Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-067

Temple Hill 69 KV

24.8 MW Capacity / 38 MW Energy

January 2021

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1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is EKPC.

2 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Barren County, Kentucky. The installed facilities will have a total capability of 38 MW with 24.8 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is June 30, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-067
Project Name	TEMPLE HILL 69 KV
State	Kentucky
County	Barren
Transmission Owner	EKPC
MFO	38
MWE	38
MWC	24.8
Fuel	Solar
Basecase Study Year	2024

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

4 Point of Interconnection

AG1-067 will interconnect with the EKPC transmission system along one of the following Points of Interconnection:

Primary POI: Temple Hill 69 kV substation.

Secondary POI: Temple Hill to Summer Shade 69 kV line.

5 Cost Summary

The AG1-067 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$5,425,000
Total System Network Upgrade Costs	$110,000
Total Costs	**$5,535,000**

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 2016-36, 2016-25 I.R.B. (6/20/2016). If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

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 69 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel) at the new Temple Hill switching station, to accept the IC generator lead line/bus (Estimated time to implement is 21 months)	$1,170,000
Total Attachment Facility Costs	**$1,170,000**

6.2 Direct Connection Cost Estimate

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

Description	Total Cost
Construct a new 69 kV switching station (Temple Hill) to facilitate connection of the IC solar generation project to the existing Patton Road Junction-Temple Hill-Summer Shade 69 kV line (Estimated time to implement is 21 months)	$3,510,000
Total Direct Connection Facility Costs	**$3,510,000**

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 Summer Shade Junction-Temple Hill-Patton Road Junction 69 kV line into the new Temple Hill switching station (Estimated time to implement is 21 months)	$365,000
Modify relays and/or settings at Summer Shade substation for the existing line to the new Temple Hill switching station (Estimated time to implement is 9 months)	$85,000
Modify relays and/or settings at Fox Hollow substation for the existing line to the new Temple Hill switching station (Estimated time to implement is 9 months)	$85,000
Connect existing OPGW infrastructure on the Summer Shade Junction-Temple Hill-Patton Road Junction 69 kV line into the new Temple Hill switching station (Estimated time to implement is 9 months)	$210,000
Total Non-Direct Connection Facility Costs	**$745,000**

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 - Load Flow Analysis – Primary POI

The Queue Project AG1-067 was evaluated as a 38.0 MW (Capacity 24.8 MW) injection at the Temple Hill 69 kV substation in the EKPC area. Project AG1-067 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-067 was studied with a commercial probability of 53.0 %. 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
165223031	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	103.1	104.46	DC	3.15
165222780	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P2-2_LAUREL CO 161	bus	277.0	104.9	106.46	DC	4.32
165223046	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	105.17	106.73	DC	4.31
166662409	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMMSHAD J	69.0	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2	bus	63.0	106.9	109.2	DC	3.21

9.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
16932272 6	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00	operation	277.0	104.84	106.4	DC	4.33

9.5 System Reinforcements - Summer Peak Load Flow – Primary POI

ID	Idx	Facility	Upgrade Description	Cost
165223031	1	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	**EKPC** r0077 (1878) : LGEE violation (non PJM area). EKPC emergency rating is 152 MVA. Project Type : FAC Cost : $0 Time Estimate : 0.0 Months **LGEE** NonPJMArea (1886) : The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : $0 Time Estimate : 0.0 Months	$0
166662409	3	AE2-071 TAP 69.0 kV - 2SUMM SHAD J 69.0 kV Ckt 1	**EKPC** EKPC-r0113a (1970) : Increase the maximum operating temperature of the 266 MCM ACSR conductor in the AE2-071 Tap-Summer Shade Junction 69 kV line section to 266 degrees F (1.7 miles) Project Type : FAC Cost : $110,000 Time Estimate : 9.0 Months	$110,000
165223046,165222780	2	5COOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	**EKPC** r0018 (1819) : LGEE violation (non PJM area). EKPC continuous rating is 267 MVA. The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : $0 Time Estimate : 0.0 Months **LGEE** NonPJMArea (1886) : The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : $0 Time Estimate : 0.0 Months	$0
			TOTAL COST	**$110,000**

9.6 Flow Gate Details – Primary POI

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

9.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
165223031	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	103.1	104.46	DC	3.15

