



**Generation Interconnection  
Feasibility Study Report  
for  
Queue Project AG1-125  
MARYSVILLE-FLATLICK 765 KV  
234.9 MW Capacity / 400 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 generating facility located in Madison County, Ohio. The installed facilities will have a total capability of 400 MW with 234.9 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 01, 2024. This study does not imply a TO commitment to this in-service date.

<b>Queue Number</b>	<b>AG1-125</b>
<b>Project Name</b>	MARYSVILLE-FLATLICK 765 KV
<b>State</b>	Ohio
<b>County</b>	Madison
<b>Transmission Owner</b>	AEP
<b>MFO</b>	400
<b>MWE</b>	400
<b>MWC</b>	234.9
<b>Fuel</b>	Solar
<b>Basecase Study Year</b>	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

AG1-125 will interconnect with the AEP transmission system tapping the Marysville to Flatlick 765 kV line.

To accommodate the interconnection on the Flatlick – Marysville 765 kV circuit, a new three (3) circuit breaker 765 kV switching station configured as a ring bus will be constructed (Attachment 1). Installation of associated protection and control equipment, 765 kV line risers, SCADA, and 765 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.

## 5 Cost Summary

The AG1-125 project will be responsible for the following costs:

Description	Total Cost
<b>Total Physical Interconnection Costs</b>	\$43,277,000
<b>Total System Network Upgrade Costs</b>	\$1,000,000
<b>Total Costs</b>	<b>\$44,277,000</b>

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
765 kV Revenue Metering	\$657,000
Generator lead first span exiting the POI station, including the first structure outside the fence	\$1,350,000
<b>Total Attachment Facility Costs</b>	<b>\$2,007,000</b>

### 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
A new three (3) circuit breaker 765 kV switching station configured as a ring bus will be constructed. Installation of associated protection and control equipment, 765 kV line risers, and SCADA will also be required.	\$38,430,000
<b>Total Direct Connection Facility Costs</b>	<b>\$38,430,000</b>

### 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
Flatlick – Marysville T-line Cut In	\$2,750,000
Review line protection and control settings at the Flatlick 765 kV station	\$45,000
Review line protection and control settings at the Marysville 765 kV station	\$45,000
<b>Total Non-Direct Connection Facility Costs</b>	<b>\$2,840,000</b>

## 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 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/meter<sup>2</sup>) - (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 AG1-125 was evaluated as a 400.0 MW (Capacity 234.9 MW) injection tapping the Marysville to Flatlick 765 kV line in the AEP area. Project AG1-125 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-125 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)

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
168107805	242928	05MARYSV	765.0	AEP	242939	05MARYSV	345.0	AEP	2	AEP_P1-3_#7222_05MALIS 765_1	single	1868.0	109.2	112.32	DC	59.84
168107806	242928	05MARYSV	765.0	AEP	242939	05MARYSV	345.0	AEP	2	AEP_P1-2_#711_6224	single	1868.0	107.96	111.1	DC	60.19

### 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
168107803	242928	05MARYSV	765.0	AEP	242939	05MARYSV	345.0	AEP	2	AEP_P1-3_#7222_05MALIS 765_1	operation	1868.0	112.54	117.99	DC	101.89

### 10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
168107805,168 107806	1	05MARYSV 765.0 kV - 05MARYSV 345.0 kV Ckt 2	<u>AEP</u> AEPO0045a (428) : Replace two 345kV Marysville CBs Project Type : FAC Cost : \$1,000,000 Time Estimate : 18-24 Months	\$1,000,000
			<b>TOTAL COST</b>	<b>\$1,000,000</b>

## 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".

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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
168107805	242928	05MARYSV	AEP	242939	05MARYSV	AEP	2	AEP_P1-3_#7222_05MALIS765_1	single	1868.0	109.2	112.32	DC	59.84

