



**Generation Interconnection
System Impact Study Report
for
Queue Project AF2-307
HOPE-BLEVINS VALLEY TAP 69 KV
39.6 MW Capacity / 66 MW Energy**

June 2022

Table of Contents

1	Introduction.....	4
2	Preface.....	4
3	General	5
4	Point of Interconnection.....	6
5	Cost Summary	6
6	Transmission Owner Scope of Work	8
6.1	Attachment Facilities.....	8
6.2	Direct Connection Cost Estimate.....	8
6.3	Non-Direct Connection Cost Estimate.....	8
7	Interconnection Customer Requirements.....	9
8	Revenue Metering and SCADA Requirements	10
8.1	PJM Requirements	10
8.2	Meteorological Data Reporting Requirements	10
8.3	Interconnected Transmission Owner Requirements.....	10
9	Summer Peak Analysis	11
9.1	Generation Deliverability	11
9.2	Multiple Facility Contingency	11
9.3	Contribution to Previously Identified Overloads.....	11
9.4	Steady-State Voltage Requirements	12
9.5	Potential Congestion due to Local Energy Deliverability.....	12
9.6	System Reinforcements.....	14
9.7	Flow Gate Details.....	23
9.7.1	Index 1	24
9.7.2	Index 2	25
9.7.3	Index 3	27
9.7.4	Index 4	28
9.7.5	Index 5	29
9.7.6	Index 6	30
9.7.7	Index 7	31
9.7.8	Index 8	33
9.7.9	Index 9	35

9.7.10	Index 10.....	36
9.7.11	Index 11.....	38
9.7.12	Index 12.....	39
9.7.13	Index 13.....	40
9.7.14	Index 14.....	41
9.8	Queue Dependencies	43
9.9	Contingency Descriptions.....	45
10	Light Load Analysis	50
11	Short Circuit Analysis.....	50
12	Stability and Reactive Power	50
13	Affected Systems	50
13.1	TVA.....	50
13.2	Duke Energy Progress.....	50
13.3	MISO	50
13.4	LG&E.....	50
14	Attachment 1: One Line Diagram	51

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.

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Bath County, Kentucky. The installed facilities will have a total capability of 66 MW with 39.6 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is September 01, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AF2-307
Project Name	HOPE-BLEVINS VALLEY TAP 69 KV
State	Kentucky
County	Bath
Transmission Owner	EKPC
MFO	66
MWE	66
MWC	39.6
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.

4 Point of Interconnection

AF2-307 will interconnect with the EKPC on transmission system tapping the Hope to Blevins Valley Tap 69 kV line.

5 Cost Summary

The AF2-307 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	\$0
Total System Network Upgrade Costs (Summer Peak)	\$5,859,000
Total Costs	\$5,859,000

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

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 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.

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
None	\$0
Total Attachment Facility Costs	\$0

6.2 Direct Connection Cost Estimate

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

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

6.3 Non-Direct Connection Cost Estimate

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

Description	Total Cost
None	\$0
Total Non-Direct Connection Facility Costs	\$0

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.

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/>

9 Summer Peak Analysis

The Queue Project AF2-307 was evaluated as a 66.0 MW (Capacity 39.6 MW) injection tapping the Hope to Blevins Valley Tap 69 kV line in the EKPC area. Project AF2-307 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF2-307 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)

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC DC	MW IMPACT
100233142	341923	2MURPHYSVIL	69.0	EKPC	325019	2KENTON-6	69.0	LGEE	1	EKPC_P4-6_SPURN39-92T	breaker	66.0	98.08	103.13	AC	3.92
101928923	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	EKPC_P2-2_ROWANCO 138	bus	66.0	69.42	127.65	AC	44.83
101928924	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	EKPC_P2-3_ROWANE83-814	bus	66.0	69.33	127.64	AC	44.83
101929152	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	EKPC_P4-2_ROWANE83-814	breaker	66.0	69.33	127.64	AC	44.83
101929153	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	EKPC_P4-2_ROWANE83-834	breaker	66.0	69.42	127.65	AC	44.83
101929154	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	EKPC_P4-2_ROWANE83-824	breaker	66.0	69.42	127.65	AC	44.83
101930361	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	DAY_P734541 34553	tower	66.0	32.1	100.5	AC	44.4

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC DC	MW IMPACT
95883755	246800	05SARDINIA	138.0	AEP	247034	05EMERSS	138.0	AEP	1	DAY_P734541 34553	tower	185.0	129.33	131.28	AC	4.24
95883719	246946	05WLDCAT	138.0	AEP	243019	05HILLSB	138.0	AEP	1	DAY_P734541 34553	tower	185.0	181.21	183.16	AC	4.24
95883763	247034	05EMERSS	138.0	AEP	246946	05WLDCAT	138.0	AEP	1	DAY_P734541 34553	tower	185.0	128.18	130.13	AC	4.24
100734247	250054	08LONGBR	138.0	DEO &K	250077	08MTZION	138.0	DEO &K	1	DAY_P734541 34553	tower	284.0	130.63	132.03	AC	5.09
100734248	250077	08MTZION	138.0	DEO &K	249991	08BUFTN1	138.0	DEO &K	1	DAY_P734541 34553	tower	298.0	120.34	121.68	AC	5.09

