



**Generation Interconnection
Feasibility Study Report
for
Queue Project AG1-447
OLIVE-UNIVERSITY PARK 345 KV
55 MW Capacity / 55 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.

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 an uprate to a planned/existing Storage generating facility located in LaPorte, Indiana. This project is an increase to the Interconnection Customer's AF2-359 and AG1-436 projects, which will share the same point of interconnection. The AG1-447 queue position is a 55 MW uprate (55 MW Capacity uprate) to the previous project. The total installed facilities will have a capability of 305 MW with 205 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this uprate project is December 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-447
Project Name	OLIVE-UNIVERSITY PARK 345 KV
State	Indiana
County	LaPorte
Transmission Owner	AEP
MFO	305
MWE	55
MWC	55
Fuel	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

AG1-447 will interconnect with the AEP transmission system via a direct connection to the AF2-359 proposed 345 kV switching station as an uprate to the PJM project AF2-359 & AG1-436.

Note: It is assumed that the existing 345 kV revenue metering system, generation lead and Protection & Control Equipment that will be installed for AF2-356/AG1-436 will be adequate for the increased generation of AG1-447. Depending on the timing of the completion of the AF2-356/AG1-436 interconnection construction relative to the AG1-447 completion, there may (or may not) be a need to review and revise the relay settings for the increased generation of AG1-447.

5 Cost Summary

The AG1-447 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$45,000
Total System Network Upgrade Costs	\$14,962,440
Total Costs	\$15,007,440

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
None	\$0
Total Attachment Facility Costs	\$0

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
None	\$0
Total Direct Connection Facility Costs	\$0

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 AF2-359 proposed 345 kV switching station	\$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

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 AG1-447 was evaluated as a 55.0 MW (Capacity 55.0 MW) injection tapping the Olive to University Park 345 kV line in the AEP area. Project AG1-447 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-447 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 LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPACT
17003974 3	96068 0	AF2-359 TAP	345. 0	CE	24322 9	05OLIV E	345. 0	AEP	1	COMED_P1-2_765-L11215__S	single	971.0	147.72	151.03	DC	47.04
17003974 4	96068 0	AF2-359 TAP	345. 0	CE	24322 9	05OLIV E	345. 0	AEP	1	AEP_P1-2_#695_168 1	single	971.0	147.72	151.03	DC	47.04

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 LOADIN G %	POST PROJECT LOADIN G %	AC D C	MW IMPACT
17003974 1	96068 0	AF2-359 TAP	345. 0	CE	24322 9	05OLIV E	345. 0	AEP	1	AEP_P1-2_#695_168 1	operation	971.0	158.55	161.64	DC	47.04
17003974 2	96068 0	AF2-359 TAP	345. 0	CE	24322 9	05OLIV E	345. 0	AEP	1	COMED_P1-2_765-L11215__S	operation	971.0	158.55	161.64	DC	47.04

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
170039744,170 039743	1	AF2-359 TAP 345.0 kV - 05OLIVE 345.0 kV Ckt 1	<p><u>AEP</u> n4057 (371) : A Sag Study will be required on the 40.64 miles of ACSR/PE 1414 62/19 conductor to mitigate the overload. The new ratings after sag study will be: S/N: 971 MVA, S/E: 1419 MVA, Depending on the sag study results, the cost for this upgrade is expected to be between \$162,560 (no remediation required, just sag study) and \$81.28 million (complete line Reconductor/rebuild). Time Estimate: a) Sag Study: 6-12 months b) Rebuild: The standard time required for construction differs from state to state. An approximate construction time would be 24 to 36 months after signing an interconnection agreement. Project Type : FAC Cost : \$162,440 Time Estimate : 6-12 Months</p> <p><u>AEP</u> AEPI0068a (447) : Replace 5 Jumpers (Sub cond 2156 ACSR 84/19 STD at Olive station, estimated cost : \$175,000 Project Type : FAC Cost : \$175,000 Time Estimate : 6-12 Months</p> <p><u>AEP</u> AEPI0068b (448) : An engineering study will need to be conducted to determine if the Olive Compliance Thermal limits 2293 Amps settings can be adjusted to mitigate the overload. Project Type : FAC Cost : \$25,000 Time Estimate : 6-12 Months</p> <p><u>AEP</u> AEPI0068c (449) : Rebuild 7.3 miles of ACSR/PE 1414 62/19 conductor to mitigate the overload. The cost for this upgrade is expected to be \$81.28 million (complete line Reconductor/rebuild). Time Estimate: The standard time required for construction differs from state to state. An approximate construction time would be 24 to 36 months after signing an interconnection agreement. Project Type : FAC Cost : \$14,600,000 Time Estimate : 24-36 Months</p> <p>Not a violation for ComEd portion (700) : Not a violation for ComEd portion Project Type : FAC Cost : \$0 Time Estimate : 0.0 Months</p>	\$14,962,440
			TOTAL COST	\$14,962,440