Bus #	Bus	Gendliv MW Impact	Type	Full MW Impact
240624	02GALON M2	-3.2947	Adder	-3.88
243186	05GVG1	13.6382	80/20	13.6382
243187	05GVG2	14.6309	80/20	14.6309
243441	05CKG2	11.9013	80/20	11.9013
247216	05FLATG1	2.5291	80/20	2.5291
247217	05FLATG2	2.5306	80/20	2.5306
247218	05FLATG3	2.5291	80/20	2.5291
247219	05FLATG4	2.5291	80/20	2.5291
247220	05FLATG5	2.5336	80/20	2.5336
253325	AC1-069 C	-2.6415	Adder	-3.11
253333	AC1-068 C	-2.6415	Adder	-3.11
253338	AC1-165 C	-2.6104	Adder	-3.07
253343	AC1-166 C	-2.6104	Adder	-3.07
270100	X2-052 CT1	2.0161	80/20	2.0161
270101	X2-052 CT2	2.0161	80/20	2.0161
270102	X2-052 ST	2.1812	80/20	2.1812
274660	LASCO STA;1U	9.7979	80/20	9.7979
274661	LASCO STA;2U	9.8404	80/20	9.8404
274770	LINCOLN ;1U	0.6897	80/20	0.6897
274771	LINCOLN ;2U	0.6897	80/20	0.6897
274772	LINCOLN ;3U	0.6897	80/20	0.6897
274773	LINCOLN ;4U	0.6897	80/20	0.6897
274774	LINCOLN ;5U	0.6897	80/20	0.6897
274775	LINCOLN ;6U	0.6897	80/20	0.6897
274776	LINCOLN ;7U	0.6897	80/20	0.6897
274777	LINCOLN ;8U	0.6897	80/20	0.6897
933281	AC2-140 C	0.3940	80/20	0.3940
938161	AE1-021	0.7307	80/20	0.7307
938321	AE1-050	1.1957	80/20	1.1957
945351	AF1-200 FTIR	113.4106	80/20	113.4106
958431	AF2-137 C	55.5933	80/20	55.5933
960681	AF2-359 C	4.1115	80/20	4.1115
961041	AF2-395	8.6007	80/20	8.6007
961631	AG1-003 C	59.8290	80/20	59.8290
961641	AG1-004	52.9460	80/20	52.9460
962761	AG1-125 C O1	59.8361	80/20	59.8361
962771	AG1-126 C	59.8361	80/20	59.8361
963851	AG1-238 C	5.4675	80/20	5.4675
965681	AG1-436 C	4.1115	80/20	4.1115
965801	AG1-448	3.0151	80/20	3.0151
WEC	WEC	1.6304	Confirmed LTF	1.6304

<b>Bus #</b>	<b>Bus</b>	<b>Gendeliv MW Impact</b>	<b>Type</b>	<b>Full MW Impact</b>
<b>LGEE</b>	LGEE	0.5472	Confirmed LTF	0.5472
<b>CPL</b>	CPL	1.0053	Confirmed LTF	1.0053
<b>CBM-W2</b>	CBM-W2	25.9123	Confirmed LTF	25.9123
<b>NY</b>	NY	0.8970	Confirmed LTF	0.8970
<b>TVA</b>	TVA	3.4118	Confirmed LTF	3.4118
<b>SIGE</b>	SIGE	0.3594	Confirmed LTF	0.3594
<b>CBM-S2</b>	CBM-S2	18.8129	Confirmed LTF	18.8129
<b>CBM-S1</b>	CBM-S1	0.8181	Confirmed LTF	0.8181
<b>MEC</b>	MEC	6.9360	Confirmed LTF	6.9360
<b>LAGN</b>	LAGN	4.8650	Confirmed LTF	4.8650
<b>CBM-W1</b>	CBM-W1	39.4803	Confirmed LTF	39.4803

