Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-022

SCOTTSVILLE-COLLEEN 138 KV

12 MW Capacity / 20 MW Energy

January 2021

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1 Introduction

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

2 Preface

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

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

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

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

3 General

The Interconnection Customer (IC) has proposed an uprate to a planned Solar generating facility located in Albemarle, Virginia. This project is an increase to the Interconnection Customer's AF1-323/AF2-302 project, which will share the same point of interconnection. The AG1-022 queue position is a 20 MW uprate (12 MW Capacity uprate) to the previous project. The total installed facilities will have a capability of 95 MW with 57 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this uprate project is December 12, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	AG1-022
Project Name	SCOTTSVILLE-COLLEEN 138 KV
State	Virginia
County	Albemarle
Transmission Owner	AEP
MFO	95
MWE	20
MWC	12
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

AG1-022 will interconnect with the AEP transmission system as an uprate to AF1-323 & AF2-302 which is tapping the Scottsville to Colleen 138 kV line.

Note: It is assumed that the existing 138 kV revenue metering system, generation lead and Protection & Control Equipment that will be installed for AF1-323 will be adequate for the increased generation of AG1-022. Depending on the timing of the completion of the AF1-323 interconnection construction relative to the AG1-022 completion, there may (or many not) be a need to review and revise the relay settings for the increased generation of AG1-022.

5 Cost Summary

The AG1-022 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$45,000
Total System Network Upgrade Costs	$5,101,200
Total Costs	$5,146,200

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

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

The estimates provided in this report are preliminary in nature, as they were determined without the benefit of detailed engineering studies. Final estimates will require an onsite review and coordination to determine final construction requirements. In addition, Stability analysis will be completed during the Facilities Study stage. It is possible that a need for additional upgrades could be identified by these studies.

6 Transmission Owner Scope of Work

The total physical interconnection costs is given in the table below:

6.1 Attachment Facilities

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

Description	Total Cost
None	$0
Total Attachment Facility Costs	**$0**

6.2 Direct Connection Cost Estimate

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

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

6.3 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Review protection and control settings relay for the increased generation of AG1-022	$45,000
Total Non-Direct Connection Facility Costs	**$45,000**

7 Schedule

It is anticipated that the time between receipt of executed Agreements and Commercial Operation may range from 12 to 18 months if no line work is required. If line work is required, construction time would generally be between 24 to 36 months after Agreement execution.

8 Interconnection Customer Requirements

It is understood that the Interconnection Customer (IC) is responsible for all costs associated with this interconnection. The costs above are reimbursable to the Transmission Owner. The cost of the IC's generating plant and the costs for the line connecting the generating plant to the Point of Interconnection are not included in this report; these are assumed to be the IC's responsibility.

The Generation Interconnection Agreement does not in or by itself establish a requirement for the Transmission Owner to provide power for consumption at the developer's facilities. A separate agreement may be reached with the local utility that provides service in the area to ensure that infrastructure is in place to meet this demand and proper metering equipment is installed. It is the responsibility of the developer to contact the local service provider to determine if a local service agreement is required.

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Revenue Metering and SCADA Requirements

9 Revenue Metering and SCADA Requirements

9.1 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

9.2 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Back Panel temperature (Fahrenheit) - (Required for plants with Maximum Facility Output of 3 MW or higher)

- Irradiance (Watts/meter2) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Ambient air temperature (Fahrenheit) - (Accepted, not required)
- Wind speed (meters/second) - (Accepted, not required)
- Wind direction (decimal degrees from true north) - (Accepted, not required)

9.3 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

http://www.pjm.com/planning/design-engineering/to-tech-standards/

10 Summer Peak - Load Flow Analysis

The Queue Project AG1-022 was evaluated as a 20.0 MW (Capacity 12.0 MW) injection as an uprate to AF1-323 & AF2-302 which is tapping the Scottsville to Colleen 138 kV line in the AEP area. Project AG1-022 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-022 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

