Generation Interconnection

Revised

System Impact Study Report

for

Queue Project AF2-348

NORTH CLARK-SPURLOCK 345 KV

150 MW Capacity / 250 MW Energy

July 2022

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1 Introduction

This System Impact Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 205, as well as the System Impact Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is EKPC.

2 Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. 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 System Impact Study is performed.

The System Impact 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.

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.

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3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Madison County, Kentucky. The installed facilities will have a total capability of 250 MW with 150 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is July 01, 2022. This study does not imply a TO commitment to this in-service date.

Queue Number	**AF2-348**
Project Name	NORTH CLARK-SPURLOCK 345 KV
State	Kentucky
County	Madison
Transmission Owner	EKPC
MFO	250
MWE	250
MWC	150
Fuel	Solar
Basecase Study Year	2023

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.

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4 Point of Interconnection

AF2-348 will interconnect with the EKPC on transmission system tapping the North Clark to Spurlock 345 kV line.

5 Cost Summary

The AF2-348 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$11,355,000
Total System Network Upgrade Costs (Summer Peak)*	$37,172,212
Total Costs	**$48,527,212****

*As your project progresses through the study process and other projects modify their request or withdraw, then your cost allocation could change.

**LG&E Impacts and necessary LG&E system upgrade(s) will be determined once the LG&E affected system study is completed by LG&E.

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.

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 88-129. 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.

Note 1: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. The allocation of costs for a network upgrade will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

Note 2: For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates $0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can

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change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently $0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

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6 Transmission Owner Scope of Work

The total physical interconnection costs is given in the tables 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
Install necessary equipment (a 345 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panels) at the new South Mason County substation to accept the IC generator lead line/bus (Estimated time to implement is 24 months)	$1,215,000
Total Attachment Facility Costs	**$1,215,000**

6.2 Direct Connection Cost Estimates

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
Construct a new 345 kV switching station ("South Mason County") to facilitate connection of the IC solar generation project to the existing Spurlock-North Clark 345 kV line (Estimated time to implement is 24 months)	$7,725,000
Total Direct Connection Facility Costs	**$7,725,000**

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
Construct facilities to loop the existing Spurlock-North Clark 345 kV line into the new South Mason County switching station (Estimated time to implement is 24 months)	$1,100,000
Modify relays and/or settings at Spurlock substation for the existing line to the new South Mason County switching station (Estimated time to implement is 9 months)	$45,000
Modify relays and/or settings at North Clark substation for the existing line to the new South Mason County switching station (Estimated time to implement is 9 months)	$45,000
Install OPGW on the South Mason County-Spurlock 345 kV line (14.6 miles) (Estimated time to implement is 24 months)	$1,225,000
Total Non-Direct Connection Facility Costs	**$2,415,000**

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7 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.

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8 Revenue Metering and SCADA Requirements

8.1 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.

8.2 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)

8.3 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/

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9 Summer Peak Analysis

The Queue Project AF2-348 was evaluated as a 250.0 MW (Capacity 150.0 MW) injection tapping the North Clark to Spurlock 345 kV line in the EKPC area. Project AF2-348 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-348 was studied with a commercial probability of 100.0 %. Potential network impacts were as follows:

9.1 Generation Deliverability

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

None.

9.2 Multiple Facility Contingency

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

None.

9.3 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
95490252	243453	05BEATTY	345.0	AEP	243454	05BIXBY	345.0	AEP	1	AEP_P4_#3196_05BEATTY 345_302E	breaker	1203.0	115.57	117.66	AC	27.51
95490253	243453	05BEATTY	345.0	AEP	243454	05BIXBY	345.0	AEP	1	AEP_P4_#10715_05COLE 345_C	breaker	1203.0	115.07	117.07	AC	26.47
95490305	243453	05BEATTY	345.0	AEP	244022	05COLE	345.0	AEP	1	AEP_P4_#8094_05BIXBY 345_C	breaker	1203.0	103.76	105.5	AC	22.9
95490306	243453	05BEATTY	345.0	AEP	244022	05COLE	345.0	AEP	1	AEP_P4_#3195_05BEATTY 345_304E	breaker	1203.0	103.59	105.37	AC	23.32
95922819	246800	05SARDINIA	138.0	AEP	247034	05EMERSS	138.0	AEP	1	DAY_P734541 34553	tower	185.0	131.31	139.63	AC	18.11
95922783	246946	05WLDCAT	138.0	AEP	243019	05HILLSB	138.0	AEP	1	DAY_P734541 34553	tower	185.0	183.18	191.5	AC	18.11
95922827	247034	05EMERSS	138.0	AEP	246946	05WLDCAT	138.0	AEP	1	DAY_P734541 34553	tower	185.0	130.16	138.48	AC	18.11
100774679	250054	08LONGBR	138.0	DEO&K	250077	08MTZION	138.0	DEO&K	1	DAY_P734541 34553	tower	284.0	132.07	140.62	AC	26.33
100774680	250077	08MTZION	138.0	DEO&K	249991	08BUFTN1	138.0	DEO&K	1	DAY_P734541 34553	tower	298.0	121.71	129.86	AC	26.33
95490295	253110	09ADKINS	345.0	DAY	243453	05BEATTY	345.0	AEP	1	DAY_P4_L34526-3	breaker	1372.0	103.49	105.47	AC	24.97
95490963	253110	09ADKINS	345.0	DAY	243453	05BEATTY	345.0	AEP	1	DAY_P7_495	tower	1372.0	106.83	108.85	AC	25.51
95490932	324267	4KENTON	138.0	LGEE	246800	05SARDINIA	138.0	AEP	1	DAY_P734541 34553	tower	185.0	134.04	142.36	AC	18.11
101985738	342541	4AVON	138.0	EKPC	342631	4PARIST	138.0	EKPC	1	EKPC_P2-4_SPUR N39-150T-A	bus	220.0	108.56	121.19	AC	28.42
161284971	342541	4AVON	138.0	EKPC	342631	4PARIST	138.0	EKPC	1	EKPC_P4-6_SPUR N39-150T-A	breaker	220.0	108.56	121.19	AC	28.42
100289058	342544	4AVON-R	138.0	EKPC	324275	4LOUDON AVE	138.0	LGEE	1	DAY_P734541 34553	tower	203.0	126.41	133.85	AC	17.77
98896705	342559	4BOONECO	138.0	EKPC	250054	08LONGBR	138.0	DEO&K	1	DAY_P734541 34553	tower	284.0	139.11	147.65	AC	26.33

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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
10028900 5	342661	4SPUR-KENT-R	138.0	EKPC	324267	4KENTON	138.0	LGEE	1	DAY_P734541 34553	tower	281.0	125.45	135.13	AC	28.12
10198709 3	342664	4SPURLOCK	138.0	EKPC	342661	4SPUR-KENT-R	138.0	EKPC	1	DAY_P734541 34553	tower	291.0	121.14	130.49	AC	28.12
98895933	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-2_C1 SILVER GROVE 345 BUS	bus	1532.0	140.26	148.13	AC	118.55
98896050	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-3_C2 816_SILVERGROVE	breaker	1532.0	140.44	148.31	AC	118.58
98896051	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-3_C2 1493_RED BANK	breaker	1532.0	140.38	148.25	AC	118.56
98896267	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	Base Case	single	1240.0	133.98	139.37	AC	65.76
98896268	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P1-3_B3 SILVER GROVE 345/138 TB23*	single	1532.0	126.72	131.48	AC	71.13
98896711	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSILGRVZIMMER	tower	1532.0	140.19	148.06	AC	118.56
98896742	942090	AE2-221 TAP	345.0	DAY	253014	09CLINTO	345.0	DAY	1	DAY_P734569 34598 34524	tower	1374.0	100.38	102.31	AC	26.28

9.4 Steady-State Voltage Requirements

To be determined

9.5 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
95490547	243453	05BEATTY	345.0	AEP	243454	05BIXBY	345.0	AEP	1	AEP_P1-2_#10137	operation	1203.0	108.36	110.36	AC	26.47
95490572	253110	09ADKINS	345.0	DAY	243453	05BEATTY	345.0	AEP	1	DAY_P1_AC1-085_ST_FSA-B	operation	1372.0	103.42	105.39	AC	24.9
161285240	342541	4AVON	138.0	EKPC	342631	4PARIS T	138.0	EKPC	1	EKPC_P1-2_SPUR-NCLA345-A	operation	220.0	104.48	117.12	AC	28.44
98896264	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	Base Case	operation	1240.0	145.68	154.4	AC	109.59
98896265	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P1-3_B3 SILVER GROVE 345/138 TB23*	operation	1532.0	140.26	148.13	AC	118.55

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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
98896412	342838	7SPURLOCK	345.0	EKPC	249581	08MELDAL	345.0	DEO&K	1	DAY-P1-STU SPUR	operation	1421.0	89.65	97.44	AC	110.45
95490602	945630	AF1-228 TAP	345.0	DAY	243453	05BEATTY	345.0	AEP	1	DAY_P1-2_#762	operation	1374.0	103.21	104.58	AC	22.14
100288528	958170	AF2-111 TAP	345.0	EKPC	342838	7SPURLOCK	345.0	EKPC	1	AEP_P1-2_#1027	operation	1151.0	84.59	99.83	AC	181.64
100288532	958170	AF2-111 TAP	345.0	EKPC	342838	7SPURLOCK	345.0	EKPC	1	Base Case	operation	1056.0	80.99	97.52	AC	180.75

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9.6 System Reinforcements

<table>
<tr><th>ID</th><th>Idx</th><th>Facility</th><th>Upgrade Description</th><th>Cost</th><th>Cost Allocated to AF2-348</th><th>Upgrade Number</th></tr>
<tr><td>95490295,95490963</td><td>10</td><td>09ADKINS 345.0 kV - 05BEATTY 345.0 kV Ckt 1</td><td><u>AEP</u>
N6401.1 : Rebuild 13.0 miles of 2-983.1 ACAR 30/7 Rail 5 conductor on Beatty-Adkins circuit (3.7 miles of double circuit construction). Bare minimum conductor is 2-1024.5 ACAR 30/7 Rail which provide no additional margin. Upgrade other elements previously rated by DP&L. Ratings validation of this equipment is currently underway. This will require relay upgrades at Beatty and Adkins. New expected ratings 1233/1523 MVA SN/SE
Project Type : FAC
Cost : $ 55,000,000
Time Estimate : 12-18 Months

The cost allocation is as follows:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($55 M)</th></tr>
<tr><td>AE2-319</td><td>27.5</td><td>8.87%</td><td>4.877</td></tr>
<tr><td>AE2-320</td><td>53.7</td><td>17.32%</td><td>9.524</td></tr>
<tr><td>AF1-117</td><td>106.5</td><td>34.33%</td><td>18.884</td></tr>
<tr><td>AF1-233</td><td>20.9</td><td>6.74%</td><td>3.705</td></tr>
<tr><td>AF1-251</td><td>16.6</td><td>5.34%</td><td>2.937</td></tr>
<tr><td>AF1-282</td><td>14.6</td><td>4.70%</td><td>2.584</td></tr>
<tr><td>AF1-283</td><td>18.9</td><td>6.11%</td><td>3.359</td></tr>
<tr><td>AF2-111</td><td>25.96</td><td>8.37%</td><td>4.604</td></tr>
<tr><td>AF2-348</td><td>25.5</td><td>8.23%</td><td>4.525</td></tr>
</table></td><td>$55,000,000</td><td>$4,525,000</td><td>N6401.1</td></tr>
</table>

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98896705	13	**4BOONE CO 138.0 kV - 08LONGBR 138.0 kV Ckt 1**	**Line is 100% owned by EKPC.** **No DEOK upgrade required.** **<u>EKPC</u>** **N6463.1: Increase MOT of Boone-Longbranch 138kV line section 954 MCM conductor to 275F (~2.25 miles). New SE rating to be 296 MVA.** **Project Type : FAC** **Cost : $ 200,000** **Time Estimate : 6 Months** **<u>EKPC</u>** **N6463.2: Upgrade bus and jumpers associated with Boone 138 kV bus using 2-500 MCM 37 CU conductor or equivalent. New SE rating to be 354 MVA.** **Project Type : FAC** **Cost : $ 20,000** **Time Estimate : 6 Months** **<u>EKPC</u>** **N6463.3: Replace the 954 MCM ACSR line conductor on the Boone County-Longbranch 138 kV line with 954 MCM ACSS conductor (2.3 miles). New SE rating to be 361 MVA.** **Project Type : FAC** **Cost : $ 2,590,000** **Time Estimate : 14 Months** **<u>EKPC</u>** **N6463.4: Replace he 1200A disconnect switches N15-813 and N15-815 at the Boone County substation with 1600A equipment and replace the 750 MCM copper substation jumpers at the Boone County substation with bundled 500 MCM copper or equivalent equipment. New SE rating to be 364 MVA.** **Project Type : FAC** **Cost : $ 215,000** **Time Estimate : 9 Months** **<u>EKPC</u>** **N6463.5: Replace the 750 MCM copper substation bus and jumpers at the Long branch substation with bundled 500 MCM copper or equivalent equipment. New SE rating to be 424 MVA.** **Project Type : FAC** **Cost : $ 190,000** **Time Estimate : 9 Months** The upgrades N6463.1 through N6463.5 are driven in a prior queue cycle. Since the cost of these upgrades are less than $5M, based on PJM cost allocation criteria, AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue	$200,000 + $20,000 + $2,590,000 + $215,000 + $190,000	$0 + $0 + $0 + $0 + $0	N6463.1 N6463.2 N6463.3 N6463.4 N6463.5

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ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-348	Upgrade Number
			Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.			
100289005	14	**4SPUR-KENT-R 138.0 kV - 4KENTON 138.0 kV Ckt 1**	**EKPC:** **2021 Baseline Upgrade B2827: Upgrade Spurlock-KU Kenton 138kv series reactor from 1200A at 5% impedance to 1600A at 6.5% impedance.**			

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<table>
<tr>
<td>101987093</td>
<td>15</td>
<td>4SPURLOCK 138.0 kV - 4SPUR-KENT-R 138.0 kV Ckt 1</td>
<td>
Project Type : FAC
Cost : $ 0
Time Estimate : 0 Months

AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

<u>EKPC</u>
N6041: Planned under B2827, will increase the reactor to 7.5% impedance.
Project Type : FAC
Cost : $ 0
Time Estimate : 0 Months

N6041 is needed for a prior queue cycle. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

<u>EKPC</u>
N7617: Increase the maximum operating temperature of the 795 MCM ACSR conductor in the Spurlock-Kenton 138 kV line section to 275 degrees F (4.4 miles). New expected SE rating to be 316 MVA on line.
Project Type : FAC
Cost : $ 400,000
Time Estimate : 8 Months

The cost allocation is as follows:

<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($400 K)</th></tr>
<tr><td>AF2-111</td><td>28.9</td><td>50.66%</td><td>202.632</td></tr>
<tr><td>AF2-348</td><td>28.1</td><td>49.34%</td><td>197.368</td></tr>
</table>

<u>EKPC</u>
</td>
<td>$0
+
$400,000
+
$5,030,000</td>
<td>$0
+
$0
+
$197,368
+
$2,481,000</td>
<td>B2827
N6041
N7617
N7617.1</td>
</tr>
</table>

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<table>
<tr><th>ID</th><th>Idx</th><th>Facility</th><th>Upgrade Description</th><th>Cost</th><th>Cost Allocated to AF2-348</th><th>Upgrade Number</th></tr>
<tr><td></td><td></td><td></td><td>
N7617.1: Replace the 795 MCM ACSR line conductor in the Spurlock-Kenton 138 kV line with 954 MCM ACSS conductor (4.4 miles). SN/SE 240/320 MVA. EKPC end SN/SE 436/450 MVA.
Project Type : FAC
Cost : $ 5,030,000
Time Estimate : 25 Months

The cost allocation is as follows:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($5.03 M)</th></tr>
<tr><td>AF2-111</td><td>28.9</td><td>50.68%</td><td>2.549</td></tr>
<tr><td>AF2-348</td><td>28.1</td><td>49.32%</td><td>2.481</td></tr>
</table>
<u>LG&E:</u>
The LG&E-end SE rating on the 4SPUR-KENT-R-4KENTON 138 kV line is 306 MVA. LG&E will need to evaluate their end of the line with an affected system study.
</td><td></td><td></td><td></td></tr>
<tr><td>100289058</td><td>12</td><td>4AVON-R 138.0 kV - 4LOUDON AVE 138.0 kV Ckt 1</td><td>
<u>EKPC end:</u>
The EKPC end SE rating is 281 MVA. No EKPC upgrade required.