ID	FROM BUS #	FROM BUS	kV	FROM BUS AREA	TO BUS #	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADI NG %	POST PROJE CT LOADI NG %	AC DC	MW IMPA CT
95453084	324267	4KENTON	138.0	LGEE	246800	05SARDINIA	138.0	AEP	1	DAY_P734541 34553	tower	185.0	132.06	134.01	AC	4.24
98862733	342559	4BOONECO	138.0	EKPC	250054	08LONGBR	138.0	DEO&K	1	DAY_P734541 34553	tower	284.0	137.66	139.07	AC	5.09
101929122	342571	4CRANSTON	138.0	EKPC	342649	4ROWANCO	138.0	EKPC	1	EKPC_P4-6_SPUR N39-92T	breaker	255.0	107.59	111.56	AC	9.15
101929120	342589	4GODDARD	138.0	EKPC	342571	4CRANSTON	138.0	EKPC	1	EKPC_P4-6_SPUR N39-92T	breaker	255.0	107.61	111.58	AC	9.15
100232988	342649	4ROWANCO	138.0	EKPC	324302	4RODBURN	138.0	LGEE	1	EKPC_P4-6_SPUR N39-92T	breaker	191.0	114.94	122.22	AC	12.72
98861961	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-2_C1 SILVER GROVE 345 BUS	bus	1532.0	138.74	139.75	AC	17.9
98862078	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-3_C2 816_SILVERGROVE	breaker	1532.0	138.92	139.93	AC	17.92
98862079	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P2-3_C2 1493_RED BANK	breaker	1532.0	138.86	139.87	AC	17.9
98862739	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSIL GRVZIMMER	tower	1532.0	138.67	139.68	AC	17.9

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	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADI NG %	POST PROJE CT LOADI NG %	AC DC	MW IMPA CT
101929730	342091	2PLUMVILLE	69.0	EKPC	341923	2MURPHYSVILLE	69.0	EKPC	1	EKPC_P1 - 2_SPUR-PLUM 138	operation	63.0	95.17	100.22	AC	3.75
98862292	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	Base Case	operation	1240.0	143.74	145.07	AC	16.69
98862293	342838	7SPURLOCK	345.0	EKPC	253077	09STUART	345.0	DAY	1	DEOK_P1-3_B3 SILVER GROVE 345/138 TB23*	operation	1532.0	138.74	139.75	AC	17.9
98862440	342838	7SPURLOCK	345.0	EKPC	249581	08MELDAL	345.0	DEO&K	1	DAY-P1-STU SPUR	operation	1421.0	88.47	89.63	AC	16.35

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Ratin g MVA	PRE PROJEC T LOADIN G %	POST PROJEC T LOADIN G %	AC D C	MW IMPAC T
101929505	939140	AE1-144 TAP	138.0	EKPC	342634	4PLUMVILLE	138.0	EKPC	1	EKPC_P1 - 2_SPUR- GODD 138-B	operation	186.0	122.25	128.43	AC	10.72
101929702	960150	AF2-306 TAP	69.0	EKPC	341644	2HOPE	69.0	EKPC	1	Base Case	operation	53.0	19.09	105.15	AC	44.07

9.6 System Reinforcements

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number
98862733	10	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. AF2-307 currently does not receive cost allocation towards this upgrade. As changes to the PJM queue process occur (such as prior queued projects	\$200 K + \$20 K + \$2.59 M + \$215 K + \$190 K	\$0 + \$0 + \$0 + \$0 + \$0	N6463.1 N6463.2 N6463.3 N6463.4 N6463.5

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number
			withdrawing from the queue, reducing in size, etc.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study.			
0101929122	11	4CRANSTON 138.0 kV - 4ROWAN CO 138.0 kV Ckt 1	EKPC N6829: Increase the maximum operating temperature of the 795 MCM ACSR conductor in the Cranston-Rowan County 138 kV line section to 275 degrees F (7.5 miles). New expected SE rating is 296 MVA. Project Type : FAC Cost : \$ 680,000 Time Estimate : 9 Months The upgrade N6829 is driven in a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study.	\$680 K	\$0	N6829
95883719	5	05WLDCAT 138.0 kV - 05HILLSB 138.0 kV Ckt 1	AEP 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 upgrade N5472, is driven by a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for	\$186 K + \$15.04 M	\$0 + \$0	N5472 N5857

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number												
			this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. AEP 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 AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study.															
101929153,101928924,101928923,101930361,101929152,101929154	3	AF2-306 TAP 69.0 kV - 2HOPE 69.0 kV Ckt 1	Existing SE rating of this line section is 98 MVA. EKPC completed a rebuild of this line in 2019 that increased the ratings of the line section.	\$0	\$0													
100734248	8	08MTZION 138.0 kV - 08BUFTN1 138.0 kV Ckt 1	DEOK N8066: Rebuild the line, replace two switches at Mt. Zion & replace meter at Buffington. New expected ratings to be 394/394 MVA SN/SE. Project Type : FAC Cost : \$ 5,625,426 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 (\$5.625 M)</th></tr><tr><td>AF2-111</td><td>26.64</td><td>83.96%</td><td>4.723</td></tr><tr><td>AF2-307</td><td>5.09</td><td>16.04%</td><td>0.902</td></tr></table>	Queue	MW contribution	Percentage of Cost	\$ cost (\$5.625 M)	AF2-111	26.64	83.96%	4.723	AF2-307	5.09	16.04%	0.902	\$5.625 M	\$902 K	N8066
Queue	MW contribution	Percentage of Cost	\$ cost (\$5.625 M)															
AF2-111	26.64	83.96%	4.723															
AF2-307	5.09	16.04%	0.902															
101929120	12	4GODDARD 138.0 kV - 4CRANSTON 138.0 kV Ckt 1	EKPC N6828: Increase the maximum operating temperature of the 795 MCM ACSR conductor in the Goddard-Cranston	\$1.15 M	\$0	N6828												