10.1 Generation Deliverability

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

None

10.2 Multiple Facility Contingency

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

None

10.3 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
163963100	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	DVP_P2-2: BREMO B1	bus	173.0	123.6	129.96	DC	11.0
163963101	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	DVP_P2-2: DOOMS B2	bus	173.0	109.72	116.69	DC	12.05
166875746	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	DVP_P7-1: LN 2106-2111	tower	173.0	121.46	128.52	DC	12.22
166875747	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	DVP_P7-1: LN 555-2168-A	tower	173.0	112.9	119.96	DC	12.22
167024759	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	AP-P2-3-PE-500-014	breaker	173.0	108.84	115.91	DC	12.22
167024760	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	AP-P2-3-PE-500-015	breaker	173.0	108.84	115.91	DC	12.22

10.4 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168066829	242603	05CLIFFR	138.0	AEP	242563	05BOXWD	138.0	AEP	1	AEP_P1-2_#10336-B	operation	167.0	134.61	146.59	DC	20.0
168066830	242603	05CLIFFR	138.0	AEP	242563	05BOXWD	138.0	AEP	1	DVP_P1-2: LN 8-B	operation	167.0	134.61	146.59	DC	20.0
168066895	242613	05COLLEENSS	138.0	AEP	242603	05CLIFFR	138.0	AEP	1	DVP_P1-2: LN 8-B	operation	167.0	110.42	122.4	DC	20.0
168066896	242613	05COLLEENSS	138.0	AEP	242603	05CLIFFR	138.0	AEP	1	AEP_P1-2_#10336-B	operation	167.0	110.42	122.4	DC	20.0
168066883	244423	05JAMESRIVR	138.0	AEP	242613	05COLLEENSS	138.0	AEP	1	DVP_P1-2: LN 8-B	operation	167.0	112.63	124.61	DC	20.0
168066884	244423	05JAMESRIVR	138.0	AEP	242613	05COLLEENSS	138.0	AEP	1	AEP_P1-2_#10336-B	operation	167.0	112.63	124.61	DC	20.0
168066874	244446	05SOAPSTONE	138.0	AEP	244423	05JAMESRIVR	138.0	AEP	1	AEP_P1-2_#10336-B	operation	167.0	115.57	127.54	DC	20.0
168066875	244446	05SOAPSTONE	138.0	AEP	244423	05JAMESRIVR	138.0	AEP	1	DVP_P1-2: LN 8-B	operation	167.0	115.57	127.54	DC	20.0
168303531	313707	6FORKUNION	230.0	DVP	961060	AF2-397 TAP	230.0	DVP	1	3143336POWHATN 230 933500 AC2-165 TAP 230 1	operation	661.760009766	140.94	141.96	DC	6.73
168303779	313708	3FORKUNION	115.0	DVP	313707	6FORKUNION	230.0	DVP	1	DVP_P1-2: LN 2193	operation	269.779998779	99.15	100.93	DC	4.8
169306186	314746	4BREMO	138.0	DVP	314744	3BREMO	115.0	DVP	1	Base Case	operation	186.119995117	97.64	104.21	DC	12.23
169306217	314749	6CHARLVL	230.0	DVP	314772	6PROFFIT	230.0	DVP	1	DVP_P1-2: LN 553	operation	550.840026855	99.85	100.01	DC	1.86
169306000	314765	6MTEAGLE	230.0	DVP	314749	6CHARLVL	230.0	DVP	1	3143336POWHATN 230 933500 AC2-165 TAP 230 1	operation	661.760009766	140.73	141.74	DC	6.73
169306075	938820	AE1-108 TAP	138.0	DVP	314746	4BREMO	138.0	DVP	1	Base Case	operation	156.979995728	115.77	123.56	DC	12.23
169524001	941010	AE2-092 TAP	115.0	DVP	314774	3SHERWOD	115.0	DVP	1	3147656MTEAGLE 230 966790 AG1-550 TAP 230 1	operation	169.199996948	117.72	118.97	DC	2.12
168066858	946590	AF1-323 TAP	138.0	AEP	244446	05SOAPSTONE	138.0	AEP	1	DVP_P1-2: LN 8-B	operation	167.0	118.56	130.54	DC	20.0
168066859	946590	AF1-323 TAP	138.0	AEP	244446	05SOAPSTONE	138.0	AEP	1	AEP_P1-2_#10336-B	operation	167.0	118.56	130.54	DC	20.0
169833048	961060	AF2-397 TAP	230.0	DVP	966790	AG1-550 TAP	230.0	DVP	1	3143336POWHATN 230 933500 AC2-165 TAP 230 1	operation	661.760009766	150.44	151.46	DC	6.73
169833058	966790	AG1-550 TAP	230.0	DVP	314765	6MTEAGLE	230.0	DVP	1	3143336POWHATN 230 933500 AC2-165 TAP 230 1	operation	661.760009766	148.55	149.56	DC	6.73