<u>LG&E end:</u>
Impacts to be determined in Facilities Study. An LG&E affected system study will be required.
</td><td>TBD</td><td>TBD</td><td>TBD</td></tr>
</table>

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<table>
<tr>
<td>95922783</td>
<td>6</td>
<td>05WLDCAT 138.0 kV - 05HILLSB 138.0 kV Ckt 1</td>
<td>
<u>AEP</u>
N5472: A sag check will be required for the ACSR ~ 477 ~ 26/7 ~ HAWK - Conductor Section 1 to determine if the line section can be operated above its emergency rating of 185 MVA. The sag study results show that a distribution circuit crossing underneath structures 37-58 and 37-59 will need to be relocated to allow the line to be operated at its MOT. An approximate time for the sag study is 6 to 12 months after signing an interconnection agreement. The new expected SE rating following the sag study will be 256 MVA SE.
Project Type : FAC
Cost : $ 186,000
Time Estimate : 6-12 Months

This constraint, and N5472, is driven by a prior queue cycle. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

<u>AEP</u>
N5857: Rebuild / reconductor 10 miles of ACSR ~ 477 ~ 26/7 ~ HAWK- Conductor Section 1. New Ratings: Rate A: 383 MVA Rate B: 449 MVA
Project Type : FAC
Cost : $ 15,040,000
Time Estimate : 24-36 Months

The cost allocation is as follows:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($15.04 M)</th></tr>
<tr><td>AE1-144</td><td>11.6</td><td>10.548</td><td>1.586</td></tr>
<tr><td>AE2-038</td><td>7.8</td><td>7.032</td><td>1.058</td></tr>
<tr><td>AE2-138</td><td>14.4</td><td>13.068</td><td>1.965</td></tr>
<tr><td>AF1-233</td><td>20.6</td><td>18.668</td><td>2.808</td></tr>
<tr><td>AF1-251</td><td>12.1</td><td>10.965</td><td>1.649</td></tr>
<tr><td>AF1-256</td><td>7.3</td><td>6.633</td><td>0.998</td></tr>
<tr><td>AF2-111</td><td>18.4</td><td>16.674</td><td>2.508</td></tr>
<tr><td>AF2-348</td><td>18.1</td><td>16.411</td><td>2.468</td></tr>
</table>
</td>
<td>$186,000
+
$15,040,000</td>
<td>$0
+
$2,468,000</td>
<td>N5472
N5857</td>
</tr>
</table>

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<table>
<tr><th>ID</th><th>Idx</th><th>Facility</th><th>Upgrade Description</th><th>Cost</th><th>Cost Allocated to AF2-348</th><th>Upgrade Number</th></tr>
<tr><td>100774680</td><td>9</td><td>08MTZION 138.0 kV - 08BUFTN1 138.0 kV Ckt 1</td><td>
<u>DEOK</u>
N8066: Rebuild the line & replace meter at Buffington. New expected ratings to be 309/349 MVA SN/SE.
Project Type : FAC
Cost : $ 5,264,470
Time Estimate : 30 Months

The cost allocation is as follows:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($5.264 M)</th></tr>
<tr><td>AF2-111</td><td>26.64</td><td>45.88%</td><td>2.416</td></tr>
<tr><td>AF2-307</td><td>5.09</td><td>8.77%</td><td>0.462</td></tr>
<tr><td>AF2-348</td><td>26.3</td><td>45.35%</td><td>2.387</td></tr>
</table>

N8066.1: Replace two switches at Mt. Zion. New expected ratings to be 394/394 MVA SN/SE.
Project Type : FAC
Cost : $ 360,956
Time Estimate : 30 Months

<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($0.360956 M)</th></tr>
<tr><td>AF2-111</td><td>26.6</td><td>45.91%</td><td>0.166</td></tr>
<tr><td>AF2-307</td><td>5.1</td><td>8.77%</td><td>0.032</td></tr>
<tr><td>AF2-348</td><td>26.3</td><td>45.32%</td><td>0.164</td></tr>
</table>
</td><td>$5,264,470 + $360,956</td><td>$2,387,000 + $164,000</td><td>N8066 N8066.1</td></tr>
<tr><td>95922819</td><td>5</td><td>05SARDINIA 138.0 kV - 05EMERSS 138.0 kV Ckt 1</td><td rowspan="2"><u>AEP</u>
N6461: Perform sag study on AEP's portion of Wildcat-Kenton 138kV circuit, 23.5 miles 477 ACSR 26/7 Hawk conductor. Total rebuild, if needed, cost estimate is $35.25 M. New AEP-end ratings are 185/257 SN/SE.
Project Type : FAC</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>95922827</td><td>7</td><td>05EMERSS 138.0 kV - 05WLDCAT 138.0 kV Ckt 1</td></tr>
</table>

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95490932	11	**4KENTON 138.0 kV - 05SARDINIA 138.0 kV Ckt 1**	**Cost : $ 94,000** **Time Estimate : 12 Months** A prior queue cycle is driving the need for N6461. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study. **AEP** **N6461.1: Rebuild the 0.1 miles of ACSR~477~ 26/7 ~ HAWK conductor on the Sardinia – Emerald Switch line. The next new rating is 284MVA SE.** **Project Type : FAC** **Cost : $ 150,000** **Time Estimate : 9 Months** **This AF2-348 is the driver for this project.**	$94,000 + $150,000	$0 + $150,000	N6461 N6461.1

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<table>
<tr><th>ID</th><th>Idx</th><th>Facility</th><th>Upgrade Description</th><th>Cost</th><th>Cost Allocated to AF2-348</th><th>Upgrade Number</th></tr>
<tr><td>98896742</td><td>17</td><td>AE2-221 TAP 345.0 kV - 09CLINTO 345.0 kV Ckt 1</td><td>
<u>Dayton</u>
N6775: Replace Clinton 2000A wave trap with 3000A. New SN/SE rating to be 1263/1390 MVA.
Project Type : FAC
Cost : $ 100,000
Time Estimate : 12 Months

This constraint, and N6775, is driven by a prior queue cycle. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

<u>Dayton</u>
N6775.1: Reconductor AE2-221 Tap to Clinton line with twin bundle 1351 ACSR. New Ratings: 1339 MVA SN, 1556 MVA SE
Project Type : FAC
Cost : $ 15,000,000
Time Estimate : 18 Months

The cost allocation is as follows:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost ($15M)</th></tr>
<tr><td>AF1-111</td><td>26.79</td><td>50.48%</td><td>$7.572</td></tr>
<tr><td>AF2-348</td><td>26.28</td><td>49.52%</td><td>$7.428</td></tr>
</table>
</td><td>$100,000
+
$15,000,000</td><td>$0
+
$7,428,000</td><td>N6775
N6775.1</td></tr>
</table>

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ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-348	Upgrade Number
161284971,161285242,101985738	1	**4AVON 138.0 kV - 4PARIS T 138.0 kV Ckt 1**	**<u>EKPC</u>** **N6783: Increase the maximum operating temperature of the 636 MCM ACSR conductor in the Avon-Paris Tap 138 kV line section to 293 degrees F (6.9 miles). New expected SE rating 280 MVA** **Project Type : FAC** **Cost : $ 625,000** **Time Estimate : 8 Months** A prior queue cycle is driving the need for N6783. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.	$625,000	$0	N6783
95490305,95490306	4	**05BEATTY 345.0 kV - 05COLE 345.0 kV Ckt 1**	**<u>AEP</u>** **N6769.1: Upgrade/Replace Three 345kV 1600A switches at Beatty station. New expected SE rating is 1409 MVA** **Project Type : FAC** **Cost : $ 1,500,000** **Time Estimate : 12-18 Months** A prior queue cycle is driving the need for N6769.1. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.	$1,500,000	$0	N6769.1

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<table>
<tr>
<td>100774679</td>
<td>8</td>
<td>08LONGBR 138.0 kV - 08MTZION 138.0 kV Ckt 1</td>
<td>

EKPC
N6460.1: Increase the EKPC-owned 3.7 miles of conductor MOT to 275 degrees F. New expected EKPC ratings to be 297/344 MVA SN/SE.
Project Type : FAC
Cost : $ 400,000
Time Estimate : 22 Months

A prior queue cycle is driving the need for N6460.1. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

DEOK
N6460.2: Rebuild the Duke owned portion of the line & Replace switch at Mt. Zion. New expected DEOK ratings to be 480.0/480.0/480.0
Project Type : FAC
Cost : $ 3,228,008
Time Estimate : 30 Months

The cost allocation is as follows:

<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($3.228M)</th></tr>
<tr><td>AF2-111</td><td>26.64</td><td>50.29%</td><td>1.623</td></tr>
<tr><td>AF2-348</td><td>26.3</td><td>49.71%</td><td>1.605</td></tr>
</table>

EKPC
N6460.3: Rebuild the EKPC portion of the Longbranch-Mt. Zion 138 kV line section using 954 MCM ACSS conductor (3.7 miles). Ratings : 310.0/364.0/383.0
Project Type : FAC
Cost : $ 4,360,000
Time Estimate : 22 Months

The cost allocation is as follows:

<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($4.360 M)</th></tr>
<tr><td>AF2-111</td><td>26.64</td><td>38.93%</td><td>1.697</td></tr>
<tr><td>AF2-348</td><td>26.3</td><td>38.48%</td><td>1.678</td></tr>
</table>

</td>
<td>$400,000
+
$3,228,008
+
$4,360,000</td>
<td>$0
+
$1,605,000
+
$1,678,000</td>
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N6460.2
N6460.3</td>
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<tr>
<td>98896051,98896050,98896267,98896268,98895933,98896711</td>
<td>16</td>
<td>7SPURLOCK 345.0 kV - 09STUART 345.0 kV Ckt 1</td>
<td>

EKPC

N5780: Reconductor Stuart-Spurlock line with twin bundle 1033 Curlew ACCR conductor. New Expected Ratings: Rate A: 1339 MVA Rate B: 1556 MVA

Project Type : FAC

Cost : $ 17,100,000

Time Estimate : 18 Months

The cost allocation table is below:

<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost ($17.1M)</th></tr>
<tr><td>AE1-144</td><td>48.19</td><td>6.38%</td><td>$1,090,878</td></tr>
<tr><td>AE2-038</td><td>32.12</td><td>4.25%</td><td>$727,101</td></tr>
<tr><td>AE2-138</td><td>84.73</td><td>11.22%</td><td>$1,918,034</td></tr>
<tr><td>AE2-210</td><td>29.33</td><td>3.88%</td><td>$663,944</td></tr>
<tr><td>AE2-275</td><td>21.24</td><td>2.81%</td><td>$480,810</td></tr>
<tr><td>AE2-308</td><td>35.33</td><td>4.68%</td><td>$799,766</td></tr>
<tr><td>AF1-127</td><td>25.84</td><td>3.42%</td><td>$584,940</td></tr>
<tr><td>AF1-233</td><td>94.25</td><td>12.48%</td><td>$2,133,539</td></tr>
<tr><td>AF1-251</td><td>72.21</td><td>9.56%</td><td>$1,634,619</td></tr>
<tr><td>AF1-256</td><td>33.74</td><td>4.47%</td><td>$763,773</td></tr>
<tr><td>AF2-111</td><td>121.05</td><td>16.02%</td><td>$2,740,210</td></tr>
<tr><td>AF2-260</td><td>7.59</td><td>1.00%</td><td>$171,815</td></tr>
<tr><td>AF2-306</td><td>7.05</td><td>0.93%</td><td>$159,591</td></tr>
<tr><td>AF2-307</td><td>17.92</td><td>2.37%</td><td>$405,655</td></tr>
<tr><td>AF2-309</td><td>6.25</td><td>0.83%</td><td>$141,481</td></tr>
<tr><td>AF2-348</td><td>118.56</td><td>15.69%</td><td>$2,683,844</td></tr>
</table>

EKPC

N5780.1: Replace Stuart substation riser conductor with 2500AAC (parallel). New Expected Ratings: Rate A: 1561 MVA Rate B: 1800 MVA

Project Type : FAC

Cost : $ 100,000

Time Estimate : 12 Months

A prior queue cycle is driving the need for N5780.1. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

DAYTON

</td>
<td>$17,000,000
+
$100,000
+
$250,000
+
$150,000
+
$170,000
+
$30,000,000</td>
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+
$0
+
$0
+
$0
+
$0
+
$11,055,000</td>
<td>N5780
N5780.1
N5780.2
B2879.2
N5780.3
N5780.4
N5780.5</td>
</tr>
</table>

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			N5780.2: Reconductor Stuart substation conductor with twin bundle 1033 Curlew ACCR conductor. New ratings 1852/2062 MVA. **Project Type : FAC** **Cost : $ 250,000** **Time Estimate : 12 Months** A prior queue cycle is driving the need for N5780.2. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study. **EKPC:** **B2879.2: Reconductor EKPC's portion of the Spurlock-Stuart 345kV line with 954 ACSS. EKPC end ratings are S/N: 1792 MVA, S/E: 1792 MVA.** **Project Type : FAC** **Cost : $ 0** **Time Estimate : 0 Months** A prior queue cycle is driving the need for B2879.2. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study. **EKPC** **N5780.3: Replace the 1500A interconnection metering CTs with 2000A equipment. New expected ratings to be 1821/1877 MVA SN/SE.** **Project Type : FAC** **Cost : $ 150,000** **Time Estimate : 9 Months** A prior queue cycle is driving the need for N5780.3. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost			

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ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-348	Upgrade Number
			responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study. **EKPC** **N5780.4: Replace the 3000A wave trap with 3600A equipment. New expected ratings to be 1868/1951 MVA SN/SE.** **Project Type : FAC** **Cost : $ 170,000** **Time Estimate : 9 Months** A prior queue cycle is driving the need for N5780.4. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study. **EKPC** **N5780.5: Construct a new 345 kV circuit between the EKPC Spurlock and DP&L Stuart substations (circuit length approximately 8.5 miles)** **Project Type : CON** **Cost : $ 30,000,000** **Time Estimate : 48 Months** The cost allocation table is below:			

Queue	MW contribution	Percentage of Cost	Cost($30M)
AF1-256	33.74	10.49%	$3.146
AF2-090	9.63	2.99%	$0.898
AF2-111	121.03	37.62%	$11.285
AF2-260	7.59	2.36%	$0.708
AF2-306	7.05	2.19%	$0.657
AF2-307	17.9	5.56%	$1.669
AF2-309	6.25	1.94%	$0.583
AF2-348	118.56	36.85%	$11.055

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<table>
<tr>
<td>95490252,95490253</td>
<td>3</td>
<td>05BEATTY 345.0 kV - 05BIXBY 345.0 kV Ckt 1</td>
<td>
<u>AEP</u>
N6741.1: Upgrade/Replace Three 345kV 1600A switches at Beatty station. New expected SE rating to be 1409 MVA
Project Type : FAC
Cost : $ 1,500,000
Time Estimate : 12-18 Months

A prior queue cycle is driving the need for N6741.1. AF2-348 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-348 could receive cost allocation. Although Queue Project AF2-348 may not presently have cost responsibility for this upgrade, Queue Project AF2-348 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-348 comes into service prior to completion of the upgrade, Queue Project AF2-348 will need an interim study.

