



Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-238

DUMONT 345 KV

90 MW Capacity / 150 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 St. Joseph County, Indiana. The installed facilities will have a total capability of 150 MW with 90 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is August 31, 2024. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-238
Project Name	DUMONT 345 KV
State	Indiana
County	St. Joseph
Transmission Owner	AEP
MFO	150
MWE	150
MWC	90
Fuel	Solar
Basecase Study Year	2024

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

4 Point of Interconnection

AG1-238 will interconnect with the AEP transmission system via a direct connection to the Dumont 345 kV substation.

To accommodate the interconnection to the Dumont 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.

5 Cost Summary

The AG1-238 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$3,544,000
Total System Network Upgrade Costs	\$2,000,000
Total Costs	\$5,544,000

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 Dumont 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 Dumont 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

The Queue Project AG1-238 was evaluated as a 150.0 MW (Capacity 90.0 MW) injection at the Dumont 345 kV substation in the AEP area. Project AG1-238 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-238 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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
167110294	958430	AF2-137 TAP	765.0	AEP	242928	05MARY SV	765.0	AEP	1	AEP_P4_#1760_05JEF RSO	breaker	4142.0	105.93	106.33	DC	42.6

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.

None

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
167110294	1	AF2-137 TAP 765.0 kV - 05MARYSV 765.0 kV Ckt 1	<u>AEP</u> AEPO0047a (426) : Replace one Marysville 765kV CB Project Type : FAC Cost : \$2,000,000 Time Estimate : 12-18 Months	\$2,000,000
			TOTAL COST	\$2,000,000

10.6 Flow Gate Details

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPAC T
167110294	958430	AF2-137 TAP	AEP	242928	05MARYS V	AEP	1	AEP_P4_#1760_05JEFRS O	breaker	4142.0	105.93	106.33	DC	42.6

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
243071	05BERRINSP G	0.2472	50/50	0.2472
243440	05CKG1	42.8729	50/50	42.8729
243441	05CKG2	53.5008	50/50	53.5008
244415	05OLIV SLR C	0.6656	50/50	0.6656
246397	05ELKHART HY	0.1078	50/50	0.1078
246416	05TWIN BRCH1	0.1633	50/50	0.1633
246422	05MAYFLWER	0.2417	50/50	0.2417
246431	05BUCHANAN	0.1165	50/50	0.1165
247620	Y3-023	0.1850	50/50	0.1850
247643	Z2-116 C	0.0545	50/50	0.0545
247966	05WTRV SLR E	0.5027	Adder	0.59
247967	05OLIV SLR E	0.6656	50/50	0.6656
247969	Z2-116 E	0.3457	50/50	0.3457
270100	X2-052 CT1	9.8655	50/50	9.8655
270101	X2-052 CT2	9.8655	50/50	9.8655
270102	X2-052 ST	10.6734	50/50	10.6734
270142	AA2-116_CT1	15.8406	50/50	15.8406
270143	AA2-116_CT2	15.8406	50/50	15.8406
270144	AA2-116_ST	14.0290	50/50	14.0290
274776	LINCOLN ;7U	3.1469	50/50	3.1469
274777	LINCOLN ;8U	3.1469	50/50	3.1469
274788	SE CHICAG;5U (Deactivation : 01/06/2020)	8.2483	Adder	9.7
274789	SE CHICAG;6U (Deactivation : 01/06/2020)	8.2701	Adder	9.73
274790	SE CHICAG;7U (Deactivation : 01/06/2020)	8.3789	Adder	9.86
274791	SE CHICAG;8U (Deactivation : 01/06/2020)	8.3789	Adder	9.86
274792	SE CHICAG;9U (Deactivation : 01/06/2020)	8.3838	Adder	9.86
274793	SE CHICAG;0U (Deactivation : 01/06/2020)	8.3838	Adder	9.86
274794	SE CHICAG;1U (Deactivation : 01/06/2020)	8.3838	Adder	9.86