10.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
166875747,166875746,167024759,167024760,163963100,163963101	1	AE1-108 TAP 138.0 kV - 4BREMO 138.0 kV Ckt 1	DVP dom-397 (1784) : Reconductor 8.502 miles of 138 kV line 8 from AE1-108 Tap to Bremo with 636 ACSR 150 C Project Type : FAC Cost : $5,101,200 Time Estimate : 30-36 Months	$5,101,200
			TOTAL COST	$5,101,200

10.6 Flow Gate Details

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

10.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
163963100	938820	AE1-108 TAP	DVP	314746	4BREMO	DVP	1	DVP_P2-2: BREMO B1	bus	173.0	123.6	129.96	DC	11.0

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
935241	AD1-161 C	1.4796	Adder	1.74
935242	AD1-161 E	1.2151	Adder	1.43
938821	AE1-108 C O1	56.8031	50/50	56.8031
938822	AE1-108 E O1	25.4933	50/50	25.4933
946293	AF1-293 BAT	13.6367	50/50	13.6367
946591	AF1-323 C	18.1464	50/50	18.1464
946592	AF1-323 E	12.0976	50/50	12.0976
958131	AF2-107 C	8.0379	50/50	8.0379
958132	AF2-107 E	4.4046	50/50	4.4046
960111	AF2-302 C	6.5987	50/50	6.5987
960112	AF2-302 E	4.3991	50/50	4.3991
961063	AF2-397 BAT	4.2883	Merchant Transmission	4.2883
961801	AG1-022 C	6.5987	50/50	6.5987
961802	AG1-022 E	4.3991	50/50	4.3991
962741	AG1-123 C O1	5.3884	50/50	5.3884
962742	AG1-123 E O1	3.7548	50/50	3.7548
962751	AG1-124 C O1	2.6383	Adder	5.86
962752	AG1-124 E O1	1.8410	Adder	4.09
964531	AG1-316 C O1	1.4964	Adder	3.32
964532	AG1-316 E O1	0.3741	Adder	0.83
965581	AG1-426	12.3754	50/50	12.3754
966251	AG1-494 C	2.8536	50/50	2.8536
966252	AG1-494 E	4.2804	50/50	4.2804
966792	AG1-550 BAT	1.2748	Merchant Transmission	1.2748
WEC	WEC	0.1405	Confirmed LTF	0.1405
LGEE	LGEE	0.3041	Confirmed LTF	0.3041
CPLE	CPLE	0.3269	Confirmed LTF	0.3269
CBM-W2	CBM-W2	4.5786	Confirmed LTF	4.5786
NY	NY	0.1377	Confirmed LTF	0.1377
TVA	TVA	0.7826	Confirmed LTF	0.7826
O-066	O-066	2.0123	Confirmed LTF	2.0123
SIGE	SIGE	0.0819	Confirmed LTF	0.0819
CBM-S2	CBM-S2	5.8151	Confirmed LTF	5.8151
CBM-S1	CBM-S1	0.2071	Confirmed LTF	0.2071
G-007	G-007	0.3171	Confirmed LTF	0.3171
MEC	MEC	0.7468	Confirmed LTF	0.7468
LAGN	LAGN	0.9397	Confirmed LTF	0.9397
CBM-W1	CBM-W1	5.9445	Confirmed LTF	5.9445

