Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-555

DEQUINE 345 KV

88.4 MW Capacity / 120 MW Energy

January 2021

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1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is AEP.

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.

An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

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; Storage generating facility located in Tippecance County, Indiana. The installed facilities will have a total capability of 120 MW with 88.4 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is June 01, 2024. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-555
Project Name	DEQUINE 345 KV
State	Indiana
County	Tippecance
Transmission Owner	AEP
MFO	120
MWE	120
MWC	88.4
Fuel	Solar; Storage
Basecase Study Year	2024

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

4 Point of Interconnection

AG1-155 will interconnect with the AEP transmission system along one of the following Points of Interconnection:

Primary POI: Dequine 345 kV substation.

AG1-555 will interconnect with the AEP transmission system via a direct connection to the Dequine 345 kV substation. The storage component of the facility will be DC connected, and will not charge from the grid.

To accommodate the interconnection to the Dequine 345 kV substation, one (1) new 345 kV circuit breaker(s) will be installed (Attachment 1). Installation of associated protection and control equipment, 345 kV line risers, SCADA, and 345 kV revenue metering will also be required. AEP reserves the right to specify the final acceptable configuration considering design practices, future expansion, and compliance requirements.

Installation of the generator lead first span exiting the POI station, including the first structure outside the AEP fence, will also be included in AEP's scope. In the case where the generator lead is a single span, the structure in the customer station will be the customer's responsibility.

Secondary POI: AG1-226 proposed 345 kV substation.

AG1-555 will interconnect with the AEP transmission system via a direct connection to the AG1-226 proposed 345 kV substation as an uprate to the PJM project AG1-226.

Note: It is assumed that the existing 345 kV revenue metering system, generation lead and Protection & Control Equipment that will be installed for AG1-226 will be adequate for the increased generation of AG1-555.Depending on the timing of the completion of the AG1-226 interconnection construction relative to the AG1-555 completion, there may (or may not) be a need to review and revise the relay settings for the increased generation of AG1-555.

5 Cost Summary

The AG1-555 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$3,544,000
Total System Network Upgrade Costs	$0
Total Costs	**$3,544,000**

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 2016-36, 2016-25 I.R.B. (6/20/2016). If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

The estimates provided in this report are preliminary in nature, as they were determined without the benefit of detailed engineering studies. Final estimates will require an on-site review and coordination to determine final construction requirements. In addition, Stability analysis will be completed during the Facilities Study stage. It is possible that a need for additional upgrades could be identified by these studies.

6 Transmission Owner Scope of Work

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

6.1 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
345 kV Revenue Metering	$458,000
Generator lead first span exiting the POI station, including the first structure outside the fence	$651,000
Total Attachment Facility Costs	**$1,109,000**

6.2 Direct Connection Cost Estimate

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

Description	Total Cost
One (1) new 345 kV circuit breaker(s) will be installed at the Dequine 345 kV substation (Attachment 1). Installation of associated protection and control equipment, 345 kV line risers, and SCADA will also be required.	$2,390,000
Total Direct Connection Facility Costs	**$2,390,000**

6.3 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
Review line protection and control settings at the Dequine 345 kV substation	$45,000
Total Non-Direct Connection Facility Costs	**$45,000**

7 Schedule

It is anticipated that the time between receipt of executed Agreements and Commercial Operation may range from 12 to 18 months if no line work is required. If line work is required, construction time would generally be between 24 to 36 months after signing Agreement execution.

8 Interconnection Customer Requirements

It is understood that the Interconnection Customer (IC) is responsible for all costs associated with this interconnection. The costs above are reimbursable to the Transmission Owner. The cost of the IC's generating plant and the costs for the line connecting the generating plant to the Point of Interconnection are not included in this report; these are assumed to be the IC's responsibility.

The Generation Interconnection Agreement does not in or by itself establish a requirement for the Transmission Owner to provide power for consumption at the developer's facilities. A separate agreement may be reached with the local utility that provides service in the area to ensure that infrastructure is in place to meet this demand and proper metering equipment is installed. It is the responsibility of the developer to contact the local service provider to determine if a local service agreement is required.

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.