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number
			138 kV line section to 275 degrees F (12.7 miles). New expected SE rating is 296 MVA. Project Type : FAC Cost : \$ 1,150,000 Time Estimate : 12 Months The upgrade N6828 is driven in a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study.			
100233142	1	2MURPHYSVIL 69.0 kV - 2KENTON-6 69.0 kV Ckt 1	EKPC N8101: Replace the 4/0 copper bus and jumpers at the Murphysville substation with 500 MCM copper or equivalent equipment. New expected SE rating is 68 MVA. Project Type : FAC Cost : \$ 130,000 Time Estimate : 9 Months EKPC N8101.1: Change the Zone 3 relay setting at Murphysville substation associated with the line protection to at least 89 MVA LTE rating. New expected SE rating is 89 MVA. Project Type : FAC Cost : \$ 0 Time Estimate : 6 Months This AF2-307 is the driver for this project.	\$130 K	\$130 K + \$0	N8101 N8101.1
100232988	13	4ROWAN CO 138.0 kV - 4RODBURN 138.0 kV Ckt 1	EKPC N6827: Replace the 800A wave trap at Rodburn substation with 1200A equipment. New expected SE rating is 255 MVA. Project Type : FAC Cost : \$ 90,000 Time Estimate : 9 Months The upgrade N6827 is driven in a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for	\$90 K	\$0	N6827

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number																																																				
			this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. LG&E LG&E end SE rating is 203 MVA. An LG&E affected system study will be required. The AF2-307 customer will be required to sign an LG&E affected system study agreement. LG&E impacts will be determined during the affected system study.																																																							
98862739,98861961,98862078,98862079	14	7SPURLOCK 345.0 kV - 09STUART 345.0 kV Ckt 1	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>7.82%</td><td>\$1,337,850</td></tr><tr><td>AE2-038</td><td>32.12</td><td>5.21%</td><td>\$891,715</td></tr><tr><td>AE2-138</td><td>84.73</td><td>13.76%</td><td>\$2,352,274</td></tr><tr><td>AE2-210</td><td>29.33</td><td>4.76%</td><td>\$814,259</td></tr><tr><td>AE2-275</td><td>21.24</td><td>3.45%</td><td>\$589,665</td></tr><tr><td>AE2-308</td><td>35.33</td><td>5.74%</td><td>\$980,831</td></tr><tr><td>AF1-127</td><td>25.84</td><td>4.20%</td><td>\$717,370</td></tr><tr><td>AF1-233</td><td>94.25</td><td>15.30%</td><td>\$2,616,568</td></tr><tr><td>AF1-251</td><td>72.21</td><td>11.72%</td><td>\$2,004,694</td></tr><tr><td>AF1-256</td><td>33.74</td><td>5.48%</td><td>\$936,690</td></tr><tr><td>AF2-111</td><td>121.05</td><td>19.65%</td><td>\$3,360,589</td></tr><tr><td>AF2-307</td><td>17.92</td><td>2.91%</td><td>\$497,495</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. AF2-307 currently does not receive cost allocation towards	Queue	MW contribution	Percentage of Cost	Cost (\$17.1M)	AE1-144	48.19	7.82%	\$1,337,850	AE2-038	32.12	5.21%	\$891,715	AE2-138	84.73	13.76%	\$2,352,274	AE2-210	29.33	4.76%	\$814,259	AE2-275	21.24	3.45%	\$589,665	AE2-308	35.33	5.74%	\$980,831	AF1-127	25.84	4.20%	\$717,370	AF1-233	94.25	15.30%	\$2,616,568	AF1-251	72.21	11.72%	\$2,004,694	AF1-256	33.74	5.48%	\$936,690	AF2-111	121.05	19.65%	\$3,360,589	AF2-307	17.92	2.91%	\$497,495	\$17.1 M + \$100 K + \$250 K + \$150 K + \$170 K + \$30 M	\$497 K + \$0 + \$0 + \$0 + \$0 + \$3.113 M	N5780 N5780.1 N5780.2 N5780.3 N5780.4 N5780.5
Queue	MW contribution	Percentage of Cost	Cost (\$17.1M)																																																							
AE1-144	48.19	7.82%	\$1,337,850																																																							
AE2-038	32.12	5.21%	\$891,715																																																							
AE2-138	84.73	13.76%	\$2,352,274																																																							
AE2-210	29.33	4.76%	\$814,259																																																							
AE2-275	21.24	3.45%	\$589,665																																																							
AE2-308	35.33	5.74%	\$980,831																																																							
AF1-127	25.84	4.20%	\$717,370																																																							
AF1-233	94.25	15.30%	\$2,616,568																																																							
AF1-251	72.21	11.72%	\$2,004,694																																																							
AF1-256	33.74	5.48%	\$936,690																																																							
AF2-111	121.05	19.65%	\$3,360,589																																																							
AF2-307	17.92	2.91%	\$497,495																																																							

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number
			this upgrade. As changes to the PJM queue process occur (such as prior queued projects withdrawing from the queue, reducing in size, etc.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. <u>DAYTON</u> 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. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. <u>EKPC:</u> 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 AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. <u>EKPC</u> N5780.3: Replace the 1500A interconnection metering CTs with 2000A equipment. New expected ratings to be 1821/1877 MVA SN/SE.			

