL	20794 2	COLU TR1	23 0	PPL	1	PL_P71_10175 1	tower	1195. 0	100.75	102.77	DC	24.22
9959815 2	20796 8	ELIM	23 0	PPL	20810 9	SUNB	23 0	PPL	1	PL_P42_00138 8	breaker	537.0	110.96	112.78	DC	9.74
9959940 9	20803 4	MILT	23 0	PPL	20810 9	SUNB	23 0	PPL	1	PL_P71_10134 3	tower	730.0	112.34	114.16	DC	13.24
9959944 6	20804 0	MON T	23 0	PPL	20803 4	MILT	23 0	PPL	1	PL_P71_10134 3	tower	801.0	107.07	108.73	DC	13.24
9959949 8	20804 0	MON T	23 0	PPL	20794 3	COLU TR2	23 0	PPL	1	PL_P71_10175 1	tower	1195. 0	105.03	107.06	DC	24.28
9959949 9	20804 0	MON T	23 0	PPL	20794 3	COLU TR2	23 0	PPL	1	PL_P71_10175 2	tower	1195. 0	102.5	104.53	DC	24.28

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
109386410	207968	ELIM	230	PPL	208109	SUNB	230	PPL	1	PL_P12_001346	operation	537.0	104.8	106.49	DC	9.07
99598685	208034	MILT	230	PPL	208109	SUNB	230	PPL	1	PL_P12_000218	operation	730.0	110.06	112.21	DC	15.62
99598686	208034	MILT	230	PPL	208109	SUNB	230	PPL	1	PL_P13_100455	operation	730.0	110.06	112.21	DC	15.62
99598700	208040	MON T	230	PPL	208034	MILT	230	PPL	1	PL_P12_000942	operation	801.0	102.67	104.62	DC	15.62

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Index	Facility	Upgrade Description	Cost
99598152	3	ELIM 230.0 kV - SUNB 230.0 kV Ckt 1	<u>PPL</u> R-PL-0005 (1928) : Rebuild SUNB-ELIM 230kV Line Project Type : FAC Cost : \$49,000,000 Time Estimate : 48.0 Months	\$49,000,000
99599521, 99599522	1	COLU TR1 230.0 kV - CWSA 230.0 kV Ckt 1	<u>PPL</u> PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : \$0 Time Estimate : 36.0 Months	\$0
99599409	4	MILT 230.0 kV - SUNB 230.0 kV Ckt 1	<u>PPL</u> PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : \$0 Time Estimate : 36.0 Months	\$0
99599446	5	MONT 230.0 kV - MILT 230.0 kV Ckt 1	<u>PPL</u> PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : \$0 Time Estimate : 36.0 Months	\$0
99599498, 99599499	6	MONT 230.0 kV - COLU TR2 230.0 kV Ckt 1	<u>PPL</u> PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : \$0 Time Estimate : 36.0 Months	\$0
99599531, 99599530	2	COLU TR2 230.0 kV - COLU TR1 230.0 kV Ckt 1	<u>PPL</u> PPL_s1106 (1925) : PPL_S_1106_B09121 MONT-MILT-SUNB 230kV: PPL Supplemental project (s1106) to rebuild a the MONT-MILT 230kV to double circuit and change operating voltage 69kV line between MILT and SUNB to 230kV Project Type : CON Cost : \$0 Time Estimate : 36.0 Months	\$0
TOTAL COST				\$49,000,000

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
99599521	207942	COLU TR1	PPL	207935	CWSA	PPL	1	PL_P71_101751	tower	1195.0	100.57	102.6	DC	24.28

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.5276	50/50	63.5276
208912	MONT G2 (Deactivation : 18/02/2019)	64.3484	50/50	64.3484
208945	LOHA CT	0.7861	50/50	0.7861
208948	WILL CT	1.6974	50/50	1.6974
209018	SUNBIPCT	0.6888	50/50	0.6888
209019	VIKI IPP	1.5086	Adder	1.77
212369	PATRIOT 1	27.7249	50/50	27.7249
212370	PATRIOT 2	27.7249	50/50	27.7249
921653	AA2-008 E	23.9520	50/50	23.9520
939891	AE1-225 C O1	0.8863	Adder	1.04
939892	AE1-225 E O1	0.9806	Adder	1.15
940561	AE2-042 C O1	13.2940	50/50	13.2940
940562	AE2-042 E O1	6.5902	50/50	6.5902
940721	AE2-059 C	2.3861	50/50	2.3861
940722	AE2-059 E	3.2951	50/50	3.2951
940941	AE2-084 C	2.3861	50/50	2.3861
940942	AE2-084 E	3.2951	50/50	3.2951
941161	AE2-110 C	5.8707	50/50	5.8707
941162	AE2-110 E	8.1071	50/50	8.1071
941171	AE2-111 C	0.7623	Adder	0.9
941172	AE2-111 E	1.0527	Adder	1.24
942281	AE2-241 C	5.8707	50/50	5.8707
942282	AE2-241 E	8.1071	50/50	8.1071
942561	AE2-271 C O1	29.6185	50/50	29.6185
942562	AE2-271 E O1	19.7133	50/50	19.7133
943721	AF1-040 C	0.0943	Adder	0.11
943722	AF1-040 E	2.1077	50/50	2.1077
945511	AF1-216 C1O1	14.7636	50/50	14.7636
945512	AF1-216 E1O1	9.8310	50/50	9.8310
945521	AF1-216 C2	14.7628	50/50	14.7628
945522	AF1-216 E2	9.8304	50/50	9.8304
945611	AF1-226 C	10.2737	50/50	10.2737
945612	AF1-226 E	14.1875	50/50	14.1875
946471	AF1-311 C O1	27.6763	50/50	27.6763
946472	AF1-311 E O1	45.1561	50/50	45.1561
946691	AF1-333 C O1	2.2502	50/50	2.2502
946692	AF1-333 E O1	1.5002	50/50	1.5002
946731	AF1-337 C	2.2502	50/50	2.2502
946732	AF1-337 E	1.5002	50/50	1.5002
946741	AF1-338 C	2.2502	50/50	2.2502
946742	AF1-338 E	1.5002	50/50	1.5002

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946751	AF1-339 C O1	2.2502	50/50	2.2502
946752	AF1-339 E O1	1.5002	50/50	1.5002
946761	AF1-271A C	0.9618	Adder	1.13
946762	AF1-271A E	0.6412	Adder	0.75
957881	AF2-082 C	3.6607	50/50	3.6607
957882	AF2-082 E	2.4405	50/50	2.4405
957921	AF2-086 C O1	8.3867	50/50	8.3867
957922	AF2-086 E O1	5.5911	50/50	5.5911
957991	AF2-093 C	0.5113	50/50	0.5113
957992	AF2-093 E	0.3409	50/50	0.3409
958461	AF2-140	12.6063	50/50	12.6063
958511	AF2-145 C1	5.2592	50/50	5.2592
958512	AF2-145 E1	3.5061	50/50	3.5061
958521	AF2-145 C2	5.2589	50/50	5.2589
958522	AF2-145 E2	3.5059	50/50	3.5059
959121	AF2-203 C	8.3867	50/50	8.3867
959122	AF2-203 E	5.5911	50/50	5.5911
959411	AF2-232 C	16.7734	50/50	16.7734
959412	AF2-232 E	11.1822	50/50	11.1822
959431	AF2-234 C O1	1.1579	Adder	2.57
959432	AF2-234 E O1	0.7719	Adder	1.71
959932	AF2-284 E	0.8169	50/50	0.8169
959982	AF2-289 E	1.2253	50/50	1.2253
959992	AF2-290 E	0.5681	50/50	0.5681
960401	AF2-331 C O1	14.5665	50/50	14.5665
960402	AF2-331 E O1	9.7110	50/50	9.7110
960411	AF2-332 C O1	14.5665	50/50	14.5665
960412	AF2-332 E O1	9.7110	50/50	9.7110
960421	AF2-333 C O1	5.8266	50/50	5.8266
960422	AF2-333 E O1	3.8844	50/50	3.8844
960431	AF2-334 C O1	5.8266	50/50	5.8266
960432	AF2-334 E O1	3.8844	50/50	3.8844
961271	AF2-418 C	8.3867	50/50	8.3867
961272	AF2-418 E	5.5911	50/50	5.5911
961362	AF2-427 E	1.2253	50/50	1.2253
961412	AF2-432 E	1.3978	50/50	1.3978
961421	AF2-433 C O1	8.3867	50/50	8.3867
961422	AF2-433 E O1	5.5911	50/50	5.5911
961431	AF2-434 C O1	8.3867	50/50	8.3867
961432	AF2-434 E O1	5.5911	50/50	5.5911
NEWTON	NEWTON	0.3460	Confirmed LTF	0.3460
FARMERCITY	FARMERCITY	0.0181	Confirmed LTF	0.0181
CALDERWOOD	CALDERWOOD	0.1650	Confirmed LTF	0.1650
NY	NY	0.7443	Confirmed LTF	0.7443
PRAIRIE	PRAIRIE	0.8343	Confirmed LTF	0.8343
O-066	O-066	9.8582	Confirmed LTF	9.8582
CHEOAH	CHEOAH	0.1667	Confirmed LTF	0.1667
EDWARDS	EDWARDS	0.1120	Confirmed LTF	0.1120
TILTON	TILTON	0.2016	Confirmed LTF	0.2016
G-007	G-007	1.3759	Confirmed LTF	1.3759
GIBSON	GIBSON	0.1753	Confirmed LTF	0.1753
BLUEG	BLUEG	0.5573	Confirmed LTF	0.5573

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.1786	Confirmed LTF	0.1786
CATAWBA	CATAWBA	0.1201	Confirmed LTF	0.1201

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
99599530	207943	COLU TR2	PPL	207942	COLU TR1	PPL	1	PL_P71_101751	tower	1195.0	100.75	102.77	DC	24.22