9 Revenue Metering and SCADA Requirements

9.1 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

9.2 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Back Panel temperature (Fahrenheit) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Irradiance (Watts/meter2) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Ambient air temperature (Fahrenheit) - (Accepted, not required)
- Wind speed (meters/second) - (Accepted, not required)
- Wind direction (decimal degrees from true north) - (Accepted, not required)

9.3 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

http://www.pjm.com/planning/design-engineering/to-tech-standards/

10 Summer Peak - Load Flow Analysis - Primary POI

The Queue Project AG1-555 was evaluated as a 120.0 MW (Capacity 88.4 MW) injection at the Dequine 345 kV substation in the AEP area. Project AG1-555 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-555 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)

None

10.3 Contribution to Previously Identified Overloads

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

None

10.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168288590	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	1	AEP_P1-2_#6490_16000	operation	1959.0	106.68	109.96	DC	64.22
168288602	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	2	AEP_P1-2_#6472_15258	operation	1959.0	105.91	109.17	DC	63.75
168288348	243878	05MEADOW	345.0	AEP	255205	17REYNOLDS	345.0	NIPS	2	AEP_P1-2_#8695-B	operation	1868.0	166.85	170.47	DC	67.74
168288362	243878	05MEADOW	345.0	AEP	958970	AF2-188 TAP	345.0	AEP	1	AEP_P1-2_#8807	operation	1868.0	162.41	166.02	DC	67.56
168587943	255204	17REYNOLDS	765.0	NIPS	243207	05GRNTWN	765.0	AEP	1	AEP_P1-2_#363_1682	operation	2669.0	106.15	106.8	DC	33.49
170092291	958970	AF2-188 TAP	345.0	AEP	255205	17REYNOLDS	345.0	NIPS	1	AEP_P1-2_#8807	operation	1868.0	166.95	170.57	DC	67.56

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

None.

10.6 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
AEP_P1-2_#6490_16000	CONTINGENCY 'AEP_P1-2_#6490_16000' OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 2 / 243217 05DEQUIN 345 243878 05MEADOW 345 2 END
AEP_P1-2_#8695-B	CONTINGENCY 'AEP_P1-2_#8695-B' OPEN BRANCH FROM BUS 958970 TO BUS 255205 CKT 1 / 958970 AF2-188 TAP 345 255205 17REYNOLDS 345 1 END
AEP_P1-2_#6472_15258	CONTINGENCY 'AEP_P1-2_#6472_15258' OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 1 / 243217 05DEQUIN 345 243878 05MEADOW 345 1 END
AEP_P1-2_#8807	CONTINGENCY 'AEP_P1-2_#8807' OPEN BRANCH FROM BUS 243878 TO BUS 255205 CKT 2 / 243878 05MEADOW 345 255205 17REYNOLDS 345 2 END
AEP_P1-2_#363_1682	CONTINGENCY 'AEP_P1-2_#363_1682' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 END

11 Short Circuit Analysis – Primary POI

The following Breakers are overdutied:

None.

12 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-555 was evaluated as a 120.0 MW (Capacity 88.4 MW) injection tapping the Eugene to Dequine 345 kV line in the AEP area. Project AG1-555 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-555 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)

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
174512874	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	1	AEP_P4_#6485_05DEQUIN 345_C1	breaker	1959.0	110.94	113.46	DC	49.37
174512881	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	2	AEP_P4_#4704_05DEQUIN 345_B1	breaker	1959.0	110.16	112.66	DC	49.02

12.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168288590	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	1	AEP_P1-2_#6490_16000	operation	1959.0	107.22	109.7	DC	48.45
168288602	243217	05DEQUIN	345.0	AEP	243878	05MEADOW	345.0	AEP	2	AEP_P1-2_#6472_15258	operation	1959.0	106.45	108.91	DC	48.1
168288348	243878	05MEADOW	345.0	AEP	255205	17REYNOLDS	345.0	NIPS	2	AEP_P1-2_#8695-B	operation	1868.0	167.45	170.18	DC	51.09
168288362	243878	05MEADOW	345.0	AEP	958970	AF2-188 TAP	345.0	AEP	1	AEP_P1-2_#8807	operation	1868.0	163.01	165.73	DC	50.95
170092291	958970	AF2-188 TAP	345.0	AEP	255205	17REYNOLDS	345.0	NIPS	1	AEP_P1-2_#8807	operation	1868.0	167.55	170.28	DC	50.95

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
174512874	243217	05DEQUIN	AEP	243878	05MEADOW	AEP	1	AEP_P4_#6485_05DEQUIN 345_C1	breaker	1959.0	110.94	113.46	DC	49.37