10.7 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

Queue Number	Project Name	Status
AD1-161	Stonewall-Long Mountain 69 kV	Active
AE1-108	Bremo-Scottsville 138 kV	Active
AF1-293	Kidds Store-Fort Union 115 kV	Active
AF1-323	Scottsville-Colleen 138 kV	Active
AF2-107	Clifford 138 kV	Active
AF2-302	Scottsville-Colleen 138 kV	Active
AF2-397	Fork Union-Mt. Eagle 230 kV	Active
AG1-022	Scottsville-Colleen 138 kV	Active
AG1-123	Amherst-Riverville138 kV	Active
AG1-124	Gladstone 138 kV	Active
AG1-316	Rustburg 138 kV	Active
AG1-426	Bremo-Scottsville 138 kV	Active
AG1-494	Boxwood-Riverville 138 kV	Active
AG1-550	Mount Eagle-Fork Union 230 kV	Active

10.8 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P1-2: LN 553	CONTINGENCY 'DVP_P1-2: LN 553' OPEN BRANCH FROM BUS 314908 TO BUS 314910 CKT 1 /* 8ELMONT 500.00 - 8CUNINGHAM 500.00 END
AEP_P1-2_#10336-B	CONTINGENCY 'AEP_P1-2_#10336-B' OPEN BRANCH FROM BUS 938820 TO BUS 314746 CKT 1 / 938820 AE1-108 TAP 138 314746 4BREMO 138 1 END
AP-P2-3-PE-500-014	CONTINGENCY '"AP-P2-3-PE-500-014"' / 181 OPEN BRANCH FROM BUS 235103 TO BUS 964990 CKT 1 / 235103 01BLACKO 500 964990 AG1-363 TAP 500 1 OPEN BRANCH FROM BUS 235446 TO BUS 235103 CKT 3 / 235446 01BLACKO 138 235103 01BLACKO 500 3 OPEN BRANCH FROM BUS 235103 TO BUS 235130 CKT 1 / 235103 01BLACKO 500 235130 01BO_SVC 23.0 1 DECREASE BUS 235103 SHUNT BY 100.00 PERCENT /* 235103 01BLACKO 500 END
AP-P2-3-PE-500-015	CONTINGENCY '"AP-P2-3-PE-500-015"' / 182 OPEN BRANCH FROM BUS 235103 TO BUS 964990 CKT 1 / 235103 01BLACKO 500 964990 AG1-363 TAP 500 1 OPEN BRANCH FROM BUS 235101 TO BUS 235103 CKT 1 / 235101 01BEDNGT 500 235103 01BLACKO 500 1 END
DVP_P2-2: DOOMS B2	CONTINGENCY 'DVP_P2-2: DOOMS B2' /* DOOMS 115 KV OPEN BRANCH FROM BUS 314767 TO BUS 314793 CKT 1 /* 3MIDWAY 115.00 - 3DOOMS 115.00 OPEN BRANCH FROM BUS 314791 TO BUS 314793 CKT 1 /* 3BRND DP 115.00 - 3DOOMS 115.00 OPEN BRANCH FROM BUS 314793 TO BUS 314819 CKT 1 /* 3DOOMS 115.00 - 3WAYNSBO 115.00 END
DVP_P1-2: LN 2193	CONTINGENCY 'DVP_P1-2: LN 2193' OPEN BRANCH FROM BUS 313707 TO BUS 313867 CKT 1 /* 6FORK UNION 230.00 - 6BREMODIST 230.00 OPEN BRANCH FROM BUS 313867 TO BUS 314747 CKT 1 /* 6BREMODIST 230.00 - 6BREMO 230.00 OPEN BUS 313867 /* ISLAND: 6BREMODIST 230.00 END