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
274795	SE CHICAG;2U (Deactivation : 01/06/2020)	8.3838	Adder	9.86
275149	KELLYCK ;1E	30.0058	Adder	35.3
293799	PILOT HIL;1E	30.0058	Adder	35.3
910542	X3-005 E	1.2128	Adder	1.43
930501	AB1-091 CT	65.7455	Adder	77.35
930502	AB1-091 ST	52.2702	Adder	61.49
933281	AC2-140 C	1.7711	50/50	1.7711
933282	AC2-140 E	0.5908	50/50	0.5908
933411	AC2-154 C	4.0722	Adder	4.79
933412	AC2-154 E	6.6442	Adder	7.82
934721	AD1-100 C	13.3091	Adder	15.66
934722	AD1-100 E	62.1092	Adder	73.07
936141	AD2-020 C O1	16.1454	50/50	16.1454
936142	AD2-020 E O1	9.9376	50/50	9.9376
936371	AD2-047 C O1	7.2871	Adder	8.57
936372	AD2-047 E O1	35.5784	Adder	41.86
936461	AD2-060	4.2865	Adder	5.04
936631	AD2-079 C O1	3.1823	50/50	3.1823
936632	AD2-079 E O1	2.1215	50/50	2.1215
939351	AE1-166 C O1	8.8290	Adder	19.6
939352	AE1-166 E O1	8.1499	Adder	18.09
939395	AE1-170 C	16.6314	50/50	16.6314
939396	AE1-170 E	22.9671	50/50	22.9671
939631	AE1-193 C	14.1252	Adder	16.62
939632	AE1-193 E	94.5303	Adder	111.21
939641	AE1-194 C	14.1252	Adder	16.62
939642	AE1-194 E	94.5303	Adder	111.21
939651	AE1-195 C	14.1252	Adder	16.62
939652	AE1-195 E	94.5303	Adder	111.21
939681	AE1-198 C	41.9410	Adder	49.34
939682	AE1-198 E	35.6390	Adder	41.93
941551	AE2-152 C O1	10.1873	Adder	22.61
941552	AE2-152 E O1	6.7916	Adder	15.08
941561	AE2-153 C O1	7.5434	Adder	8.87
941562	AE2-153 E O1	35.3170	Adder	41.55
942241	AE2-236 C O1	10.2502	50/50	10.2502
942242	AE2-236 E O1	4.3930	50/50	4.3930
943001	AE2-323 C	14.6340	Adder	17.22
943002	AE2-323 E	7.1753	Adder	8.44
943021	AE2-325 C	8.1692	50/50	8.1692
943022	AE2-325 E	5.4461	50/50	5.4461
943781	AF1-046 C	6.8307	Adder	8.04
943782	AF1-046 E	4.5538	Adder	5.36
944161	AF1-084 C	14.0357	50/50	14.0357
944162	AF1-084 E	8.0167	50/50	8.0167
944241	AF1-092 C O1	30.2806	50/50	30.2806
944242	AF1-092 E O1	9.2158	50/50	9.2158
944911	AF1-156 C	19.2872	Adder	22.69
944912	AF1-156 E	12.8581	Adder	15.13
944931	AF1-158 C O1	23.9760	50/50	23.9760
944932	AF1-158 E O1	15.9840	50/50	15.9840