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.3706	50/50	63.3706
208912	MONT G2 (Deactivation : 18/02/2019)	64.1894	50/50	64.1894
208945	LOHA CT	0.7841	50/50	0.7841
208948	WILL CT	1.6932	50/50	1.6932
209018	SUNBIPCT	0.6871	50/50	0.6871
209019	VIKI IPP	1.5048	Adder	1.77
212369	PATRIOT 1	27.6563	50/50	27.6563
212370	PATRIOT 2	27.6563	50/50	27.6563
921653	AA2-008 E	23.8927	50/50	23.8927
939891	AE1-225 C O1	0.8841	Adder	1.04
939892	AE1-225 E O1	0.9781	Adder	1.15
940561	AE2-042 C O1	13.2612	50/50	13.2612
940562	AE2-042 E O1	6.5740	50/50	6.5740
940721	AE2-059 C	2.3802	50/50	2.3802
940722	AE2-059 E	3.2870	50/50	3.2870
940941	AE2-084 C	2.3802	50/50	2.3802
940942	AE2-084 E	3.2870	50/50	3.2870
941161	AE2-110 C	1.5312	50/50	1.5312
941162	AE2-110 E	2.1144	50/50	2.1144
941171	AE2-111 C	0.7603	Adder	0.89
941172	AE2-111 E	1.0500	Adder	1.24
941371	AE2-133 C	0.7362	Adder	0.87
941372	AE2-133 E	1.0167	Adder	1.2
942281	AE2-241 C	1.5312	50/50	1.5312
942282	AE2-241 E	2.1144	50/50	2.1144
942561	AE2-271 C O1	29.5453	50/50	29.5453
942562	AE2-271 E O1	19.6646	50/50	19.6646
943721	AF1-040 C	0.0941	Adder	0.11
943722	AF1-040 E	2.1024	50/50	2.1024
945511	AF1-216 C1O1	14.7271	50/50	14.7271
945512	AF1-216 E1O1	9.8067	50/50	9.8067
945521	AF1-216 C2	14.7263	50/50	14.7263
945522	AF1-216 E2	9.8061	50/50	9.8061
945611	AF1-226 C	2.6795	50/50	2.6795
945612	AF1-226 E	3.7003	50/50	3.7003
946471	AF1-311 C O1	27.6079	50/50	27.6079
946472	AF1-311 E O1	45.0445	50/50	45.0445
946691	AF1-333 C O1	2.2447	50/50	2.2447
946692	AF1-333 E O1	1.4965	50/50	1.4965
946731	AF1-337 C	2.2447	50/50	2.2447
946732	AF1-337 E	1.4965	50/50	1.4965

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946741	AF1-338 C	2.2447	50/50	2.2447
946742	AF1-338 E	1.4965	50/50	1.4965
946751	AF1-339 C O1	2.2447	50/50	2.2447
946752	AF1-339 E O1	1.4965	50/50	1.4965
946761	AF1-271A C	0.9593	Adder	1.13
946762	AF1-271A E	0.6396	Adder	0.75
957881	AF2-082 C	3.6515	50/50	3.6515
957882	AF2-082 E	2.4343	50/50	2.4343
957921	AF2-086 C O1	2.1874	50/50	2.1874
957922	AF2-086 E O1	1.4582	50/50	1.4582
957991	AF2-093 C	0.5100	50/50	0.5100
957992	AF2-093 E	0.3400	50/50	0.3400
958461	AF2-140	12.5751	50/50	12.5751
958511	AF2-145 C1	5.2462	50/50	5.2462
958512	AF2-145 E1	3.4975	50/50	3.4975
958521	AF2-145 C2	5.2459	50/50	5.2459
958522	AF2-145 E2	3.4973	50/50	3.4973
959121	AF2-203 C	2.1874	50/50	2.1874
959122	AF2-203 E	1.4582	50/50	1.4582
959411	AF2-232 C	4.3747	50/50	4.3747
959412	AF2-232 E	2.9165	50/50	2.9165
959421	AF2-233 C O1	0.5472	Adder	1.21
959422	AF2-233 E O1	0.3648	Adder	0.81
959431	AF2-234 C O1	1.1549	Adder	2.56
959432	AF2-234 E O1	0.7700	Adder	1.71
959932	AF2-284 E	0.8149	50/50	0.8149
959982	AF2-289 E	1.2223	50/50	1.2223
959992	AF2-290 E	0.5667	50/50	0.5667
960401	AF2-331 C O1	14.5305	50/50	14.5305
960402	AF2-331 E O1	9.6870	50/50	9.6870
960411	AF2-332 C O1	14.5305	50/50	14.5305
960412	AF2-332 E O1	9.6870	50/50	9.6870
960421	AF2-333 C O1	5.8122	50/50	5.8122
960422	AF2-333 E O1	3.8748	50/50	3.8748
960431	AF2-334 C O1	5.8122	50/50	5.8122
960432	AF2-334 E O1	3.8748	50/50	3.8748
961271	AF2-418 C	2.1874	50/50	2.1874
961272	AF2-418 E	1.4582	50/50	1.4582
961362	AF2-427 E	1.2223	50/50	1.2223
961412	AF2-432 E	0.3646	50/50	0.3646
961421	AF2-433 C O1	2.1874	50/50	2.1874
961422	AF2-433 E O1	1.4582	50/50	1.4582
961431	AF2-434 C O1	2.1874	50/50	2.1874
961432	AF2-434 E O1	1.4582	50/50	1.4582
NEWTON	NEWTON	0.3449	Confirmed LTF	0.3449
FARMERCITY	FARMERCITY	0.0180	Confirmed LTF	0.0180
CALDERWOOD	CALDERWOOD	0.1645	Confirmed LTF	0.1645
NY	NY	0.7421	Confirmed LTF	0.7421
PRAIRIE	PRAIRIE	0.8317	Confirmed LTF	0.8317
O-066	O-066	9.8314	Confirmed LTF	9.8314
CHEOAH	CHEOAH	0.1662	Confirmed LTF	0.1662
EDWARDS	EDWARDS	0.1117	Confirmed LTF	0.1117

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TILTON	TILTON	0.2010	Confirmed LTF	0.2010
G-007	G-007	1.3718	Confirmed LTF	1.3718
GIBSON	GIBSON	0.1747	Confirmed LTF	0.1747
BLUEG	BLUEG	0.5555	Confirmed LTF	0.5555
TRIMBLE	TRIMBLE	0.1781	Confirmed LTF	0.1781
CATAWBA	CATAWBA	0.1197	Confirmed LTF	0.1197

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
99598152	207968	ELIM	PPL	208109	SUNB	PPL	1	PL_P42_001388	breaker	537.0	110.96	112.78	DC	9.74

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	25.4961	50/50	25.4961
208912	MONT G2 (Deactivation : 18/02/2019)	25.8255	50/50	25.8255
208945	LOHA CT	0.7255	50/50	0.7255
208948	WILL CT	1.7140	50/50	1.7140
209006	NEPC IPP (Deactivation : 24/10/2018)	1.2997	Adder	1.53
211369	W1-111 BAT	0.0050	Adder	0.01
211375	BEAC	0.9998	Adder	1.18
211418	BUMO	0.6807	Adder	0.8
212369	PATRIOT 1	20.0081	50/50	20.0081
212370	PATRIOT 2	20.0081	50/50	20.0081
292935	U2-015E OP1	4.5553	Adder	5.36
921653	AA2-008 E	17.2853	50/50	17.2853
923673	AB1-182 E	0.9460	Adder	1.11
939521	AE1-181 C	1.3497	Adder	1.59
939522	AE1-181 E	0.8998	Adder	1.06
940561	AE2-042 C O1	9.1185	50/50	9.1185
940562	AE2-042 E O1	4.5203	50/50	4.5203
940592	AE2-046 E	1.2997	Adder	1.53
940721	AE2-059 C	1.6367	50/50	1.6367
940722	AE2-059 E	2.2601	50/50	2.2601
940941	AE2-084 C	1.6367	50/50	1.6367
940942	AE2-084 E	2.2601	50/50	2.2601
941161	AE2-110 C	1.0520	50/50	1.0520
941162	AE2-110 E	1.4528	50/50	1.4528
942281	AE2-241 C	1.0520	50/50	1.0520
942282	AE2-241 E	1.4528	50/50	1.4528
942561	AE2-271 C O1	11.8871	50/50	11.8871
942562	AE2-271 E O1	7.9117	50/50	7.9117
943723	AF1-040 BAT	1.9566	Merchant Transmission	1.9566
945511	AF1-216 C1O1	14.3522	50/50	14.3522
945512	AF1-216 E1O1	9.5570	50/50	9.5570
945521	AF1-216 C2	14.3505	50/50	14.3505
945522	AF1-216 E2	9.5558	50/50	9.5558
945611	AF1-226 C	1.8410	50/50	1.8410
945612	AF1-226 E	2.5424	50/50	2.5424
946471	AF1-311 C O1	11.1076	50/50	11.1076
946472	AF1-311 E O1	18.1229	50/50	18.1229
957921	AF2-086 C O1	1.5029	50/50	1.5029
957922	AF2-086 E O1	1.0019	50/50	1.0019
957991	AF2-093 C	0.3507	50/50	0.3507
957992	AF2-093 E	0.2338	50/50	0.2338