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number																
			Project Type : FAC Cost : \$ 150,000 Time Estimate : 9 Months A prior queue cycle is driving the need for N5780.3. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 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. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 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 : FAC Cost : \$ 30,000,000 Time Estimate : 48 Months The cost allocation table is below: <table><tr><th>Queue</th><th>MW contribution</th><th>Percentage of Cost</th><th>Cost(\$30M)</th></tr><tr><td>AF1-256</td><td>33.74</td><td>19.54%</td><td>\$5.861</td></tr><tr><td>AF2-111</td><td>121.05</td><td>70.09%</td><td>\$21.027</td></tr><tr><td>AF2-307</td><td>17.92</td><td>10.38%</td><td>\$3.113</td></tr></table>	Queue	MW contribution	Percentage of Cost	Cost(\$30M)	AF1-256	33.74	19.54%	\$5.861	AF2-111	121.05	70.09%	\$21.027	AF2-307	17.92	10.38%	\$3.113			
Queue	MW contribution	Percentage of Cost	Cost(\$30M)																			
AF1-256	33.74	19.54%	\$5.861																			
AF2-111	121.05	70.09%	\$21.027																			
AF2-307	17.92	10.38%	\$3.113																			

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF2-307	Upgrade Number				
100734247	7	08LONGBR 138.0 kV - 08MTZION 138.0 kV Ckt 1	<u>EKPC</u> 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 The upgrade N6460.1 is driven in a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. <u>DEOK</u> 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 upgrade N6460.2 is driven in a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study. <u>EKPC</u> 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 table is below: <table><tr><td>Queue</td><td>MW contribution</td><td>Percentage of Cost</td><td>\$ cost (\$7.588 M)</td></tr></table>	Queue	MW contribution	Percentage of Cost	\$ cost (\$7.588 M)	\$400 K + \$ 3.228 M + \$4.360 M	\$0 + \$0 + 1.217 M	N6460.1 N6460.2 N6460.3
Queue	MW contribution	Percentage of Cost	\$ cost (\$7.588 M)							

ID	Idx	Facility	Upgrade Description				Cost	Cost Allocated to AF2-307	Upgrade Number								
			<table><tr><td>AF2-111</td><td>26.64</td><td>83.96%</td><td>6.371</td></tr><tr><td>AF2-307</td><td>5.09</td><td>16.04%</td><td>1.217</td></tr></table>				AF2-111	26.64	83.96%	6.371	AF2-307	5.09	16.04%	1.217			
AF2-111	26.64	83.96%	6.371														
AF2-307	5.09	16.04%	1.217														
95453084	9	4KENTON 138.0 kV - 05SARDINIA 138.0 kV Ckt 1	<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 Cost : \$ 94,000 Time Estimate : 12 Months				\$94 K	\$0	N6461								
95883755	4	05SARDINIA 138.0 kV - 05EMERSS 138.0 kV Ckt 1	This overload and N6461 is driven by a prior queue cycle. AF2-307 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.) AF2-307 could receive cost allocation. Although Queue Project AF2-307 may not presently have cost responsibility for this upgrade, Queue Project AF2-307 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AF2-307 comes into service prior to completion of the upgrade, Queue Project AF2-307 will need an interim study.														
95883763	6	05EMERSS 138.0 kV - 05WLDCAT 138.0 kV Ckt 1	<u>LG&E end:</u> An LG&E affected system study will be required. The AF2-307 customer will be required to sign an LG&E affected system study agreement. LG&E impacts will be determined during the affected system study.														
			TOTAL COST				\$81,968,426	\$5,859,000									

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.

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".

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
100233142	341923	2MURPHYSVIL	EKPC	325019	2KENTON-6	LGEE	1	EKPC_P4-6_SPUR N39-92T	breaker	66.0	98.08	103.13	AC	3.92