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342900	1COOPER1 G	4.9218	50/50	4.9218
342903	1COOPER2 G	9.5458	50/50	9.5458
939131	AE1-143 C	5.4221	Adder	6.38
939132	AE1-143 E	2.6857	Adder	3.16
940045	AE1-246 C	5.4632	Adder	6.43
940046	AE1-246 E	2.6305	Adder	3.09
940831	AE2-071 C	1.6233	Adder	1.91
940832	AE2-071 E	1.0822	Adder	1.27
943701	AF1-038 C	8.3977	50/50	8.3977
943702	AF1-038 E	5.5985	50/50	5.5985
943821	AF1-050 C	2.5575	Adder	3.01
943822	AF1-050 E	1.7050	Adder	2.01
944151	AF1-083 C O1	2.5256	Adder	2.97
944152	AF1-083 E O1	1.6837	Adder	1.98
944511	AF1-116 C	6.0808	Adder	7.15
944512	AF1-116 E	4.0539	Adder	4.77
945381	AF1-203 C	0.9276	Adder	1.09
945382	AF1-203 E	0.6184	Adder	0.73
960741	AF2-365 C O1	1.5231	Adder	1.79
960742	AF2-365 E O1	1.0154	Adder	1.19
962221	AG1-067 C O1	0.9274	Adder	2.06
962222	AG1-067 E O1	0.4936	Adder	1.1
962241	AG1-070 C O1	1.2361	Adder	2.74
962242	AG1-070 E O1	0.2472	Adder	0.55
962251	AG1-071 C O1	1.4833	Adder	3.29
962252	AG1-071 E O1	0.3296	Adder	0.73
964781	AG1-341 C O1	2.2790	Adder	5.06
964782	AG1-341 E O1	1.5193	Adder	3.37
964891	AG1-353 C	2.3239	Adder	5.16
964892	AG1-353 E	1.5493	Adder	3.44
964901	AG1-354 C	3.2939	Adder	7.31
964902	AG1-354 E	2.1959	Adder	4.87
965401	AG1-405 C	10.6088	50/50	10.6088
965402	AG1-405 E	7.0726	50/50	7.0726
965411	AG1-406	6.8244	50/50	6.8244
966021	AG1-471 C O1	5.1635	50/50	5.1635
966022	AG1-471 E O1	3.4423	50/50	3.4423
966031	AG1-472 C	1.5310	Adder	3.4
966032	AG1-472 E	1.0207	Adder	2.27
966191	AG1-488 C O1	1.8353	Adder	4.07
966192	AG1-488 E O1	1.2236	Adder	2.72

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
WEC	WEC	0.0652	Confirmed LTF	0.0652
CPLE	CPLE	0.0628	Confirmed LTF	0.0628
LGE-0012019	LGE-0012019	5.0017	LTF	5.0017
CBM-W2	CBM-W2	5.1878	Confirmed LTF	5.1878
NY	NY	0.0426	Confirmed LTF	0.0426
TVA	TVA	1.3454	Confirmed LTF	1.3454
O-066	O-066	0.5048	Confirmed LTF	0.5048
SIGE	SIGE	0.0489	Confirmed LTF	0.0489
CBM-S2	CBM-S2	1.7957	Confirmed LTF	1.7957
CBM-S1	CBM-S1	0.2983	Confirmed LTF	0.2983
G-007	G-007	0.0788	Confirmed LTF	0.0788
MEC	MEC	0.5848	Confirmed LTF	0.5848
LAGN	LAGN	1.2705	Confirmed LTF	1.2705
CBM-W1	CBM-W1	2.5797	Confirmed LTF	2.5797

9.6.2 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
165223046	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	105.17	106.73	DC	4.31