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
958461	AF2-140	9.0975	50/50	9.0975
958511	AF2-145 C1	5.1126	50/50	5.1126
958512	AF2-145 E1	3.4084	50/50	3.4084
958521	AF2-145 C2	5.1120	50/50	5.1120
958522	AF2-145 E2	3.4080	50/50	3.4080
959121	AF2-203 C	1.5029	50/50	1.5029
959122	AF2-203 E	1.0019	50/50	1.0019
959411	AF2-232 C	3.0058	50/50	3.0058
959412	AF2-232 E	2.0038	50/50	2.0038
959602	AF2-251 E	1.5713	Adder	3.49
959701	AF2-261 C O1	0.8659	Adder	1.92
959702	AF2-261 E O1	1.1958	Adder	2.65
959711	AF2-262 C O1	0.5007	Adder	1.11
959712	AF2-262 E O1	0.6915	Adder	1.53
959932	AF2-284 E	0.6456	50/50	0.6456
959982	AF2-289 E	0.9683	50/50	0.9683
959992	AF2-290 E	0.3897	50/50	0.3897
960401	AF2-331 C O1	5.8461	50/50	5.8461
960402	AF2-331 E O1	3.8974	50/50	3.8974
960411	AF2-332 C O1	5.8461	50/50	5.8461
960412	AF2-332 E O1	3.8974	50/50	3.8974
960421	AF2-333 C O1	2.3384	50/50	2.3384
960422	AF2-333 E O1	1.5590	50/50	1.5590
960431	AF2-334 C O1	2.3384	50/50	2.3384
960432	AF2-334 E O1	1.5590	50/50	1.5590
961271	AF2-418 C	1.5029	50/50	1.5029
961272	AF2-418 E	1.0019	50/50	1.0019
961301	AF2-421 C O1	0.3179	Adder	0.71
961302	AF2-421 E O1	0.2120	Adder	0.47
961311	AF2-422 C O1	0.3179	Adder	0.71
961312	AF2-422 E O1	0.2120	Adder	0.47
961321	AF2-423 C O1	0.3179	Adder	0.71
961322	AF2-423 E O1	0.2120	Adder	0.47
961362	AF2-427 E	0.9683	50/50	0.9683
961412	AF2-432 E	0.2505	50/50	0.2505
961421	AF2-433 C O1	1.5029	50/50	1.5029
961422	AF2-433 E O1	1.0019	50/50	1.0019
961431	AF2-434 C O1	1.5029	50/50	1.5029
961432	AF2-434 E O1	1.0019	50/50	1.0019
NEWTON	NEWTON	0.6501	Confirmed LTF	0.6501
FARMERCITY	FARMERCITY	0.0338	Confirmed LTF	0.0338
G-007A	G-007A	1.5632	Confirmed LTF	1.5632
VFT	VFT	5.0181	Confirmed LTF	5.0181
CALDERWOOD	CALDERWOOD	0.2947	Confirmed LTF	0.2947
PRAIRIE	PRAIRIE	1.5575	Confirmed LTF	1.5575
CHEOAH	CHEOAH	0.2968	Confirmed LTF	0.2968
EDWARDS	EDWARDS	0.2125	Confirmed LTF	0.2125
TILTON	TILTON	0.3824	Confirmed LTF	0.3824
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
GIBSON	GIBSON	0.3309	Confirmed LTF	0.3309
BLUEG	BLUEG	1.0520	Confirmed LTF	1.0520
TRIMBLE	TRIMBLE	0.3372	Confirmed LTF	0.3372

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CATAWBA	CATAWBA	0.2037	Confirmed LTF	0.2037

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
99599409	208034	MILT	PPL	208109	SUNB	PPL	1	PL_P71_101343	tower	730.0	112.34	114.16	DC	13.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	34.6389	50/50	34.6389
208912	MONT G2 (Deactivation : 18/02/2019)	35.0865	50/50	35.0865
209006	NEPC IPP (Deactivation : 24/10/2018)	1.5872	Adder	1.87
211369	W1-111 BAT	0.0061	Adder	0.01
211375	BEAC	1.2209	Adder	1.44
211418	BUMO	0.8335	Adder	0.98
212369	PATRIOT 1	17.4672	50/50	17.4672
212370	PATRIOT 2	17.4672	50/50	17.4672
292935	U2-015E OP1	5.5780	Adder	6.56
921653	AA2-008 E	15.0902	50/50	15.0902
923673	AB1-182 E	1.1657	Adder	1.37
939521	AE1-181 C	1.6483	Adder	1.94
939522	AE1-181 E	1.0988	Adder	1.29
940561	AE2-042 C O1	27.1903	50/50	27.1903
940562	AE2-042 E O1	13.4790	50/50	13.4790
940592	AE2-046 E	1.5872	Adder	1.87
940721	AE2-059 C	4.8803	50/50	4.8803
940722	AE2-059 E	6.7395	50/50	6.7395
940941	AE2-084 C	4.8803	50/50	4.8803
940942	AE2-084 E	6.7395	50/50	6.7395
941161	AE2-110 C	1.2477	50/50	1.2477
941162	AE2-110 E	1.7231	50/50	1.7231
942281	AE2-241 C	1.2477	50/50	1.2477
942282	AE2-241 E	1.7231	50/50	1.7231
942561	AE2-271 C O1	16.1498	50/50	16.1498
942562	AE2-271 E O1	10.7488	50/50	10.7488
943723	AF1-040 BAT	2.6232	50/50	2.6232
945611	AF1-226 C	2.1835	50/50	2.1835
945612	AF1-226 E	3.0154	50/50	3.0154
946471	AF1-311 C O1	15.0908	50/50	15.0908
946472	AF1-311 E O1	24.6218	50/50	24.6218
957921	AF2-086 C O1	1.7825	50/50	1.7825
957922	AF2-086 E O1	1.1883	50/50	1.1883
957991	AF2-093 C	1.0458	50/50	1.0458
957992	AF2-093 E	0.6972	50/50	0.6972
958461	AF2-140	7.9422	50/50	7.9422
959121	AF2-203 C	1.7825	50/50	1.7825
959122	AF2-203 E	1.1883	50/50	1.1883
959411	AF2-232 C	3.5650	50/50	3.5650
959412	AF2-232 E	2.3766	50/50	2.3766
959602	AF2-251 E	1.9367	Adder	4.3

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959701	AF2-261 C O1	1.0596	Adder	2.35
959702	AF2-261 E O1	1.4633	Adder	3.25
959711	AF2-262 C O1	0.6115	Adder	1.36
959712	AF2-262 E O1	0.8445	Adder	1.87
959933	AF2-284 BAT	0.2054	50/50	0.2054
959983	AF2-289 BAT	0.2054	50/50	0.2054
959992	AF2-290 E	1.1620	50/50	1.1620
960401	AF2-331 C O1	7.9425	50/50	7.9425
960402	AF2-331 E O1	5.2950	50/50	5.2950
960411	AF2-332 C O1	7.9425	50/50	7.9425
960412	AF2-332 E O1	5.2950	50/50	5.2950
960421	AF2-333 C O1	3.1770	50/50	3.1770
960422	AF2-333 E O1	2.1180	50/50	2.1180
960431	AF2-334 C O1	3.1770	50/50	3.1770
960432	AF2-334 E O1	2.1180	50/50	2.1180
961271	AF2-418 C	1.7825	50/50	1.7825
961272	AF2-418 E	1.1883	50/50	1.1883
961301	AF2-421 C O1	0.3883	Adder	0.86
961302	AF2-421 E O1	0.2588	Adder	0.57
961311	AF2-422 C O1	0.3883	Adder	0.86
961312	AF2-422 E O1	0.2588	Adder	0.57
961321	AF2-423 C O1	0.3883	Adder	0.86
961322	AF2-423 E O1	0.2588	Adder	0.57
961363	AF2-427 BAT	0.2054	50/50	0.2054
961412	AF2-432 E	0.2971	50/50	0.2971
961421	AF2-433 C O1	1.7825	50/50	1.7825
961422	AF2-433 E O1	1.1883	50/50	1.1883
961431	AF2-434 C O1	1.7825	50/50	1.7825
961432	AF2-434 E O1	1.1883	50/50	1.1883
NEWTON	NEWTON	0.7350	Confirmed LTF	0.7350
FARMERCITY	FARMERCITY	0.0382	Confirmed LTF	0.0382
G-007A	G-007A	1.8149	Confirmed LTF	1.8149
VFT	VFT	5.8308	Confirmed LTF	5.8308
CALDERWOOD	CALDERWOOD	0.3335	Confirmed LTF	0.3335
PRAIRIE	PRAIRIE	1.7616	Confirmed LTF	1.7616
CHEOAH	CHEOAH	0.3358	Confirmed LTF	0.3358
EDWARDS	EDWARDS	0.2401	Confirmed LTF	0.2401
TILTON	TILTON	0.4322	Confirmed LTF	0.4322
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
GIBSON	GIBSON	0.3740	Confirmed LTF	0.3740
BLUEG	BLUEG	1.1892	Confirmed LTF	1.1892
TRIMBLE	TRIMBLE	0.3812	Confirmed LTF	0.3812
CATAWBA	CATAWBA	0.2306	Confirmed LTF	0.2306

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
99599446	208040	MONT	PPL	208034	MILT	PPL	1	PL_P71_101343	tower	801.0	107.07	108.73	DC	13.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	34.6389	50/50	34.6389
208912	MONT G2 (Deactivation : 18/02/2019)	35.0865	50/50	35.0865
209006	NEPC IPP (Deactivation : 24/10/2018)	1.5872	Adder	1.87
211369	W1-111 BAT	0.0061	Adder	0.01
211375	BEAC	1.2209	Adder	1.44
211418	BUMO	0.8335	Adder	0.98
212369	PATRIOT 1	17.4672	50/50	17.4672
212370	PATRIOT 2	17.4672	50/50	17.4672
292935	U2-015E OP1	5.5780	Adder	6.56
921653	AA2-008 E	15.0902	50/50	15.0902
923673	AB1-182 E	1.1657	Adder	1.37
938401	AE1-059 C O1	9.6492	Adder	11.35
939521	AE1-181 C	1.6483	Adder	1.94
939522	AE1-181 E	1.0988	Adder	1.29
940592	AE2-046 E	1.5872	Adder	1.87
941161	AE2-110 C	1.2477	50/50	1.2477
941162	AE2-110 E	1.7231	50/50	1.7231
942281	AE2-241 C	1.2477	50/50	1.2477
942282	AE2-241 E	1.7231	50/50	1.7231
942561	AE2-271 C O1	16.1498	50/50	16.1498
942562	AE2-271 E O1	10.7488	50/50	10.7488
943723	AF1-040 BAT	2.6232	50/50	2.6232
945611	AF1-226 C	2.1835	50/50	2.1835
945612	AF1-226 E	3.0154	50/50	3.0154
946471	AF1-311 C O1	15.0908	50/50	15.0908
946472	AF1-311 E O1	24.6218	50/50	24.6218
957921	AF2-086 C O1	1.7825	50/50	1.7825
957922	AF2-086 E O1	1.1883	50/50	1.1883
958461	AF2-140	7.9422	50/50	7.9422
959121	AF2-203 C	1.7825	50/50	1.7825
959122	AF2-203 E	1.1883	50/50	1.1883
959411	AF2-232 C	3.5650	50/50	3.5650
959412	AF2-232 E	2.3766	50/50	2.3766
959602	AF2-251 E	1.9367	Adder	4.3
959701	AF2-261 C O1	1.0596	Adder	2.35
959702	AF2-261 E O1	1.4633	Adder	3.25
959711	AF2-262 C O1	0.6115	Adder	1.36
959712	AF2-262 E O1	0.8445	Adder	1.87
959933	AF2-284 BAT	0.2054	50/50	0.2054
959983	AF2-289 BAT	0.2054	50/50	0.2054
959993	AF2-290 BAT	0.6285	50/50	0.6285