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944961	AF1-161 C	6.5207	50/50	6.5207
944962	AF1-161 E	6.5207	50/50	6.5207
945111	AF1-176 C O1	40.6600	50/50	40.6600
945112	AF1-176 E O1	37.6910	50/50	37.6910
945351	AF1-200 FTIR	516.7069	Merchant Transmission	516.7069
945501	AF1-215 C O1	39.2292	Adder	46.15
945502	AF1-215 E O1	26.1528	Adder	30.77
957371	AF2-031 C O1	1.7402	Adder	2.05
957372	AF2-031 E O1	2.6103	Adder	3.07
957891	AF2-083 C O1	26.2870	50/50	26.2870
957892	AF2-083 E O1	13.1435	50/50	13.1435
958001	AF2-094 C	6.9514	50/50	6.9514
958002	AF2-094 E	3.5810	50/50	3.5810
958011	AF2-095 C O1	29.1485	Adder	34.29
958012	AF2-095 E O1	13.7170	Adder	16.14
958021	AF2-096 C	54.6275	Adder	64.27
958022	AF2-096 E	25.7071	Adder	30.24
958381	AF2-132 C O1	38.7365	Adder	45.57
958382	AF2-132 E O1	25.8244	Adder	30.38
958391	AF2-133 C O1	38.4826	Adder	45.27
958392	AF2-133 E O1	25.6550	Adder	30.18
958401	AF2-134 C O1	13.0764	Adder	15.38
958402	AF2-134 E O1	8.7176	Adder	10.26
958431	AF2-137 C	147.9450	50/50	147.9450
958432	AF2-137 E	204.3050	50/50	204.3050
958981	AF2-189 C O1	19.2726	Adder	22.67
958982	AF2-189 E O1	12.8484	Adder	15.12
959001	AF2-191 C O1	17.5415	50/50	17.5415
959002	AF2-191 E O1	11.6943	50/50	11.6943
960591	AF2-350 C O1	12.8597	Adder	15.13
960592	AF2-350 E O1	8.5731	Adder	10.09
960601	AF2-351 C O1	1.7146	Adder	2.02
960602	AF2-351 E O1	2.5719	Adder	3.03
960681	AF2-359 C	20.0610	50/50	20.0610
960682	AF2-359 E	13.3740	50/50	13.3740
960981	AF2-389 C	7.8894	50/50	7.8894
960982	AF2-389 E	5.2596	50/50	5.2596
961051	AF2-396 O1	52.1840	50/50	52.1840
961501	AF2-441 C O1	17.3427	Adder	20.4
961502	AF2-441 E O1	26.0141	Adder	30.6
961631	AG1-003 C	159.2170	50/50	159.2170
961632	AG1-003 E	122.5830	50/50	122.5830
961641	AG1-004	140.9000	50/50	140.9000
962601	AG1-109	6.5207	50/50	6.5207
963701	AG1-222 C	9.5824	Adder	21.27
963702	AG1-222 E	7.7560	Adder	17.22
963851	AG1-238 C	25.5600	50/50	25.5600
963852	AG1-238 E	17.0400	50/50	17.0400
964361	AG1-298 O1	57.3824	Adder	127.37
964401	AG1-302 C O1	20.5304	Adder	45.57
964402	AG1-302 E O1	13.6869	Adder	30.38
964861	AG1-349 C O1	17.7607	Adder	39.42

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964862	AG1-349 E O1	11.8404	Adder	26.28
965501	AG1-418 C O1	7.9992	50/50	7.9992
965502	AG1-418 E O1	5.3328	50/50	5.3328
965681	AG1-436 C	20.0610	50/50	20.0610
965682	AG1-436 E	13.3740	50/50	13.3740
965791	AG1-447	14.7114	50/50	14.7114
965801	AG1-448	14.7114	50/50	14.7114
965841	AG1-453 C O1	9.6410	Adder	21.4
965842	AG1-453 E O1	6.4273	Adder	14.27
965851	AG1-454 O1	5.7387	Adder	12.74
966431	AG1-512 C	1.8313	Adder	4.07
966432	AG1-512 E	2.7469	Adder	6.1
966651	AG1-535 O1	9.8021	Adder	21.76
WEC	WEC	7.4236	Confirmed LTF	7.4236
LGEE	LGEE	4.8379	Confirmed LTF	4.8379
CBM-W2	CBM-W2	100.2624	Confirmed LTF	100.2624
NY	NY	3.4115	Confirmed LTF	3.4115
TVA	TVA	8.4154	Confirmed LTF	8.4154
O-066	O-066	42.0894	Confirmed LTF	42.0894
SIGE	SIGE	1.8779	Confirmed LTF	1.8779
CBM-S1	CBM-S1	2.4008	Confirmed LTF	2.4008
G-007	G-007	6.5667	Confirmed LTF	6.5667
HAMLET	HAMLET	1.3017	Confirmed LTF	1.3017
MEC	MEC	30.3245	Confirmed LTF	30.3245
LAGN	LAGN	14.5863	Confirmed LTF	14.5863
CATAWBA	CATAWBA	0.5824	Confirmed LTF	0.5824
CBM-W1	CBM-W1	263.5620	Confirmed LTF	263.5620