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342442	2W GLASGOW	0.0165	50/50	0.0165
342900	1COOPER1 G	10.1486	50/50	10.1486
342903	1COOPER2 G	19.7433	50/50	19.7433
342945	1LAUREL 1G	6.1423	50/50	6.1423
939131	AE1-143 C	9.9773	50/50	9.9773
939132	AE1-143 E	4.9420	50/50	4.9420
940045	AE1-246 C	9.3685	50/50	9.3685
940046	AE1-246 E	4.5107	50/50	4.5107
940831	AE2-071 C	2.5509	50/50	2.5509
940832	AE2-071 E	1.7006	50/50	1.7006
942411	AE2-254 C O1	1.3451	Adder	1.58
942412	AE2-254 E O1	0.8967	Adder	1.05
943701	AF1-038 C	6.6586	50/50	6.6586
943702	AF1-038 E	4.4390	50/50	4.4390
943821	AF1-050 C	4.5025	50/50	4.5025
943822	AF1-050 E	3.0017	50/50	3.0017
944151	AF1-083 C O1	4.5583	50/50	4.5583
944152	AF1-083 E O1	3.0389	50/50	3.0389
944511	AF1-116 C	11.1895	50/50	11.1895
944512	AF1-116 E	7.4597	50/50	7.4597
945381	AF1-203 C	1.4576	50/50	1.4576
945382	AF1-203 E	0.9718	50/50	0.9718
960741	AF2-365 C O1	2.2040	Adder	2.59
960742	AF2-365 E O1	1.4693	Adder	1.73
962221	AG1-067 C O1	2.8138	50/50	2.8138
962222	AG1-067 E O1	1.4977	50/50	1.4977
962241	AG1-070 C O1	3.8850	50/50	3.8850
962242	AG1-070 E O1	0.7770	50/50	0.7770
962251	AG1-071 C O1	4.6620	50/50	4.6620
962252	AG1-071 E O1	1.0360	50/50	1.0360
964781	AG1-341 C O1	7.3763	50/50	7.3763
964782	AG1-341 E O1	4.9176	50/50	4.9176
964891	AG1-353 C	7.8586	50/50	7.8586
964892	AG1-353 E	5.2391	50/50	5.2391
964901	AG1-354 C	10.7820	50/50	10.7820
964902	AG1-354 E	7.1880	50/50	7.1880
965401	AG1-405 C	3.9234	50/50	3.9234
965402	AG1-405 E	2.6156	50/50	2.6156
965411	AG1-406	2.5238	50/50	2.5238
966021	AG1-471 C O1	7.2990	50/50	7.2990
966022	AG1-471 E O1	4.8660	50/50	4.8660

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966031	AG1-472 C	4.8624	50/50	4.8624
966032	AG1-472 E	3.2416	50/50	3.2416
966191	AG1-488 C O1	6.3433	50/50	6.3433
966192	AG1-488 E O1	4.2288	50/50	4.2288
WEC	WEC	0.0787	Confirmed LTF	0.0787
CPLE	CPLE	0.0874	Confirmed LTF	0.0874
LGE-0012019	LGE-0012019	7.7561	LTF	7.7561
CBM-W2	CBM-W2	7.4368	Confirmed LTF	7.4368
NY	NY	0.0868	Confirmed LTF	0.0868
TVA	TVA	2.0090	Confirmed LTF	2.0090
O-066	O-066	1.0364	Confirmed LTF	1.0364
SIGE	SIGE	0.0700	Confirmed LTF	0.0700
CBM-S2	CBM-S2	2.6726	Confirmed LTF	2.6726
CBM-S1	CBM-S1	0.4378	Confirmed LTF	0.4378
G-007	G-007	0.1617	Confirmed LTF	0.1617
MEC	MEC	0.7945	Confirmed LTF	0.7945
LAGN	LAGN	1.8725	Confirmed LTF	1.8725
CBM-W1	CBM-W1	3.0283	Confirmed LTF	3.0283

9.6.3 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
166662409	940830	AE2-071 TAP	EKPC	342319	2SUMM SHAD J	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2	bus	63.0	106.9	109.2	DC	3.21

