



***Affected System Impact Study
3500MW DC Interface_Greenfield***

Prepared by:

***Southwest Power Pool
Independent Coordinator of Transmission
415 N. McKinley, Suite140
Little Rock, AR 72205***

Rev	Issue Date	Description of Revision	Revised By	Project Manager
0	6/15/12	Posting Affected System Impact Study	EC	BR

Contents

INTRODUCTION	2
LOAD FLOW ANALYSIS	2
MODEL INFORMATION	2
LOAD FLOW ANALYSIS	3
ANALYSIS RESULTS	3
APPENDIX A: APPROVED CONSTRUCTION PLAN PROJECTS	15

Introduction

This Affected System Impact Study is based on the Customer's requested 3500MW DC interface on the TVA transmission system located at TVA's proposed Greenfield 500kV substation. The Greenfield 500kV substation ties the Shelby-Lagoon Creek 500kV line and the Cordova-Haywood 500kV line. This also includes the loop in of the Shelby-Cordova 500kV ckt2 into Greenfield 500kV substation, the construction of Lagoon Creek-Jackson 500kV line, and the construction of the Johnsonville-Maury 500kV line. The proposed commercial operation date of the project is January 1, 2017. The objective of this study is to assess the reliability impact of the new facility on the Entergy transmission system. It is also intended to determine whether the transmission system meets standards established by NERC Reliability Standards and Entergy's planning guidelines when the plant is connected to Entergy's transmission system. If not, transmission improvements will be identified.

The Impact Study process required a load flow analysis to determine if the existing transmission lines are adequate to handle the full output from the plant for simulated transfers to adjacent control areas. This Impact Study was based on information provided by the Customer, TVA, and assumptions made by Entergy's Independent Coordinator of Transmission (ICT) planning group and Entergy's Transmission Technical System Planning group. All supplied information and assumptions are documented in this report. If the actual equipment installed is different from the supplied information or the assumptions made, the results outlined in this report are subject to change.

The results of this Affected System Impact Study are preliminary in nature and are provided for informational purposes only. The underlying request requires further study due to the nature of the transmission system-to-transmission system interface of the request. As the underlying request is not a generator interconnection request, but a generation tie, further ad hoc studies among Entergy and neighboring systems must be performed to address, among other things, flows between systems, across seams, and cost allocation, as well as to define the level of transfers between systems. The specific nature and scope of further study will have to be negotiated among the parties and the parties will have to enter into an Ad Hoc Study Agreement in order for those studies to be performed.

Load Flow Analysis

Model Information

The load flow analysis was performed based on the projected 2017 summer peak load flow model. The loads were scaled based on the forecasted loads for the year. All firm power transactions between Entergy and its neighboring control areas were modeled for the year 2017 excluding short-term firm transactions on the same transmission interface. An economic dispatch was carried out on Entergy generating units after the scaling of load and modeling of transactions. The Customer DC interface was modeled at TVA's proposed Greenfield 500kV substation. (The Greenfield 500kV substation ties the Shelby-Lagoon Creek 500kV line and the Cordova-Haywood 500kV line. This also includes the loop in of the Shelby-Cordova 500kV ckt2 into Greenfield 500kV substation, the construction of Lagoon Creek-Jackson 500kV line and the construction of the Johnsonville-Maury 500kV line.) These associated facilities were then modeled in the case to build a revised case for the load flow analysis. Transfers were simulated between six (6) control areas using the requesting DC interface as the source and the adjacent control areas as sink.

This study considered one scenario:

Approved Future Transmission Projects	Pending Transmission Service & Study Requests
Included	Not Included

The DC interface, step-up transformers, and interconnecting lines were modeled according to the information provided by the customer.

Analysis

Load Flow Analysis

With the above assumptions implemented, the First Contingency Incremental Transfer Capability (FCITC) values are calculated. The FCITC depends on various factors – the system load, generation dispatch, scheduled maintenance of equipment, and the configuration of the interconnected system and the power flows in effect among the interconnected systems. The FCITC is also dependent on previously confirmed firm reservations on the interface.

Performance Criteria

The criteria for overload violations are as follows:

A) With All Lines in Service

- The MVA flow in any branch should not exceed Rate A (normal rating).

B) Under Contingencies

- The MVA flow through any facility should not exceed 95% Rate A.
- OTDF of 0.5 percent was used, (contingency line flows that increased more than 17.5MW were identified.)

Analysis Results

Summary of the analysis results are documented in following table for each scenario.