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960401	AF2-331 C O1	7.9425	50/50	7.9425
960402	AF2-331 E O1	5.2950	50/50	5.2950
960411	AF2-332 C O1	7.9425	50/50	7.9425
960412	AF2-332 E O1	5.2950	50/50	5.2950
960421	AF2-333 C O1	3.1770	50/50	3.1770
960422	AF2-333 E O1	2.1180	50/50	2.1180
960431	AF2-334 C O1	3.1770	50/50	3.1770
960432	AF2-334 E O1	2.1180	50/50	2.1180
961271	AF2-418 C	1.7825	50/50	1.7825
961272	AF2-418 E	1.1883	50/50	1.1883
961301	AF2-421 C O1	0.3883	Adder	0.86
961302	AF2-421 E O1	0.2588	Adder	0.57
961311	AF2-422 C O1	0.3883	Adder	0.86
961312	AF2-422 E O1	0.2588	Adder	0.57
961321	AF2-423 C O1	0.3883	Adder	0.86
961322	AF2-423 E O1	0.2588	Adder	0.57
961363	AF2-427 BAT	0.2054	50/50	0.2054
961412	AF2-432 E	0.2971	50/50	0.2971
961421	AF2-433 C O1	1.7825	50/50	1.7825
961422	AF2-433 E O1	1.1883	50/50	1.1883
961431	AF2-434 C O1	1.7825	50/50	1.7825
961432	AF2-434 E O1	1.1883	50/50	1.1883
NEWTON	NEWTON	0.7350	Confirmed LTF	0.7350
FARMERCITY	FARMERCITY	0.0382	Confirmed LTF	0.0382
G-007A	G-007A	1.8149	Confirmed LTF	1.8149
VFT	VFT	5.8308	Confirmed LTF	5.8308
CALDERWOOD	CALDERWOOD	0.3335	Confirmed LTF	0.3335
PRAIRIE	PRAIRIE	1.7616	Confirmed LTF	1.7616
CHEOAH	CHEOAH	0.3358	Confirmed LTF	0.3358
EDWARDS	EDWARDS	0.2401	Confirmed LTF	0.2401
TILTON	TILTON	0.4322	Confirmed LTF	0.4322
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
GIBSON	GIBSON	0.3740	Confirmed LTF	0.3740
BLUEG	BLUEG	1.1892	Confirmed LTF	1.1892
TRIMBLE	TRIMBLE	0.3812	Confirmed LTF	0.3812
CATAWBA	CATAWBA	0.2306	Confirmed LTF	0.2306

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
99599498	208040	MONT	PPL	207943	COLU	PPL	1	PL_P71_101751	tower	1195.0	105.03	107.06	DC	24.28

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.5276	50/50	63.5276
208912	MONT G2 (Deactivation : 18/02/2019)	64.3484	50/50	64.3484
208945	LOHA CT	0.7861	50/50	0.7861
208948	WILL CT	1.6974	50/50	1.6974
209018	SUNBIPCT	0.6888	50/50	0.6888
209019	VIKI IPP	1.5086	Adder	1.77
212369	PATRIOT 1	27.7249	50/50	27.7249
212370	PATRIOT 2	27.7249	50/50	27.7249
921653	AA2-008 E	23.9520	50/50	23.9520
939891	AE1-225 C O1	0.8863	Adder	1.04
939892	AE1-225 E O1	0.9806	Adder	1.15
940561	AE2-042 C O1	13.2940	50/50	13.2940
940562	AE2-042 E O1	6.5902	50/50	6.5902
940721	AE2-059 C	2.3861	50/50	2.3861
940722	AE2-059 E	3.2951	50/50	3.2951
940941	AE2-084 C	2.3861	50/50	2.3861
940942	AE2-084 E	3.2951	50/50	3.2951
941171	AE2-111 C	0.7623	Adder	0.9
941172	AE2-111 E	1.0527	Adder	1.24
941371	AE2-133 C	0.7381	Adder	0.87
941372	AE2-133 E	1.0192	Adder	1.2
942561	AE2-271 C O1	29.6185	50/50	29.6185
942562	AE2-271 E O1	19.7133	50/50	19.7133
943721	AF1-040 C	0.0943	Adder	0.11
943722	AF1-040 E	2.1077	50/50	2.1077
945511	AF1-216 C1O1	14.7636	50/50	14.7636
945512	AF1-216 E1O1	9.8310	50/50	9.8310
945521	AF1-216 C2	14.7628	50/50	14.7628
945522	AF1-216 E2	9.8304	50/50	9.8304
946471	AF1-311 C O1	27.6763	50/50	27.6763
946472	AF1-311 E O1	45.1561	50/50	45.1561
946691	AF1-333 C O1	2.2502	50/50	2.2502
946692	AF1-333 E O1	1.5002	50/50	1.5002
946731	AF1-337 C	2.2502	50/50	2.2502
946732	AF1-337 E	1.5002	50/50	1.5002
946741	AF1-338 C	2.2502	50/50	2.2502
946742	AF1-338 E	1.5002	50/50	1.5002
946751	AF1-339 C O1	2.2502	50/50	2.2502
946752	AF1-339 E O1	1.5002	50/50	1.5002
946761	AF1-271A C	0.9618	Adder	1.13
946762	AF1-271A E	0.6412	Adder	0.75

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957881	AF2-082 C	3.6607	50/50	3.6607
957882	AF2-082 E	2.4405	50/50	2.4405
957991	AF2-093 C	0.5113	50/50	0.5113
957992	AF2-093 E	0.3409	50/50	0.3409
958461	AF2-140	12.6063	50/50	12.6063
958511	AF2-145 C1	5.2592	50/50	5.2592
958512	AF2-145 E1	3.5061	50/50	3.5061
958521	AF2-145 C2	5.2589	50/50	5.2589
958522	AF2-145 E2	3.5059	50/50	3.5059
959421	AF2-233 C O1	0.5486	Adder	1.22
959422	AF2-233 E O1	0.3657	Adder	0.81
959431	AF2-234 C O1	1.1579	Adder	2.57
959432	AF2-234 E O1	0.7719	Adder	1.71
959932	AF2-284 E	0.8169	50/50	0.8169
959982	AF2-289 E	1.2253	50/50	1.2253
959992	AF2-290 E	0.5681	50/50	0.5681
960401	AF2-331 C O1	14.5665	50/50	14.5665
960402	AF2-331 E O1	9.7110	50/50	9.7110
960411	AF2-332 C O1	14.5665	50/50	14.5665
960412	AF2-332 E O1	9.7110	50/50	9.7110
960421	AF2-333 C O1	5.8266	50/50	5.8266
960422	AF2-333 E O1	3.8844	50/50	3.8844
960431	AF2-334 C O1	5.8266	50/50	5.8266
960432	AF2-334 E O1	3.8844	50/50	3.8844
961362	AF2-427 E	1.2253	50/50	1.2253
961413	AF2-432 BAT	0.4517	50/50	0.4517
NEWTON	NEWTON	0.3460	Confirmed LTF	0.3460
FARMERCITY	FARMERCITY	0.0181	Confirmed LTF	0.0181
CALDERWOOD	CALDERWOOD	0.1650	Confirmed LTF	0.1650
NY	NY	0.7443	Confirmed LTF	0.7443
PRAIRIE	PRAIRIE	0.8343	Confirmed LTF	0.8343
O-066	O-066	9.8582	Confirmed LTF	9.8582
CHEOAH	CHEOAH	0.1667	Confirmed LTF	0.1667
EDWARDS	EDWARDS	0.1120	Confirmed LTF	0.1120
TILTON	TILTON	0.2016	Confirmed LTF	0.2016
G-007	G-007	1.3759	Confirmed LTF	1.3759
GIBSON	GIBSON	0.1753	Confirmed LTF	0.1753
BLUEG	BLUEG	0.5573	Confirmed LTF	0.5573
TRIMBLE	TRIMBLE	0.1786	Confirmed LTF	0.1786
CATAWBA	CATAWBA	0.1201	Confirmed LTF	0.1201

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
AA2-008	Saegers 230 kV	In Service
AB1-182	Bear Creek	Engineering and Procurement
AE1-059	Stanton-Summit 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
AF1-040	Dauphin-Pine Grove 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
AF2-082	Dauphin PG Tie-Dauphin Juniata Tie 69 k	Active
AF2-086	Scott Tap-Bowmans Mill Tap 69 kV	Active
AF2-093	Derry 12.47 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
AF2-261	Harwood-Susquehanna #1 230 kV	Active
AF2-262	Freeland #1 Tap-Jeddo-Highland 69 kV	Active
AF2-284	Watson 12.47 kV	Active
AF2-289	Watson 12.47 kV	Active
AF2-290	Derry 12.47 kV	Active

Queue Number	Project Name	Status
AF2-331	Montour 230 kV	Active
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
AF2-422	East Hazelton 12.47 kV	Active
AF2-423	East Hazelton 12.47 kV	Active
AF2-427	Watson 12.47 kV	Active
AF2-432	University 12.47 kV	Active
AF2-433	Columbia-Geisinger Tap #1 69 kV	Active
AF2-434	Columbis-Geisinger Tap #1 69 kV	Active
U2-015	Harwood-E. Palmerton 230kV	Withdrawn
W1-111	Harwood-Berwick 69kV	In Service