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342442	2W GLASGOW	0.0176	50/50	0.0176
940045	AE1-246 C	6.2055	Adder	7.3
940046	AE1-246 E	2.9878	Adder	3.52
940831	AE2-071 C	13.9033	50/50	13.9033
940832	AE2-071 E	9.2688	50/50	9.2688
945381	AF1-203 C	7.9447	50/50	7.9447
945382	AF1-203 E	5.2965	50/50	5.2965
960741	AF2-365 C O1	1.5940	Adder	1.88
960742	AF2-365 E O1	1.0627	Adder	1.25
962221	AG1-067 C O1	0.9445	Adder	2.1
962222	AG1-067 E O1	0.5027	Adder	1.12
962241	AG1-070 C O1	3.9296	50/50	3.9296
962242	AG1-070 E O1	0.7859	50/50	0.7859
962251	AG1-071 C O1	4.7156	50/50	4.7156
962252	AG1-071 E O1	1.0479	50/50	1.0479
966031	AG1-472 C	1.9756	Adder	4.39
966032	AG1-472 E	1.3170	Adder	2.92
WEC	WEC	0.0170	Confirmed LTF	0.0170
CPLE	CPLE	0.0218	Confirmed LTF	0.0218
CBM-W2	CBM-W2	1.2365	Confirmed LTF	1.2365
NY	NY	0.0017	Confirmed LTF	0.0017
TVA	TVA	0.2870	Confirmed LTF	0.2870
O-066	O-066	0.0135	Confirmed LTF	0.0135
SIGE	SIGE	0.0096	Confirmed LTF	0.0096
CBM-S2	CBM-S2	0.4802	Confirmed LTF	0.4802
CBM-S1	CBM-S1	0.0600	Confirmed LTF	0.0600
G-007	G-007	0.0021	Confirmed LTF	0.0021
MEC	MEC	0.1478	Confirmed LTF	0.1478
TRIMBLE	TRIMBLE	0.0039	Confirmed LTF	0.0039
LAGN	LAGN	0.2992	Confirmed LTF	0.2992
CBM-W1	CBM-W1	0.6870	Confirmed LTF	0.6870

9.7 Queue Dependencies – Primary POI

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
AE1-143	Marion County 161 kV	Engineering and Procurement
AE1-246	Barren County-Summer Shade 161 kV	Active
AE2-071	Patton Rd-Summer Shade 69 kV	Active
AE2-254	Garrard County-Tommy-Gooch 69 kV	Active
AF1-038	Sewellton Jct-Webbs Crossroads 69 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
AF1-203	Patton Rd-Summer Shade 69 kV	Active
AF2-365	Munfordville KU Tap-Horse Cave Jct. 69 kV	Active
AG1-067	Temple Hill 69 kV	Active
AG1-070	Bon Ayr 69 kV	Active
AG1-071	Bon Ayr 69 kV	Active
AG1-341	Summer Shade 161 kV	Active
AG1-353	Greene County-Marion County 161 kV	Active
AG1-354	Summershade-Green County 161 kV	Active
AG1-405	Walnut Grove-Asahi 69 kV	Active
AG1-406	Walnut Grove-Asahi 69 kV	Active
AG1-471	Up Church-Wayne County 69 kV	Active
AG1-472	Seymour-Cave City 69 kV	Active
AG1-488	Marion IP 161 kV	Active

9.8 Contingency Descriptions – Primary POI

Contingency Name	Contingency Definition
EKPC_P2-2_SUMMSHADE 161 #2	CONTINGENCY 'EKPC_P2-2_SUMMSHADE 161 #2' /* SUMMERSHADE 161 BUS OPEN BRANCH FROM BUS 964900 TO BUS 342814 CKT 1 /* 964900 AG1-354 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 940040 TO BUS 342814 CKT 1 OPEN BUS 342814 END
EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00	CONTINGENCY 'EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00' OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /*5LAUREL CO 161.005LAUREL DAM 161.00 END
EKPC_P7-1_LAURL 161 DBL	CONTINGENCY 'EKPC_P7-1_LAURL 161 DBL' /* LAUREL CO - LAUREL DAM 161 & LAUREL CO - TYNER 161 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 /* 342754 5LAUREL CO 161.00 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END
EKPC_P2-2_LAUREL CO 161	CONTINGENCY 'EKPC_P2-2_LAUREL CO 161' /* LAUREL 161 BUS OPEN BUS 342754 /* 5LAUREL CO END
EKPC_P7-1_COOP 161 DBL 2	CONTINGENCY 'EKPC_P7-1_COOP 161 DBL 2' /* COOPER - ELIHU 161 & COOPER - LAUREL DAM 161 OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 OPEN BRANCH FROM BUS 342718 TO BUS 342757 CKT 1 /* 342718 5COOPER2 161.00 342757 5LAUREL DAM 161.00 END

10 Short Circuit Analysis – Primary POI

The following Breakers are overdutied:

None.

11 Summer Peak – Load Flow Analysis – Secondary POI

The Queue Project AG1-067 was evaluated as a 38.0 MW (Capacity 24.8 MW) injection tapping the Temple Hill to Summer Shade 69 kV line in the EKPC area. Project AG1-067 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-067 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

11.1 Generation Deliverability

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

None.

