Generation Interconnection

Feasibility Study Report

for

Queue Project AF1-205

NAPOLEON MUNI 138 KV

24 MW Capacity / 40 MW Energy

January 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 AMPT.

2 Preface

The intent of the feasibility study is to determine a plan, with estimated 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.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a $10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer

will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Henry County, Ohio. The installed facilities will have a total capability of 40 MW with 24 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 11/01/2022. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF1-205**
Project Name	NAPOLEON MUNI 138 KV
State	OHIO
County	HENRY
Transmission Owner	AMPT
MFO	40
MWE	40
MWC	24
Fuel	Solar
Basecase Study Year	2023

3.1 Point of Interconnection

3.1.1 Primary POI

AF1-205 will interconnect with the AMPT transmission system at the Napoleon Muni 138 kV substation. AMPT owns the primary POI.

3.1.2 Secondary POI

AF1-205 will interconnect with the ATSI transmission system tapping the Napoleon Muni to Stryker 138 kV line. ATSI owns the secondary POI.

3.2 Cost Summary

The AF1-205 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	$8,000
Direct Connection Network Upgrade	$0
Non Direct Connection Network Upgrades	$1,983,000
Total Costs	**$1,991,000**

In addition, the AF1-205 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	**$53,257,500**

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

The Feasibility Study is used to make a preliminary determination of the type and scope of Attachment Facilities, Local Upgrades, and Network Upgrades that will be necessary to accommodate the Interconnection Request and to provide the Interconnection Customer a preliminary estimate of the time that will be required to construct any necessary facilities and upgrades and the Interconnection Customer's cost responsibility. The System Impact Study provides refined and comprehensive estimates of cost responsibility and construction lead times for new facilities and system upgrades. Facilities Studies will include, commensurate with the degree of engineering specificity as provided in the Facilities Study Agreement, good faith estimates of the cost, determined in accordance with Section 217 of the Tariff,

(a) to be charged to each affected New Service Customer for the Facilities and System Upgrades that are necessary to accommodate this queue project;

(b) the time required to complete detailed design and construction of the facilities and upgrades; and

(c) a description of any site-specific environmental issues or requirements that could reasonably be anticipated to affect the cost or time required to complete construction of such facilities and upgrades .

The costs provided above exclude the Contribution in Aid of Construction ("CIAC") Federal Income Tax Gross Up charge. If, at a future date, it is determined that the CIAC Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

The required Attachment Facilities and Direct and Non-Direct Connection work for the interconnection of the AF1-205 generation project to the FE Transmission System is detailed in the following sections. The associated one-line with the generation project Attachment Facilities and the Primary Direct and Non-Direct Connection facilities are shown in Attachment 1.

4 Transmission Owner Scope of Work

The interconnection of the project at the Primary POI will be accomplished by expanding the Napoleon Muni 138kV station yard, extending the Napoleon Muni 138kV bus, installing two-138kV circuit breakers, associated disconnect switches and dead-end structure. The IC will be responsible for acquiring all easements, properties and permits that may be required to construct the associated attachment facilities.

A summary of the connection facilities required for the Primary POI and their estimated costs are shown in the following table. Based upon this scope of work, it is expect to take a minimum of 14-months after signing of an interconnection Construction Service Agreement. This includes preliminary payment that compensates AMPT for the preliminary engineering design work as it relates to the construction of the AF1-205 interconnection substation. This estimate assume there will be no environmental issues with any of the new properties associated with this project, that there are no delays in acquiring the necessary permits for implementing the defined direct connection and network upgrades, and that PJM will approve all transmission system outages for the requested dates.

5 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
Installation of attachment facilities line and associated materials to accept Interconnection Customer Generator Lead line	$8,000
Total Attachment Facility Costs	$8,000

6 Direct Connection Cost Estimate

Direct Connection scope of work is not required.

7 Non-Direct Connection Cost Estimate

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
Two 138kV Circuit Breakers	$750,000
Associated Relaying Upgrades	$450,000
One Dead-End Termination Structure	$200,000
Five 138kV Disconnect Switches	$198,000
Bus Supports, Bus Work & Fittings	$210,000
Substation Yard Expansion (Fence, Ground Grid, etc.)	$175,000
Total Non-Direct Connection Facility Costs	**$1,983,000**

8 Schedule

Based on the scope of work for the Direct and Non-Direct Connection facilities, it is expected to take a minimum of **14 months** after the signing of an Interconnection Agreement to complete the installation. Full initial deposit will be required for the Non-Direct Connection work. This assumes that there will be no environmental issues with any of the new properties associated with this project, that there will be no delays in acquiring the necessary permits for implementing the defined interconnection work, and that all transmission system outages will be allowed when requested.