<u>AEP</u>
N6741.2: A sag study will be required on the 9.5 miles of ACSR ~ 954 ~ 45/7 ~ Bundled - Conductor Section 1 to mitigate the overload. Depending on the sag study results, the cost for this upgrade is expected to be between $38,000 (no remediation required, just sag study) and $19 million (complete line reconductor/rebuild). New ratings after sag study: S/N:1409 S/E: 1887 (just conductor ratings). 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 : $ 38,000
Time Estimate : 36 Months

<u>AEP</u>
N6741.3: Upgrade/Replace four 345kV 2000A Bixby switches. New expected SE rating to be 1556 MVA.
Project Type : FAC
Cost : $ 1,500,000
Time Estimate : 18 Months

The cost allocation table is below:
<table>
<tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>$ cost ($1.538 M)</th></tr>
<tr><td>AF2-066</td><td>10.5</td><td>8.69%</td><td>0.134</td></tr>
<tr><td>AF2-079</td><td>20.1</td><td>16.64%</td><td>0.256</td></tr>
<tr><td>AF2-111</td><td>27.9</td><td>23.09%</td><td>0.355</td></tr>
<tr><td>AF2-210</td><td>22.4</td><td>18.54%</td><td>0.285</td></tr>
<tr><td>AF2-212</td><td>12.4</td><td>10.26%</td><td>0.158</td></tr>
</table>
</td>
<td>$1,500,000
+
$1,538,000</td>
<td>$0
+
$350,000</td>
<td>N6741.1
N6741.2
N6741.3</td>
</tr>
</table>

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ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-348	Upgrade Number
			AF2-348 | 27.5 | 22.77% | 0.350			
			TOTAL COST	**$160,475,434**	**$37,172,212****	

Note : For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates $0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently $0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

**LG&E Impacts and necessary LG&E system upgrade(s) will be determined once the LG&E affected system study is completed by LG&E.

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9.7 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".

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9.7.1 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
161284971	342541	4AVON	EKPC	342631	4PARIS T	EKPC	1	EKPC_P4-6_SPUR N39-150T-A	breaker	220.0	108.56	121.19	AC	28.42

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
941411	AE2-138 C	22.8614	50/50	22.8614
941412	AE2-138 E	8.4556	50/50	8.4556
941981	AE2-210 C O1	7.8774	50/50	7.8774
941982	AE2-210 E O1	2.9631	50/50	2.9631
942591	AE2-275 C O1	4.5267	Adder	5.33
942592	AE2-275 E O1	1.7027	Adder	2.0
942891	AE2-308 C O1	8.4898	Adder	9.99
942892	AE2-308 E O1	3.0872	Adder	3.63
943111	AE2-339 C	5.0379	50/50	5.0379
943112	AE2-339 E	2.4813	50/50	2.4813
944621	AF1-127 C O1	7.1218	50/50	7.1218
944622	AF1-127 E O1	3.5078	50/50	3.5078
945861	AF1-251 C	16.6795	50/50	16.6795
945862	AF1-251 E	11.1197	50/50	11.1197
958171	AF2-111 C O1	17.0535	50/50	17.0535
958172	AF2-111 E O1	11.3690	50/50	11.3690
960571	AF2-348 C	17.0535	50/50	17.0535
960572	AF2-348 E	11.3690	50/50	11.3690
960641	AF2-355 C O1	8.7612	Adder	10.31
960642	AF2-355 E O1	5.8408	Adder	6.87
WEC	WEC	0.0387	Confirmed LTF	0.0387
LGEE	LGEE	0.6504	Confirmed LTF	0.6504
CPLE	CPLE	0.2606	Confirmed LTF	0.2606
CBM-W2	CBM-W2	4.7420	Confirmed LTF	4.7420
NY	NY	0.0182	Confirmed LTF	0.0182
TVA	TVA	1.3076	Confirmed LTF	1.3076
O-066	O-066	0.1075	Confirmed LTF	0.1075
CBM-S2	CBM-S2	2.9536	Confirmed LTF	2.9536
CBM-S1	CBM-S1	8.2814	Confirmed LTF	8.2814
G-007	G-007	0.0156	Confirmed LTF	0.0156
MADISON	MADISON	2.2962	Confirmed LTF	2.2962
MEC	MEC	0.4799	Confirmed LTF	0.4799
CBM-W1	CBM-W1	1.1759	Confirmed LTF	1.1759

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9.7.2 Index 2

None.

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9.7.3 Index 3

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
95490253	243453	05BEATTY	AEP	243454	05BIXBY	AEP	1	AEP_P4_#10715_05COLE 345_C	breaker	1203.0	115.07	117.07	AC	26.47

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
250164	08BKJDB1	0.1419	Adder	0.17
250165	08BKJDB2	0.1419	Adder	0.17
251827	WILLYESP	0.4550	Adder	0.54
251828	CLNTESP1	0.4616	Adder	0.54
251829	CLNTESP2	0.3077	Adder	0.36
253110	09ADKINS	35.9956	50/50	35.9956
904722	V4-073 E	0.1944	Adder	0.23
913222	Y1-054 E	1.4833	Adder	1.75
918802	AA1-099 E	0.3077	Adder	0.36
925921	AC1-068 C	11.9347	50/50	11.9347
925922	AC1-068 E	5.5812	50/50	5.5812
925931	AC1-069 C	11.9347	50/50	11.9347
925932	AC1-069 E	5.5812	50/50	5.5812
925981	**AC1-074 C O1 (Suspended)**	**3.9565**	**Adder**	**4.65**
925982	**AC1-074 E O1 (Suspended)**	**1.6956**	**Adder**	**1.99**
926011	AC1-078 C O1	11.5401	50/50	11.5401
926012	AC1-078 E O1	19.2335	50/50	19.2335
926061	AC1-085 C	23.1070	50/50	23.1070
926062	AC1-085 E	37.7010	50/50	37.7010
926101	AC1-089 C O1	4.0969	Adder	4.82
926102	AC1-089 E O1	6.6845	Adder	7.86
926791	AC1-165 C	11.7943	50/50	11.7943
926792	AC1-165 E	5.7216	50/50	5.7216
926801	AC1-166 C	11.7943	50/50	11.7943
926802	AC1-166 E	5.7216	50/50	5.7216
930062	AB1-014 E	7.7779	Adder	9.15
932421	AC2-060 C	6.4100	Adder	7.54
932422	AC2-060 E	3.6056	Adder	4.24
932431	AC2-061 C	4.1676	Adder	4.9
932432	AC2-061 E	4.2250	Adder	4.97
932462	AC2-066 E	4.6667	Adder	5.49
932481	AC2-068 C	3.0109	Adder	3.54
932482	AC2-068 E	4.9311	Adder	5.8
932551	**AC2-075 C (Suspended)**	**0.9397**	**Adder**	**1.11**
932552	**AC2-075 E (Suspended)**	**0.4734**	**Adder**	**0.56**
932661	AC2-088 C O1	3.9047	Adder	4.59
932662	AC2-088 E O1	3.2133	Adder	3.78
934491	AD1-073 C	1.3221	Adder	1.56
934492	AD1-073 E	0.6811	Adder	0.8
934561	AD1-081 C	2.3080	50/50	2.3080
934562	AD1-081 E	1.1890	50/50	1.1890
935031	**AD1-136 C (Suspended)**	**0.5491**	**Adder**	**0.65**
935032	**AD1-136 E (Suspended)**	**0.4678**	**Adder**	**0.55**
935041	AD1-140 C O1	11.5859	Adder	13.63
935042	AD1-140 E O1	9.5783	Adder	11.27
936251	AD2-031 C O1	2.3279	Adder	2.74
936252	AD2-031 E O1	3.7981	Adder	4.47
936381	AD2-048 C	3.2554	Adder	3.83
936382	AD2-048 E	1.6242	Adder	1.91
938271	AE1-040 C O1	3.9422	Adder	4.64
938272	AE1-040 E O1	1.9836	Adder	2.33

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
938921	AE1-120	4.4158	Adder	5.2
939141	AE1-144 C O1	6.6841	Adder	7.86
939142	AE1-144 E O1	3.3170	Adder	3.9
940531	AE2-038 C O1	4.4588	Adder	5.25
940532	AE2-038 E O1	2.2086	Adder	2.6
941411	AE2-138 C	13.7227	Adder	16.14
941412	AE2-138 E	5.0755	Adder	5.97
941511	AE2-148 C	176.5959	50/50	176.5959
941512	AE2-148 E	79.8748	50/50	79.8748
941981	AE2-210 C O1	4.7285	Adder	5.56
941982	AE2-210 E O1	1.7786	Adder	2.09
942021	AE2-214 C	61.4052	50/50	61.4052
942022	AE2-214 E	40.9368	50/50	40.9368
942051	AE2-217 C	11.5338	Adder	13.57
942052	AE2-217 E	7.6892	Adder	9.05
942061	AE2-218 C	10.3372	Adder	12.16
942062	AE2-218 E	7.0215	Adder	8.26
942091	AE2-221 C	29.0466	50/50	29.0466
942092	AE2-221 E	19.3644	50/50	19.3644
942521	AE2-267 C O1	2.6252	Adder	3.09
942522	AE2-267 E O1	1.6227	Adder	1.91
942951	AE2-315	2.9481	Adder	3.47
942981	AE2-320 C O1	23.4832	50/50	23.4832
942982	AE2-320 E O1	11.6188	50/50	11.6188
943191	AE2-319 C O1	23.4832	50/50	23.4832
943192	AE2-319 E O1	11.6188	50/50	11.6188
943201	AE2-318 C	6.3912	Adder	7.52
943202	AE2-318 E	3.1195	Adder	3.67
943771	AF1-045	2.9768	Adder	3.5
943773	AF1-045 E	1.9877	Adder	2.34
943943	AF1-062 BAT	20.0340	Merchant Transmission	20.0340
944521	AF1-117 C	50.0274	50/50	50.0274
944522	AF1-117 E	15.4106	50/50	15.4106
944621	AF1-127 C O1	3.8179	Adder	4.49
944622	AF1-127 E O1	1.8805	Adder	2.21
944941	AF1-159	1.3477	Adder	1.59
945631	AF1-228 C	43.6514	50/50	43.6514
945632	AF1-228 E	29.1009	50/50	29.1009
945681	AF1-233 C	12.6794	Adder	14.92
945682	AF1-233 E	6.2639	Adder	7.37
945841	AF1-249 C	1.1723	Adder	1.38
945842	AF1-249 E	0.4957	Adder	0.58
945861	AF1-251 C	9.4764	Adder	11.15
945862	AF1-251 E	6.3176	Adder	7.43
945911	AF1-256 C	4.0592	Adder	4.78
945912	AF1-256 E	2.7061	Adder	3.18
946101	AF1-275	25.5855	50/50	25.5855
946171	AF1-282 C	9.1212	50/50	9.1212
946172	AF1-282 E	6.0808	50/50	6.0808
946181	AF1-283 C	11.8576	50/50	11.8576
946182	AF1-283 E	7.9050	50/50	7.9050
957721	AF2-066 C	5.1873	Adder	6.1
957722	AF2-066 E	3.4582	Adder	4.07
957731	AF2-067 C	2.5531	Adder	3.0
957732	AF2-067 E	1.7020	Adder	2.0
957851	AF2-079 C	9.9011	Adder	11.65
957852	AF2-079 E	6.6007	Adder	7.77
958171	AF2-111 C O1	13.6859	Adder	16.1
958172	AF2-111 E O1	9.1239	Adder	10.73
958291	AF2-123 C	1.6228	Adder	1.91
958292	AF2-123 E	2.2373	Adder	2.63
959073	AF2-198 BAT	2.2689	Merchant Transmission	2.2689
959721	AF2-263 C	4.0404	Adder	4.75
959722	AF2-263 E	2.6936	Adder	3.17
960071	AF2-298 C	3.4869	Adder	4.1
960072	AF2-298 E	2.3324	Adder	2.74

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960571	AF2-348 C	13.4997	Adder	15.88
960572	AF2-348 E	8.9998	Adder	10.59
960801	AF2-371 C	3.3762	Adder	3.97
960802	AF2-371 E	2.2508	Adder	2.65
961491	AF2-440 C	1.8634	Adder	2.19
961492	AF2-440 E	1.8634	Adder	2.19
WEC	WEC	0.7302	Confirmed LTF	0.7302
LGEE	LGEE	3.1303	Confirmed LTF	3.1303
CPLE	CPLE	0.2342	Confirmed LTF	0.2342
CBM-W2	CBM-W2	23.6609	Confirmed LTF	23.6609
NY	NY	0.9025	Confirmed LTF	0.9025
TVA	TVA	3.4482	Confirmed LTF	3.4482
O-066	O-066	10.7251	Confirmed LTF	10.7251
CBM-S2	CBM-S2	4.4622	Confirmed LTF	4.4622
CBM-S1	CBM-S1	25.7645	Confirmed LTF	25.7645
G-007	G-007	1.6546	Confirmed LTF	1.6546
MEC	MEC	4.0011	Confirmed LTF	4.0011
CBM-W1	CBM-W1	23.1685	Confirmed LTF	23.1685

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9.7.4 Index 4

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
95490306	243453	05BEATTY	AEP	244022	05COLE	AEP	1	AEP_P4_#3195_05BEATTY 345_304E	breaker	1203.0	103.59	105.37	AC	23.32