10.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
PL_P13_100455	CONTINGENCY 'PL_P13_100455' /* COLUMBIA 230/69KV TRAN 2 OUT DISCONNECT BUS 207943 /* END
PL_P42_001388	CONTINGENCY 'PL_P42_001388' /* SUNB 230KV YARD 3T BF - MILT-SUNB AND SUNB-CWSA DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 1 /* /* SUNB-MILT 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 207935 CKT 1 /* /* SUNB-CWSA 230KV LINE END
PL_P12_001346	CONTINGENCY 'PL_P12_001346' /* MONT-MILT 230KV LINE DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 1 /* /* MONT-MILT END
PL_P71_101343	CONTINGENCY 'PL_P71_101343' /* SAEGERS-CLINTON & SAEGERS- ELIMSPORT 230 KV TOWER DISCONNECT BRANCH FROM BUS 212397 TO BUS 207968 CKT 1 /* /* SAEG-ELIM DISCONNECT BRANCH FROM BUS 207937 TO BUS 212397 CKT 1 /* /* SAEG-CLIN END
PL_P12_000942	CONTINGENCY 'PL_P12_000942' /* CWSA-COLU 230KV LINE WITH COLU TR1 DISCONNECT BUS 207942 /* COLU-CWSA 1 230KV & COLU T1 END
PL_P12_000218	CONTINGENCY 'PL_P12_000218' /* MONT-COLU 230 KV LINE DISCONNECT BRANCH FROM BUS 207943 TO BUS 208040 CKT 1 /* COLU TR2-MONT 230 DISCONNECT BRANCH FROM BUS 207943 TO BUS 212093 CKT 2 /* COLU TR2-COLU 230-69 END
PL_P71_101751	CONTINGENCY 'PL_P71_101751' /* MONT-BETA 1 & 2 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 1 /* MONT-BETA 1 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 2 /* MONT-BETA 2 END
PL_P71_101752	CONTINGENCY 'PL_P71_101752' /* D/C BETA-SUSQ & BETA-SU10 230KV LINES DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ 230KV LINE DISCONNECT BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 /* BETA-SU10 230KV LINE END

11 Short Circuit Analysis - Primary POI

Short circuit analysis will be performed during the System Impact Study.

12 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AF2-331 was evaluated as a 50.0 MW (Capacity 30.0 MW) injection tapping the **Montour to Saegers 230 kV line** in the PPL area. Project AF2-331 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-331 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)

None

12.2 Multiple Facility Contingency

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
99599531	207943	COLU TR2	230.0	PPL	207942	COLU TR1	230.0	PPL	1	PL_P71_101752	tower	1195.0	98.22	100.17	DC	23.3

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
99599521	207942	COLU TR1	230	PPL	207935	CWSA	230	PPL	1	PL_P71_101751	tower	1195.0	100.49	102.44	DC	23.36
99599530	207943	COLU TR2	230	PPL	207942	COLU TR1	230	PPL	1	PL_P71_101751	tower	1195.0	100.74	102.69	DC	23.3
99598152	207968	ELIM	230	PPL	208109	SUNB	230	PPL	1	PL_P42_001388	breaker	537.0	110.95	113.05	DC	11.27
155593390	207968	ELIM	230	PPL	208109	SUNB	230	PPL	1	PL_P42_001365	breaker	537.0	104.58	108.01	DC	18.39
156394713	207968	ELIM	230	PPL	208109	SUNB	230	PPL	1	PL_P71_100487-B	tower	537.0	123.94	132.76	DC	47.38
99599409	208034	MILT	230	PPL	208109	SUNB	230	PPL	1	PL_P71_101343	tower	730.0	112.33	114.15	DC	13.24
99599446	208040	MON T	230	PPL	208034	MILT	230	PPL	1	PL_P71_101343	tower	801.0	107.05	108.71	DC	13.24
99599498	208040	MON T	230	PPL	207943	COLU TR2	230	PPL	1	PL_P71_101751	tower	1195.0	105.02	106.98	DC	23.36
99599499	208040	MON T	230	PPL	207943	COLU TR2	230	PPL	1	PL_P71_101752	tower	1195.0	102.49	104.45	DC	23.36

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 %	ACDC	MW IMPACT
109386410	207968	ELIM	230	PPL	208109	SUNB	230	PPL	1	PL_P12_001346	operation	537.0	104.47	106.47	DC	10.7
99598687	208034	MILT	230	PPL	208109	SUNB	230	PPL	1	PL_P12_000942	operation	730.0	107.94	109.95	DC	14.63
99598700	208040	MON T	230	PPL	208034	MILT	230	PPL	1	PL_P12_000942	operation	801.0	102.66	104.49	DC	14.63

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
99599530	207943	COLU TR2	PPL	207942	COLU TR1	PPL	1	PL_P71_101751	tower	1195.0	100.74	102.69	DC	23.3

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.3706	50/50	63.3706
208912	MONT G2 (Deactivation : 18/02/2019)	64.1894	50/50	64.1894
208945	LOHA CT	0.7841	50/50	0.7841
208948	WILL CT	1.6932	50/50	1.6932
209018	SUNBIPCT	0.6871	50/50	0.6871
209019	VIKI IPP	1.5048	Adder	1.77
212369	PATRIOT 1	27.6563	50/50	27.6563
212370	PATRIOT 2	27.6563	50/50	27.6563
921653	AA2-008 E	23.8927	50/50	23.8927
939891	AE1-225 C O1	0.8841	Adder	1.04
939892	AE1-225 E O1	0.9781	Adder	1.15
940561	AE2-042 C O1	13.2612	50/50	13.2612
940562	AE2-042 E O1	6.5740	50/50	6.5740
940721	AE2-059 C	2.3802	50/50	2.3802
940722	AE2-059 E	3.2870	50/50	3.2870
940941	AE2-084 C	2.3802	50/50	2.3802
940942	AE2-084 E	3.2870	50/50	3.2870
941161	AE2-110 C	1.5312	50/50	1.5312
941162	AE2-110 E	2.1144	50/50	2.1144
941171	AE2-111 C	0.7603	Adder	0.89
941172	AE2-111 E	1.0500	Adder	1.24
941371	AE2-133 C	0.7362	Adder	0.87
941372	AE2-133 E	1.0167	Adder	1.2
942281	AE2-241 C	1.5312	50/50	1.5312
942282	AE2-241 E	2.1144	50/50	2.1144
942561	AE2-271 C O1	29.5453	50/50	29.5453
942562	AE2-271 E O1	19.6646	50/50	19.6646
943721	AF1-040 C	0.0941	Adder	0.11
943722	AF1-040 E	2.1024	50/50	2.1024
945511	AF1-216 C1O1	14.7271	50/50	14.7271
945512	AF1-216 E1O1	9.8067	50/50	9.8067
945521	AF1-216 C2	14.7263	50/50	14.7263
945522	AF1-216 E2	9.8061	50/50	9.8061
945611	AF1-226 C	2.6795	50/50	2.6795
945612	AF1-226 E	3.7003	50/50	3.7003
946471	AF1-311 C O1	27.6079	50/50	27.6079
946472	AF1-311 E O1	45.0445	50/50	45.0445
946691	AF1-333 C O1	2.2447	50/50	2.2447
946692	AF1-333 E O1	1.4965	50/50	1.4965
946731	AF1-337 C	2.2447	50/50	2.2447
946732	AF1-337 E	1.4965	50/50	1.4965

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946741	AF1-338 C	2.2447	50/50	2.2447
946742	AF1-338 E	1.4965	50/50	1.4965
946751	AF1-339 C O1	2.2447	50/50	2.2447
946752	AF1-339 E O1	1.4965	50/50	1.4965
946761	AF1-271A C	0.9593	Adder	1.13
946762	AF1-271A E	0.6396	Adder	0.75
957881	AF2-082 C	3.6515	50/50	3.6515
957882	AF2-082 E	2.4343	50/50	2.4343
957921	AF2-086 C O2	2.1874	50/50	2.1874
957922	AF2-086 E O2	1.4582	50/50	1.4582
957991	AF2-093 C	0.5100	50/50	0.5100
957992	AF2-093 E	0.3400	50/50	0.3400
958461	AF2-140	12.5751	50/50	12.5751
958511	AF2-145 C1	5.2462	50/50	5.2462
958512	AF2-145 E1	3.4975	50/50	3.4975
958521	AF2-145 C2	5.2459	50/50	5.2459
958522	AF2-145 E2	3.4973	50/50	3.4973
959121	AF2-203 C	2.1874	50/50	2.1874
959122	AF2-203 E	1.4582	50/50	1.4582
959411	AF2-232 C	4.3747	50/50	4.3747
959412	AF2-232 E	2.9165	50/50	2.9165
959421	AF2-233 C O2	0.5815	Adder	1.29
959422	AF2-233 E O2	0.3877	Adder	0.86
959431	AF2-234 C O2	1.0648	Adder	2.36
959432	AF2-234 E O2	0.7098	Adder	1.58
959932	AF2-284 E	0.8149	50/50	0.8149
959982	AF2-289 E	1.2223	50/50	1.2223
959992	AF2-290 E	0.5667	50/50	0.5667
960401	AF2-331 C O2	13.9803	50/50	13.9803
960402	AF2-331 E O2	9.3202	50/50	9.3202
960411	AF2-332 C O2	13.9803	50/50	13.9803
960412	AF2-332 E O2	9.3202	50/50	9.3202
960421	AF2-333 C O2	5.5921	50/50	5.5921
960422	AF2-333 E O2	3.7281	50/50	3.7281
960431	AF2-334 C O2	5.5921	50/50	5.5921
960432	AF2-334 E O2	3.7281	50/50	3.7281
961271	AF2-418 C	2.1874	50/50	2.1874
961272	AF2-418 E	1.4582	50/50	1.4582
961362	AF2-427 E	1.2223	50/50	1.2223
961412	AF2-432 E	0.3646	50/50	0.3646
961421	AF2-433 C O2	2.1874	50/50	2.1874
961422	AF2-433 E O2	1.4582	50/50	1.4582
961431	AF2-434 C O2	2.1874	50/50	2.1874
961432	AF2-434 E O2	1.4582	50/50	1.4582
NEWTON	NEWTON	0.3449	Confirmed LTF	0.3449
FARMERCITY	FARMERCITY	0.0180	Confirmed LTF	0.0180
CALDERWOOD	CALDERWOOD	0.1645	Confirmed LTF	0.1645
NY	NY	0.7421	Confirmed LTF	0.7421
PRAIRIE	PRAIRIE	0.8317	Confirmed LTF	0.8317
O-066	O-066	9.8314	Confirmed LTF	9.8314
CHEOAH	CHEOAH	0.1662	Confirmed LTF	0.1662
EDWARDS	EDWARDS	0.1117	Confirmed LTF	0.1117