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936381	AD2-048 C	6.0477	50/50	6.0477
936382	AD2-048 E	3.0173	50/50	3.0173
939141	AE1-144 C O1	13.5851	50/50	13.5851
939142	AE1-144 E O1	6.7417	50/50	6.7417
940531	AE2-038 C O1	9.0624	50/50	9.0624
940532	AE2-038 E O1	4.4888	50/50	4.4888
945681	AF1-233 C	19.4003	50/50	19.4003
945682	AF1-233 E	9.5842	50/50	9.5842
945911	AF1-256 C	6.1834	50/50	6.1834
945912	AF1-256 E	4.1222	50/50	4.1222
960151	AF2-306	1.3110	Adder	1.54
960161	AF2-307 C	1.9967	Adder	2.35
960162	AF2-307 E	1.3311	Adder	1.57
WEC	WEC	0.0044	Confirmed LTF	0.0044
LGEE	LGEE	0.1198	Confirmed LTF	0.1198
CPL	CPL	0.0556	Confirmed LTF	0.0556
G-007A	G-007A	0.0048	Confirmed LTF	0.0048
VFT	VFT	0.0129	Confirmed LTF	0.0129
CBM-W2	CBM-W2	0.8354	Confirmed LTF	0.8354
NY	NY	0.0006	Confirmed LTF	0.0006
TVA	TVA	0.2450	Confirmed LTF	0.2450
CBM-S2	CBM-S2	0.6127	Confirmed LTF	0.6127
CBM-S1	CBM-S1	1.5506	Confirmed LTF	1.5506
MADISON	MADISON	0.4939	Confirmed LTF	0.4939
MEC	MEC	0.0779	Confirmed LTF	0.0779
CBM-W1	CBM-W1	0.1126	Confirmed LTF	0.1126

9.7.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
98862179	342838	7SPURLOCK	EKPC	249581	08MELDAL	DEO&K	1	EKPC_P4-2_SPUR N39-1474	breaker	1421.0	88.52	89.66	AC	16.1

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342918	1JKCT 1G	4.4713	50/50	4.4713
342921	1JKCT 2G	3.2585	50/50	3.2585
342924	1JKCT 3G	4.4713	50/50	4.4713
342939	1JKCT 9G	3.2971	50/50	3.2971
342942	1JKCT 10G	3.2971	50/50	3.2971
342957	1SPURLK1G	22.7957	50/50	22.7957
342960	1SPURLK2G	45.3625	50/50	45.3625
342963	1SPURLK3G	23.8375	50/50	23.8375
342966	1SPURLK4G	23.8375	50/50	23.8375
925981	AC1-074 C O1 (Suspended)	13.5873	50/50	13.5873
925982	AC1-074 E O1 (Suspended)	5.8231	50/50	5.8231
926101	AC1-089 C O1	3.7631	Adder	4.43
926102	AC1-089 E O1	6.1398	Adder	7.22
932551	AC2-075 C (Suspended)	3.2270	50/50	3.2270
932552	AC2-075 E (Suspended)	1.6256	50/50	1.6256
936381	AD2-048 C	10.9950	50/50	10.9950
936382	AD2-048 E	5.4858	50/50	5.4858
936571	AD2-072 C O1 (Suspended)	7.0184	Adder	8.26
936572	AD2-072 E O1 (Suspended)	3.4412	Adder	4.05
939131	AE1-143 C	5.1672	Adder	6.08
939132	AE1-143 E	2.5595	Adder	3.01
939141	AE1-144 C O1	29.6307	50/50	29.6307
939142	AE1-144 E O1	14.7045	50/50	14.7045
940531	AE2-038 C O1	19.7661	50/50	19.7661
940532	AE2-038 E O1	9.7907	50/50	9.7907
941411	AE2-138 C	57.7656	50/50	57.7656
941412	AE2-138 E	21.3654	50/50	21.3654
941981	AE2-210 C O1	19.9045	50/50	19.9045
941982	AE2-210 E O1	7.4870	50/50	7.4870
942411	AE2-254 C O1	3.6411	Adder	4.28
942412	AE2-254 E O1	2.4274	Adder	2.86
942591	AE2-275 C O1	12.0024	Adder	14.12
942592	AE2-275 E O1	4.5147	Adder	5.31
942891	AE2-308 C O1	20.0735	Adder	23.62
942892	AE2-308 E O1	7.2995	Adder	8.59
943111	AE2-339 C	6.6475	50/50	6.6475
943112	AE2-339 E	3.2741	50/50	3.2741
943701	AF1-038 C	2.6356	Adder	3.1
943702	AF1-038 E	1.7571	Adder	2.07
944151	AF1-083 C O1	2.3913	Adder	2.81
944152	AF1-083 E O1	1.5942	Adder	1.88
944511	AF1-116 C	5.7950	Adder	6.82
944512	AF1-116 E	3.8634	Adder	4.55
944621	AF1-127 C O1	15.7579	50/50	15.7579
944622	AF1-127 E O1	7.7613	50/50	7.7613
945681	AF1-233 C	56.8741	50/50	56.8741
945682	AF1-233 E	28.0972	50/50	28.0972
945861	AF1-251 C	39.5234	50/50	39.5234
945862	AF1-251 E	26.3490	50/50	26.3490
945911	AF1-256 C	18.2510	50/50	18.2510
945912	AF1-256 E	12.1674	50/50	12.1674
958171	AF2-111 C O1	68.2020	50/50	68.2020
958172	AF2-111 E O1	45.4680	50/50	45.4680