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
243859	05FR-11G C	2.2195	50/50	2.2195
243862	05FR-12G C	1.0795	50/50	1.0795
243864	05FR-21G C	1.1227	50/50	1.1227
243866	05FR-22G C	1.1227	50/50	1.1227
243870	05FR-3G C	1.0795	50/50	1.0795
243873	05FR-4G C	2.5132	50/50	2.5132
247900	05FR-11G E	42.8614	50/50	42.8614
247901	05FR-12G E	42.1498	50/50	42.1498
247902	05FR-21G E	45.0510	50/50	45.0510
247903	05FR-22G E	43.1351	50/50	43.1351
247904	05FR-3G E	87.3650	50/50	87.3650
247905	05FR-4G E	68.4250	50/50	68.4250
930461	AB1-087 CT1	41.1556	50/50	41.1556
930462	AB1-087 ST1	32.7204	50/50	32.7204
930471	AB1-088 CT1	41.1556	50/50	41.1556
930472	AB1-088 ST1	32.7204	50/50	32.7204
933446	AC2-157 1C	5.1042	50/50	5.1042
933447	AC2-157 2C	5.1042	50/50	5.1042
933448	AC2-157 1E	8.3278	50/50	8.3278
933449	AC2-157 2E	8.3278	50/50	8.3278
942601	AE2-276	6.7160	50/50	6.7160
944201	AF1-088 FTIR	134.3200	50/50	134.3200
945391	AF1-204 C O1	13.0216	50/50	13.0216
945392	AF1-204 E O1	39.0647	50/50	39.0647
953761	J829	25.8625	PJM External (MISO)	25.8625
954681	J949 C	16.7348	PJM External (MISO)	16.7348
954772	J515 E	67.5000	PJM External (MISO)	67.5000
956451	J1139	16.4370	PJM External (MISO)	16.4370
957141	AF2-008 FTIR	67.1600	50/50	67.1600
957142	AF2-008 NFTI	134.3200	50/50	134.3200
957843	AF2-078 BAT	4.4130	50/50	4.4130
963741	AG1-226 C O2	159.1001	50/50	159.1001
963742	AG1-226 E O2	56.8729	50/50	56.8729
963841	AG1-237 C O2	10.5862	50/50	10.5862
963842	AG1-237 E O2	70.8458	50/50	70.8458
966531	AG1-522 C	18.8028	50/50	18.8028
966532	AG1-522 E	12.5352	50/50	12.5352
966541	AG1-523 C	18.8028	50/50	18.8028
966542	AG1-523 E	12.5352	50/50	12.5352
966551	AG1-524 C	18.8028	50/50	18.8028
966552	AG1-524 E	12.5352	50/50	12.5352
966561	AG1-525 C	18.8028	50/50	18.8028

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966562	AG1-525 E	12.5352	50/50	12.5352
966841	AG1-555 C O2	36.3686	50/50	36.3686
966842	AG1-555 E O2	13.0006	50/50	13.0006
LGEE	LGEE	2.2298	Confirmed LTF	2.2298
CPLE	CPLE	0.8565	Confirmed LTF	0.8565
G-007A	G-007A	0.2757	Confirmed LTF	0.2757
VFT	VFT	0.7288	Confirmed LTF	0.7288
CBM-W2	CBM-W2	45.0778	Confirmed LTF	45.0778
TVA	TVA	4.7040	Confirmed LTF	4.7040
SIGE	SIGE	0.7081	Confirmed LTF	0.7081
CBM-S2	CBM-S2	16.3595	Confirmed LTF	16.3595
CBM-S1	CBM-S1	1.2901	Confirmed LTF	1.2901
CBM-N	CBM-N	0.1308	Confirmed LTF	0.1308
MEC	MEC	2.6044	Confirmed LTF	2.6044
LAGN	LAGN	5.8083	Confirmed LTF	5.8083

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
174512881	243217	05DEQUIN	AEP	243878	05MEADOW	AEP	2	AEP_P4_#4704_05DEQUIN 345_B1	breaker	1959.0	110.16	112.66	DC	49.02