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TILTON	TILTON	0.2010	Confirmed LTF	0.2010
G-007	G-007	1.3718	Confirmed LTF	1.3718
GIBSON	GIBSON	0.1747	Confirmed LTF	0.1747
BLUEG	BLUEG	0.5555	Confirmed LTF	0.5555
TRIMBLE	TRIMBLE	0.1781	Confirmed LTF	0.1781
CATAWBA	CATAWBA	0.1197	Confirmed LTF	0.1197

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
99599521	207942	COLU TR1	PPL	207935	CWSA	PPL	1	PL_P71_101751	tower	1195.0	100.49	102.44	DC	23.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.5276	50/50	63.5276
208912	MONT G2 (Deactivation : 18/02/2019)	64.3484	50/50	64.3484
208945	LOHA CT	0.7861	50/50	0.7861
208948	WILL CT	1.6974	50/50	1.6974
209018	SUNBIPCT	0.6888	50/50	0.6888
209019	VIKI IPP	1.5086	Adder	1.77
212369	PATRIOT 1	27.7249	50/50	27.7249
212370	PATRIOT 2	27.7249	50/50	27.7249
921653	AA2-008 E	23.9520	50/50	23.9520
939891	AE1-225 C O1	0.8863	Adder	1.04
939892	AE1-225 E O1	0.9806	Adder	1.15
940561	AE2-042 C O1	13.2940	50/50	13.2940
940562	AE2-042 E O1	6.5902	50/50	6.5902
940721	AE2-059 C	2.3861	50/50	2.3861
940722	AE2-059 E	3.2951	50/50	3.2951
940941	AE2-084 C	2.3861	50/50	2.3861
940942	AE2-084 E	3.2951	50/50	3.2951
941161	AE2-110 C	5.8707	50/50	5.8707
941162	AE2-110 E	8.1071	50/50	8.1071
941171	AE2-111 C	0.7623	Adder	0.9
941172	AE2-111 E	1.0527	Adder	1.24
942281	AE2-241 C	5.8707	50/50	5.8707
942282	AE2-241 E	8.1071	50/50	8.1071
942561	AE2-271 C O1	29.6185	50/50	29.6185
942562	AE2-271 E O1	19.7133	50/50	19.7133
943721	AF1-040 C	0.0943	Adder	0.11
943722	AF1-040 E	2.1077	50/50	2.1077
945511	AF1-216 C1O1	14.7636	50/50	14.7636
945512	AF1-216 E1O1	9.8310	50/50	9.8310
945521	AF1-216 C2	14.7628	50/50	14.7628
945522	AF1-216 E2	9.8304	50/50	9.8304
945611	AF1-226 C	10.2737	50/50	10.2737
945612	AF1-226 E	14.1875	50/50	14.1875
946471	AF1-311 C O1	27.6763	50/50	27.6763
946472	AF1-311 E O1	45.1561	50/50	45.1561
946691	AF1-333 C O1	2.2502	50/50	2.2502
946692	AF1-333 E O1	1.5002	50/50	1.5002
946731	AF1-337 C	2.2502	50/50	2.2502
946732	AF1-337 E	1.5002	50/50	1.5002
946741	AF1-338 C	2.2502	50/50	2.2502
946742	AF1-338 E	1.5002	50/50	1.5002

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
946751	AF1-339 C O1	2.2502	50/50	2.2502
946752	AF1-339 E O1	1.5002	50/50	1.5002
946761	AF1-271A C	0.9618	Adder	1.13
946762	AF1-271A E	0.6412	Adder	0.75
957881	AF2-082 C	3.6607	50/50	3.6607
957882	AF2-082 E	2.4405	50/50	2.4405
957921	AF2-086 C O2	8.3867	50/50	8.3867
957922	AF2-086 E O2	5.5911	50/50	5.5911
957991	AF2-093 C	0.5113	50/50	0.5113
957992	AF2-093 E	0.3409	50/50	0.3409
958461	AF2-140	12.6063	50/50	12.6063
958511	AF2-145 C1	5.2592	50/50	5.2592
958512	AF2-145 E1	3.5061	50/50	3.5061
958521	AF2-145 C2	5.2589	50/50	5.2589
958522	AF2-145 E2	3.5059	50/50	3.5059
959121	AF2-203 C	8.3867	50/50	8.3867
959122	AF2-203 E	5.5911	50/50	5.5911
959411	AF2-232 C	16.7734	50/50	16.7734
959412	AF2-232 E	11.1822	50/50	11.1822
959421	AF2-233 C O2	0.5830	Adder	1.29
959422	AF2-233 E O2	0.3887	Adder	0.86
959932	AF2-284 E	0.8169	50/50	0.8169
959982	AF2-289 E	1.2253	50/50	1.2253
959992	AF2-290 E	0.5681	50/50	0.5681
960401	AF2-331 C O2	14.0151	50/50	14.0151
960402	AF2-331 E O2	9.3434	50/50	9.3434
960411	AF2-332 C O2	14.0151	50/50	14.0151
960412	AF2-332 E O2	9.3434	50/50	9.3434
960421	AF2-333 C O2	5.6060	50/50	5.6060
960422	AF2-333 E O2	3.7374	50/50	3.7374
960431	AF2-334 C O2	5.6060	50/50	5.6060
960432	AF2-334 E O2	3.7374	50/50	3.7374
961271	AF2-418 C	8.3867	50/50	8.3867
961272	AF2-418 E	5.5911	50/50	5.5911
961362	AF2-427 E	1.2253	50/50	1.2253
961412	AF2-432 E	1.3978	50/50	1.3978
961421	AF2-433 C O2	8.3867	50/50	8.3867
961422	AF2-433 E O2	5.5911	50/50	5.5911
961431	AF2-434 C O2	8.3867	50/50	8.3867
961432	AF2-434 E O2	5.5911	50/50	5.5911
NEWTON	NEWTON	0.3460	Confirmed LTF	0.3460
FARMERCITY	FARMERCITY	0.0181	Confirmed LTF	0.0181
CALDERWOOD	CALDERWOOD	0.1650	Confirmed LTF	0.1650
NY	NY	0.7443	Confirmed LTF	0.7443
PRAIRIE	PRAIRIE	0.8343	Confirmed LTF	0.8343
O-066	O-066	9.8582	Confirmed LTF	9.8582
CHEOAH	CHEOAH	0.1667	Confirmed LTF	0.1667
EDWARDS	EDWARDS	0.1120	Confirmed LTF	0.1120
TILTON	TILTON	0.2016	Confirmed LTF	0.2016
G-007	G-007	1.3759	Confirmed LTF	1.3759
GIBSON	GIBSON	0.1753	Confirmed LTF	0.1753
BLUEG	BLUEG	0.5573	Confirmed LTF	0.5573

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
TRIMBLE	TRIMBLE	0.1786	Confirmed LTF	0.1786
CATAWBA	CATAWBA	0.1201	Confirmed LTF	0.1201

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
156394713	207968	ELIM	PPL	208109	SUNB	PPL	1	PL_P71_100487-B	tower	537.0	123.94	132.76	DC	47.38

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208945	LOHA CT	1.9036	50/50	1.9036
208948	WILL CT	4.2815	50/50	4.2815
212369	PATRIOT 1	62.5268	50/50	62.5268
212370	PATRIOT 2	62.5268	50/50	62.5268
921653	AA2-008 E	54.0178	50/50	54.0178
945511	AF1-216 C1O1	36.5947	50/50	36.5947
945512	AF1-216 E1O1	24.3681	50/50	24.3681
945521	AF1-216 C2	36.5917	50/50	36.5917
945522	AF1-216 E2	24.3661	50/50	24.3661
946691	AF1-333 C O1	3.6655	50/50	3.6655
946692	AF1-333 E O1	2.4437	50/50	2.4437
946731	AF1-337 C	3.6655	50/50	3.6655
946732	AF1-337 E	2.4437	50/50	2.4437
946741	AF1-338 C	3.6655	50/50	3.6655
946742	AF1-338 E	2.4437	50/50	2.4437
946751	AF1-339 C O1	3.6655	50/50	3.6655
946752	AF1-339 E O1	2.4437	50/50	2.4437
958461	AF2-140	28.4304	50/50	28.4304
958511	AF2-145 C1	13.0361	50/50	13.0361
958512	AF2-145 E1	8.6907	50/50	8.6907
958521	AF2-145 C2	13.0350	50/50	13.0350
958522	AF2-145 E2	8.6900	50/50	8.6900
959932	AF2-284 E	1.8954	50/50	1.8954
959982	AF2-289 E	2.8430	50/50	2.8430
960401	AF2-331 C O2	28.4304	50/50	28.4304
960402	AF2-331 E O2	18.9536	50/50	18.9536
960411	AF2-332 C O2	28.4304	50/50	28.4304
960412	AF2-332 E O2	18.9536	50/50	18.9536
960421	AF2-333 C O2	11.3722	50/50	11.3722
960422	AF2-333 E O2	7.5814	50/50	7.5814
960431	AF2-334 C O2	11.3722	50/50	11.3722
960432	AF2-334 E O2	7.5814	50/50	7.5814
961362	AF2-427 E	2.8430	50/50	2.8430
NEWTON	NEWTON	0.4234	Confirmed LTF	0.4234
FARMERCITY	FARMERCITY	0.0221	Confirmed LTF	0.0221
CALDERWOOD	CALDERWOOD	0.1958	Confirmed LTF	0.1958
NY	NY	0.2267	Confirmed LTF	0.2267
PRAIRIE	PRAIRIE	1.0177	Confirmed LTF	1.0177
O-066	O-066	2.7418	Confirmed LTF	2.7418
CHEOAH	CHEOAH	0.1972	Confirmed LTF	0.1972
EDWARDS	EDWARDS	0.1379	Confirmed LTF	0.1379
TILTON	TILTON	0.2482	Confirmed LTF	0.2482