Summary of Results for DC interface– ERIS Load Flow Study

Interface		Summer Peak Case Used	FCITC Available
AECI	Associated Electric Cooperative, Inc.	2017	-4079
AMRN	Ameren Transmission	2017	-3213
DUKE	DUKE	2017	-2552
PJM	PJM	2017	-2551
SOCO	Southern Company	2017	-5405
TVA	Tennessee Valley Authority	2017	-2730

DETAILS OF TRANSFER: (WITH FUTURE PROJECTS AND WITHOUT PENDING TRANSMISSION SERVICE & STUDY REQUEST)

Limiting Elements	Est. Cost	AECI	AMRN	DUKE	PJM	SOCO	TVA
Batesville - Moorefield 161kV	4,850,000		X				
Bee Branch AECC - Quitman 161kV	Included in 2012 ICT BP	X	X		X		
Black Rock AECC - Walnut Ridge 161kV	17,740,000		X				
Bolton - Edwards 115kV	9,009,000					X	
Calico Rock - Melborne 161kV	Included in 2012 ICT BP	X	X	X	X	X	X
Calico Rock - Norfolk 161kV	Included in 2012 ICT BP	X	X	X	X	X	
Champagne - Plaisance (CLECO) 138kV	Other Ownership					X	
Coldwater - Hernando 115kV	8,158,000			X	X	X	X
Coughlin (CLECO) - Plaisance 138kV (CLECO)	Other Ownership					X	
DELTP4 (SPA) - 6LEWIS4 (SPA) 138kVV	Other Ownership	X					
Edwards - Vicksburg East 115kV	14,615,000					X	
Florence - South Jackson 115kV - Supplemental Upgrade	Committed to by Others					X	
Getwell - Hernando 115kV	Included in 2012 ICT BP	X	X	X	X	X	X
Harrisburg Tap - Marked Tree 161kV	2,772,000	X	X				
Hergett JCWL - Trumann West AECC 161kV	11,504,000	X	X	X	X		
Horn Lake - Green Brook 115kV	2,300,000		X	X	X	X	X
Horn Lake - Green Brook 115kV Supplemental Upgrade	Committed to by Others		X	X	X	X	X
Hot Springs Village - Cheetah 115kV	2,853,000	X	X				
Hoxies AECC - Walnut Ridge 161kV	200,000	X	X	X	X		
Independence SES - Moorefield 161kV	16,410,000	X	X	X	X	X	X
International Paper - Mansfield 138kV (CLECO)	Other Ownership	X					
International Paper - Wallake 138kV (CLECO)	Other Ownership	X					
Jonesboro SPA - Jonesboro 161kV	1,650,000		X		X		
Kosh (AECI) - Coxcrk (AECI) 161kV	Other Ownership		X				
Mark Tree - Twist 161kV	14,858,000	X	X		X		
MARN TAP (AMRN) - PENOCRK (AMRN) 161kV	Other Ownership				X		
NEWMAD (AECI) - N MADRD (SWPA) 161kV	Other Ownership		X				
Newport - Swifton 161kV	17,020,000		X				
PALMYRA (AMRN) - MARBHD N (AMRN) 138kV	Other Ownership				X		
PALMYRA (AMRN) 345/161kV transformer	Other Ownership			X	X	X	
Parkin - Twist 161kV	11,393,000	X	X		X		

Limiting Elements	Est. Cost	AECI	AMRN	DUKE	PJM	SOCO	TVA
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Committed to by Others			X	X	X	X
Russellville East - Russellville North 161kV	4,421,000	X	X		X		
SALEM (AECI) 345/161kV transformer	Other Ownership		X				
Trumann - Trumann West AECC 161kV	Included in 2012 ICT BP	X	X	X	X	X	

DETAILS OF SCENARIO 1 – 2017

AECI

Limiting Element	Contingency Element	ATC
International Paper - Mansfield 138kV (CLECO)	Dolet Hills (CLECO) - S.W. Shreevport 345kV (CLECO)	-4079
Trumann - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	-991
Trumann - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	-872
International Paper - Wallake 138kV (CLECO)	Dolet Hills (CLECO) - S.W. Shreevport 345kV (CLECO)	-631
Trumann - Trumann West AECC 161kV	Cash - Newport AB 161kV	-621
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-524
Trumann - Trumann West AECC 161kV	Cash - Jonesboro 161kV	-400
Trumann - Trumann West AECC 161kV	Hergett JCWL - Jonesboro 161kV	340
Parkin - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	747
DELTP4 (SPA) - 6LEWIS4 (SPA) 138kV	R.S.S.-4 (AEPW) - ORU ETP4 (AEPW) 138kV	786
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	820
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Paragould 161 kV	890
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	919
Independence SES - Moorefield 161kV	Dell - Independence SES 500kV	930
Hot Springs Village - Cheetah 115kV	ANO - Fort Smith 500kV	931
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	932
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	941
Mark Tree - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	983
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	1041
Independence SES - Moorefield 161kV	Newport - Newport Industrial 161kV	1051
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Jonesboro North (AECC) 161kV	1057
Hergett JCWL - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	1063
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	1067
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	1075
Independence SES - Moorefield 161kV	Newport AB - Newport Industrial 161kV	1086
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	1095
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	1147
Independence SES - Moorefield 161kV	Cash - Newport AB 161kV	1157
Hergett JCWL - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	1183
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	1193
Trumann - Trumann West AECC 161kV	Jonesboro - Jonesboro North (AECC) 161kV	1194
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	1210
Independence SES - Moorefield 161kV	Cash - Jonesboro 161kV	1220