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
AA2-116	Cook-East Elkhart 345kV	Under Construction
AB1-091	Davis Creek 345kV	Active
AC2-140	DC Cook Unit 2	In Service
AC2-154	Davis Creek 138kV	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD2-020	Valley 138 kV	Active
AD2-047	Davis Creek 138 kV	Active
AD2-060	Davis Creek 138kV	Active
AD2-079	Capitol Ave 34.5kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE1-170	Kenzie Creek-Colby 138 kV	Active
AE1-193	Crete 345 kV	Active
AE1-194	Crete 345 kV	Active
AE1-195	Crete 345 kV	Active
AE1-198	Crete 345 kV	Active
AE2-152	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-153	Braidwood-Davis Creek	Active
AE2-236	Columbia-Northeast 138 kV	Active
AE2-323	Twin Branch-Guardian 138 kV	Active
AE2-325	Valley 138 kV	Active
AF1-046	Twin Branch-Guardian 138 kV	Active
AF1-084	East Hartford-Murch 69 kV	Active
AF1-092	Huntington Jct. 138 kV	Active
AF1-156	Braidwood-Davis Creek	Active
AF1-158	Edison-Gravel Pit 138 kV	Active
AF1-161	Valley 138 kV	Active
AF1-176	Corey 138 kV	Active
AF1-200	Plano 345 kV	Active
AF1-215	Reynolds-Olive 345 kV	Active
AF2-031	River E.C.	Active
AF2-083	Ed Lowe-Kenzie Creek 138 kV	Active
AF2-094	Huntington Jct. 138 kV	Active
AF2-095	Wilmington-Davis Creek	Active
AF2-096	Braidwood-East Frankfort 345 kV	Active
AF2-132	Reynolds-Olive #1 345 kV	Active
AF2-133	Reynolds-Olive #2 345 kV	Active
AF2-134	Reynolds-Olive #2 345 kV	Active
AF2-137	Marysville-Sorenson 765 kV	Active
AF2-189	Greentown 138 kV	Active

Queue Number	Project Name	Status
AF2-191	New Carlisle 138 kV	Active
AF2-350	Kensington 138 kV	Active
AF2-351	Kensington 138 kV	Active
AF2-359	Olive-University Park 345 kV	Active
AF2-389	Pokagon-Corey 69 kV	Active
AF2-396	Stinger 138 kV	Active
AF2-441	Burnham 138kV	Active
AG1-003	Marysville-Sorenson 765 kV	Active
AG1-004	Marysville-Sorenson 765 kV	Active
AG1-109	Valley 138 kV	Active
AG1-222	Guardian-Twin Branch 138 kV	Active
AG1-238	Dumont 345 kV	Active
AG1-298	Calumet-Burnham 345 kV	Active
AG1-302	Reynolds-Olive 345 kV	Active
AG1-349	Olive-Reynolds #2 345 kV	Active
AG1-418	Columbia City 138 kV	Active
AG1-436	Olive-University Park 345 kV	Active
AG1-447	Olive-University Park 345 kV	Active
AG1-448	Olive-University Park 345 kV	Active
AG1-453	Guardian 138 kV	Active
AG1-454	Guardian 138 kV	Active
AG1-512	University Park North 345 kV	Active
AG1-535	Franklin Park 138 kV	Active
X2-052	Dumont-Olive 345kV	In Service
X3-005	Wildwood 12kV	In Service
Y3-023	Country Side 12kV	In Service
Z2-116	Twin Branch 12.47kV	In Service

10.8 Contingency Descriptions

Contingency Name	Contingency Definition
AEP_P4_#1760_05JEFRSO	CONTINGENCY "'AEP_P4_#1760_05JEFRSO' 765_A" / 1455 OPEN BRANCH FROM BUS 243207 TO BUS 243208 CKT 1 / 243207 05GRNTWN 765 243208 05JEFRSO 765 1 OPEN BRANCH FROM BUS 242924 TO BUS 243208 CKT 1 / 242924 05HANG R 765 243208 05JEFRSO 765 1 END

11 Short Circuit Analysis

The following Breakers are overdutied:

None.

12 Affected Systems

12.1 TVA

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

12.2 Duke Energy Progress

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

12.3 MISO

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

12.4 LG&E

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