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
G-007	G-007	0.4233	Confirmed LTF	0.4233
GIBSON	GIBSON	0.2151	Confirmed LTF	0.2151
BLUEG	BLUEG	0.6840	Confirmed LTF	0.6840
TRIMBLE	TRIMBLE	0.2193	Confirmed LTF	0.2193
CATAWBA	CATAWBA	0.1379	Confirmed LTF	0.1379

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
99599409	208034	MILT	PPL	208109	SUNB	PPL	1	PL_P71_101343	tower	730.0	112.33	114.15	DC	13.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	34.6389	50/50	34.6389
208912	MONT G2 (Deactivation : 18/02/2019)	35.0865	50/50	35.0865
209006	NEPC IPP (Deactivation : 24/10/2018)	1.5872	Adder	1.87
211369	W1-111 BAT	0.0061	Adder	0.01
211375	BEAC	1.2209	Adder	1.44
211418	BUMO	0.8335	Adder	0.98
212369	PATRIOT 1	17.4672	50/50	17.4672
212370	PATRIOT 2	17.4672	50/50	17.4672
292935	U2-015E OP1	5.5780	Adder	6.56
921653	AA2-008 E	15.0902	50/50	15.0902
923673	AB1-182 E	1.1657	Adder	1.37
939521	AE1-181 C	1.6483	Adder	1.94
939522	AE1-181 E	1.0988	Adder	1.29
940561	AE2-042 C O1	27.1903	50/50	27.1903
940562	AE2-042 E O1	13.4790	50/50	13.4790
940592	AE2-046 E	1.5872	Adder	1.87
940721	AE2-059 C	4.8803	50/50	4.8803
940722	AE2-059 E	6.7395	50/50	6.7395
940941	AE2-084 C	4.8803	50/50	4.8803
940942	AE2-084 E	6.7395	50/50	6.7395
941161	AE2-110 C	1.2477	50/50	1.2477
941162	AE2-110 E	1.7231	50/50	1.7231
942281	AE2-241 C	1.2477	50/50	1.2477
942282	AE2-241 E	1.7231	50/50	1.7231
942561	AE2-271 C O1	16.1498	50/50	16.1498
942562	AE2-271 E O1	10.7488	50/50	10.7488
943723	AF1-040 BAT	2.6232	50/50	2.6232
945611	AF1-226 C	2.1835	50/50	2.1835
945612	AF1-226 E	3.0154	50/50	3.0154
946471	AF1-311 C O1	15.0908	50/50	15.0908
946472	AF1-311 E O1	24.6218	50/50	24.6218
957921	AF2-086 C O2	1.7825	50/50	1.7825
957922	AF2-086 E O2	1.1883	50/50	1.1883
957991	AF2-093 C	1.0458	50/50	1.0458
957992	AF2-093 E	0.6972	50/50	0.6972
958461	AF2-140	7.9422	50/50	7.9422
959121	AF2-203 C	1.7825	50/50	1.7825
959122	AF2-203 E	1.1883	50/50	1.1883
959411	AF2-232 C	3.5650	50/50	3.5650
959412	AF2-232 E	2.3766	50/50	2.3766
959602	AF2-251 E	1.9367	Adder	4.3

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959701	AF2-261 C O2	1.0192	Adder	2.26
959702	AF2-261 E O2	1.4074	Adder	3.12
959711	AF2-262 C O2	0.6115	Adder	1.36
959712	AF2-262 E O2	0.8445	Adder	1.87
959933	AF2-284 BAT	0.2054	50/50	0.2054
959983	AF2-289 BAT	0.2054	50/50	0.2054
959992	AF2-290 E	1.1620	50/50	1.1620
960401	AF2-331 C O2	7.9425	50/50	7.9425
960402	AF2-331 E O2	5.2950	50/50	5.2950
960411	AF2-332 C O2	7.9425	50/50	7.9425
960412	AF2-332 E O2	5.2950	50/50	5.2950
960421	AF2-333 C O2	3.1770	50/50	3.1770
960422	AF2-333 E O2	2.1180	50/50	2.1180
960431	AF2-334 C O2	3.1770	50/50	3.1770
960432	AF2-334 E O2	2.1180	50/50	2.1180
961271	AF2-418 C	1.7825	50/50	1.7825
961272	AF2-418 E	1.1883	50/50	1.1883
961301	AF2-421 C O2	0.3883	Adder	0.86
961302	AF2-421 E O2	0.2588	Adder	0.57
961311	AF2-422 C O2	0.3883	Adder	0.86
961312	AF2-422 E O2	0.2588	Adder	0.57
961321	AF2-423 C O2	0.3883	Adder	0.86
961322	AF2-423 E O2	0.2588	Adder	0.57
961363	AF2-427 BAT	0.2054	50/50	0.2054
961412	AF2-432 E	0.2971	50/50	0.2971
961421	AF2-433 C O2	1.7825	50/50	1.7825
961422	AF2-433 E O2	1.1883	50/50	1.1883
961431	AF2-434 C O2	1.7825	50/50	1.7825
961432	AF2-434 E O2	1.1883	50/50	1.1883
NEWTON	NEWTON	0.7350	Confirmed LTF	0.7350
FARMERCITY	FARMERCITY	0.0382	Confirmed LTF	0.0382
G-007A	G-007A	1.8149	Confirmed LTF	1.8149
VFT	VFT	5.8308	Confirmed LTF	5.8308
CALDERWOOD	CALDERWOOD	0.3335	Confirmed LTF	0.3335
PRAIRIE	PRAIRIE	1.7616	Confirmed LTF	1.7616
CHEOAH	CHEOAH	0.3358	Confirmed LTF	0.3358
EDWARDS	EDWARDS	0.2401	Confirmed LTF	0.2401
TILTON	TILTON	0.4322	Confirmed LTF	0.4322
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
GIBSON	GIBSON	0.3740	Confirmed LTF	0.3740
BLUEG	BLUEG	1.1892	Confirmed LTF	1.1892
TRIMBLE	TRIMBLE	0.3812	Confirmed LTF	0.3812
CATAWBA	CATAWBA	0.2306	Confirmed LTF	0.2306

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
99599446	208040	MONT	PPL	208034	MILT	PPL	1	PL_P71_101343	tower	801.0	107.05	108.71	DC	13.24

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	34.6389	50/50	34.6389
208912	MONT G2 (Deactivation : 18/02/2019)	35.0865	50/50	35.0865
209006	NEPC IPP (Deactivation : 24/10/2018)	1.5872	Adder	1.87
211369	W1-111 BAT	0.0061	Adder	0.01
211375	BEAC	1.2209	Adder	1.44
211418	BUMO	0.8335	Adder	0.98
212369	PATRIOT 1	17.4672	50/50	17.4672
212370	PATRIOT 2	17.4672	50/50	17.4672
292935	U2-015E OP1	5.5780	Adder	6.56
921653	AA2-008 E	15.0902	50/50	15.0902
923673	AB1-182 E	1.1657	Adder	1.37
938401	AE1-059 C O1	9.6492	Adder	11.35
939521	AE1-181 C	1.6483	Adder	1.94
939522	AE1-181 E	1.0988	Adder	1.29
940592	AE2-046 E	1.5872	Adder	1.87
941161	AE2-110 C	1.2477	50/50	1.2477
941162	AE2-110 E	1.7231	50/50	1.7231
942281	AE2-241 C	1.2477	50/50	1.2477
942282	AE2-241 E	1.7231	50/50	1.7231
942561	AE2-271 C O1	16.1498	50/50	16.1498
942562	AE2-271 E O1	10.7488	50/50	10.7488
943723	AF1-040 BAT	2.6232	50/50	2.6232
945611	AF1-226 C	2.1835	50/50	2.1835
945612	AF1-226 E	3.0154	50/50	3.0154
946471	AF1-311 C O1	15.0908	50/50	15.0908
946472	AF1-311 E O1	24.6218	50/50	24.6218
957921	AF2-086 C O2	1.7825	50/50	1.7825
957922	AF2-086 E O2	1.1883	50/50	1.1883
958461	AF2-140	7.9422	50/50	7.9422
959121	AF2-203 C	1.7825	50/50	1.7825
959122	AF2-203 E	1.1883	50/50	1.1883
959411	AF2-232 C	3.5650	50/50	3.5650
959412	AF2-232 E	2.3766	50/50	2.3766
959602	AF2-251 E	1.9367	Adder	4.3
959701	AF2-261 C O2	1.0192	Adder	2.26
959702	AF2-261 E O2	1.4074	Adder	3.12
959711	AF2-262 C O2	0.6115	Adder	1.36
959712	AF2-262 E O2	0.8445	Adder	1.87
959933	AF2-284 BAT	0.2054	50/50	0.2054
959983	AF2-289 BAT	0.2054	50/50	0.2054
959993	AF2-290 BAT	0.6285	50/50	0.6285