11.2 Multiple Facility Contingency

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

None.

11.3 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
165223031	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	103.1	104.46	DC	3.16
173786255	342322	2SUMMSHADE	69.0	EKPC	341431	2EDM-JBGAL J	69.0	EKPC	1	EKPC_P2-3_GREEN W45-1014	breaker	46.0	108.88	111.17	DC	2.34
165222780	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P2-2_LAUREL CO 161	bus	277.0	104.9	106.46	DC	4.32
165223046	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	105.17	106.73	DC	4.32
173969393	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	105.17	106.73	DC	4.32
166662409	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMMSHAD J	69.0	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2	bus	63.0	106.9	109.08	DC	3.05
173786209	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMMSHAD J	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	63.0	106.9	109.08	DC	3.05

11.4 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
16932272 6	342718	5COOPER 2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00	operation	277.0	104.84	106.41	DC	4.33

11.5 Flow Gate Details - Secondary POI

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

11.5.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
165223031	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	103.1	104.46	DC	3.16

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342900	1COOPER1 G	4.9218	50/50	4.9218
342903	1COOPER2 G	9.5458	50/50	9.5458
939131	AE1-143 C	5.4221	Adder	6.38
939132	AE1-143 E	2.6857	Adder	3.16
940045	AE1-246 C	5.4632	Adder	6.43
940046	AE1-246 E	2.6305	Adder	3.09
940831	AE2-071 C	1.6233	Adder	1.91
940832	AE2-071 E	1.0822	Adder	1.27
943701	AF1-038 C	8.3977	50/50	8.3977
943702	AF1-038 E	5.5985	50/50	5.5985
943821	AF1-050 C	2.5575	Adder	3.01
943822	AF1-050 E	1.7050	Adder	2.01
944151	AF1-083 C O1	2.5256	Adder	2.97
944152	AF1-083 E O1	1.6837	Adder	1.98
944511	AF1-116 C	6.0808	Adder	7.15
944512	AF1-116 E	4.0539	Adder	4.77
945381	AF1-203 C	0.9276	Adder	1.09
945382	AF1-203 E	0.6184	Adder	0.73
960741	AF2-365 C O1	1.5231	Adder	1.79
960742	AF2-365 E O1	1.0154	Adder	1.19
962221	AG1-067 C O2	0.9285	Adder	2.06
962222	AG1-067 E O2	0.4942	Adder	1.1
962241	AG1-070 C O2	1.2324	Adder	2.74
962242	AG1-070 E O2	0.2465	Adder	0.55
962251	AG1-071 C O2	1.4789	Adder	3.28
962252	AG1-071 E O2	0.3286	Adder	0.73
964781	AG1-341 C O2	2.6451	Adder	5.87
964782	AG1-341 E O2	1.7634	Adder	3.91
964891	AG1-353 C	2.3239	Adder	5.16
964892	AG1-353 E	1.5493	Adder	3.44
964901	AG1-354 C	3.2939	Adder	7.31
964902	AG1-354 E	2.1959	Adder	4.87
965401	AG1-405 C	10.6088	50/50	10.6088
965402	AG1-405 E	7.0726	50/50	7.0726
965411	AG1-406	6.8244	50/50	6.8244
966021	AG1-471 C O2	5.2283	50/50	5.2283
966022	AG1-471 E O2	3.4855	50/50	3.4855
966031	AG1-472 C O2	1.4123	Adder	3.13
966032	AG1-472 E O2	0.9415	Adder	2.09
966191	AG1-488 C O2	1.8800	Adder	4.17
966192	AG1-488 E O2	1.2533	Adder	2.78

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
WEC	WEC	0.0652	Confirmed LTF	0.0652
CPLE	CPLE	0.0628	Confirmed LTF	0.0628
LGE-0012019	LGE-0012019	5.0017	LTF	5.0017
CBM-W2	CBM-W2	5.1878	Confirmed LTF	5.1878
NY	NY	0.0426	Confirmed LTF	0.0426
TVA	TVA	1.3454	Confirmed LTF	1.3454
O-066	O-066	0.5048	Confirmed LTF	0.5048
SIGE	SIGE	0.0489	Confirmed LTF	0.0489
CBM-S2	CBM-S2	1.7957	Confirmed LTF	1.7957
CBM-S1	CBM-S1	0.2983	Confirmed LTF	0.2983
G-007	G-007	0.0788	Confirmed LTF	0.0788
MEC	MEC	0.5848	Confirmed LTF	0.5848
LAGN	LAGN	1.2705	Confirmed LTF	1.2705
CBM-W1	CBM-W1	2.5797	Confirmed LTF	2.5797