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
247964	Y1-063 BAT	0.3047	Merchant Transmission	0.3047
250164	08BKJDB1	0.1228	Adder	0.14
250165	08BKJDB2	0.1228	Adder	0.14
251827	WILLYESP	0.3883	Adder	0.46
251828	CLNTESP1	0.4062	Adder	0.48
251829	CLNTESP2	0.2708	Adder	0.32
253110	09ADKINS	31.6299	50/50	31.6299
253261	09MON D	0.2568	50/50	0.2568
904722	V4-073 E	0.1615	Adder	0.19
913222	Y1-054 E	1.2723	Adder	1.5
918802	AA1-099 E	0.2708	Adder	0.32
925921	AC1-068 C	10.4982	50/50	10.4982
925922	AC1-068 E	4.9094	50/50	4.9094
925931	AC1-069 C	10.4982	50/50	10.4982
925932	AC1-069 E	4.9094	50/50	4.9094
925981	**AC1-074 C O1 (Suspended)**	**3.4572**	**Adder**	**4.07**
925982	**AC1-074 E O1 (Suspended)**	**1.4817**	**Adder**	**1.74**
926011	AC1-078 C O1	4.7786	Adder	5.62
926012	AC1-078 E O1	7.9643	Adder	9.37
926061	AC1-085 C	20.0655	50/50	20.0655
926062	AC1-085 E	32.7385	50/50	32.7385
926101	AC1-089 C O1	3.6798	Adder	4.33
926102	AC1-089 E O1	6.0038	Adder	7.06
926791	AC1-165 C	10.3747	50/50	10.3747
926792	AC1-165 E	5.0330	50/50	5.0330
926801	AC1-166 C	10.3747	50/50	10.3747
926802	AC1-166 E	5.0330	50/50	5.0330
930062	AB1-014 E	6.7845	Adder	7.98
932421	AC2-060 C	6.1771	Adder	7.27
932422	AC2-060 E	3.4746	Adder	4.09
932431	AC2-061 C	3.7419	Adder	4.4
932432	AC2-061 E	3.7934	Adder	4.46
932462	AC2-066 E	4.0707	Adder	4.79
932481	AC2-068 C	2.4640	Adder	2.9
932482	AC2-068 E	4.0354	Adder	4.75
932551	**AC2-075 C (Suspended)**	**0.8211**	**Adder**	**0.97**
932552	**AC2-075 E (Suspended)**	**0.4136**	**Adder**	**0.49**
932661	AC2-088 C O1	3.4308	Adder	4.04
932662	AC2-088 E O1	2.8233	Adder	3.32
934491	AD1-073 C	1.2740	Adder	1.5
934492	AD1-073 E	0.6563	Adder	0.77
934561	AD1-081 C	0.9557	Adder	1.12
934562	AD1-081 E	0.4923	Adder	0.58
935031	**AD1-136 C (Suspended)**	**0.4825**	**Adder**	**0.57**
935032	**AD1-136 E (Suspended)**	**0.4110**	**Adder**	**0.48**
935041	AD1-140 C O1	8.4247	Adder	9.91
935042	AD1-140 E O1	6.9649	Adder	8.19
936251	AD2-031 C O1	2.3946	50/50	2.3946
936252	AD2-031 E O1	3.9069	50/50	3.9069
936381	AD2-048 C	2.8481	Adder	3.35
936382	AD2-048 E	1.4210	Adder	1.67

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
938271	AE1-040 C O1	4.3191	50/50	4.3191
938272	AE1-040 E O1	2.1732	50/50	2.1732
938921	AE1-120	3.8518	Adder	4.53
939141	AE1-144 C O1	5.9022	Adder	6.94
939142	AE1-144 E O1	2.9290	Adder	3.45
940531	AE2-038 C O1	3.9372	Adder	4.63
940532	AE2-038 E O1	1.9502	Adder	2.29
941411	AE2-138 C	12.0175	Adder	14.14
941412	AE2-138 E	4.4448	Adder	5.23
941511	AE2-148 C	154.5696	50/50	154.5696
941512	AE2-148 E	69.9123	50/50	69.9123
941981	AE2-210 C O1	4.1409	Adder	4.87
941982	AE2-210 E O1	1.5576	Adder	1.83
942061	AE2-218 C	8.0171	Adder	9.43
942062	AE2-218 E	5.4456	Adder	6.41
942091	AE2-221 C	24.9948	50/50	24.9948
942092	AE2-221 E	16.6632	50/50	16.6632
942521	AE2-267 C O1	2.2386	Adder	2.63
942522	AE2-267 E O1	1.3837	Adder	1.63
942951	AE2-315	2.4491	Adder	2.88
942981	AE2-320 C O1	20.6567	50/50	20.6567
942982	AE2-320 E O1	10.2203	50/50	10.2203
943111	AE2-339 C	1.5550	Adder	1.83
943112	AE2-339 E	0.7659	Adder	0.9
943191	AE2-319 C O1	20.6567	50/50	20.6567
943192	AE2-319 E O1	10.2203	50/50	10.2203
943201	AE2-318 C	5.5532	Adder	6.53
943202	AE2-318 E	2.7105	Adder	3.19
943771	AF1-045	2.5865	Adder	3.04
943773	AF1-045 E	1.7271	Adder	2.03
944521	AF1-117 C	44.0230	50/50	44.0230
944522	AF1-117 E	13.5610	50/50	13.5610
944621	AF1-127 C O1	3.3418	Adder	3.93
944622	AF1-127 E O1	1.6460	Adder	1.94
944941	AF1-159	1.3863	50/50	1.3863
945631	AF1-228 C	38.2556	50/50	38.2556
945632	AF1-228 E	25.5037	50/50	25.5037
945681	AF1-233 C	11.1983	Adder	13.17
945682	AF1-233 E	5.5322	Adder	6.51
945841	AF1-249 C	1.0050	Adder	1.18
945842	AF1-249 E	0.4250	Adder	0.5
945861	AF1-251 C	8.2972	Adder	9.76
945862	AF1-251 E	5.5315	Adder	6.51
945911	AF1-256 C	3.5851	Adder	4.22
945912	AF1-256 E	2.3901	Adder	2.81
946102	AF1-275 BAT	18.6520	50/50	18.6520
946171	AF1-282 C	7.9206	50/50	7.9206
946172	AF1-282 E	5.2804	50/50	5.2804
946181	AF1-283 C	10.2968	50/50	10.2968
946182	AF1-283 E	6.8645	50/50	6.8645
957721	AF2-066 C	4.1893	Adder	4.93
957722	AF2-066 E	2.7929	Adder	3.29
957731	AF2-067 C	2.0557	Adder	2.42
957732	AF2-067 E	1.3705	Adder	1.61
957851	AF2-079 C	7.8403	Adder	9.22
957852	AF2-079 E	5.2268	Adder	6.15
958171	AF2-111 C O1	12.0602	Adder	14.19
958172	AF2-111 E O1	8.0402	Adder	9.46
960071	AF2-298 C	2.8582	Adder	3.36
960072	AF2-298 E	1.9118	Adder	2.25
960151	AF2-306	1.4292	Adder	1.68
960161	AF2-307 C	2.1768	Adder	2.56
960162	AF2-307 E	1.4512	Adder	1.71
960571	AF2-348 C	11.8919	Adder	13.99
960572	AF2-348 E	7.9279	Adder	9.33
961491	AF2-440 C	1.6635	Adder	1.96

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
961492	AF2-440 E	1.6635	Adder	1.96
WEC	WEC	0.4271	Confirmed LTF	0.4271
LGEE	LGEE	2.6369	Confirmed LTF	2.6369
CPLE	CPLE	0.2798	Confirmed LTF	0.2798
CBM-W2	CBM-W2	18.2309	Confirmed LTF	18.2309
NY	NY	0.6857	Confirmed LTF	0.6857
TVA	TVA	2.8476	Confirmed LTF	2.8476
O-066	O-066	8.1379	Confirmed LTF	8.1379
CBM-S2	CBM-S2	4.3928	Confirmed LTF	4.3928
CBM-S1	CBM-S1	21.4193	Confirmed LTF	21.4193
G-007	G-007	1.2542	Confirmed LTF	1.2542
MEC	MEC	2.6632	Confirmed LTF	2.6632
CBM-W1	CBM-W1	12.4349	Confirmed LTF	12.4349

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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
95922819	246800	05SARDINIA	AEP	247034	05EMERSS	AEP	1	DAY_P734541 34553	tower	185.0	131.31	139.63	AC	18.11

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
251831	Z1-080 BAT	0.5183	Merchant Transmission	0.5183
918803	AA1-099 BAT	0.3455	Merchant Transmission	0.3455
925981	**AC1-074 C O1 (Suspended)**	**2.6694**	**Adder**	**3.14**
925982	**AC1-074 E O1 (Suspended)**	**1.1440**	**Adder**	**1.35**
932551	**AC2-075 C (Suspended)**	**0.6340**	**Adder**	**0.75**
932552	**AC2-075 E (Suspended)**	**0.3194**	**Adder**	**0.38**
936381	AD2-048 C	3.0986	Adder	3.65
936382	AD2-048 E	1.5460	Adder	1.82
939141	AE1-144 C O1	6.3828	Adder	7.51
939142	AE1-144 E O1	3.1675	Adder	3.73
940531	AE2-038 C O1	4.2578	Adder	5.01
940532	AE2-038 E O1	2.1090	Adder	2.48
941411	AE2-138 C	8.9474	Adder	10.53
941412	AE2-138 E	3.3093	Adder	3.89
941981	AE2-210 C O1	3.0830	Adder	3.63
941982	AE2-210 E O1	1.1597	Adder	1.36
943111	AE2-339 C	1.1515	Adder	1.35
943112	AE2-339 E	0.5672	Adder	0.67
944621	AF1-127 C O1	2.4853	Adder	2.92
944622	AF1-127 E O1	1.2241	Adder	1.44
945681	AF1-233 C	11.7244	Adder	13.79
945682	AF1-233 E	5.7922	Adder	6.81
945861	AF1-251 C	6.1744	Adder	7.26
945862	AF1-251 E	4.1162	Adder	4.84
945911	AF1-256 C	3.7328	Adder	4.39
945912	AF1-256 E	2.4885	Adder	2.93
958171	AF2-111 C O1	9.3865	Adder	11.04
958172	AF2-111 E O1	6.2577	Adder	7.36
960151	AF2-306	1.4193	Adder	1.67
960161	AF2-307 C	2.1616	Adder	2.54
960162	AF2-307 E	1.4411	Adder	1.7
960571	AF2-348 C	9.2336	Adder	10.86
960572	AF2-348 E	6.1557	Adder	7.24
WEC	WEC	0.0633	Confirmed LTF	0.0633
LGEE	LGEE	0.9254	Confirmed LTF	0.9254
CPLE	CPLE	0.1416	Confirmed LTF	0.1416
CBM-W2	CBM-W2	4.5209	Confirmed LTF	4.5209
NY	NY	0.0769	Confirmed LTF	0.0769
TVA	TVA	1.0178	Confirmed LTF	1.0178
O-066	O-066	0.8669	Confirmed LTF	0.8669
CBM-S2	CBM-S2	1.8207	Confirmed LTF	1.8207
CBM-S1	CBM-S1	7.6084	Confirmed LTF	7.6084
G-007	G-007	0.1331	Confirmed LTF	0.1331
MADISON	MADISON	1.9233	Confirmed LTF	1.9233
MEC	MEC	0.5323	Confirmed LTF	0.5323
CBM-W1	CBM-W1	1.8765	Confirmed LTF	1.8765

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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
95922783	246946	05WLDCAT	AEP	243019	05HILLSB	AEP	1	DAY_P734541 34553	tower	185.0	183.18	191.5	AC	18.11

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
251831	Z1-080 BAT	0.5183	Merchant Transmission	0.5183
918803	AA1-099 BAT	0.3455	Merchant Transmission	0.3455
925981	**AC1-074 C O1 (Suspended)**	**2.6694**	**Adder**	**3.14**
925982	**AC1-074 E O1 (Suspended)**	**1.1440**	**Adder**	**1.35**
926101	AC1-089 C O1	40.2728	50/50	40.2728
926102	AC1-089 E O1	65.7082	50/50	65.7082
932551	**AC2-075 C (Suspended)**	**0.6340**	**Adder**	**0.75**
932552	**AC2-075 E (Suspended)**	**0.3194**	**Adder**	**0.38**
936381	AD2-048 C	3.0986	Adder	3.65
936382	AD2-048 E	1.5460	Adder	1.82
939141	AE1-144 C O1	6.3828	Adder	7.51
939142	AE1-144 E O1	3.1675	Adder	3.73
940531	AE2-038 C O1	4.2578	Adder	5.01
940532	AE2-038 E O1	2.1090	Adder	2.48
941411	AE2-138 C	8.9474	Adder	10.53
941412	AE2-138 E	3.3093	Adder	3.89
941981	AE2-210 C O1	3.0830	Adder	3.63
941982	AE2-210 E O1	1.1597	Adder	1.36
943111	AE2-339 C	1.1515	Adder	1.35
943112	AE2-339 E	0.5672	Adder	0.67
944621	AF1-127 C O1	2.4853	Adder	2.92
944622	AF1-127 E O1	1.2241	Adder	1.44
945681	AF1-233 C	11.7244	Adder	13.79
945682	AF1-233 E	5.7922	Adder	6.81
945861	AF1-251 C	6.1744	Adder	7.26
945862	AF1-251 E	4.1162	Adder	4.84
945911	AF1-256 C	3.7328	Adder	4.39
945912	AF1-256 E	2.4885	Adder	2.93
958171	AF2-111 C O1	9.3865	Adder	11.04
958172	AF2-111 E O1	6.2577	Adder	7.36
960151	AF2-306	1.4193	Adder	1.67
960161	AF2-307 C	2.1616	Adder	2.54
960162	AF2-307 E	1.4411	Adder	1.7
960571	AF2-348 C	9.2336	Adder	10.86
960572	AF2-348 E	6.1557	Adder	7.24
WEC	WEC	0.0633	Confirmed LTF	0.0633
LGEE	LGEE	0.9254	Confirmed LTF	0.9254
CPLE	CPLE	0.1416	Confirmed LTF	0.1416
CBM-W2	CBM-W2	4.5209	Confirmed LTF	4.5209
NY	NY	0.0769	Confirmed LTF	0.0769
TVA	TVA	1.0178	Confirmed LTF	1.0178
O-066	O-066	0.8669	Confirmed LTF	0.8669
CBM-S2	CBM-S2	1.8207	Confirmed LTF	1.8207
CBM-S1	CBM-S1	7.6084	Confirmed LTF	7.6084
G-007	G-007	0.1331	Confirmed LTF	0.1331
MADISON	MADISON	1.9233	Confirmed LTF	1.9233
MEC	MEC	0.5323	Confirmed LTF	0.5323
CBM-W1	CBM-W1	1.8765	Confirmed LTF	1.8765

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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
95922827	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DAY_P734541 34553	tower	185.0	130.16	138.48	AC	18.11