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	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
170039744	960680	AF2-359 TAP	CE	243229	05OLIVE	AEP	1	AEP_P1-2_#695_1681	single	971.0	147.72	151.03	DC	47.04

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
272364	ESS H440N ;R	1.8535	Adder	2.18
274654	BRAIDWOOD;1U	21.0569	80/20	21.0569
274655	BRAIDWOOD;2U	20.5935	80/20	20.5935
274658	DRESDEN ;2U	81.3459	Adder	95.7
274659	DRESDEN ;3U	77.2821	Adder	90.92
274660	LASCO STA;1U	19.6084	80/20	19.6084
274661	LASCO STA;2U	19.6916	80/20	19.6916
274675	JOLIET 29;7U	8.9537	80/20	8.9537
274802	UNIV PARK;5U	1.2023	80/20	1.2023
274803	UNIV PARK;6U	1.2023	80/20	1.2023
274805	UNIV PK N;1U	1.4335	80/20	1.4335
274806	UNIV PK N;2U	1.4190	80/20	1.4190
274807	UNIV PK N;3U	1.4423	80/20	1.4423
274808	UNIV PK N;4U	1.4364	80/20	1.4364
274809	UNIV PK N;5U	1.4219	80/20	1.4219
274810	UNIV PK N;6U	1.4364	80/20	1.4364
274811	UNIV PK N;7U	1.4423	80/20	1.4423
274812	UNIV PK N;8U	1.4306	80/20	1.4306
274813	UNIV PK N;9U	1.4306	80/20	1.4306
274814	UNIV PK N;0U	1.4248	80/20	1.4248
274815	UNIV PK N;XU	1.4335	80/20	1.4335
274816	UNIV PK N;YU	1.4423	80/20	1.4423
274891	OTTER CRK;1U	0.3473	80/20	0.3473
904201	W3-134	0.1846	80/20	0.1846
915011	Y3-013 1	2.6199	Adder	3.08
915021	Y3-013 2	2.6199	Adder	3.08
915031	Y3-013 3	2.6199	Adder	3.08
924472	AB2-096 CT1	13.3049	Adder	15.65
924473	AB2-096 CT2	13.3049	Adder	15.65
924474	AB2-096 CT3	13.3049	Adder	15.65
926331	AC1-110 1	1.3291	Adder	1.56
926341	AC1-110 2	1.3291	Adder	1.56
927451	AC1-142A 1	3.5059	80/20	3.5059
927461	AC1-142A 2	2.9787	Adder	3.5
930482	AB1-089 CT	25.5466	Adder	30.05
930483	AB1-089 ST	20.3105	Adder	23.89
930501	AB1-091 CT	27.5572	Adder	32.42
930502	AB1-091 ST	21.9090	Adder	25.78
930761	AB1-122 CT1	48.1272	Adder	56.62
930771	AB1-122 CT2	51.7537	Adder	60.89
933411	AC2-154 C	1.7460	Adder	2.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
933431	AC2-156 C O1	0.6683	Adder	0.79
933911	AD1-013 C	1.2991	Adder	1.53
933931	AD1-016 C	0.6476	Adder	0.76
934101	AD1-039 1	4.7165	Adder	5.55
934111	AD1-039 2	5.0719	Adder	5.97
934701	AD1-098 C O1	4.8418	Adder	5.7
934721	AD1-100 C	13.4627	Adder	15.84
934871	AD1-116 C	0.8580	80/20	0.8580
934971	AD1-129 C	0.6304	Adder	0.74
936291	AD2-038 C O1	1.7986	Adder	2.12
936371	AD2-047 C O1	3.1244	Adder	3.68
936461	AD2-060	1.8379	Adder	2.16
936511	AD2-066 C O1	5.9456	Adder	6.99
937001	AD2-134 C	1.9237	Adder	2.26
937401	AD2-194 1	5.4830	Adder	6.45
937411	AD2-194 2	5.4800	Adder	6.45
938511	AE1-070 1	6.4389	Adder	7.58
938521	AE1-070 2	5.8942	Adder	6.93
938851	AE1-113 C O1	5.6998	Adder	6.71
939321	AE1-163 C O1	4.5194	Adder	5.32
939351	AE1-166 C O1	3.7940	Adder	8.42
941131	AE2-107 C	4.5969	Adder	5.41
941551	AE2-152 C O1	4.3776	Adder	9.72
941561	AE2-153 C O1	3.8942	80/20	3.8942
942421	AE2-255 C O1	2.1590	Adder	2.54
942651	AE2-281 C O1	0.6456	Adder	0.76
942991	AE2-321 C	5.7132	Adder	6.72
943121	AE2-341 C	8.9213	Adder	10.5
943591	AF1-030 C O1	5.9327	Adder	6.98
943801	AF1-048 C	2.6707	Adder	3.14
944041	AF1-072	1.5057	Adder	1.77
944911	AF1-156 C	9.9567	80/20	9.9567
945351	AF1-200 FTIR	215.8321	Merchant Transmission	215.8321
946661	AF1-330 C	1.3992	Adder	1.65
946671	AF1-331	1.6871	Adder	1.98
957331	AF2-027 C	1.7466	Adder	2.05
957401	AF2-034 C	0.9732	Adder	1.14
957471	AF2-041 C	14.9466	Adder	17.58
958011	AF2-095 C O1	12.4952	Adder	14.7
958021	AF2-096 C	28.2565	80/20	28.2565
958481	AF2-142 C	10.1601	80/20	10.1601
958491	AF2-143 C	8.3010	Adder	9.77
959081	AF2-199 C	4.9822	Adder	5.86
959091	AF2-200 C O1	9.9644	Adder	11.72
959351	AF2-226 C	1.7017	Adder	2.0
960281	AF2-319 C	1.7017	Adder	2.0
960381	AF2-329	4.6291	Adder	5.45
960581	AF2-349 C	15.1960	Adder	17.88
960591	AF2-350 C O1	5.5131	Adder	6.49
960601	AF2-351 C O1	0.7351	Adder	0.86
960681	AF2-359 C	64.1422	80/20	64.1422
960721	AF2-363 C O1	4.1294	Adder	4.86