11.5.2 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
173786255	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P2-3_GREEN W45-1014	breaker	46.0	108.88	111.17	DC	2.34

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
940831	AE2-071 C	1.4234	Adder	1.67
940832	AE2-071 E	0.9489	Adder	1.12
945381	AF1-203 C	0.8133	Adder	0.96
945382	AF1-203 E	0.5422	Adder	0.64
962221	AG1-067 C O2	0.6892	Adder	1.53
962222	AG1-067 E O2	0.3668	Adder	0.81
964781	AG1-341 C O2	2.3758	Adder	5.27
964782	AG1-341 E O2	1.5839	Adder	3.52
WEC	WEC	0.0057	Confirmed LTF	0.0057
CPLE	CPLE	0.0710	Confirmed LTF	0.0710
G-007A	G-007A	0.0240	Confirmed LTF	0.0240
VFT	VFT	0.0645	Confirmed LTF	0.0645
CBM-W2	CBM-W2	1.3261	Confirmed LTF	1.3261
TVA	TVA	0.4662	Confirmed LTF	0.4662
CBM-S2	CBM-S2	1.4303	Confirmed LTF	1.4303
CBM-S1	CBM-S1	0.0878	Confirmed LTF	0.0878
CBM-N	CBM-N	0.0120	Confirmed LTF	0.0120
MEC	MEC	0.1208	Confirmed LTF	0.1208
GIBSON	GIBSON	0.0497	Confirmed LTF	0.0497
BLUEG	BLUEG	0.3021	Confirmed LTF	0.3021
TRIMBLE	TRIMBLE	0.0929	Confirmed LTF	0.0929
LAGN	LAGN	0.4358	Confirmed LTF	0.4358
CBM-W1	CBM-W1	0.2664	Confirmed LTF	0.2664

11.5.3 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
173969393	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P4-5_LAURLS50-1024	breaker	277.0	105.17	106.73	DC	4.32

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342442	2W GLASGOW	0.0165	50/50	0.0165
342900	1COOPER1 G	10.1486	50/50	10.1486
342903	1COOPER2 G	19.7433	50/50	19.7433
342945	1LAUREL 1G	6.1423	50/50	6.1423
939131	AE1-143 C	9.9773	50/50	9.9773
939132	AE1-143 E	4.9420	50/50	4.9420
940045	AE1-246 C	9.3685	50/50	9.3685
940046	AE1-246 E	4.5107	50/50	4.5107
940831	AE2-071 C	2.5509	50/50	2.5509
940832	AE2-071 E	1.7006	50/50	1.7006
942411	AE2-254 C O1	1.3451	Adder	1.58
942412	AE2-254 E O1	0.8967	Adder	1.05
943701	AF1-038 C	6.6586	50/50	6.6586
943702	AF1-038 E	4.4390	50/50	4.4390
943821	AF1-050 C	4.5025	50/50	4.5025
943822	AF1-050 E	3.0017	50/50	3.0017
944151	AF1-083 C O1	4.5583	50/50	4.5583
944152	AF1-083 E O1	3.0389	50/50	3.0389
944511	AF1-116 C	11.1895	50/50	11.1895
944512	AF1-116 E	7.4597	50/50	7.4597
945381	AF1-203 C	1.4576	50/50	1.4576
945382	AF1-203 E	0.9718	50/50	0.9718
960741	AF2-365 C O1	2.2040	Adder	2.59
960742	AF2-365 E O1	1.4693	Adder	1.73
962221	AG1-067 C O2	2.8165	50/50	2.8165
962222	AG1-067 E O2	1.4991	50/50	1.4991
962241	AG1-070 C O2	3.8768	50/50	3.8768
962242	AG1-070 E O2	0.7754	50/50	0.7754
962251	AG1-071 C O2	4.6521	50/50	4.6521
962252	AG1-071 E O2	1.0338	50/50	1.0338
964781	AG1-341 C O2	7.8139	50/50	7.8139
964782	AG1-341 E O2	5.2093	50/50	5.2093
964891	AG1-353 C	7.8586	50/50	7.8586
964892	AG1-353 E	5.2391	50/50	5.2391
964901	AG1-354 C	10.7820	50/50	10.7820
964902	AG1-354 E	7.1880	50/50	7.1880
965401	AG1-405 C	3.9234	50/50	3.9234
965402	AG1-405 E	2.6156	50/50	2.6156
965411	AG1-406	2.5238	50/50	2.5238
966021	AG1-471 C O2	7.4002	50/50	7.4002
966022	AG1-471 E O2	4.9334	50/50	4.9334
966031	AG1-472 C O2	2.0318	Adder	4.51