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
251831	Z1-080 BAT	0.5183	Merchant Transmission	0.5183
918803	AA1-099 BAT	0.3455	Merchant Transmission	0.3455
925981	**AC1-074 C O1 (Suspended)**	**2.6694**	**Adder**	**3.14**
925982	**AC1-074 E O1 (Suspended)**	**1.1440**	**Adder**	**1.35**
932551	**AC2-075 C (Suspended)**	**0.6340**	**Adder**	**0.75**
932552	**AC2-075 E (Suspended)**	**0.3194**	**Adder**	**0.38**
936381	AD2-048 C	3.0986	Adder	3.65
936382	AD2-048 E	1.5460	Adder	1.82
939141	AE1-144 C O1	6.3828	Adder	7.51
939142	AE1-144 E O1	3.1675	Adder	3.73
940531	AE2-038 C O1	4.2578	Adder	5.01
940532	AE2-038 E O1	2.1090	Adder	2.48
941411	AE2-138 C	8.9474	Adder	10.53
941412	AE2-138 E	3.3093	Adder	3.89
941981	AE2-210 C O1	3.0830	Adder	3.63
941982	AE2-210 E O1	1.1597	Adder	1.36
943111	AE2-339 C	1.1515	Adder	1.35
943112	AE2-339 E	0.5672	Adder	0.67
944621	AF1-127 C O1	2.4853	Adder	2.92
944622	AF1-127 E O1	1.2241	Adder	1.44
945681	AF1-233 C	11.7244	Adder	13.79
945682	AF1-233 E	5.7922	Adder	6.81
945861	AF1-251 C	6.1744	Adder	7.26
945862	AF1-251 E	4.1162	Adder	4.84
945911	AF1-256 C	3.7328	Adder	4.39
945912	AF1-256 E	2.4885	Adder	2.93
958171	AF2-111 C O1	9.3865	Adder	11.04
958172	AF2-111 E O1	6.2577	Adder	7.36
960151	AF2-306	1.4193	Adder	1.67
960161	AF2-307 C	2.1616	Adder	2.54
960162	AF2-307 E	1.4411	Adder	1.7
960571	AF2-348 C	9.2336	Adder	10.86
960572	AF2-348 E	6.1557	Adder	7.24
WEC	WEC	0.0633	Confirmed LTF	0.0633
LGEE	LGEE	0.9254	Confirmed LTF	0.9254
CPLE	CPLE	0.1416	Confirmed LTF	0.1416
CBM-W2	CBM-W2	4.5209	Confirmed LTF	4.5209
NY	NY	0.0769	Confirmed LTF	0.0769
TVA	TVA	1.0178	Confirmed LTF	1.0178
O-066	O-066	0.8669	Confirmed LTF	0.8669
CBM-S2	CBM-S2	1.8207	Confirmed LTF	1.8207
CBM-S1	CBM-S1	7.6084	Confirmed LTF	7.6084
G-007	G-007	0.1331	Confirmed LTF	0.1331
MADISON	MADISON	1.9233	Confirmed LTF	1.9233
MEC	MEC	0.5323	Confirmed LTF	0.5323
CBM-W1	CBM-W1	1.8765	Confirmed LTF	1.8765

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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
100774679	250054	08LONGBR	DEO&K	250077	08MTZION	DEO&K	1	DAY_P734541 34553	tower	284.0	132.07	140.62	AC	26.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342957	1SPURLK1G	6.4392	50/50	6.4392
342960	1SPURLK2G	10.1120	50/50	10.1120
342963	1SPURLK3G	5.3137	50/50	5.3137
342966	1SPURLK4G	5.3137	50/50	5.3137
925981	**AC1-074 C O1 (Suspended)**	**9.2602**	**50/50**	**9.2602**
925982	**AC1-074 E O1 (Suspended)**	**3.9686**	**50/50**	**3.9686**
932551	**AC2-075 C (Suspended)**	**2.1993**	**50/50**	**2.1993**
932552	**AC2-075 E (Suspended)**	**1.1079**	**50/50**	**1.1079**
936381	AD2-048 C	6.0766	50/50	6.0766
936382	AD2-048 E	3.0318	50/50	3.0318
936571	**AD2-072 C O1 (Suspended)**	**2.9503**	**Adder**	**3.47**
936572	**AD2-072 E O1 (Suspended)**	**1.4466**	**Adder**	**1.7**
939141	AE1-144 C O1	8.7955	50/50	8.7955
939142	AE1-144 E O1	4.3649	50/50	4.3649
940531	AE2-038 C O1	5.8673	50/50	5.8673
940532	AE2-038 E O1	2.9063	50/50	2.9063
941411	AE2-138 C	14.2454	Adder	16.76
941412	AE2-138 E	5.2689	Adder	6.2
941981	AE2-210 C O1	4.9086	Adder	5.77
941982	AE2-210 E O1	1.8464	Adder	2.17
942411	AE2-254 C O1	1.4112	Adder	1.66
942412	AE2-254 E O1	0.9408	Adder	1.11
942591	AE2-275 C O1	4.0292	Adder	4.74
942592	AE2-275 E O1	1.5156	Adder	1.78
942891	AE2-308 C O1	6.9321	Adder	8.16
942892	AE2-308 E O1	2.5208	Adder	2.97
943111	AE2-339 C	2.1017	Adder	2.47
943112	AE2-339 E	1.0352	Adder	1.22
944621	AF1-127 C O1	4.0562	Adder	4.77
944622	AF1-127 E O1	1.9978	Adder	2.35
945681	AF1-233 C	16.6082	50/50	16.6082
945682	AF1-233 E	8.2048	50/50	8.2048
945861	AF1-251 C	9.9454	Adder	11.7
945862	AF1-251 E	6.6303	Adder	7.8
945911	AF1-256 C	5.3208	50/50	5.3208
945912	AF1-256 E	3.5472	50/50	3.5472
958171	AF2-111 C O1	15.9870	50/50	15.9870
958172	AF2-111 E O1	10.6580	50/50	10.6580
960151	AF2-306	1.7039	Adder	2.0
960161	AF2-307 C	2.5952	Adder	3.05
960162	AF2-307 E	1.7301	Adder	2.04
960571	AF2-348 C	15.7965	50/50	15.7965
960572	AF2-348 E	10.5310	50/50	10.5310
960641	AF2-355 C O1	7.8845	Adder	9.28
960642	AF2-355 E O1	5.2563	Adder	6.18
WEC	WEC	0.0369	Confirmed LTF	0.0369
LGEE	LGEE	1.7104	Confirmed LTF	1.7104
CPLE	CPLE	0.2844	Confirmed LTF	0.2844

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	6.3227	Confirmed LTF	6.3227
NY	NY	0.0653	Confirmed LTF	0.0653
TVA	TVA	1.6254	Confirmed LTF	1.6254
O-066	O-066	0.6317	Confirmed LTF	0.6317
CBM-S2	CBM-S2	3.3524	Confirmed LTF	3.3524
CBM-S1	CBM-S1	12.7970	Confirmed LTF	12.7970
G-007	G-007	0.0957	Confirmed LTF	0.0957
MADISON	MADISON	3.7760	Confirmed LTF	3.7760
MEC	MEC	0.5784	Confirmed LTF	0.5784
CBM-W1	CBM-W1	0.8632	Confirmed LTF	0.8632

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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
100774680	250077	08MTZION	DEO&K	249991	08BUFTN1	DEO&K	1	DAY_P734541 34553	tower	298.0	121.71	129.86	AC	26.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342957	1SPURLK1G	6.4392	50/50	6.4392
342960	1SPURLK2G	10.1120	50/50	10.1120
342963	1SPURLK3G	5.3137	50/50	5.3137
342966	1SPURLK4G	5.3137	50/50	5.3137
925981	**AC1-074 C O1 (Suspended)**	**9.2602**	**50/50**	**9.2602**
925982	**AC1-074 E O1 (Suspended)**	**3.9686**	**50/50**	**3.9686**
932551	**AC2-075 C (Suspended)**	**2.1993**	**50/50**	**2.1993**
932552	**AC2-075 E (Suspended)**	**1.1079**	**50/50**	**1.1079**
936381	AD2-048 C	6.0766	50/50	6.0766
936382	AD2-048 E	3.0318	50/50	3.0318
936571	**AD2-072 C O1 (Suspended)**	**2.9503**	**Adder**	**3.47**
936572	**AD2-072 E O1 (Suspended)**	**1.4466**	**Adder**	**1.7**
939141	AE1-144 C O1	8.7955	50/50	8.7955
939142	AE1-144 E O1	4.3649	50/50	4.3649
940531	AE2-038 C O1	5.8673	50/50	5.8673
940532	AE2-038 E O1	2.9063	50/50	2.9063
941411	AE2-138 C	14.2454	Adder	16.76
941412	AE2-138 E	5.2689	Adder	6.2
941981	AE2-210 C O1	4.9086	Adder	5.77
941982	AE2-210 E O1	1.8464	Adder	2.17
942411	AE2-254 C O1	1.4112	Adder	1.66
942412	AE2-254 E O1	0.9408	Adder	1.11
942591	AE2-275 C O1	4.0292	Adder	4.74
942592	AE2-275 E O1	1.5156	Adder	1.78
942891	AE2-308 C O1	6.9321	Adder	8.16
942892	AE2-308 E O1	2.5208	Adder	2.97
943111	AE2-339 C	2.1017	Adder	2.47
943112	AE2-339 E	1.0352	Adder	1.22
944621	AF1-127 C O1	4.0562	Adder	4.77
944622	AF1-127 E O1	1.9978	Adder	2.35
945681	AF1-233 C	16.6082	50/50	16.6082
945682	AF1-233 E	8.2048	50/50	8.2048
945861	AF1-251 C	9.9454	Adder	11.7
945862	AF1-251 E	6.6303	Adder	7.8
945911	AF1-256 C	5.3208	50/50	5.3208
945912	AF1-256 E	3.5472	50/50	3.5472
958171	AF2-111 C O1	15.9870	50/50	15.9870
958172	AF2-111 E O1	10.6580	50/50	10.6580
960151	AF2-306	1.7039	Adder	2.0
960161	AF2-307 C	2.5952	Adder	3.05
960162	AF2-307 E	1.7301	Adder	2.04
960571	AF2-348 C	15.7965	50/50	15.7965
960572	AF2-348 E	10.5310	50/50	10.5310
960641	AF2-355 C O1	7.8845	Adder	9.28
960642	AF2-355 E O1	5.2563	Adder	6.18
WEC	WEC	0.0369	Confirmed LTF	0.0369
LGEE	LGEE	1.7104	Confirmed LTF	1.7104
CPLE	CPLE	0.2844	Confirmed LTF	0.2844

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	6.3227	Confirmed LTF	6.3227
NY	NY	0.0653	Confirmed LTF	0.0653
TVA	TVA	1.6254	Confirmed LTF	1.6254
O-066	O-066	0.6317	Confirmed LTF	0.6317
CBM-S2	CBM-S2	3.3524	Confirmed LTF	3.3524
CBM-S1	CBM-S1	12.7970	Confirmed LTF	12.7970
G-007	G-007	0.0957	Confirmed LTF	0.0957
MADISON	MADISON	3.7760	Confirmed LTF	3.7760
MEC	MEC	0.5784	Confirmed LTF	0.5784
CBM-W1	CBM-W1	0.8632	Confirmed LTF	0.8632

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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
95490963	253110	09ADKINS	DAY	243453	05BEATTY	AEP	1	DAY_P7_495	tower	1372.0	106.83	108.85	AC	25.51

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
253110	09ADKINS	61.7808	50/50	61.7808
342960	1SPURLK2G	10.1448	50/50	10.1448
342963	1SPURLK3G	5.3310	50/50	5.3310
342966	1SPURLK4G	5.3310	50/50	5.3310
925921	AC1-068 C	18.7551	50/50	18.7551
925922	AC1-068 E	8.7708	50/50	8.7708
925931	AC1-069 C	18.7551	50/50	18.7551
925932	AC1-069 E	8.7708	50/50	8.7708
925981	**AC1-074 C O1 (Suspended)**	**3.2987**	**Adder**	**3.88**
925982	**AC1-074 E O1 (Suspended)**	**1.4137**	**Adder**	**1.66**
926061	AC1-085 C	22.1494	50/50	22.1494
926062	AC1-085 E	36.1386	50/50	36.1386
926791	AC1-165 C	18.5344	50/50	18.5344
926792	AC1-165 E	8.9914	50/50	8.9914
926801	AC1-166 C	18.5344	50/50	18.5344
926802	AC1-166 E	8.9914	50/50	8.9914
930062	AB1-014 E	5.7805	Adder	6.8
932421	AC2-060 C	5.3600	Adder	6.31
932422	AC2-060 E	3.0150	Adder	3.55
932462	AC2-066 E	3.4683	Adder	4.08
932551	**AC2-075 C (Suspended)**	**0.7834**	**Adder**	**0.92**
932552	**AC2-075 E (Suspended)**	**0.3947**	**Adder**	**0.46**
932661	AC2-088 C O1	3.3192	Adder	3.9
932662	AC2-088 E O1	2.7314	Adder	3.21
934491	AD1-073 C	1.1055	Adder	1.3
934492	AD1-073 E	0.5695	Adder	0.67
935031	**AD1-136 C (Suspended)**	**0.4668**	**Adder**	**0.55**
935032	**AD1-136 E (Suspended)**	**0.3976**	**Adder**	**0.47**
936251	AD2-031 C O1	1.4185	Adder	1.67
936252	AD2-031 E O1	2.3143	Adder	2.72
938271	AE1-040 C O1	4.0344	50/50	4.0344
938272	AE1-040 E O1	2.0300	50/50	2.0300
938921	AE1-120	3.2819	Adder	3.86
939141	AE1-144 C O1	6.2314	Adder	7.33
939142	AE1-144 E O1	3.0924	Adder	3.64
940531	AE2-038 C O1	4.1569	Adder	4.89
940532	AE2-038 E O1	2.0590	Adder	2.42
941411	AE2-138 C	12.2853	Adder	14.45
941412	AE2-138 E	4.5439	Adder	5.35
941981	AE2-210 C O1	4.2332	Adder	4.98
941982	AE2-210 E O1	1.5923	Adder	1.87
942091	AE2-221 C	26.2296	50/50	26.2296
942092	AE2-221 E	17.4864	50/50	17.4864
942981	AE2-320 C O1	36.9034	50/50	36.9034
942982	AE2-320 E O1	18.2586	50/50	18.2586
943191	AE2-319 C O1	36.9034	50/50	36.9034
943192	AE2-319 E O1	18.2586	50/50	18.2586
943201	AE2-318 C	4.2452	Adder	4.99
943202	AE2-318 E	2.0720	Adder	2.44
943771	AF1-045	1.9773	Adder	2.33
943773	AF1-045 E	1.3203	Adder	1.55
944521	AF1-117 C	81.4040	50/50	81.4040

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
944522	AF1-117 E	25.0760	50/50	25.0760
944621	AF1-127 C O1	3.3897	Adder	3.99
944622	AF1-127 E O1	1.6695	Adder	1.96
944941	AF1-159	0.8212	Adder	0.97
945681	AF1-233 C	11.8870	Adder	13.98
945682	AF1-233 E	5.8725	Adder	6.91
945861	AF1-251 C	8.4498	Adder	9.94
945862	AF1-251 E	5.6332	Adder	6.63
945911	AF1-256 C	3.8099	Adder	4.48
945912	AF1-256 E	2.5399	Adder	2.99
946102	AF1-275 BAT	3.7860	Merchant Transmission	3.7860
946171	AF1-282 C	8.7432	50/50	8.7432
946172	AF1-282 E	5.8288	50/50	5.8288
946181	AF1-283 C	11.3662	50/50	11.3662
946182	AF1-283 E	7.5774	50/50	7.5774
958171	AF2-111 C O1	13.2396	Adder	15.58
958172	AF2-111 E O1	8.8264	Adder	10.38
960571	AF2-348 C	13.0088	Adder	15.3
960572	AF2-348 E	8.6726	Adder	10.2
WEC	WEC	0.2117	Confirmed LTF	0.2117
LGEE	LGEE	1.8382	Confirmed LTF	1.8382
CPLE	CPLE	0.2262	Confirmed LTF	0.2262
CBM-W2	CBM-W2	11.5151	Confirmed LTF	11.5151
NY	NY	0.5032	Confirmed LTF	0.5032
TVA	TVA	2.0468	Confirmed LTF	2.0468
O-066	O-066	5.8800	Confirmed LTF	5.8800
CBM-S2	CBM-S2	3.3986	Confirmed LTF	3.3986
CBM-S1	CBM-S1	15.2423	Confirmed LTF	15.2423
G-007	G-007	0.9058	Confirmed LTF	0.9058
MEC	MEC	1.5064	Confirmed LTF	1.5064
CBM-W1	CBM-W1	4.9790	Confirmed LTF	4.9790