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960731	AF2-364 C O1	4.2946	Adder	5.05
960751	AF2-366 C	4.8728	Adder	5.73
962691	AG1-118 C O1	8.4901	Adder	18.85
962701	AG1-119 C	8.0879	Adder	17.95
962711	AG1-120 C O1	3.1897	Adder	7.08
962781	AG1-127 C	2.8593	Adder	6.35
962791	AG1-128 C O1	2.3063	Adder	5.12
963681	AG1-220 C O1	4.0707	Adder	9.04
964461	AG1-309 FTIR	166.5727	Merchant Transmission	166.5727
965061	AG1-371	1.3203	Adder	2.93
965071	AG1-372	0.8802	Adder	1.95
965081	AG1-373	0.4401	Adder	0.98
965141	AG1-379 C	6.2798	Adder	13.94
965551	AG1-423 C O1	5.5860	Adder	12.4
965681	AG1-436 C	64.1422	80/20	64.1422
965791	AG1-447	47.0376	80/20	47.0376
965801	AG1-448	47.0376	80/20	47.0376
966081	AG1-477 C	0.7475	Adder	1.66
966091	AG1-478 C	0.7712	Adder	1.71
966101	AG1-479 C (Withdrawn : 12/03/2020)	0.7475	Adder	1.66
966431	AG1-512 C	3.6634	80/20	3.6634
966441	AG1-513 C	0.1886	Adder	0.42
WEC	WEC	3.0779	Confirmed LTF	3.0779
CBM-W2	CBM-W2	16.3699	Confirmed LTF	16.3699
NY	NY	0.8699	Confirmed LTF	0.8699
TVA	TVA	1.2096	Confirmed LTF	1.2096
SIGE	SIGE	0.1444	Confirmed LTF	0.1444
CHEOAH	CHEOAH	0.0075	Confirmed LTF	0.0075
CBM-S1	CBM-S1	0.2109	Confirmed LTF	0.2109
HAMLET	HAMLET	0.3921	Confirmed LTF	0.3921
MEC	MEC	10.7655	Confirmed LTF	10.7655
GIBSON	GIBSON	0.0966	Confirmed LTF	0.0966
BLUEG	BLUEG	1.5537	Confirmed LTF	1.5537
TRIMBLE	TRIMBLE	0.5292	Confirmed LTF	0.5292
LAGN	LAGN	3.2287	Confirmed LTF	3.2287
CATAWBA	CATAWBA	0.2002	Confirmed LTF	0.2002
CBM-W1	CBM-W1	55.3089	Confirmed LTF	55.3089