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
966032	AG1-472 E O2	1.3545	Adder	3.01
966191	AG1-488 C O2	6.5272	50/50	6.5272
966192	AG1-488 E O2	4.3515	50/50	4.3515
WEC	WEC	0.0787	Confirmed LTF	0.0787
CPLE	CPLE	0.0874	Confirmed LTF	0.0874
LGE-0012019	LGE-0012019	7.7561	LTF	7.7561
CBM-W2	CBM-W2	7.4368	Confirmed LTF	7.4368
NY	NY	0.0868	Confirmed LTF	0.0868
TVA	TVA	2.0090	Confirmed LTF	2.0090
O-066	O-066	1.0364	Confirmed LTF	1.0364
SIGE	SIGE	0.0700	Confirmed LTF	0.0700
CBM-S2	CBM-S2	2.6726	Confirmed LTF	2.6726
CBM-S1	CBM-S1	0.4378	Confirmed LTF	0.4378
G-007	G-007	0.1617	Confirmed LTF	0.1617
MEC	MEC	0.7945	Confirmed LTF	0.7945
LAGN	LAGN	1.8725	Confirmed LTF	1.8725
CBM-W1	CBM-W1	3.0283	Confirmed LTF	3.0283

11.5.4 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
173786209	940830	AE2-071 TAP	EKPC	342319	2SUMM SHAD J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	63.0	106.9	109.08	DC	3.05

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342442	2W GLASGOW	0.0176	50/50	0.0176
940045	AE1-246 C	6.2055	Adder	7.3
940046	AE1-246 E	2.9878	Adder	3.52
940831	AE2-071 C	13.9033	50/50	13.9033
940832	AE2-071 E	9.2688	50/50	9.2688
945381	AF1-203 C	7.9447	50/50	7.9447
945382	AF1-203 E	5.2965	50/50	5.2965
960741	AF2-365 C O1	1.5940	Adder	1.88
960742	AF2-365 E O1	1.0627	Adder	1.25
962221	AG1-067 C O2	0.8973	Adder	1.99
962222	AG1-067 E O2	0.4776	Adder	1.06
962241	AG1-070 C O2	3.8824	50/50	3.8824
962242	AG1-070 E O2	0.7765	50/50	0.7765
962251	AG1-071 C O2	4.6588	50/50	4.6588
962252	AG1-071 E O2	1.0353	50/50	1.0353
966031	AG1-472 C O2	1.6588	Adder	3.68
966032	AG1-472 E O2	1.1059	Adder	2.45
WEC	WEC	0.0170	Confirmed LTF	0.0170
CPLE	CPLE	0.0218	Confirmed LTF	0.0218
CBM-W2	CBM-W2	1.2365	Confirmed LTF	1.2365
NY	NY	0.0017	Confirmed LTF	0.0017
TVA	TVA	0.2870	Confirmed LTF	0.2870
O-066	O-066	0.0135	Confirmed LTF	0.0135
SIGE	SIGE	0.0096	Confirmed LTF	0.0096
CBM-S2	CBM-S2	0.4802	Confirmed LTF	0.4802
CBM-S1	CBM-S1	0.0600	Confirmed LTF	0.0600
G-007	G-007	0.0021	Confirmed LTF	0.0021
MEC	MEC	0.1478	Confirmed LTF	0.1478
TRIMBLE	TRIMBLE	0.0039	Confirmed LTF	0.0039
LAGN	LAGN	0.2992	Confirmed LTF	0.2992
CBM-W1	CBM-W1	0.6870	Confirmed LTF	0.6870