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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
95490932	324267	4KENTON	LGEE	246800	05SARDINIA	AEP	1	DAY_P734541 34553	tower	185.0	134.04	142.36	AC	18.11

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
251831	Z1-080 BAT	0.5183	Merchant Transmission	0.5183
918803	AA1-099 BAT	0.3455	Merchant Transmission	0.3455
925981	**AC1-074 C O1 (Suspended)**	**2.6694**	**Adder**	**3.14**
925982	**AC1-074 E O1 (Suspended)**	**1.1440**	**Adder**	**1.35**
932551	**AC2-075 C (Suspended)**	**0.6340**	**Adder**	**0.75**
932552	**AC2-075 E (Suspended)**	**0.3194**	**Adder**	**0.38**
936381	AD2-048 C	3.0986	Adder	3.65
936382	AD2-048 E	1.5460	Adder	1.82
939141	AE1-144 C O1	6.3828	Adder	7.51
939142	AE1-144 E O1	3.1675	Adder	3.73
940531	AE2-038 C O1	4.2578	Adder	5.01
940532	AE2-038 E O1	2.1090	Adder	2.48
941411	AE2-138 C	8.9474	Adder	10.53
941412	AE2-138 E	3.3093	Adder	3.89
941981	AE2-210 C O1	3.0830	Adder	3.63
941982	AE2-210 E O1	1.1597	Adder	1.36
943111	AE2-339 C	1.1515	Adder	1.35
943112	AE2-339 E	0.5672	Adder	0.67
944621	AF1-127 C O1	2.4853	Adder	2.92
944622	AF1-127 E O1	1.2241	Adder	1.44
945681	AF1-233 C	11.7244	Adder	13.79
945682	AF1-233 E	5.7922	Adder	6.81
945861	AF1-251 C	6.1744	Adder	7.26
945862	AF1-251 E	4.1162	Adder	4.84
945911	AF1-256 C	3.7328	Adder	4.39
945912	AF1-256 E	2.4885	Adder	2.93
958171	AF2-111 C O1	9.3865	Adder	11.04
958172	AF2-111 E O1	6.2577	Adder	7.36
960151	AF2-306	1.4193	Adder	1.67
960161	AF2-307 C	2.1616	Adder	2.54
960162	AF2-307 E	1.4411	Adder	1.7
960571	AF2-348 C	9.2336	Adder	10.86
960572	AF2-348 E	6.1557	Adder	7.24
WEC	WEC	0.0633	Confirmed LTF	0.0633
LGEE	LGEE	0.9254	Confirmed LTF	0.9254
CPLE	CPLE	0.1416	Confirmed LTF	0.1416
CBM-W2	CBM-W2	4.5209	Confirmed LTF	4.5209
NY	NY	0.0769	Confirmed LTF	0.0769
TVA	TVA	1.0178	Confirmed LTF	1.0178
O-066	O-066	0.8669	Confirmed LTF	0.8669
CBM-S2	CBM-S2	1.8207	Confirmed LTF	1.8207
CBM-S1	CBM-S1	7.6084	Confirmed LTF	7.6084
G-007	G-007	0.1331	Confirmed LTF	0.1331
MADISON	MADISON	1.9233	Confirmed LTF	1.9233
MEC	MEC	0.5323	Confirmed LTF	0.5323
CBM-W1	CBM-W1	1.8765	Confirmed LTF	1.8765

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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
100289058	342544	4AVON-R	EKPC	324275	4LOUDON AVE	LGEE	1	DAY_P73454134553	tower	203.0	126.41	133.85	AC	17.77

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925981	**AC1-074 C O1 (Suspended)**	**4.4425**	**Adder**	**5.23**
925982	**AC1-074 E O1 (Suspended)**	**1.9039**	**Adder**	**2.24**
932551	**AC2-075 C (Suspended)**	**1.0551**	**Adder**	**1.24**
932552	**AC2-075 E (Suspended)**	**0.5315**	**Adder**	**0.63**
939141	AE1-144 C O1	3.5632	Adder	4.19
939142	AE1-144 E O1	1.7683	Adder	2.08
940531	AE2-038 C O1	2.3770	Adder	2.8
940532	AE2-038 E O1	1.1774	Adder	1.39
941411	AE2-138 C	14.5568	Adder	17.13
941412	AE2-138 E	5.3840	Adder	6.33
941981	AE2-210 C O1	5.0159	Adder	5.9
941982	AE2-210 E O1	1.8867	Adder	2.22
942891	AE2-308 C O1	5.6259	Adder	6.62
942892	AE2-308 E O1	2.0458	Adder	2.41
943111	AE2-339 C	4.7985	50/50	4.7985
943112	AE2-339 E	2.3635	50/50	2.3635
944621	AF1-127 C O1	5.7122	50/50	5.7122
944622	AF1-127 E O1	2.8134	50/50	2.8134
945681	AF1-233 C	6.8255	Adder	8.03
945682	AF1-233 E	3.3720	Adder	3.97
945861	AF1-251 C	10.9956	Adder	12.94
945862	AF1-251 E	7.3304	Adder	8.62
945911	AF1-256 C	2.1889	Adder	2.58
945912	AF1-256 E	1.4593	Adder	1.72
958171	AF2-111 C O1	8.9684	Adder	10.55
958172	AF2-111 E O1	5.9789	Adder	7.03
960571	AF2-348 C	9.0640	Adder	10.66
960572	AF2-348 E	6.0426	Adder	7.11
NEWTON	NEWTON	0.2740	Confirmed LTF	0.2740
FARMERCITY	FARMERCITY	0.0105	Confirmed LTF	0.0105
GIBSON	GIBSON	0.2157	Confirmed LTF	0.2157
NY	NY	0.0221	Confirmed LTF	0.0221
PRAIRIE	PRAIRIE	0.5528	Confirmed LTF	0.5528
O-066	O-066	0.2419	Confirmed LTF	0.2419
COFFEEN	COFFEEN	0.0469	Confirmed LTF	0.0469
EDWARDS	EDWARDS	0.0724	Confirmed LTF	0.0724
TILTON	TILTON	0.1638	Confirmed LTF	0.1638
G-007	G-007	0.0364	Confirmed LTF	0.0364
BLUEG	BLUEG	1.2048	Confirmed LTF	1.2048
TRIMBLE	TRIMBLE	0.3901	Confirmed LTF	0.3901
CATAWBA	CATAWBA	0.0021	Confirmed LTF	0.0021

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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
98896705	342559	4BOONE CO	EKPC	250054	08LONGBR	DEO&K	1	DAY_P734541 34553	tower	284.0	139.11	147.65	AC	26.33

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342957	1SPURLK1G	6.4392	50/50	6.4392
342960	1SPURLK2G	10.1120	50/50	10.1120
342963	1SPURLK3G	5.3137	50/50	5.3137
342966	1SPURLK4G	5.3137	50/50	5.3137
925981	**AC1-074 C O1 (Suspended)**	**9.2602**	**50/50**	**9.2602**
925982	**AC1-074 E O1 (Suspended)**	**3.9686**	**50/50**	**3.9686**
932551	**AC2-075 C (Suspended)**	**2.1993**	**50/50**	**2.1993**
932552	**AC2-075 E (Suspended)**	**1.1079**	**50/50**	**1.1079**
936381	AD2-048 C	6.0766	50/50	6.0766
936382	AD2-048 E	3.0318	50/50	3.0318
936571	**AD2-072 C O1 (Suspended)**	**2.9503**	**Adder**	**3.47**
936572	**AD2-072 E O1 (Suspended)**	**1.4466**	**Adder**	**1.7**
939141	AE1-144 C O1	8.7955	50/50	8.7955
939142	AE1-144 E O1	4.3649	50/50	4.3649
940531	AE2-038 C O1	5.8673	50/50	5.8673
940532	AE2-038 E O1	2.9063	50/50	2.9063
941411	AE2-138 C	14.2454	Adder	16.76
941412	AE2-138 E	5.2689	Adder	6.2
941981	AE2-210 C O1	4.9086	Adder	5.77
941982	AE2-210 E O1	1.8464	Adder	2.17
942411	AE2-254 C O1	1.4112	Adder	1.66
942412	AE2-254 E O1	0.9408	Adder	1.11
942591	AE2-275 C O1	4.0292	Adder	4.74
942592	AE2-275 E O1	1.5156	Adder	1.78
942891	AE2-308 C O1	6.9321	Adder	8.16
942892	AE2-308 E O1	2.5208	Adder	2.97
943111	AE2-339 C	2.1017	Adder	2.47
943112	AE2-339 E	1.0352	Adder	1.22
944621	AF1-127 C O1	4.0562	Adder	4.77
944622	AF1-127 E O1	1.9978	Adder	2.35
945681	AF1-233 C	16.6082	50/50	16.6082
945682	AF1-233 E	8.2048	50/50	8.2048
945861	AF1-251 C	9.9454	Adder	11.7
945862	AF1-251 E	6.6303	Adder	7.8
945911	AF1-256 C	5.3208	50/50	5.3208
945912	AF1-256 E	3.5472	50/50	3.5472
958171	AF2-111 C O1	15.9870	50/50	15.9870
958172	AF2-111 E O1	10.6580	50/50	10.6580
960151	AF2-306	1.7039	Adder	2.0
960161	AF2-307 C	2.5952	Adder	3.05
960162	AF2-307 E	1.7301	Adder	2.04
960571	AF2-348 C	15.7965	50/50	15.7965
960572	AF2-348 E	10.5310	50/50	10.5310
960641	AF2-355 C O1	7.8845	Adder	9.28
960642	AF2-355 E O1	5.2563	Adder	6.18
WEC	WEC	0.0369	Confirmed LTF	0.0369
LGEE	LGEE	1.7104	Confirmed LTF	1.7104
CPLE	CPLE	0.2844	Confirmed LTF	0.2844

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
CBM-W2	CBM-W2	6.3227	Confirmed LTF	6.3227
NY	NY	0.0653	Confirmed LTF	0.0653
TVA	TVA	1.6254	Confirmed LTF	1.6254
O-066	O-066	0.6317	Confirmed LTF	0.6317
CBM-S2	CBM-S2	3.3524	Confirmed LTF	3.3524
CBM-S1	CBM-S1	12.7970	Confirmed LTF	12.7970
G-007	G-007	0.0957	Confirmed LTF	0.0957
MADISON	MADISON	3.7760	Confirmed LTF	3.7760
MEC	MEC	0.5784	Confirmed LTF	0.5784
CBM-W1	CBM-W1	0.8632	Confirmed LTF	0.8632

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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
100289005	342661	4SPUR-KENT-R	EKPC	324267	4KENTON	LGEE	1	DAY_P734541 34553	tower	281.0	125.45	135.13	AC	28.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342957	1SPURLK1G	8.0998	50/50	8.0998
342960	1SPURLK2G	11.7848	50/50	11.7848
342963	1SPURLK3G	6.1928	50/50	6.1928
342966	1SPURLK4G	6.1928	50/50	6.1928
925981	**AC1-074 C O1 (Suspended)**	**2.4462**	**Adder**	**2.88**
925982	**AC1-074 E O1 (Suspended)**	**1.0484**	**Adder**	**1.23**
932551	**AC2-075 C (Suspended)**	**0.5810**	**Adder**	**0.68**
932552	**AC2-075 E (Suspended)**	**0.2927**	**Adder**	**0.34**
939141	AE1-144 C O1	5.2648	Adder	6.19
939142	AE1-144 E O1	2.6127	Adder	3.07
940531	AE2-038 C O1	3.5120	Adder	4.13
940532	AE2-038 E O1	1.7396	Adder	2.05
941411	AE2-138 C	11.1527	Adder	13.12
941412	AE2-138 E	4.1250	Adder	4.85
941981	AE2-210 C O1	3.8429	Adder	4.52
941982	AE2-210 E O1	1.4455	Adder	1.7
943111	AE2-339 C	1.1401	Adder	1.34
943112	AE2-339 E	0.5616	Adder	0.66
944621	AF1-127 C O1	2.9896	Adder	3.52
944622	AF1-127 E O1	1.4725	Adder	1.73
945681	AF1-233 C	11.6092	Adder	13.66
945682	AF1-233 E	5.7352	Adder	6.75
945861	AF1-251 C	7.5690	Adder	8.9
945862	AF1-251 E	5.0460	Adder	5.94
945911	AF1-256 C	3.8164	Adder	4.49
945912	AF1-256 E	2.5443	Adder	2.99
958171	AF2-111 C O1	17.3220	50/50	17.3220
958172	AF2-111 E O1	11.5480	50/50	11.5480
960571	AF2-348 C	16.8705	50/50	16.8705
960572	AF2-348 E	11.2470	50/50	11.2470
WEC	WEC	0.0060	Confirmed LTF	0.0060
LGEE	LGEE	0.3246	Confirmed LTF	0.3246
CPLE	CPLE	0.0628	Confirmed LTF	0.0628
CBM-W2	CBM-W2	2.1540	Confirmed LTF	2.1540
NY	NY	0.0791	Confirmed LTF	0.0791
TVA	TVA	0.6118	Confirmed LTF	0.6118
O-066	O-066	0.9005	Confirmed LTF	0.9005
CBM-S2	CBM-S2	0.9537	Confirmed LTF	0.9537
CBM-S1	CBM-S1	3.9277	Confirmed LTF	3.9277
G-007	G-007	0.1394	Confirmed LTF	0.1394
MADISON	MADISON	1.0786	Confirmed LTF	1.0786
MEC	MEC	0.1827	Confirmed LTF	0.1827

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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
101987093	342664	4SPURLOCK	EKPC	342661	4SPUR-KENT-R	EKPC	1	DAY_P734541 34553	tower	291.0	121.14	130.49	AC	28.12