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
960151	AF2-306	6.3427	50/50	6.3427
960161	AF2-307 C	9.6604	50/50	9.6604
960162	AF2-307 E	6.4403	50/50	6.4403
960571	AF2-348 C	66.7320	50/50	66.7320
960572	AF2-348 E	44.4880	50/50	44.4880
960641	AF2-355 C O1	24.6655	Adder	29.02
960642	AF2-355 E O1	16.4437	Adder	19.35
LGEE	LGEE	2.8474	Confirmed LTF	2.8474
CPL	CPL	0.8170	Confirmed LTF	0.8170
CBM-W2	CBM-W2	13.2842	Confirmed LTF	13.2842
NY	NY	0.1139	Confirmed LTF	0.1139
TVA	TVA	4.0432	Confirmed LTF	4.0432
O-066	O-066	0.9811	Confirmed LTF	0.9811
CBM-S2	CBM-S2	9.2942	Confirmed LTF	9.2942
CBM-S1	CBM-S1	27.9286	Confirmed LTF	27.9286
G-007	G-007	0.1487	Confirmed LTF	0.1487
MADISON	MADISON	12.6726	Confirmed LTF	12.6726
MEC	MEC	0.9979	Confirmed LTF	0.9979

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
101929154	960150	AF2-306 TAP	EKPC	341644	2HOPE	EKPC	1	EKPC_P4-2_ROWAN E83-824	breaker	66.0	69.42	127.65	AC	44.83

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939141	AE1-144 C O1	3.9048	Adder	4.59
939142	AE1-144 E O1	1.9378	Adder	2.28
940531	AE2-038 C O1	2.6048	Adder	3.06
940532	AE2-038 E O1	1.2902	Adder	1.52
945681	AF1-233 C	7.1775	Adder	8.44
945682	AF1-233 E	3.5459	Adder	4.17
945911	AF1-256 C	2.2118	Adder	2.6
945912	AF1-256 E	1.4745	Adder	1.73
960151	AF2-306	17.6613	50/50	17.6613
960161	AF2-307 C	26.8995	50/50	26.8995
960162	AF2-307 E	17.9330	50/50	17.9330
NEWTON	NEWTON	0.0279	Confirmed LTF	0.0279
FARMERCITY	FARMERCITY	0.0025	Confirmed LTF	0.0025
GIBSON	GIBSON	0.0186	Confirmed LTF	0.0186
NY	NY	0.0039	Confirmed LTF	0.0039
PRAIRIE	PRAIRIE	0.1446	Confirmed LTF	0.1446
O-066	O-066	0.0739	Confirmed LTF	0.0739
COFFEEN	COFFEEN	0.0052	Confirmed LTF	0.0052
CHEOAH	CHEOAH	0.0916	Confirmed LTF	0.0916
EDWARDS	EDWARDS	0.0014	Confirmed LTF	0.0014
G-007	G-007	0.0114	Confirmed LTF	0.0114
CALDERWOOD	CALDERWOOD	0.0919	Confirmed LTF	0.0919
BLUEG	BLUEG	0.0972	Confirmed LTF	0.0972
TRIMBLE	TRIMBLE	0.0250	Confirmed LTF	0.0250
CATAWBA	CATAWBA	0.0385	Confirmed LTF	0.0385
CBM-W1	CBM-W1	0.0250	Confirmed LTF	0.0250

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
95883755	246800	05SARDINIA	AEP	247034	05EMERSS	AEP	1	DAY_P734541 34553	tower	185.0	129.33	131.28	AC	4.24

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

9.7.5 Index 5

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
95883719	246946	05WLDCAT	AEP	243019	05HILLSB	AEP	1	DAY_P73454134553	tower	185.0	181.21	183.16	AC	4.24

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

9.7.6 Index 6

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
95883763	247034	05EMERSS	AEP	246946	05WLDCAT	AEP	1	DAY_P734541 34553	tower	185.0	128.18	130.13	AC	4.24

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

9.7.7 Index 7

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
100734247	250054	08LONGBR	DEO&K	250077	08MTZION	DEO&K	1	DAY_P734541 34553	tower	284.0	130.63	132.03	AC	5.09

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
CPL	CPL	0.2844	Confirmed LTF	0.2844
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

9.7.8 Index 8

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
100734248	250077	08MTZION	DEO&K	249991	08BUFTN1	DEO&K	1	DAY_P734541 34553	tower	298.0	120.34	121.68	AC	5.09

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
CPL	CPL	0.2844	Confirmed LTF	0.2844
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

9.7.9 Index 9

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
95453084	324267	4KENTON	LGEE	246800	05SARDINIA	AEP	1	DAY_P734541 34553	tower	185.0	132.06	134.01	AC	4.24

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

9.7.10 Index 10

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
98862733	342559	4BOONE CO	EKPC	250054	08LONGBR	DEO&K	1	DAY_P734541 34553	tower	284.0	137.66	139.07	AC	5.09

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
CPL	CPL	0.2844	Confirmed LTF	0.2844
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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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