The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the "System Reinforcements" section of the report.

9 Transmission Owner Analysis

AMPT evaluated Queue Project AF1-205 was evaluated as a 40 MW (Capacity 24 MW) injection at the AMPT Napoleon 138kV substation. Project AF1-205 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, AMPT Planning Criteria).

10 Interconnection Customer Requirements

The IC will be required to comply with all AMPT interconnection requirements for generation interconnection customers which can be found in AMPT's "Transmission Facilities Interconnection Requirements" document located at: https://www.pjm.com/-/media/planning/plan-standards/private-ampt/ampt-interconnection-requirements.ashx

11 Revenue Metering and SCADA Requirements

11.1 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.

11.1.1 Meteorological Data Reporting Requirement

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

11.2 AMP Transmission Requirements

The IC will be required to comply with all AMPT revenue metering requirements for generation interconnection customer which can be found in AMPT's "Transmission Facilities Interconnection Requirements" document located at: https://www.pjm.com/-/media/planning/plan-standards/private-ampt/ampt-interconnection-requirements.ashx

12 Network Impacts – Primary POI

The Queue Project AF1-205 was evaluated as a 40.0 MW (Capacity 24.0 MW) injection at the AMPT owned Napoleon Muni 138 kV substation. Project AF1-205 was evaluated for compliance with applicable reliability planning criteria {PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners (AMPT)}. Project AF1-205 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

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)

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
4102667 6	239070	02RICHLD	138.0	ATSI	239165	02WAUSEO	138.0	ATSI	1	AEP_P7-1_#10983 -B	tower	190.0	103.69	104.33	DC	2.67

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.

None

12.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
41026676	1	02RICHLD 138.0 kV - 02WAUSEO 138.0 kV Ckt 1	**TE-011A** : Reconductor the Richland-Wauseon 138 kV line with 336 ACSS (approx 26.3 miles). This project is dependant on the s1698 project Richland-Wauseon-Midway 138 kV Three-Terminal Elimination project (ISD 12/31/2020) **Project Type** : FAC **Cost** : $53,257,500 **Time Estimate** : 36.0 Months	$53,257,500
			TOTAL COST	**$53,257,500**

12.6 Flow Gate Details

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

12.6.1 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
41026676	239070	02RICHLD	ATSI	239165	02WAUSEO	ATSI	1	AEP_P7-1_#10983-B	tower	190.0	103.69	104.33	DC	2.67

Bus #	Bus	MW Impact
238979	02NAPMUN	2.1002
239064	02RICHG1	0.6855
239065	02RICHG2&3	1.3657
239067	02RICHG4	7.3530
239068	02RICHG5	7.3530
239069	02RICHG6	7.3530
239202	02STRYCT	0.2457
926941	AC1-181	0.3116
940841	AE2-072 C	40.0275
940842	AE2-072 E	26.6850
941781	AE2-181 C	3.6253
941782	AE2-181 E	2.4169
942661	AE2-282 C O1	5.0204
942662	AE2-282 E O1	2.6417
944551	AF1-120 C	3.0420
944552	AF1-120 E	1.5324
945401	AF1-205 C O1	0.7220
945402	AF1-205 E O1	0.4814
945411	AF1-206 C O1	13.6546
945412	AF1-206 E O1	9.1031
DUCKCREEK	DUCKCREEK	0.1128
NEWTON	NEWTON	0.1053
FARMERCITY	FARMERCITY	0.0055
NY	NY	0.0531
PRAIRIE	PRAIRIE	0.2531
O-066	O-066	0.6384
COFFEEN	COFFEEN	0.0518
EDWARDS	EDWARDS	0.0343
CHEOAH	CHEOAH	0.0485
TILTON	TILTON	0.0617
G-007	G-007	0.0988
GIBSON	GIBSON	0.0535
CALDERWOOD	CALDERWOOD	0.0482
BLUEG	BLUEG	0.1684
TRIMBLE	TRIMBLE	0.0540
CATAWBA	CATAWBA	0.0336