Limiting Element	Contingency Element	ATC
Calico Rock - Melborne 161kV	Sage - Guion 161kV	1222
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	1225
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	1227
Independence SES - Moorefield 161kV	Newport - Swifton 161kV	1235
Calico Rock - Melborne 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1279
Calico Rock - Melborne 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1283
Independence SES - Moorefield 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1289
Independence SES - Moorefield 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1293
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	1298
Independence SES - Moorefield 161kV	Hoxies AECC - Swifton 161 kV	1304
Trumann - Trumann West AECC 161kV	Dell - Manilla AECC 161kV	1317
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	1361
Trumann - Trumann West AECC 161kV	Manilla AECC - Monette 161kV	1368
Russellville East - Russellville North 161kV	ANO - Fort Smith 500kV	1371
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	1371
Calico Rock - Norfolk 161kV	Sage - Guion 161kV	1379
Hoxies AECC - Walnut Ridge 161kV	Newport - Newport Industrial 161kV	1420
Calico Rock - Norfolk 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1430
Calico Rock - Norfolk 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1431
Hergett JCWL - Trumann West AECC 161kV	Cash - Newport AB 161kV	1433
Hoxies AECC - Walnut Ridge 161kV	Independence SES - Moorefield 161kV	1445
Hoxies AECC - Walnut Ridge 161kV	Newport AB - Newport Industrial 161kV	1500
Hergett JCWL - Trumann West AECC 161kV	Cash - Jonesboro 161kV	1655
Hoxies AECC - Walnut Ridge 161kV	Batesville - Moorefield 161kV	1665
Hoxies AECC - Walnut Ridge 161kV	Cash - Newport AB 161kV	1666
Bee Branch AECC - Quitman 161kV	ANO - Fort Smith 500kV	1691
Hot Springs Village - Cheetah 115kV	Dardanelle - Dardanelle Dam SPA 161kV	1700
Parkin - Twist 161kV	Ebony North - West Memphis LEHI 161 kV	1769
Parkin - Twist 161kV	Ebony North - Marion 161 kV	1775
Bee Branch AECC - Quitman 161kV	Hilltop - Dardanelle Dam SPA 161kV	1810
Hoxies AECC - Walnut Ridge 161kV	Cash - Jonesboro 161kV	1813
Harrisburg Tap - Marked Tree 161kV	Newport - Newport Industrial 161kV	1852
Hoxies AECC - Walnut Ridge 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1886
Hot Springs Village - Cheetah 115kV	Russellville East - Russellville South 161kV	1953
Harrisburg Tap - Marked Tree 161kV	Newport AB - Newport Industrial 161kV	1972
Mark Tree - Twist 161kV	Ebony North - West Memphis LEHI 161 kV	2006
Mark Tree - Twist 161kV	Ebony North - Marion 161 kV	2011

AMRN

Limiting Element	Contingency Element	ATC
Horn Lake - Green Brook 115kV	Getwell 230/115kV transformer	-3213
Horn Lake - Green Brook 115kV Supplemental Upgrade	Getwell 230/115kV transformer	-3213
Trumann - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	-1133
Trumann - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	-996
Trumann - Trumann West AECC 161kV	Cash - Newport AB 161kV	-710
Trumann - Trumann West AECC 161kV	Cash - Jonesboro 161kV	-457