9.7.11 Index 11

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
101929122	342571	4CRANSTON	EKPC	342649	4ROWAN CO	EKPC	1	EKPC_P4-6_SPUR N39-92T	breaker	255.0	107.59	111.56	AC	9.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936381	AD2-048 C	2.2900	Adder	2.69
936382	AD2-048 E	1.1426	Adder	1.34
939141	AE1-144 C O1	42.5958	50/50	42.5958
939142	AE1-144 E O1	21.1386	50/50	21.1386
940531	AE2-038 C O1	28.4149	50/50	28.4149
940532	AE2-038 E O1	14.0747	50/50	14.0747
945681	AF1-233 C	88.9248	50/50	88.9248
945682	AF1-233 E	43.9310	50/50	43.9310
945911	AF1-256 C	28.3426	50/50	28.3426
945912	AF1-256 E	18.8950	50/50	18.8950
960151	AF2-306	3.6044	50/50	3.6044
960161	AF2-307 C	5.4897	50/50	5.4897
960162	AF2-307 E	3.6598	50/50	3.6598
WEC	WEC	0.0132	Confirmed LTF	0.0132
LGEE	LGEE	0.0770	Confirmed LTF	0.0770
CBM-W2	CBM-W2	0.3440	Confirmed LTF	0.3440
NY	NY	0.0083	Confirmed LTF	0.0083
TVA	TVA	0.0364	Confirmed LTF	0.0364
O-066	O-066	0.1142	Confirmed LTF	0.1142
CBM-S1	CBM-S1	0.3919	Confirmed LTF	0.3919
G-007	G-007	0.0177	Confirmed LTF	0.0177
MEC	MEC	0.0651	Confirmed LTF	0.0651
CATAWBA	CATAWBA	0.0056	Confirmed LTF	0.0056
CBM-W1	CBM-W1	0.4629	Confirmed LTF	0.4629

9.7.12 Index 12

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
101929120	342589	4GODDARD	EKPC	342571	4CRANSTON	EKPC	1	EKPC_P4-6_SPUR N39-92T	breaker	255.0	107.61	111.58	AC	9.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
936381	AD2-048 C	2.2900	Adder	2.69
936382	AD2-048 E	1.1426	Adder	1.34
939141	AE1-144 C O1	42.5958	50/50	42.5958
939142	AE1-144 E O1	21.1386	50/50	21.1386
940531	AE2-038 C O1	28.4149	50/50	28.4149
940532	AE2-038 E O1	14.0747	50/50	14.0747
945681	AF1-233 C	88.9248	50/50	88.9248
945682	AF1-233 E	43.9310	50/50	43.9310
945911	AF1-256 C	28.3426	50/50	28.3426
945912	AF1-256 E	18.8950	50/50	18.8950
960151	AF2-306	3.6044	50/50	3.6044
960161	AF2-307 C	5.4897	50/50	5.4897
960162	AF2-307 E	3.6598	50/50	3.6598
WEC	WEC	0.0132	Confirmed LTF	0.0132
LGEE	LGEE	0.0770	Confirmed LTF	0.0770
CBM-W2	CBM-W2	0.3440	Confirmed LTF	0.3440
NY	NY	0.0083	Confirmed LTF	0.0083
TVA	TVA	0.0364	Confirmed LTF	0.0364
O-066	O-066	0.1142	Confirmed LTF	0.1142
CBM-S1	CBM-S1	0.3919	Confirmed LTF	0.3919
G-007	G-007	0.0177	Confirmed LTF	0.0177
MEC	MEC	0.0651	Confirmed LTF	0.0651
CATAWBA	CATAWBA	0.0056	Confirmed LTF	0.0056
CBM-W1	CBM-W1	0.4629	Confirmed LTF	0.4629

9.7.13 Index 13

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
100232988	342649	4ROWAN CO	EKPC	324302	4RODBURN	LGEE	1	EKPC_P4-6_SPUR N39-92T	breaker	191.0	114.94	122.22	AC	12.72

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939141	AE1-144 C O1	38.4006	50/50	38.4006
939142	AE1-144 E O1	19.0566	50/50	19.0566
940531	AE2-038 C O1	25.6163	50/50	25.6163
940532	AE2-038 E O1	12.6885	50/50	12.6885
945681	AF1-233 C	79.6915	50/50	79.6915
945682	AF1-233 E	39.3695	50/50	39.3695
945911	AF1-256 C	25.3997	50/50	25.3997
945912	AF1-256 E	16.9331	50/50	16.9331
960151	AF2-306	5.0099	50/50	5.0099
960161	AF2-307 C	7.6305	50/50	7.6305
960162	AF2-307 E	5.0870	50/50	5.0870
NEWTON	NEWTON	0.1160	Confirmed LTF	0.1160
CPL	CPL	0.0509	Confirmed LTF	0.0509
FARMERCITY	FARMERCITY	0.0042	Confirmed LTF	0.0042
G-007A	G-007A	0.0911	Confirmed LTF	0.0911
VFT	VFT	0.2386	Confirmed LTF	0.2386
GIBSON	GIBSON	0.0923	Confirmed LTF	0.0923
PRAIRIE	PRAIRIE	0.2170	Confirmed LTF	0.2170
COFFEEN	COFFEEN	0.0200	Confirmed LTF	0.0200
EDWARDS	EDWARDS	0.0329	Confirmed LTF	0.0329
CBM-S2	CBM-S2	0.4335	Confirmed LTF	0.4335
TILTON	TILTON	0.0750	Confirmed LTF	0.0750
MADISON	MADISON	0.3468	Confirmed LTF	0.3468
BLUEG	BLUEG	0.4184	Confirmed LTF	0.4184
TRIMBLE	TRIMBLE	0.1336	Confirmed LTF	0.1336

9.7.14 Index 14

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPACT
98862739	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	DEOK_P7-1_C5 CIRCUIT1883&4545REDBANKSILGRVZIMMER	tower	1532.0	138.67	139.68	AC	17.9

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	2.8559	Adder	3.36
943822	AF1-050 E	1.9039	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

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
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
CPL	CPL	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