## 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
AC1-068	Atlanta 69kV I	Engineering and Procurement
AC1-069	Atlanta 69kV II	Engineering and Procurement
AC1-165	Atlanta 69kV III	Engineering and Procurement
AC1-166	Atlanta 69kV IV	Engineering and Procurement
AC2-140	DC Cook Unit 2	In Service
AE1-021	Gavin #2 765 kV	Engineering and Procurement
AE1-050	Gavin Unit 1 765 kV	Engineering and Procurement
AF1-200	Plano 345 kV	Active
AF2-137	Marysville-Sorenson 765 kV	Active
AF2-359	Olive-University Park 345 kV	Active
AF2-395	Flatlick 765 kV	Active
AG1-003	Marysville-Sorenson 765 kV	Active
AG1-004	Marysville-Sorenson 765 kV	Active
AG1-125	Marysville-Flatlick 765 kV	Active
AG1-126	Marysville-Flatlick 765 kV	Active
AG1-238	Dumont 345 kV	Active
AG1-436	Olive-University Park 345 kV	Active
AG1-448	Olive-University Park 345 kV	Active
X2-052	Dumont-Olive 345kV	In Service

## 10.8 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
<b>AEP_P1-3_#7222_05MALIS 765_1</b>	CONTINGENCY 'AEP_P1-3_#7222_05MALIS 765_1' OPEN BRANCH FROM BUS 242926 TO BUS 242928 CKT 1 / 242926 05MALIS 765 242928 05MARYSV 765 1 OPEN BRANCH FROM BUS 242926 TO BUS 246751 CKT 1 / 242926 05MALIS 765 246751 05VASSEL 765 1 OPEN BRANCH FROM BUS 242926 TO BUS 243538 CKT 1 / 242926 05MALIS 765 243538 05MALISX 138 1 OPEN BRANCH FROM BUS 243537 TO BUS 243538 CKT SR / 243537 05MALIS 138 243538 05MALISX 138 SR OPEN BRANCH FROM BUS 243537 TO BUS 243538 CKT ZB / 243537 05MALIS 138 243538 05MALISX 138 ZB END
<b>AEP_P1-2_#711_6224</b>	CONTINGENCY 'AEP_P1-2_#711_6224' OPEN BRANCH FROM BUS 242926 TO BUS 242928 CKT 1 / 242926 05MALIS 765 242928 05MARYSV 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 AG1-125 was evaluated as a 400.0 MW (Capacity 234.9 MW) injection tapping the Marysville to Flatlick 765 kV line in the AEP area. Project AG1-125 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-125 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 LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
168107805	242928	05MARYSV	765.0	AEP	242939	05MARYSV	345.0	AEP	2	AEP_P1-3_#7222_05MALIS 765_1	single	1868.0	109.21	112.33	DC	59.84

### 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 LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
168107803	242928	05MARYSV	765.0	AEP	242939	05MARYSV	345.0	AEP	2	AEP_P1-3_#7222_05MALIS 765_1	operation	1868.0	112.54	118.0	DC	101.89

## 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".

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## 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
168107805	242928	05MARYSV	AEP	242939	05MARYSV	AEP	2	AEP_P1-3_#7222_05MALIS765_1	single	1868.0	109.21	112.33	DC	59.84