Contingency Name	Contingency Definition
DVP_P1-2: LN 8-B	CONTINGENCY 'DVP_P1-2: LN 8-B' OPEN BRANCH FROM BUS 938820 TO BUS 314746 CKT 1 /* AE1-108 TAP 138.00 - 4BREMO 138.00 OPEN BRANCH FROM BUS 314744 TO BUS 314746 CKT 1 /* 3BREMO 115.00 - 4BREMO 138.00 OPEN BUS 314746 /* ISLAND: 4BREMO 138.00 END
DVP_P2-2: BREMO B1	CONTINGENCY 'DVP_P2-2: BREMO B1' /* BREMO 230 KV OPEN BRANCH FROM BUS 314326 TO BUS 314747 CKT 1 /* 6BEARGRDN 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 314326 TO BUS 315191 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN G118.000 OPEN BUS 315191 /* ISLAND: 1BEARGRDN G118.000 OPEN BRANCH FROM BUS 314326 TO BUS 314747 CKT 2 /* 6BEARGRDN 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 314326 TO BUS 315192 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN G218.000 OPEN BRANCH FROM BUS 314326 TO BUS 315193 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN S122.000 OPEN BUS 315192 /* ISLAND: 1BEARGRDN G218.000 OPEN BUS 315193 /* ISLAND: 1BEARGRDN S122.000 OPEN BRANCH FROM BUS 314677 TO BUS 314747 CKT 1 /* 6BUCKING 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 313868 TO BUS 314747 CKT 1 /* 6CARTERV 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 313867 TO BUS 314747 CKT 1 /* 6BREMODIST 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 314744 TO BUS 314747 CKT 1 /* 3BREMO 115.00 - 6BREMO 230.00 OPEN BUS 314747 /* 6BREMO 230.00 KV OPEN BUS 314326 /* ISLAND: 6BEARGRDN 230.00 END
DVP_P7-1: LN 555-2168-A	CONTINGENCY 'DVP_P7-1: LN 555-2168-A' /* . OPEN BRANCH FROM BUS 314907 TO BUS 314912 CKT 1 /* 8DOOMS 500.00 - 8LEXNGTN 500.00 OPEN BRANCH FROM BUS 314794 TO BUS 965530 CKT 1 /* 6DOOMS 230.00 - AG1-421 TAP 230.00 END
Base Case	

Contingency Name	Contingency Definition
DVP_P7-1: LN 2106-2111	CONTINGENCY 'DVP_P7-1: LN 2106-2111' /* . OPEN BRANCH FROM BUS 314326 TO BUS 314747 CKT 1 /* 6BEARGRDN 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 314326 TO BUS 315191 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN G118.000 OPEN BUS 315191 /* ISLAND: 1BEARGRDN G118.000 OPEN BRANCH FROM BUS 314326 TO BUS 314747 CKT 2 /* 6BEARGRDN 230.00 - 6BREMO 230.00 OPEN BRANCH FROM BUS 314326 TO BUS 315192 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN G218.000 OPEN BRANCH FROM BUS 314326 TO BUS 315193 CKT 1 /* 6BEARGRDN 230.00 - 1BEARGRDN S122.000 OPEN BUS 315192 /* ISLAND: 1BEARGRDN G218.000 OPEN BUS 315193 /* ISLAND: 1BEARGRDN S122.000 END
314765 6MTEAGLE 230 966790 AG1-550 TAP 230 1	CONTINGENCY '314765 6MTEAGLE 230 966790 AG1-550 TAP 230 1' OPEN BRANCH FROM BUS 314765 TO BUS 966790 CKT 1 END
314333 6POWHATN 230 933500 AC2-165 TAP 230 1	CONTINGENCY '314333 6POWHATN 230 933500 AC2-165 TAP 230 1' OPEN BRANCH FROM BUS 314333 TO BUS 933500 CKT 1 END

11 Short Circuit Analysis

The following Breakers are overdutied

None

12 Affected Systems

12.1 TVA

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

12.2 Duke Energy Progress

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

12.3 MISO

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

12.4 LG&E

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