Affected Systems

12.7 Affected Systems

12.7.1 LG&E

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

12.7.2 MISO

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

12.7.3 TVA

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

12.7.4 Duke Energy Progress

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

12.7.5 NYISO

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

12.8 Contingency Definitions

Contingency Name	Contingency Definition
AEP_P7-1_#10983-B	CONTINGENCY 'AEP_P7-1_#10983-B' OPEN BRANCH FROM BUS 239070 TO BUS 243029 CKT 1 / 239070 02RICHLD 138 243029 05LCKWRD 138 1 OPEN BRANCH FROM BUS 940840 TO BUS 242993 CKT 1 / 239269 AE2-072 TAP 138 242993 05E.LPSC 138 1 OPEN BRANCH FROM BUS 242993 TO BUS 893021 CKT 1 / 242993 05E.LPSC 138 893021 V2-006 C 138 1 OPEN BRANCH FROM BUS 242971 TO BUS 243029 CKT 1 / 242971 05BRYAN 138 243029 05LCKWRD 138 1 REMOVE SWSHUNT FROM BUS 243029 / 243029 05LCKWRD 138 END

Short Circuit

12.9 Short Circuit

The following Breakers are overduty:

None.

13 Network Impacts – Secondary POI

The Queue Project AF1-205 was evaluated as a 40.0 MW (Capacity 24.0 MW) injection tapping the Napoleon Muni to Stryker 138 kV line in the ATSI area. Project AF1-205 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-205 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Load Flow

13.1 Generation Deliverability

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
4352594 0	25600 0	18ARGNT A	345. 0	METC	24323 4	05TWI N B	345. 0	AEP	1	AEP_P1-2_#702 1	singl e	956.0	99.99	100.13	DC	1.31

13.2 Multiple Facility Contingency

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

None

13.3 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
4102667 6	23907 0	02RICHL D	138. 0	ATSI	23916 5	02WAUSE O	138. 0	ATSI	1	AEP_P7-1_#10983 -B	towe r	190.0	103.69	104.42	DC	3.06

13.4 Potential Congestion due to Local Energy Deliverability

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

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

None

13.5 Flow Gate Details

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

13.5.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
43525940	256000	18ARGNTA	METC	243234	05TWINB	AEP	1	AEP_P1-2_#7021	single	956.0	99.99	100.13	DC	1.31

Bus #	Bus	MW Impact
238564	02BAYSG1	1.2513
238670	**02DVBSG1 (Deativation : 05/31/20)**	**4.7571**
238885	02LEMOG1	1.2913
238886	02LEMOG2	1.2913
238887	02LEMOG3	1.2913
238888	02LEMOG4	1.2913
238979	02NAPMUN	2.0428
239202	02STRYCT	0.0921
239293	02BS-PKR	0.1092
241902	Y1-069 GE	7.0651
247528	05COVRT1	3.3841
247529	05COVRT2	3.3841
247530	05COVRT3	3.3841
247531	05COVRT4	2.0311
247532	05COVRT5	2.0311
247533	05COVRT6	2.0311
925961	AC1-072	0.3139
931951	AB1-107 1	15.7317
931961	AB1-107 2	35.4908
934891	AD1-118	4.0474
936601	AD2-075	16.3053
938911	AE1-119	31.8010
941781	AE2-181 C	1.5491
942661	AE2-282 C O1	2.4470
943961	AF1-064 C O2	1.8878
944551	AF1-120 C	1.4827
945401	AF1-205 C O2	1.3135
945411	AF1-206 C O2	6.7055
950311	G934 C	3.7995
950351	J466	3.1329
950791	J201 C	0.4444
950871	J246 C	0.1728
951531	J533 C	4.9364
951571	J538 C	3.1212
951941	J602 C	3.5527
952161	J571	1.0017
952201	J589 C	3.8039
952401	J752 C	1.6500
952611	J717 C	3.6497
952761	J728 C	3.3942
952881	J758	29.2420
952971	J793	128.0886