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342957	1SPURLK1G	8.0998	50/50	8.0998
342960	1SPURLK2G	11.7848	50/50	11.7848
342963	1SPURLK3G	6.1928	50/50	6.1928
342966	1SPURLK4G	6.1928	50/50	6.1928
925981	**AC1-074 C O1 (Suspended)**	**2.4462**	**Adder**	**2.88**
925982	**AC1-074 E O1 (Suspended)**	**1.0484**	**Adder**	**1.23**
932551	**AC2-075 C (Suspended)**	**0.5810**	**Adder**	**0.68**
932552	**AC2-075 E (Suspended)**	**0.2927**	**Adder**	**0.34**
939141	AE1-144 C O1	5.2648	Adder	6.19
939142	AE1-144 E O1	2.6127	Adder	3.07
940531	AE2-038 C O1	3.5120	Adder	4.13
940532	AE2-038 E O1	1.7396	Adder	2.05
941411	AE2-138 C	11.1527	Adder	13.12
941412	AE2-138 E	4.1250	Adder	4.85
941981	AE2-210 C O1	3.8429	Adder	4.52
941982	AE2-210 E O1	1.4455	Adder	1.7
943111	AE2-339 C	1.1401	Adder	1.34
943112	AE2-339 E	0.5616	Adder	0.66
944621	AF1-127 C O1	2.9896	Adder	3.52
944622	AF1-127 E O1	1.4725	Adder	1.73
945681	AF1-233 C	11.6092	Adder	13.66
945682	AF1-233 E	5.7352	Adder	6.75
945861	AF1-251 C	7.5690	Adder	8.9
945862	AF1-251 E	5.0460	Adder	5.94
945911	AF1-256 C	3.8164	Adder	4.49
945912	AF1-256 E	2.5443	Adder	2.99
958171	AF2-111 C O1	17.3220	50/50	17.3220
958172	AF2-111 E O1	11.5480	50/50	11.5480
960571	AF2-348 C	16.8705	50/50	16.8705
960572	AF2-348 E	11.2470	50/50	11.2470
WEC	WEC	0.0060	Confirmed LTF	0.0060
LGEE	LGEE	0.3246	Confirmed LTF	0.3246
CPLE	CPLE	0.0628	Confirmed LTF	0.0628
CBM-W2	CBM-W2	2.1540	Confirmed LTF	2.1540
NY	NY	0.0791	Confirmed LTF	0.0791
TVA	TVA	0.6118	Confirmed LTF	0.6118
O-066	O-066	0.9005	Confirmed LTF	0.9005
CBM-S2	CBM-S2	0.9537	Confirmed LTF	0.9537
CBM-S1	CBM-S1	3.9277	Confirmed LTF	3.9277
G-007	G-007	0.1394	Confirmed LTF	0.1394
MADISON	MADISON	1.0786	Confirmed LTF	1.0786
MEC	MEC	0.1827	Confirmed LTF	0.1827

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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
98896711	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSILGRVZIMMER	tower	1532.0	140.19	148.06	AC	118.56

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
251968	08ZIMRHP	49.1100	50/50	49.1100
251969	08ZIMRLP	26.8936	50/50	26.8936
251970	08MELDL1	2.4872	50/50	2.4872
251971	08MELDL2	2.4872	50/50	2.4872
251972	08MELDL3	2.4939	50/50	2.4939
342942	1JKCT 10G	3.6588	50/50	3.6588
342957	1SPURLK1G	25.2360	50/50	25.2360
342960	1SPURLK2G	48.0149	50/50	48.0149
342963	1SPURLK3G	25.2313	50/50	25.2313
342966	1SPURLK4G	25.2313	50/50	25.2313
925921	AC1-068 C	-3.5275	Adder	-4.15
925931	AC1-069 C	-3.5275	Adder	-4.15
925981	**AC1-074 C O1 (Suspended)**	**15.7310**	**50/50**	**15.7310**
925982	**AC1-074 E O1 (Suspended)**	**6.7418**	**50/50**	**6.7418**
926791	AC1-165 C	-3.4860	Adder	-4.1
926801	AC1-166 C	-3.4860	Adder	-4.1
926951	AC1-182	1.1693	50/50	1.1693
932551	**AC2-075 C (Suspended)**	**3.7361**	**50/50**	**3.7361**
932552	**AC2-075 E (Suspended)**	**1.8821**	**50/50**	**1.8821**
935031	**AD1-136 C (Suspended)**	**-0.7821**	**Adder**	**-0.92**
936381	AD2-048 C	10.8074	Adder	12.71
936382	AD2-048 E	5.3921	Adder	6.34
936571	**AD2-072 C O1 (Suspended)**	**8.5425**	**Adder**	**10.05**
936572	**AD2-072 E O1 (Suspended)**	**4.1885**	**Adder**	**4.93**
939131	AE1-143 C	6.3983	Adder	7.53
939132	AE1-143 E	3.1693	Adder	3.73
939141	AE1-144 C O1	32.8876	50/50	32.8876
939142	AE1-144 E O1	16.3208	50/50	16.3208
940531	AE2-038 C O1	21.9387	50/50	21.9387
940532	AE2-038 E O1	10.8669	50/50	10.8669
941411	AE2-138 C	63.1825	50/50	63.1825
941412	AE2-138 E	23.3689	50/50	23.3689
941981	AE2-210 C O1	21.7710	50/50	21.7710
941982	AE2-210 E O1	8.1891	50/50	8.1891
942411	AE2-254 C O1	4.2917	Adder	5.05
942412	AE2-254 E O1	2.8611	Adder	3.37
942591	AE2-275 C O1	13.5039	Adder	15.89
942592	AE2-275 E O1	5.0795	Adder	5.98
942891	AE2-308 C O1	22.6326	Adder	26.63
942892	AE2-308 E O1	8.2300	Adder	9.68
943111	AE2-339 C	7.4515	50/50	7.4515
943112	AE2-339 E	3.6701	50/50	3.6701
943701	AF1-038 C	3.2136	Adder	3.78
943702	AF1-038 E	2.1424	Adder	2.52
943772	AF1-045 BAT	4.6771	Merchant Transmission	4.6771
943821	AF1-050 C	2.8562	Adder	3.36

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943822	AF1-050 E	1.9041	Adder	2.24
944151	AF1-083 C O1	3.0011	Adder	3.53
944152	AF1-083 E O1	2.0007	Adder	2.35
944511	AF1-116 C	7.1757	Adder	8.44
944512	AF1-116 E	4.7838	Adder	5.63
944621	AF1-127 C O1	17.3021	50/50	17.3021
944622	AF1-127 E O1	8.5219	50/50	8.5219
945681	AF1-233 C	63.0592	50/50	63.0592
945682	AF1-233 E	31.1528	50/50	31.1528
945861	AF1-251 C	43.3079	50/50	43.3079
945862	AF1-251 E	28.8719	50/50	28.8719
945911	AF1-256 C	20.2344	50/50	20.2344
945912	AF1-256 E	13.4896	50/50	13.4896
957961	AF2-090 C	5.4759	Adder	6.44
957962	AF2-090 E	2.7082	Adder	3.19
958171	AF2-111 C O1	72.6165	50/50	72.6165
958172	AF2-111 E O1	48.4110	50/50	48.4110
959691	AF2-260 C	4.0203	Adder	4.73
959692	AF2-260 E	2.4273	Adder	2.86
960151	AF2-306	5.9953	Adder	7.05
960161	AF2-307 C	9.1313	Adder	10.74
960162	AF2-307 E	6.0875	Adder	7.16
960171	AF2-308	2.1241	Adder	2.5
960181	AF2-309 C	3.1862	Adder	3.75
960182	AF2-309 E	2.1241	Adder	2.5
960571	AF2-348 C	71.1375	50/50	71.1375
960572	AF2-348 E	47.4250	50/50	47.4250
960641	AF2-355 C O1	27.7305	Adder	32.62
960642	AF2-355 E O1	18.4870	Adder	21.75
961001	AF2-391 C O1	5.4633	Adder	6.43
961002	AF2-391 E O1	3.6422	Adder	4.28
WEC	WEC	0.3726	Confirmed LTF	0.3726
LGEE	LGEE	4.6667	Confirmed LTF	4.6667
CPLE	CPLE	0.4842	Confirmed LTF	0.4842
CBM-W2	CBM-W2	24.7338	Confirmed LTF	24.7338
NY	NY	0.7499	Confirmed LTF	0.7499
TVA	TVA	5.2542	Confirmed LTF	5.2542
O-066	O-066	8.7293	Confirmed LTF	8.7293
CBM-S2	CBM-S2	7.6123	Confirmed LTF	7.6123
CBM-S1	CBM-S1	38.9705	Confirmed LTF	38.9705
G-007	G-007	1.3468	Confirmed LTF	1.3468
MADISON	MADISON	3.2579	Confirmed LTF	3.2579
MEC	MEC	2.9873	Confirmed LTF	2.9873
CBM-W1	CBM-W1	10.1331	Confirmed LTF	10.1331

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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
98896742	942090	AE2-221 TAP	DAY	253014	09CLINTO	DAY	1	DAY_P734569 34598 34524	tower	1374.0	100.38	102.31	AC	26.28

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
250166	HLCRST AB114	1.0907	50/50	1.0907
251830	BIOENGRY	0.1032	50/50	0.1032
342957	1SPURLK1G	5.5785	50/50	5.5785
342960	1SPURLK2G	10.5564	50/50	10.5564
342963	1SPURLK3G	5.5473	50/50	5.5473
342966	1SPURLK4G	5.5473	50/50	5.5473
925981	**AC1-074 C O1 (Suspended)**	**3.1506**	**Adder**	**3.71**
925982	**AC1-074 E O1 (Suspended)**	**1.3503**	**Adder**	**1.59**
926061	AC1-085 C	65.1989	50/50	65.1989
926062	AC1-085 E	106.3771	50/50	106.3771
930062	AB1-014 E	10.2106	50/50	10.2106
932461	AC2-066 C	0.6544	50/50	0.6544
932462	AC2-066 E	6.1264	50/50	6.1264
932481	AC2-068 C	-2.8251	Adder	-3.32
932551	**AC2-075 C (Suspended)**	**0.7483**	**Adder**	**0.88**
932552	**AC2-075 E (Suspended)**	**0.3770**	**Adder**	**0.44**
932661	AC2-088 C O1	4.7378	50/50	4.7378
932662	AC2-088 E O1	3.8988	50/50	3.8988
935031	**AD1-136 C (Suspended)**	**0.6663**	**50/50**	**0.6663**
935032	**AD1-136 E (Suspended)**	**0.5675**	**50/50**	**0.5675**
936381	AD2-048 C	2.5159	Adder	2.96
936382	AD2-048 E	1.2552	Adder	1.48
938921	AE1-120	5.7970	50/50	5.7970
939141	AE1-144 C O1	6.2260	Adder	7.32
939142	AE1-144 E O1	3.0897	Adder	3.63
940531	AE2-038 C O1	4.1532	Adder	4.89
940532	AE2-038 E O1	2.0572	Adder	2.42
941411	AE2-138 C	12.2369	Adder	14.4
941412	AE2-138 E	4.5260	Adder	5.32
941981	AE2-210 C O1	4.2165	Adder	4.96
941982	AE2-210 E O1	1.5860	Adder	1.87
942091	AE2-221 C	100.7748	50/50	100.7748
942092	AE2-221 E	67.1832	50/50	67.1832
942591	AE2-275 C O1	3.1759	Adder	3.74
942592	AE2-275 E O1	1.1946	Adder	1.41
942891	AE2-308 C O1	5.3267	Adder	6.27
942892	AE2-308 E O1	1.9370	Adder	2.28
943111	AE2-339 C	1.4725	Adder	1.73
943112	AE2-339 E	0.7253	Adder	0.85
943201	AE2-318 C	5.0534	Adder	5.95
943202	AE2-318 E	2.4665	Adder	2.9
943771	AF1-045	2.3537	Adder	2.77
943773	AF1-045 E	1.5717	Adder	1.85
943863	AF1-053 BAT	3.0888	Merchant Transmission	3.0888
944521	AF1-117 C	6.8933	Adder	8.11
944522	AF1-117 E	2.1235	Adder	2.5
944621	AF1-127 C O1	3.3619	Adder	3.96
944622	AF1-127 E O1	1.6558	Adder	1.95
945681	AF1-233 C	11.9293	Adder	14.03
945682	AF1-233 E	5.8933	Adder	6.93

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Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945861	AF1-251 C	8.4004	Adder	9.88
945862	AF1-251 E	5.6003	Adder	6.59
945911	AF1-256 C	3.8266	Adder	4.5
945912	AF1-256 E	2.5511	Adder	3.0
946171	AF1-282 C	25.7364	50/50	25.7364
946172	AF1-282 E	17.1576	50/50	17.1576
946181	AF1-283 C	33.4573	50/50	33.4573
946182	AF1-283 E	22.3049	50/50	22.3049
958171	AF2-111 C O1	16.0725	50/50	16.0725
958172	AF2-111 E O1	10.7150	50/50	10.7150
960151	AF2-306	1.3888	Adder	1.63
960161	AF2-307 C	2.1152	Adder	2.49
960162	AF2-307 E	1.4101	Adder	1.66
960571	AF2-348 C	15.7665	50/50	15.7665
960572	AF2-348 E	10.5110	50/50	10.5110
960641	AF2-355 C O1	6.5258	Adder	7.68
960642	AF2-355 E O1	4.3506	Adder	5.12
WEC	WEC	0.0381	Confirmed LTF	0.0381
LGEE	LGEE	1.3732	Confirmed LTF	1.3732
CPLE	CPLE	0.3995	Confirmed LTF	0.3995
CBM-W2	CBM-W2	7.6413	Confirmed LTF	7.6413
NY	NY	0.1703	Confirmed LTF	0.1703
TVA	TVA	1.7374	Confirmed LTF	1.7374
O-066	O-066	1.8278	Confirmed LTF	1.8278
CBM-S2	CBM-S2	4.4333	Confirmed LTF	4.4333
CBM-S1	CBM-S1	12.4136	Confirmed LTF	12.4136
G-007	G-007	0.2798	Confirmed LTF	0.2798
MEC	MEC	0.6912	Confirmed LTF	0.6912

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9.8 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
AA1-099	Clinton Co. 34.5kV	In Service
AB1-014	Hillcrest 138kV	In Service
AC1-068	Atlanta 69kV I	Engineering and Procurement
AC1-069	Atlanta 69kV II	Engineering and Procurement
AC1-074	Jacksonville-Renaker 138kV I	Suspended
AC1-078	Beatty-London 138kV	Engineering and Procurement
AC1-085	Stuart-Clinton 345kV	Under Construction
AC1-089	Hillsboro-Wildcat 138kV	Engineering and Procurement
AC1-165	Atlanta 69kV III	Engineering and Procurement
AC1-166	Atlanta 69kV IV	Engineering and Procurement
AC1-182	W.H. Zimmer Station 345kV	In Service
AC2-060	Buckskin 69kV	Active
AC2-061	Hillsboro-Clinton 138kV	Active
AC2-066	Hillcrest 138kV	In Service
AC2-068	Camden-Crystal II 69kV	Engineering and Procurement
AC2-075	Jacksonville-Renaker 138 kV	Suspended
AC2-088	S. Bethel-Brown 69kV	Engineering and Procurement
AD1-073	Buckskin 69 kV	Active
AD1-081	Beatty-London 138 kV	Engineering and Procurement
AD1-136	South Bethel-Brown 69 kV	Suspended
AD1-140	Greene-Clark 138 kV	Engineering and Procurement
AD2-031	Martinsville-Wilmington 69 kV	Active
AD2-048	Cynthia-Headquarters 69 kV	Engineering and Procurement
AD2-072	Van Arsdell-Mercer Industrial 69kV	Suspended
AE1-040	Greenfield 69 kV	Active
AE1-120	Hillcrest 138 kV	In Service
AE1-143	Marion County 161 kV	Engineering and Procurement
AE1-144	Goddard-Plumville 138 kV	Active
AE2-038	Goddard-Plumsville 138 kV II	Active
AE2-138	Avon-North Clark 345 kV	Active
AE2-148	Beatty-Greene 345 kV	Active
AE2-210	Avon-North Clark 345 kV	Active
AE2-214	Cole 345 kV	Active
AE2-217	East Springfield-London 138 kV	Active
AE2-218	Eldean 138 kV	Engineering and Procurement
AE2-221	Clinton-Stuart 345 kV	Engineering and Procurement
AE2-254	Garrard County-Tommy-Gooch 69 kV	Engineering and Procurement
AE2-267	Woodsdale 345 kV	Active
AE2-275	JK Smith-Fawkes 138 kV	Active
AE2-308	Three Forks-Dale 138 kV	Active
AE2-315	Yankee Tap 69 kV	Active
AE2-318	Ford-Cedarville 138 kV	Active
AE2-319	Atlanta 69kV I	Active
AE2-320	Atlanta 69 kV II	Active
AE2-339	Avon 138 kV	Active
AF1-038	Sewellton Jct-Webbs Crossroads 69 kV	Active
AF1-045	Cedarville-Ford 138 kV	Active
AF1-050	Summer Shade - Green County 161 kV	Active
AF1-053	Givens-Mechanicsburg 138 kV	Active
AF1-062	Jug Street 138 kV	Active
AF1-083	Green County-Saloma 161 kV	Active