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
AB1-089	Byron-Wayne 345kV #1	Active
AB1-091	Davis Creek 345kV	Active
AB1-122	Kendall-Tazewell & Dresden-Mole Creek	Engineering and Procurement
AB2-096	Silver Lake-Cherry Valley	Active
AC1-110	Aurora 138kV	Active
AC1-142A	Joliet	In Service
AC2-154	Davis Creek 138kV	Active
AC2-156	Sandwich 34.5kV	Active
AD1-013	Twombly Road 138kV	Active
AD1-016	Marengo	Active
AD1-039	Kendall-Tazewell & Dresden-Mole Creek	Active
AD1-098	Dixon-McGirr	Active
AD1-100	Loretto-Wilton & Braidwood-Davis Creek	Active
AD1-116	Nevada 345 kV	Active
AD1-129	Belvidere 34 kV	Active
AD2-038	Powerton	Active
AD2-047	Davis Creek 138 kV	Active
AD2-060	Davis Creek 138kV	Active
AD2-066	Mazon-Crescent Ridge	Active
AD2-134	Shady Oaks	Active
AD2-194	Elwood	Active
AE1-070	Elwood 345 kV	Active
AE1-113	Mole Creek 345 kV	Active
AE1-163	Powerton-Nevada 345 kV	Active
AE1-166	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-107	Haumesser Road 138 kV	Active
AE2-152	Loretto-Wilton & Braidwood-Davis Creek	Active
AE2-153	Braidwood-Davis Creek	Active
AE2-255	Molecreek 345 kV	Active
AE2-281	Powerton-Nevada 345 kV	Active
AE2-321	Belvidere-Marengo 138 kV	Active
AE2-341	Sandwich-Plano	Active
AF1-030	Plano-R 138 kV	Active
AF1-048	Belvidere-Marengo	Active
AF1-072	Rocky Road	Active
AF1-156	Braidwood-Davis Creek	Active
AF1-200	Plano 345 kV	Active
AF1-330	Marengo	Active
AF1-331	Twombly Road	Active

Queue Number	Project Name	Status
AF2-027	Zion Energy Center 345 kV	Active
AF2-034	Kendall	Active
AF2-041	Nelson-Electric Junction 345 kV	Active
AF2-095	Wilmington-Davis Creek	Active
AF2-096	Braidwood-East Frankfort 345 kV	Active
AF2-142	Nevada 345 kV	Active
AF2-143	Powerton-Nevada 345 kV	Active
AF2-199	Nelson-Electric Junction 345 kV	Active
AF2-200	Nelson-Electric Junction 345 kV	Active
AF2-226	Katydid Road 345 kV	Active
AF2-319	Katydid Road 345 kV	Active
AF2-329	Sandwich-Plano 138 kV	Active
AF2-349	Garden Prairie-Silver Lake 345 kV	Active
AF2-350	Kensington 138 kV	Active
AF2-351	Kensington 138 kV	Active
AF2-359	Olive-University Park 345 kV	Active
AF2-363	Glidden 138 kV	Active
AF2-364	Wayne Red 138 kV	Active
AF2-366	Glidden-Waterman 138 kV	Active
AG1-118	Sugar Grove 138 kV	Active
AG1-119	Wayne-Byron 345 kV	Active
AG1-120	Glidden-Cherry Valley 138 kV	Active
AG1-127	Glidden-Waterman 138 kV	Active
AG1-128	Shady Oaks 138 kV	Active
AG1-220	West Dekalb 138 kV	Active
AG1-309	Byron 345 kV	Active
AG1-371	Nelson-Electric Junction 345 kV	Active
AG1-372	Nelson-Electric Junction 345 kV	Active
AG1-373	Nelson-Electric Junction 345 kV	Active
AG1-379	Minonk 345 kV	Active
AG1-423	Wayne 345 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
AG1-477	Grundy County 34.5 kV	Active
AG1-478	Will County 34.5 kV	Active
AG1-479	Grundy County 34.5 kV II	Withdrawn
AG1-512	University Park North 345 kV	Active
AG1-513	Aurora 138 kV	Active
W3-134	South Joliet 34.5kV	Under Construction
Y3-013	Zion Energy Center	In Service

10.8 Contingency Descriptions

Contingency Name	Contingency Definition
AEP_P1-2_#695_1681	CONTINGENCY 'AEP_P1-2_#695_1681' OPEN BRANCH FROM BUS 243206 TO BUS 270644 CKT 1 / 243206 05DUMONT 765 270644 WILTON ; 765 1 END
COMED_P1-2_765-L11215__-S	CONTINGENCY 'COMED_P1-2_765-L11215__-S' / CONTINGENCY # 199 TRIP BRANCH FROM BUS 270644 TO BUS 243206 CKT 1 / WILTON ; 765 05DUMONT 765 REMOVE SHUNT 1 FROM BUS 270644 / WILTON ; 765 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).