Bus #	Bus	MW Impact
953071	J794 C	0.2331
953271	J701 C	0.8116
953291	J796	27.3583
953321	J799	16.1708
953361	J806	20.1567
953421	J841	80.2667
953771	J832	12.5070
953781	J833	8.4720
953811	J839	9.9020
953941	J857	17.5642
954111	J875	14.9790
954381	J906 C	2.2094
954591	J937	98.3705
955021	J978 C	2.0458
955071	J984 C	3.9515
955121	J989	8.6840
955181	J996	6.8296
955261	J1005	22.8880
955341	J1013	9.4360
955351	J1014 C	5.9140
955591	J1043 C	2.6076
955621	J1046	3.5670
955721	J1056 C	2.4685
955781	J1062	14.2680
955801	J1064 C	4.1755
955811	J1065 C	3.9512
955831	J1068 C	2.7459
955861	J1071	14.0350
955961	J1083	8.9831
956011	J1088	17.4090
956021	J1089	19.5925
956031	J1090	10.9260
956161	J1103	2.1236
956291	J1117	9.9536
956301	J1119	72.8880
956741	J1172	5.5100
956751	J1173	7.7128
956801	J1178	8.3415
DUCKCREEK	DUCKCREEK	2.8960
NEWTON	NEWTON	1.8857
FARMERCITY	FARMERCITY	0.1171
G-007A	G-007A	1.4265
VFT	VFT	3.8571
CBM-W1	CBM-W1	28.3351
PRAIRIE	PRAIRIE	4.4970
COFFEEN	COFFEEN	1.0327
EDWARDS	EDWARDS	0.9149
CHEOAH	CHEOAH	0.3569
TILTON	TILTON	1.2304
GIBSON	GIBSON	0.7759
CALDERWOOD	CALDERWOOD	0.3598
BLUEG	BLUEG	1.8940

Bus #	Bus	MW Impact
TRIMBLE	TRIMBLE	0.6021
CATAWBA	CATAWBA	0.1386

13.5.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
41026676	239070	02RICHLD	ATSI	239165	02WAUSEO	ATSI	1	AEP_P7-1_#10983-B	tower	190.0	103.69	104.42	DC	3.06

Bus #	Bus	MW Impact
238979	02NAPMUN	2.1002
239064	02RICHG1	0.6855
239065	02RICHG2&3	1.3657
239067	02RICHG4	7.3530
239068	02RICHG5	7.3530
239069	02RICHG6	7.3530
239202	02STRYCT	0.2457
926941	AC1-181	0.3116
940841	AE2-072 C	40.0275
940842	AE2-072 E	26.6850
941781	AE2-181 C	3.6253
941782	AE2-181 E	2.4169
942661	AE2-282 C O1	5.0204
942662	AE2-282 E O1	2.6417
944551	AF1-120 C	3.0420
944552	AF1-120 E	1.5324
945401	AF1-205 C O2	0.8259
945402	AF1-205 E O2	0.5506
945411	AF1-206 C O2	13.1639
945412	AF1-206 E O2	8.7759
DUCKCREEK	DUCKCREEK	0.1128
NEWTON	NEWTON	0.1053
FARMERCITY	FARMERCITY	0.0055
NY	NY	0.0531
PRAIRIE	PRAIRIE	0.2531
O-066	O-066	0.6384
COFFEEN	COFFEEN	0.0518
EDWARDS	EDWARDS	0.0343
CHEOAH	CHEOAH	0.0485
TILTON	TILTON	0.0617
G-007	G-007	0.0988
GIBSON	GIBSON	0.0535
CALDERWOOD	CALDERWOOD	0.0482
BLUEG	BLUEG	0.1684
TRIMBLE	TRIMBLE	0.0540
CATAWBA	CATAWBA	0.0336

Affected Systems

13.6 Affected Systems

13.6.1 LG&E

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

13.6.1 MISO

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

13.6.2 TVA

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

13.6.3 Duke Energy Progress

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

13.6.4 NYISO

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

13.7 Contingency Definitions

Contingency Name	Contingency Definition
AEP_P1-2_#7021	CONTINGENCY 'AEP_P1-2_#7021' OPEN BRANCH FROM BUS 243212 TO BUS 247803 CKT 1 / 243212 05BENTON 345 247803 05SEGRETO 345 1 END
AEP_P7-1_#10983-B	CONTINGENCY 'AEP_P7-1_#10983-B' OPEN BRANCH FROM BUS 239070 TO BUS 243029 CKT 1 / 239070 02RICHLD 138 243029 05LCKWRD 138 1 OPEN BRANCH FROM BUS 940840 TO BUS 242993 CKT 1 / 239269 AE2-072 TAP 138 242993 05E.LPSC 138 1 OPEN BRANCH FROM BUS 242993 TO BUS 893021 CKT 1 / 242993 05E.LPSC 138 893021 V2-006 C 138 1 OPEN BRANCH FROM BUS 242971 TO BUS 243029 CKT 1 / 242971 05BRYAN 138 243029 05LCKWRD 138 1 REMOVE SWSHUNT FROM BUS 243029 / 243029 05LCKWRD 138 END

Short Circuit

13.8 Short Circuit

The following Breakers are overduty:

None.

14 Attachment 1 – One Line