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Queue Number	Project Name	Status
AF1-116	Marion County 161 kV	Active
AF1-117	Atlanta-Stuart 345 kV	Active
AF1-127	Avon 345 kV	Active
AF1-159	Martinsville-Wilmington 69 kV	Active
AF1-228	Beatty-Greene 345 kV	Active
AF1-233	Flemingsburg 138 kV	Active
AF1-249	Nickel 12.47 kV	Engineering and Procurement
AF1-251	Avon-North Clark 345 kV	Active
AF1-256	Flemingsburg-Spurlock 138 kV	Active
AF1-275	Cole 345 kV	Active
AF1-282	Stuart-Clinton 345 kV	Active
AF1-283	Stuart-Clinton 345 kV	Active
AF2-066	West Manchester-Crown 69kV	Active
AF2-067	West Manchester 69 kV	Active
AF2-079	Greenville-West Milton 138 kV	Active
AF2-090	Central Hardin 138 kV	Active
AF2-111	North Clark-Spurlock 345 kV	Active
AF2-123	National-Tangy 138 kV	Active
AF2-198	Heath 69 kV	Active
AF2-260	Stephensburg-Central Hardin 69 kV	Active
AF2-263	Shelby 138 kV	Active
AF2-298	Crown-New Lebanon 69 kV	Active
AF2-306	Hope-Blevins Valley Tap 69 kV	Active
AF2-307	Hope-Blevins Valley Tap 69 kV	Active
AF2-308	Central Hardin-Stephensburg 69 kV	Active
AF2-309	Central Hardin-Stephensburg 69 kV	Active
AF2-348	North Clark-Spurlock 345 kV	Active
AF2-355	West Gerrard-J.K. Smith 345 nkV	Active
AF2-371	Harrison-Good Hope 138 kV	Active
AF2-391	Central Hardin 69 kV	Active
AF2-440	Hillsboro-Middleboro 138 kV	Active
V4-073	Yankee 12.5kV	In Service
Y1-054	Rochelle 138kV	In Service
Y1-063	Trenton 34.5kV	In Service
Z1-080	Clinton County 34.5kV	In Service

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9.9 Contingency Descriptions

Contingency Name	Contingency Definition
DAY_P734569 34598 34524	CONTINGENCY 'DAY_P734569 34598 34524' OPEN BRANCH FROM BUS 249566 TO BUS 249578 CKT 1 / OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 249566 TO BUS 253079 CKT 1 / 249566 08FOSTER 345 253079 09SUGRCK 345 1 END
DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSILGRVZIMMER	CONTINGENCY 'DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSILGRVZIMMER' OPEN BRANCH FROM BUS 249989 TO BUS 250080 CKT 1 / 249989 08BKJ246 138 250080 08NWTWN2 138 1 OPEN BRANCH FROM BUS 250079 TO BUS 250080 CKT Z1 / 250079 08NWTWN1 138 250080 08NWTWN2 138 Z1 OPEN BRANCH FROM BUS 250079 TO BUS 250092 CKT 1 / 250079 08NWTWN1 138 250092 08REDBK1 138 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 / 249573 08SGROVE 345 249577 08ZIMER 345 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 / 249573 08SGROVE 345 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 / 249571 08REDBK1 345 249573 08SGROVE 345 1 END
AEP_P1-2_#1027	CONTINGENCY 'AEP_P1-2_#1027' OPEN BRANCH FROM BUS 248000 TO BUS 324010 CKT 1 / 248000 06CLIFTY 345 324010 7TRIMBL REAC 345 1 OPEN BRANCH FROM BUS 324010 TO BUS 324114 CKT 1 / 324010 7TRIMBL REAC 345 324114 7TRIMBLE CO 345 1 END
DAY_P4_L34526-3	CONTINGENCY 'DAY_P4_L34526-3' OPEN LINE FROM BUS 253027 TO BUS 253006 CKT 1 /* 09GREENE 345 - 09BATH 345 OPEN LINE FROM BUS 253027 TO BUS 253014 CKT 1 /* 09GREENE 345 - 09CLINTO 345 OPEN LINE FROM BUS 253014 TO BUS 253013 CKT 1 /* 09CLINTON 69 - 09CLINTO 345 OPEN LINE FROM BUS 253014 TO BUS 253013 CKT 2 /* 09CLINTON 69 - 09CLINTO 345 END
DAY_P1-2_#762	CONTINGENCY 'DAY_P1-2_#762' OPEN BRANCH FROM BUS 243453 TO BUS 253110 CKT 1 / 243453 05BEATTY 345 253110 09ADKINS 345 1 END
AEP_P4_#3195_05BEATTY 345_304E	CONTINGENCY 'AEP_P4_#3195_05BEATTY 345_304E' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END
EKPC_P4-6_SPUR N39-150T-A	CONTINGENCY 'EKPC_P4-6_SPUR N39-150T-A' /* SPURLOCK OPEN BUS 342960 /* 1SPURLK2G DROPS GEN OPEN BRANCH FROM BUS 958170 TO BUS 342838 CKT 1 /* 958170 AF2-111 TAP 345.00 342838 7SPURLOCK 345.00 END
DAY_P734541 34553	CONTINGENCY 'DAY_P734541 34553' OPEN BRANCH FROM BUS 249581 TO BUS 342838 CKT 1 /* 249581 08MELDAL 345.00 342838 7SPURLOCK 345.00 OPEN BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 /* 253077 09STUART 345.00 342838 7SPURLOCK 345.00 END
AEP_P4_#10715_05COLE 345_C	CONTINGENCY 'AEP_P4_#10715_05COLE 345_C' OPEN BRANCH FROM BUS 244022 TO BUS 243457 CKT 1 / 244022 05COLE 345 243457 05HAYDEN 345 1 OPEN BRANCH FROM BUS 244022 TO BUS 244023 CKT 1 / 244022 05COLE 345 244023 05COLE 138 1 END

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Contingency Name	Contingency Definition
DEOK_P2-2_C1 SILVER GROVE 345 BUS	CONTINGENCY 'DEOK_P2-2_C1 SILVER GROVE 345 BUS' OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 / 249573 08SGROVE 345 249577 08ZIMER 345 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 / 249573 08SGROVE 345 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 / 249571 08REDBK1 345 249573 08SGROVE 345 1 END
DEOK_P2-3_C2 1493_RED BANK	CONTINGENCY 'DEOK_P2-3_C2 1493_RED BANK' OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 / 249571 08REDBK1 345 249573 08SGROVE 345 1 OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 / 249573 08SGROVE 345 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 / 249573 08SGROVE 345 249577 08ZIMER 345 1 OPEN BRANCH FROM BUS 249571 TO BUS 250092 CKT 1 / 249571 08REDBK1 345 250092 08REDBK1 138 1 END
AEP_P4_#8094_05BIXBY 345_C	CONTINGENCY 'AEP_P4_#8094_05BIXBY 345_C' OPEN BRANCH FROM BUS 243453 TO BUS 243454 CKT 1 / 243453 05BEATTY 345 243454 05BIXBY 345 1 OPEN BRANCH FROM BUS 941520 TO BUS 243454 CKT 1 / 941520 AE2-149 TAP 345 243454 05BIXBY 345 1 END
DEOK_P2-3_C2 816_SILVERGROVE	CONTINGENCY 'DEOK_P2-3_C2 816_SILVERGROVE' OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 / 249573 08SGROVE 345 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249988 TO BUS 250097 CKT 1 / 249988 08BKJ135 138 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 250042 TO BUS 250097 CKT 1 / 250042 08HANDS1 138 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 250052 TO BUS 250097 CKT 1 / 250052 08KYUNIV 138 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 250053 TO BUS 250097 CKT 1 / 250053 08LAFARG 138 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 / 249571 08REDBK1 345 249573 08SGROVE 345 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 / 249573 08SGROVE 345 249577 08ZIMER 345 1 END
DAY-P1-STU SPUR	CONTINGENCY 'DAY-P1-STU SPUR' DISCONNECT BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 /* STU SPUR END
EKPC_P2-4_SPUR N39-150T-A	CONTINGENCY 'EKPC_P2-4_SPUR N39-150T-A' /* SPURLOCK OPEN BUS 342960 /* 1SPURLK2G OPEN BRANCH FROM BUS 958170 TO BUS 342838 CKT 1 /* 958170 AF2-111 TAP 345.00 342838 7SPURLOCK 345.00 END
DAY_P4_L34553-1	CONTINGENCY 'DAY_P4_L34553-1' OPEN LINE FROM BUS 253077 TO BUS 342838 CKT 1 /* 09STUART 345 - 7SPURLK 345 OPEN LINE FROM BUS 253077 TO BUS 253076 CKT 1 /* 09STUART 345 - 09STUART 138 END
Base Case	
EKPC_P1-2_SPUR-NCLA345-A	CONTINGENCY 'EKPC_P1-2_SPUR-NCLA345-A' /* SPURLOCK- AF2-111 TAP OPEN BRANCH FROM BUS 958170 TO BUS 342838 CKT 1 /* 958170 AF2-111 TAP 345.00 342838 7SPURLOCK 345.00 END
DAY_P7_495	CONTINGENCY 'DAY_P7_495' OPEN BRANCH FROM BUS 249566 TO BUS 253006 CKT 1 / 249566 08FOSTER 345 253006 09BATH 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253027 CKT 1 / 253014 09CLINTO 345 253027 09GREENE 345 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 1 / 253014 09CLINTO 345 253013 09CLINTO 69.0 1 OPEN BRANCH FROM BUS 253014 TO BUS 253013 CKT 2 / 253014 09CLINTO 345 253013 09CLINTO 69.0 1 END
DEOK_P1-3_B3 SILVER GROVE 345/138 TB23*	CONTINGENCY 'DEOK_P1-3_B3 SILVER GROVE 345/138 TB23*' OPEN BRANCH FROM BUS 249573 TO BUS 250097 CKT 1 / 249573 08SGROVE 345 250097 08SGROVE 138 1 OPEN BRANCH FROM BUS 249571 TO BUS 249573 CKT 1 / 249571 08REDBK1 345 249573 08SGROVE 345 1 OPEN BRANCH FROM BUS 249573 TO BUS 249577 CKT 1 / 249573 08SGROVE 345 249577 08ZIMER 345 1 END

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Contingency Name	Contingency Definition
AEP_P1-2_#10137	CONTINGENCY 'AEP_P1-2_#10137' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 END
DAY_P1_AC1-085_ST_FSA-B	CONTINGENCY 'DAY_P1_AC1-085_ST_FSA-B' OPEN BRANCH FROM BUS 253014 TO BUS 942090 CKT 1 END
EKPC_P2-3_SPUR N39-1474	CONTINGENCY 'EKPC_P2-3_SPUR N39-1474' /* SPURLOCK OPEN BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 /* 253077 09STUART 345.00 342838 7SPURLOCK 345.00 OPEN BRANCH FROM BUS 342664 TO BUS 342838 CKT 2 /* 342664 4SPURLOCK 138.00 342838 7SPURLOCK 345.00 END
EKPC_P4-2_SPUR N39-1474	CONTINGENCY 'EKPC_P4-2_SPUR N39-1474' /* SPURLOCK OPEN BRANCH FROM BUS 253077 TO BUS 342838 CKT 1 /* 253077 09STUART 345.00 342838 7SPURLOCK 345.00 OPEN BRANCH FROM BUS 342664 TO BUS 342838 CKT 2 /* 342664 4SPURLOCK 138.00 342838 7SPURLOCK 345.00 END
AEP_P4_#3196_05BEATTY 345_302E	CONTINGENCY 'AEP_P4_#3196_05BEATTY 345_302E' OPEN BRANCH FROM BUS 243453 TO BUS 244022 CKT 1 / 243453 05BEATTY 345 244022 05COLE 345 1 OPEN BRANCH FROM BUS 243453 TO BUS 243468 CKT 4 / 243453 05BEATTY 345 243468 05BEATTX 138 4 END

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10 Light Load Analysis

Not applicable.

11 Short Circuit Analysis

The following Breakers are overdutied:

None.

12 Stability and Reactive Power

(Summary of the VAR requirements based upon the results of the dynamic studies)

To be determined in the Facilities Study Phase.

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).

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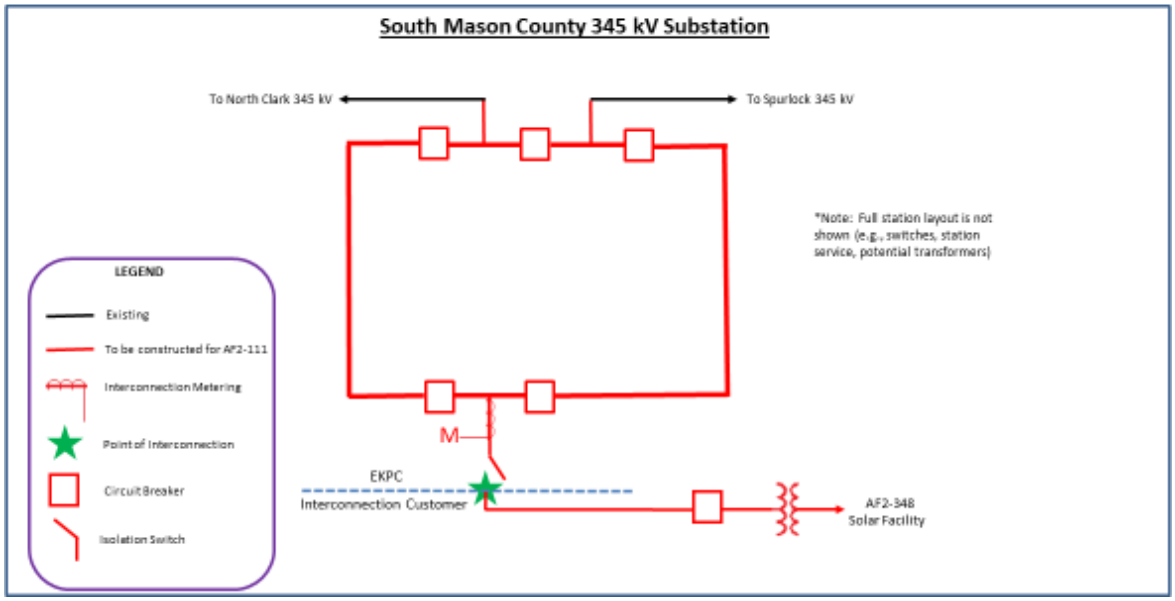
14 Attachment 1: One Line Diagram

AF2-348 Conceptual Single-Line Diagram of Interconnection Facilities