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960401	AF2-331 C O2	7.9425	50/50	7.9425
960402	AF2-331 E O2	5.2950	50/50	5.2950
960411	AF2-332 C O2	7.9425	50/50	7.9425
960412	AF2-332 E O2	5.2950	50/50	5.2950
960421	AF2-333 C O2	3.1770	50/50	3.1770
960422	AF2-333 E O2	2.1180	50/50	2.1180
960431	AF2-334 C O2	3.1770	50/50	3.1770
960432	AF2-334 E O2	2.1180	50/50	2.1180
961271	AF2-418 C	1.7825	50/50	1.7825
961272	AF2-418 E	1.1883	50/50	1.1883
961301	AF2-421 C O2	0.3883	Adder	0.86
961302	AF2-421 E O2	0.2588	Adder	0.57
961311	AF2-422 C O2	0.3883	Adder	0.86
961312	AF2-422 E O2	0.2588	Adder	0.57
961321	AF2-423 C O2	0.3883	Adder	0.86
961322	AF2-423 E O2	0.2588	Adder	0.57
961363	AF2-427 BAT	0.2054	50/50	0.2054
961412	AF2-432 E	0.2971	50/50	0.2971
961421	AF2-433 C O2	1.7825	50/50	1.7825
961422	AF2-433 E O2	1.1883	50/50	1.1883
961431	AF2-434 C O2	1.7825	50/50	1.7825
961432	AF2-434 E O2	1.1883	50/50	1.1883
NEWTON	NEWTON	0.7350	Confirmed LTF	0.7350
FARMERCITY	FARMERCITY	0.0382	Confirmed LTF	0.0382
G-007A	G-007A	1.8149	Confirmed LTF	1.8149
VFT	VFT	5.8308	Confirmed LTF	5.8308
CALDERWOOD	CALDERWOOD	0.3335	Confirmed LTF	0.3335
PRAIRIE	PRAIRIE	1.7616	Confirmed LTF	1.7616
CHEOAH	CHEOAH	0.3358	Confirmed LTF	0.3358
EDWARDS	EDWARDS	0.2401	Confirmed LTF	0.2401
TILTON	TILTON	0.4322	Confirmed LTF	0.4322
MADISON	MADISON	0.0081	Confirmed LTF	0.0081
GIBSON	GIBSON	0.3740	Confirmed LTF	0.3740
BLUEG	BLUEG	1.1892	Confirmed LTF	1.1892
TRIMBLE	TRIMBLE	0.3812	Confirmed LTF	0.3812
CATAWBA	CATAWBA	0.2306	Confirmed LTF	0.2306

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
99599498	208040	MONT	PPL	207943	COLU	PPL	1	PL_P71_101751	tower	1195.0	105.02	106.98	DC	23.36

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
208911	MONT G1	63.5276	50/50	63.5276
208912	MONT G2 (Deactivation : 18/02/2019)	64.3484	50/50	64.3484
208945	LOHA CT	0.7861	50/50	0.7861
208948	WILL CT	1.6974	50/50	1.6974
209018	SUNBIPCT	0.6888	50/50	0.6888
209019	VIKI IPP	1.5086	Adder	1.77
212369	PATRIOT 1	27.7249	50/50	27.7249
212370	PATRIOT 2	27.7249	50/50	27.7249
921653	AA2-008 E	23.9520	50/50	23.9520
939891	AE1-225 C O1	0.8863	Adder	1.04
939892	AE1-225 E O1	0.9806	Adder	1.15
940561	AE2-042 C O1	13.2940	50/50	13.2940
940562	AE2-042 E O1	6.5902	50/50	6.5902
940721	AE2-059 C	2.3861	50/50	2.3861
940722	AE2-059 E	3.2951	50/50	3.2951
940941	AE2-084 C	2.3861	50/50	2.3861
940942	AE2-084 E	3.2951	50/50	3.2951
941171	AE2-111 C	0.7623	Adder	0.9
941172	AE2-111 E	1.0527	Adder	1.24
941371	AE2-133 C	0.7381	Adder	0.87
941372	AE2-133 E	1.0192	Adder	1.2
942561	AE2-271 C O1	29.6185	50/50	29.6185
942562	AE2-271 E O1	19.7133	50/50	19.7133
943721	AF1-040 C	0.0943	Adder	0.11
943722	AF1-040 E	2.1077	50/50	2.1077
945511	AF1-216 C1O1	14.7636	50/50	14.7636
945512	AF1-216 E1O1	9.8310	50/50	9.8310
945521	AF1-216 C2	14.7628	50/50	14.7628
945522	AF1-216 E2	9.8304	50/50	9.8304
946471	AF1-311 C O1	27.6763	50/50	27.6763
946472	AF1-311 E O1	45.1561	50/50	45.1561
946691	AF1-333 C O1	2.2502	50/50	2.2502
946692	AF1-333 E O1	1.5002	50/50	1.5002
946731	AF1-337 C	2.2502	50/50	2.2502
946732	AF1-337 E	1.5002	50/50	1.5002
946741	AF1-338 C	2.2502	50/50	2.2502
946742	AF1-338 E	1.5002	50/50	1.5002
946751	AF1-339 C O1	2.2502	50/50	2.2502
946752	AF1-339 E O1	1.5002	50/50	1.5002
946761	AF1-271A C	0.9618	Adder	1.13
946762	AF1-271A E	0.6412	Adder	0.75

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
957881	AF2-082 C	3.6607	50/50	3.6607
957882	AF2-082 E	2.4405	50/50	2.4405
957991	AF2-093 C	0.5113	50/50	0.5113
957992	AF2-093 E	0.3409	50/50	0.3409
958461	AF2-140	12.6063	50/50	12.6063
958511	AF2-145 C1	5.2592	50/50	5.2592
958512	AF2-145 E1	3.5061	50/50	3.5061
958521	AF2-145 C2	5.2589	50/50	5.2589
958522	AF2-145 E2	3.5059	50/50	3.5059
959421	AF2-233 C O2	0.5830	Adder	1.29
959422	AF2-233 E O2	0.3887	Adder	0.86
959431	AF2-234 C O2	1.0675	Adder	2.37
959432	AF2-234 E O2	0.7116	Adder	1.58
959932	AF2-284 E	0.8169	50/50	0.8169
959982	AF2-289 E	1.2253	50/50	1.2253
959992	AF2-290 E	0.5681	50/50	0.5681
960401	AF2-331 C O2	14.0151	50/50	14.0151
960402	AF2-331 E O2	9.3434	50/50	9.3434
960411	AF2-332 C O2	14.0151	50/50	14.0151
960412	AF2-332 E O2	9.3434	50/50	9.3434
960421	AF2-333 C O2	5.6060	50/50	5.6060
960422	AF2-333 E O2	3.7374	50/50	3.7374
960431	AF2-334 C O2	5.6060	50/50	5.6060
960432	AF2-334 E O2	3.7374	50/50	3.7374
961362	AF2-427 E	1.2253	50/50	1.2253
961413	AF2-432 BAT	0.4517	50/50	0.4517
NEWTON	NEWTON	0.3460	Confirmed LTF	0.3460
FARMERCITY	FARMERCITY	0.0181	Confirmed LTF	0.0181
CALDERWOOD	CALDERWOOD	0.1650	Confirmed LTF	0.1650
NY	NY	0.7443	Confirmed LTF	0.7443
PRAIRIE	PRAIRIE	0.8343	Confirmed LTF	0.8343
O-066	O-066	9.8582	Confirmed LTF	9.8582
CHEOAH	CHEOAH	0.1667	Confirmed LTF	0.1667
EDWARDS	EDWARDS	0.1120	Confirmed LTF	0.1120
TILTON	TILTON	0.2016	Confirmed LTF	0.2016
G-007	G-007	1.3759	Confirmed LTF	1.3759
GIBSON	GIBSON	0.1753	Confirmed LTF	0.1753
BLUEG	BLUEG	0.5573	Confirmed LTF	0.5573
TRIMBLE	TRIMBLE	0.1786	Confirmed LTF	0.1786
CATAWBA	CATAWBA	0.1201	Confirmed LTF	0.1201

12.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
PL_P42_001388	CONTINGENCY 'PL_P42_001388' /* SUNB 230KV YARD 3T BF - MILT-SUNB AND SUNB-CWSA DISCONNECT BRANCH FROM BUS 208109 TO BUS 208034 CKT 1 /* /* SUNB-MILT 230KV LINE DISCONNECT BRANCH FROM BUS 208109 TO BUS 207935 CKT 1 /* /* SUNB-CWSA 230KV LINE END
PL_P12_001346	CONTINGENCY 'PL_P12_001346' /* MONT-MILT 230KV LINE DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 1 /* /* MONT-MILT END
PL_P71_101343	CONTINGENCY 'PL_P71_101343' /* SAEGERS-CLINTON & SAEGERS-ELIMSPORT 230 KV TOWER DISCONNECT BRANCH FROM BUS 212397 TO BUS 207968 CKT 1 /* /* SAEG-ELIM DISCONNECT BRANCH FROM BUS 207937 TO BUS 212397 CKT 1 /* /* SAEG-CLIN END
PL_P42_001365	CONTINGENCY 'PL_P42_001365' /* MONT 230KV 3T BF - MONT-SAEG 1 AND MONT-MILT DISCONNECT BRANCH FROM BUS 208040 TO BUS 960400 CKT 1 /* /* MONT-AF2-331 TAP 230KV LINE DISCONNECT BRANCH FROM BUS 208040 TO BUS 208034 CKT 1 /* /* MONT-MILT 230KV LINE END
PL_P12_000942	CONTINGENCY 'PL_P12_000942' /* CWSA-COLU 230KV LINE WITH COLU TR1 DISCONNECT BUS 207942 /* COLU-CWSA 1 230KV & COLU T1 END
PL_P71_100487-B	CONTINGENCY 'PL_P71_100487-B' /* MONT-SAEG #1 & 2 230KV LINES OUT DISCONNECT BRANCH FROM BUS 212397 TO BUS 208040 CKT 2 /* /* MONT-SAEG 2 DISCONNECT BRANCH FROM BUS 960400 TO BUS 208040 CKT 1 /* /* AF2-331 TAP-SAEG 1 END
PL_P71_101751	CONTINGENCY 'PL_P71_101751' /* MONT-BETA 1 & 2 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 1 /* MONT-BETA 1 DISCONNECT BRANCH FROM BUS 207915 TO BUS 208040 CKT 2 /* MONT-BETA 2 END
PL_P71_101752	CONTINGENCY 'PL_P71_101752' /* D/C BETA-SUSQ & BETA-SU10 230KV LINES DISCONNECT BRANCH FROM BUS 207915 TO BUS 208113 CKT 1 /* BETA-SUSQ 230KV LINE DISCONNECT BRANCH FROM BUS 207915 TO BUS 208120 CKT 1 /* BETA-SU10 230KV LINE END

13 Affected Systems

13.1 NYISO

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