11.6 Contingency Descriptions – Secondary POI

Contingency Name	Contingency Definition
EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00	CONTINGENCY 'EKPC_P2-1_5LAUREL CO 161.00 TO 5LAUREL DAM 161.00' / 563 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 / 342754 5LAUREL CO 161 342757 5LAUREL DAM 161 1 END
EKPC_P4-2_SSHAD S11-1004	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1004' / 71 OPEN BRANCH FROM BUS 342814 TO BUS 940040 CKT 1 / 342814 5SUMM SHADE 161 940040 AE1-246 TAP 161 1 OPEN BRANCH FROM BUS 342814 TO BUS 361788 CKT 1 / 342814 5SUMM SHADE 161 361788 5SUM SHAD TP 161 1 OPEN BRANCH FROM BUS 342814 TO BUS 964900 CKT 1 / 342814 5SUMM SHADE 161 964900 AG1-354 TAP 161 1 OPEN BRANCH FROM BUS 342814 TO BUS 360334 CKT 1 / 342814 5SUMM SHADE 161 360334 5SUMMER SHAD 161 1 OPEN BRANCH FROM BUS 342814 TO BUS 342322 CKT 1 / 342814 5SUMM SHADE 161 342322 2SUMM SHADE 69.0 1 END
EKPC_P2-2_LAUREL CO 161	CONTINGENCY 'EKPC_P2-2_LAUREL CO 161' /* LAUREL 161 BUS OPEN BUS 342754 /* 5LAUREL CO END
EKPC_P2-3_GREEN W45-1014	CONTINGENCY 'EKPC_P2-3_GREEN W45-1014' / 21 OPEN BRANCH FROM BUS 342733 TO BUS 943820 CKT 1 / 342733 5GREEN CO 161 943820 AF1-050 TAP 161 1 OPEN BRANCH FROM BUS 342733 TO BUS 964890 CKT 1 / 342733 5GREEN CO 161 964890 AG1-353 TAP 161 1 OPEN BRANCH FROM BUS 342733 TO BUS 341563 CKT 1 / 342733 5GREEN CO 161 341563 2GREEN CO 69.0 1 OPEN BRANCH FROM BUS 342817 TO BUS 944150 CKT 1 / 342817 5TAYLOR CO J 161 944150 AF1-083 TAP 161 1 END
EKPC_P7-1_COOP 161 DBL 2	CONTINGENCY 'EKPC_P7-1_COOP 161 DBL 2' /* COOPER - ELIHU 161 & COOPER - LAUREL DAM 161 OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 OPEN BRANCH FROM BUS 342718 TO BUS 342757 CKT 1 /* 342718 5COOPER2 161.00 342757 5LAUREL DAM 161.00 END

Contingency Name	Contingency Definition
EKPC_P7-1_LAURL 161 DBL	CONTINGENCY 'EKPC_P7-1_LAURL 161 DBL' /* LAUREL CO - LAUREL DAM 161 & LAUREL CO - TYNER 161 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 /* 342754 5LAUREL CO 161.00 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END
EKPC_P2-2_SUMMSHADE 161 #2	CONTINGENCY 'EKPC_P2-2_SUMMSHADE 161 #2' /* SUMMERSHADE 161 BUS OPEN BRANCH FROM BUS 964900 TO BUS 342814 CKT 1 /* 964900 AG1-354 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 940040 TO BUS 342814 CKT 1 OPEN BUS 342814 END
EKPC_P4-5_LAURL S50-1024	CONTINGENCY 'EKPC_P4-5_LAURL S50-1024' / 608 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 / 342754 5LAUREL CO 161 342757 5LAUREL DAM 161 1 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 / 342754 5LAUREL CO 161 342781 5PITTSBURG 161 1 OPEN BRANCH FROM BUS 342754 TO BUS 341740 CKT 1 / 342754 5LAUREL CO 161 341740 2LAUREL CO 69.0 1 OPEN BRANCH FROM BUS 342781 TO BUS 324688 CKT 1 / 342781 5PITTSBURG 161 324688 2PITTSBRG KU 69.0 1 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 / 342781 5PITTSBURG 161 342820 5TYNER 161 1 END

12 Affected Systems

12.1 TVA

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

12.2 Duke Energy Progress

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

12.3 MISO

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

12.4 LG&E

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