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
AC1-068	Atlanta 69kV I	Engineering and Procurement
AC1-069	Atlanta 69kV II	Engineering and Procurement
AC1-074	Jacksonville-Renaker 138kV I	Suspended
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
AC2-075	Jacksonville-Renaker 138 kV	Suspended
AD1-136	South Bethel-Brown 69 kV	Suspended
AD2-048	Cynthia-Headquarters 69 kV	Engineering and Procurement
AD2-072	Van Arsdell-Mercer Industrial 69kV	Suspended
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
AE2-210	Avon-North Clark 345 kV	Active
AE2-254	Garrard County-Tommy-Gooch 69 kV	Engineering and Procurement
AE2-275	JK Smith-Fawkes 138 kV	Active
AE2-308	Three Forks-Dale 138 kV	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
AF1-083	Green County-Saloma 161 kV	Active
AF1-116	Marion County 161 kV	Active
AF1-127	Avon 345 kV	Active

Queue Number	Project Name	Status
AF1-233	Flemingsburg 138 kV	Active
AF1-251	Avon-North Clark 345 kV	Active
AF1-256	Flemingsburg-Spurlock 138 kV	Active
AF2-090	Central Hardin 138 kV	Active
AF2-111	North Clark-Spurlock 345 kV	Active
AF2-260	Stephensburg-Central Hardin 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
AF2-391	Central Hardin 69 kV	Active
Z1-080	Clinton County 34.5kV	In Service

9.9 Contingency Descriptions

Contingency Name	Contingency Definition
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
EKPC_P4-6_SPUR N39-92T	CONTINGENCY 'EKPC_P4-6_SPUR N39-92T' /* SPURLOCK OPEN BRANCH FROM BUS 342622 TO BUS 342664 CKT 1 /* 342622 4MAYSVIL I T138.00 342664 4SPURLOCK 138.00 OPEN BRANCH FROM BUS 342622 TO BUS 342625 CKT 1 /* 342622 4MAYSVIL I T138.00 342625 4MAYSVIL IND138.00 OPEN BRANCH FROM BUS 342622 TO BUS 342634 CKT 1 /* 342622 4MAYSVIL I T138.00 342634 4PLUMVILLE 138.00 OPEN BRANCH FROM BUS 945910 TO BUS 342664 CKT 1 /* 945910 AF1-256 TAP 138.00 342664 4SPURLOCK 138.00 END
EKPC_P1-2_SPUR-PLUM 138	CONTINGENCY 'EKPC_P1-2_SPUR-PLUM 138' /* SPURLOCK - PLUMVILLE OPEN BRANCH FROM BUS 342622 TO BUS 342664 CKT 1 /* 342622 4MAYSVIL I T138.00 342664 4SPURLOCK 138.00 OPEN BRANCH FROM BUS 342622 TO BUS 342625 CKT 1 /* 342622 4MAYSVIL I T138.00 342625 4MAYSVIL IND138.00 OPEN BRANCH FROM BUS 342622 TO BUS 342634 CKT 1 /* 342622 4MAYSVIL I T138.00 342634 4PLUMVILLE 138.00 END

Contingency Name	Contingency Definition
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_P4-2_ROWAN E83-814	CONTINGENCY 'EKPC_P4-2_ROWAN E83-814' /* OPEN BUS 342649 /* 4ROWAN CO OPEN BRANCH FROM BUS 342589 TO BUS 342571 CKT 1 /* 342589 4GODDARD 138.00 342571 4CRANSTON 138.00 END

Contingency Name	Contingency Definition
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
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
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
EKPC_P2-3_ROWAN E83- 814	CONTINGENCY 'EKPC_P2-3_ROWAN E83-814' /* OPEN BUS 342649 /* 4ROWAN CO OPEN BRANCH FROM BUS 342589 TO BUS 342571 CKT 1 /* 342589 4GODDARD 138.00 342571 4CRANSTON 138.00 END

Contingency Name	Contingency Definition
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
Base Case	
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_P1-2_SPUR-GODD 138-B	CONTINGENCY 'EKPC_P1-2_SPUR-GODD 138-B' /* SPURLOCK - GODDARD OPEN BRANCH FROM BUS 945910 TO BUS 342664 CKT 1 /* 945910 AF1-256 TAP 138.00 342664 4SPURLOCK 138.00 END
EKPC_P2-2_ROWAN CO 138	CONTINGENCY 'EKPC_P2-2_ROWAN CO 138' /* ROWAN 138 BUS OPEN BUS 342649 /* 4ROWAN CO 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

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
EKPC_P4-2_ROWAN E83-834	CONTINGENCY 'EKPC_P4-2_ROWAN E83-834' /* OPEN BUS 342649 /* 4ROWAN CO DROPS BUS END
EKPC_P4-2_ROWAN E83-824	CONTINGENCY 'EKPC_P4-2_ROWAN E83-824' /* OPEN BUS 342649 /* 4ROWAN CO DROPS BUS OPEN BRANCH FROM BUS 342265 TO BUS 342658 CKT 1 /* 342265 2SKAGGS 69.000 342658 4SKAGGS 138.00 END

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).

14 Attachment 1: One Line Diagram

AF2-306/AF2-307 Conceptual Single-Line Diagram of Interconnection Facilities