Bus #	Bus	Gendliv MW Impact	Type	Full MW Impact
240624	02GALON M2	-3.2947	Adder	-3.88
243186	05GVG1	13.6382	80/20	13.6382
243187	05GVG2	14.6309	80/20	14.6309
243441	05CKG2	11.9013	80/20	11.9013
247216	05FLATG1	2.5291	80/20	2.5291
247217	05FLATG2	2.5306	80/20	2.5306
247218	05FLATG3	2.5291	80/20	2.5291
247219	05FLATG4	2.5291	80/20	2.5291
247220	05FLATG5	2.5336	80/20	2.5336
253325	AC1-069 C	-2.6415	Adder	-3.11
253333	AC1-068 C	-2.6415	Adder	-3.11
253338	AC1-165 C	-2.6104	Adder	-3.07
253343	AC1-166 C	-2.6104	Adder	-3.07
270100	X2-052 CT1	2.0161	80/20	2.0161
270101	X2-052 CT2	2.0161	80/20	2.0161
270102	X2-052 ST	2.1812	80/20	2.1812
274660	LASCO STA;1U	9.7979	80/20	9.7979
274661	LASCO STA;2U	9.8404	80/20	9.8404
274770	LINCOLN ;1U	0.6897	80/20	0.6897
274771	LINCOLN ;2U	0.6897	80/20	0.6897
274772	LINCOLN ;3U	0.6897	80/20	0.6897
274773	LINCOLN ;4U	0.6897	80/20	0.6897
274774	LINCOLN ;5U	0.6897	80/20	0.6897
274775	LINCOLN ;6U	0.6897	80/20	0.6897
274776	LINCOLN ;7U	0.6897	80/20	0.6897
274777	LINCOLN ;8U	0.6897	80/20	0.6897
933281	AC2-140 C	0.3940	80/20	0.3940
938161	AE1-021	0.7307	80/20	0.7307
938321	AE1-050	1.1957	80/20	1.1957
945351	AF1-200 FTIR	113.4106	80/20	113.4106
958431	AF2-137 C	55.5933	80/20	55.5933
960681	AF2-359 C	4.1115	80/20	4.1115
961041	AF2-395	8.6007	80/20	8.6007
961631	AG1-003 C	59.8290	80/20	59.8290
961641	AG1-004	52.9460	80/20	52.9460
962761	AG1-125 C O2	59.8361	80/20	59.8361
962771	AG1-126 C	59.8361	80/20	59.8361
963851	AG1-238 C	5.4675	80/20	5.4675
965681	AG1-436 C	4.1115	80/20	4.1115
965801	AG1-448	3.0151	80/20	3.0151
WEC	WEC	1.6304	Confirmed LTF	1.6304

<b>Bus #</b>	<b>Bus</b>	<b>Gendeliv MW Impact</b>	<b>Type</b>	<b>Full MW Impact</b>
<b>LGEE</b>	LGEE	0.5472	Confirmed LTF	0.5472
<b>CPL</b>	CPL	1.0053	Confirmed LTF	1.0053
<b>CBM-W2</b>	CBM-W2	25.9123	Confirmed LTF	25.9123
<b>NY</b>	NY	0.8970	Confirmed LTF	0.8970
<b>TVA</b>	TVA	3.4118	Confirmed LTF	3.4118
<b>SIGE</b>	SIGE	0.3594	Confirmed LTF	0.3594
<b>CBM-S2</b>	CBM-S2	18.8129	Confirmed LTF	18.8129
<b>CBM-S1</b>	CBM-S1	0.8181	Confirmed LTF	0.8181
<b>MEC</b>	MEC	6.9360	Confirmed LTF	6.9360
<b>LAGN</b>	LAGN	4.8650	Confirmed LTF	4.8650
<b>CBM-W1</b>	CBM-W1	39.4803	Confirmed LTF	39.4803

## 12.6 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
<b>AEP_P1-3_#7222_05MALIS 765_1</b>	CONTINGENCY 'AEP_P1-3_#7222_05MALIS 765_1' / 485 OPEN BRANCH FROM BUS 242926 TO BUS 242928 CKT 1 / 242926 05MALIS 765 242928 05MARYSV 765 1 OPEN BRANCH FROM BUS 242926 TO BUS 246751 CKT 1 / 242926 05MALIS 765 246751 05VASSEL 765 1 OPEN BRANCH FROM BUS 242926 TO BUS 243538 CKT 1 / 242926 05MALIS 765 243538 05MALISX 138 1 OPEN BRANCH FROM BUS 243537 TO BUS 243538 CKT SR / 243537 05MALIS 138 243538 05MALISX 138 SR OPEN BRANCH FROM BUS 243537 TO BUS 243538 CKT ZB / 243537 05MALIS 138 243538 05MALISX 138 ZB 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).