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
243859	05FR-11G C	2.2041	50/50	2.2041
243862	05FR-12G C	1.0720	50/50	1.0720
243864	05FR-21G C	1.1149	50/50	1.1149
243866	05FR-22G C	1.1149	50/50	1.1149
243870	05FR-3G C	1.0720	50/50	1.0720
243873	05FR-4G C	2.4957	50/50	2.4957
247900	05FR-11G E	42.5631	50/50	42.5631
247901	05FR-12G E	41.8564	50/50	41.8564
247902	05FR-21G E	44.7375	50/50	44.7375
247903	05FR-22G E	42.8349	50/50	42.8349
247904	05FR-3G E	86.7570	50/50	86.7570
247905	05FR-4G E	67.9488	50/50	67.9488
930461	AB1-087 CT1	40.8676	50/50	40.8676
930462	AB1-087 ST1	32.4914	50/50	32.4914
930471	AB1-088 CT1	40.8676	50/50	40.8676
930472	AB1-088 ST1	32.4914	50/50	32.4914
933446	AC2-157 1C	5.0684	50/50	5.0684
933447	AC2-157 2C	5.0684	50/50	5.0684
933448	AC2-157 1E	8.2696	50/50	8.2696
933449	AC2-157 2E	8.2696	50/50	8.2696
942601	AE2-276	6.6690	50/50	6.6690
944201	AF1-088 FTIR	133.3800	50/50	133.3800
945391	AF1-204 C O1	12.9311	50/50	12.9311
945392	AF1-204 E O1	38.7932	50/50	38.7932
953761	J829	25.6825	PJM External (MISO)	25.6825
954681	J949 C	16.6175	PJM External (MISO)	16.6175
954772	J515 E	67.0320	PJM External (MISO)	67.0320
956451	J1139	16.3230	PJM External (MISO)	16.3230
957141	AF2-008 FTIR	66.6900	50/50	66.6900
957142	AF2-008 NFTI	133.3800	50/50	133.3800
957843	AF2-078 BAT	4.3824	50/50	4.3824
963741	AG1-226 C O2	157.9929	50/50	157.9929
963742	AG1-226 E O2	56.4771	50/50	56.4771
963841	AG1-237 C O2	10.5123	50/50	10.5123
963842	AG1-237 E O2	70.3517	50/50	70.3517
966531	AG1-522 C	18.6714	50/50	18.6714
966532	AG1-522 E	12.4476	50/50	12.4476
966541	AG1-523 C	18.6714	50/50	18.6714
966542	AG1-523 E	12.4476	50/50	12.4476
966551	AG1-524 C	18.6714	50/50	18.6714
966552	AG1-524 E	12.4476	50/50	12.4476
966561	AG1-525 C	18.6714	50/50	18.6714

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966562	AG1-525 E	12.4476	50/50	12.4476
966841	AG1-555 C O2	36.1149	50/50	36.1149
966842	AG1-555 E O2	12.9099	50/50	12.9099
LGEE	LGEE	2.2141	Confirmed LTF	2.2141
CPLE	CPLE	0.8497	Confirmed LTF	0.8497
G-007A	G-007A	0.2733	Confirmed LTF	0.2733
VFT	VFT	0.7224	Confirmed LTF	0.7224
CBM-W2	CBM-W2	44.7642	Confirmed LTF	44.7642
TVA	TVA	4.6704	Confirmed LTF	4.6704
SIGE	SIGE	0.7032	Confirmed LTF	0.7032
CBM-S2	CBM-S2	16.2342	Confirmed LTF	16.2342
CBM-S1	CBM-S1	1.2806	Confirmed LTF	1.2806
CBM-N	CBM-N	0.1296	Confirmed LTF	0.1296
MEC	MEC	2.5853	Confirmed LTF	2.5853
LAGN	LAGN	5.7680	Confirmed LTF	5.7680

12.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
AEP_P4_#4704_05DEQUIN 345_B1	CONTINGENCY 'AEP_P4_#4704_05DEQUIN 345_B1' / 2510 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 1 / 243217 05DEQUIN 345 243878 05MEADOW 345 1 OPEN BRANCH FROM BUS 243217 TO BUS 249525 CKT 1 / 243217 05DEQUIN 345 249525 08WESTWD 345 1 REMOVE SWSHUNT FROM BUS 243217 /* 243217 05DEQUIN 345 END
AEP_P1-2_#6490_16000	CONTINGENCY 'AEP_P1-2_#6490_16000' / 2472 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 2 / 243217 05DEQUIN 345 243878 05MEADOW 345 2 END
AEP_P1-2_#8807	CONTINGENCY 'AEP_P1-2_#8807' / 1147 OPEN BRANCH FROM BUS 243878 TO BUS 255205 CKT 2 / 243878 05MEADOW 345 255205 17REYNOLDS 345 2 END
AEP_P1-2_#6472_15258	CONTINGENCY 'AEP_P1-2_#6472_15258' / 2508 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 1 / 243217 05DEQUIN 345 243878 05MEADOW 345 1 END
AEP_P4_#6485_05DEQUIN 345_C1	CONTINGENCY 'AEP_P4_#6485_05DEQUIN 345_C1' / 2467 OPEN BRANCH FROM BUS 243217 TO BUS 243878 CKT 2 / 243217 05DEQUIN 345 243878 05MEADOW 345 2 OPEN BRANCH FROM BUS 243217 TO BUS 249525 CKT 1 / 243217 05DEQUIN 345 249525 08WESTWD 345 1 REMOVE SWSHUNT FROM BUS 243217 /* 243217 05DEQUIN 345 END
AEP_P1-2_#8695-B	CONTINGENCY 'AEP_P1-2_#8695-B' / 1153 OPEN BRANCH FROM BUS 255205 TO BUS 958970 CKT 1 / 255205 17REYNOLDS 345 958970 AF2-188 TAP 345 1 END

13 Affected Systems

13.1 TVA

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

13.2 Duke Energy Progress

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

13.3 MISO

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

13.4 LG&E

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