Limiting Element	Contingency Element	ATC
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-405
Trumann - Trumann West AECC 161kV	Hergett JCWL - Jonesboro 161kV	388
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	702
Parkin - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	841
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	876
Independence SES - Moorefield 161kV	Dell - Independence SES 500kV	888
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	894
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	903
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	964
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Paragould 161 kV	969
Independence SES - Moorefield 161kV	Newport - Newport Industrial 161kV	973
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	996
Independence SES - Moorefield 161kV	Newport AB - Newport Industrial 161kV	1005
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	1024
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	1044
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	1062
Calico Rock - Melborne 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1065
Independence SES - Moorefield 161kV	Cash - Newport AB 161kV	1071
Independence SES - Moorefield 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1073
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	1104
Mark Tree - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	1107
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	1120
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	1124
Calico Rock - Melborne 161kV	Sage - Guion 161kV	1124
Independence SES - Moorefield 161kV	Cash - Jonesboro 161kV	1130
Independence SES - Moorefield 161kV	Newport - Swifton 161kV	1133
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	1136
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Jonesboro North (AECC) 161kV	1151
Calico Rock - Melborne 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1164
Independence SES - Moorefield 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1173
Calico Rock - Norfolk 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1190
Independence SES - Moorefield 161kV	Hollands Bottom - ISES 500kV	1192
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	1202
Hergett JCWL - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	1215
Hot Springs Village - Cheetah 115kV	ANO - Fort Smith 500kV	1218
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	1258
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	1260
Calico Rock - Norfolk 161kV	Sage - Guion 161kV	1268
Hoxies AECC - Walnut Ridge 161kV	Newport - Newport Industrial 161kV	1284
Hoxies AECC - Walnut Ridge 161kV	Independence SES - Moorefield 161kV	1290
Calico Rock - Norfolk 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	1298
Trumann - Trumann West AECC 161kV	Jonesboro - Jonesboro North (AECC) 161kV	1300
Hoxies AECC - Walnut Ridge 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1348
Hergett JCWL - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	1352

Limiting Element	Contingency Element	ATC
Hoxies AECC - Walnut Ridge 161kV	Newport AB - Newport Industrial 161kV	1355
Trumann - Trumann West AECC 161kV	Dell - Manilla AECC 161kV	1473
Hoxies AECC - Walnut Ridge 161kV	Batesville - Moorefield 161kV	1486
Hoxies AECC - Walnut Ridge 161kV	Cash - Newport AB 161kV	1506
Trumann - Trumann West AECC 161kV	Manilla AECC - Monette 161kV	1530
Hergett JCWL - Trumann West AECC 161kV	Cash - Newport AB 161kV	1638
Hoxies AECC - Walnut Ridge 161kV	Cash - Jonesboro 161kV	1639
Getwell - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	1673
Getwell - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	1674
Russellville East - Russellville North 161kV	ANO - Fort Smith 500kV	1717
Bee Branch AECC - Quitman 161kV	Hilltop - Dardanelle Dam SPA 161kV	1734
Bee Branch AECC - Quitman 161kV	ANO - Fort Smith 500kV	1784
Hoxies AECC - Walnut Ridge 161kV	GOBKNOB (AECI) COXCRK (AECI) 161kV UNION MS (TVA) - WELLSPRNG MS (TVA) 161kV	1804
Getwell - Hernando 115kV		1830
Hoxies AECC - Walnut Ridge 161kV	Batesville - Cushman 161 kV	1834
Hoxies AECC - Walnut Ridge 161kV	GOBKNOB (AECI) 345/161kV transformer	1878
Hergett JCWL - Trumann West AECC 161kV	Cash - Jonesboro 161kV	1891
Parkin - Twist 161kV	Ebony North - West Memphis LEHI 161 kV	1993
Parkin - Twist 161kV	Ebony North - Marion 161 kV	1999
Jonesboro SPA - Jonesboro 161kV	N MADRD (SPA) - KENNETT (SPA) 161kV	2093
Harrisburg Tap - Marked Tree 161kV	Newport - Newport Industrial 161kV	2116
Getwell - Hernando 115kV	CALHOUNCITY (TVA) - SW BRUCE TP (TVA) 161kV	2125
Getwell - Hernando 115kV	WELLSRING MS (TVA) - BANKHEAD TP 161kV	2127
Getwell - Hernando 115kV	Riverbend - Fancy Point 230kV	2136
Bee Branch AECC - Quitman 161kV	Independence SES - Moorefield 161kV	2177
Batesville - Moorefield 161kV	ANO - Fort Smith 500kV	2185
Getwell - Hernando 115kV	Twinkle Town - Robinsonville 230kV	2187
Calico Rock - Melborne 161kV	Base Case	2190
Harrisburg Tap - Marked Tree 161kV	Newport AB - Newport Industrial 161kV	2253
Mark Tree - Twist 161kV	Ebony North - West Memphis LEHI 161 kV	2259
Getwell - Hernando 115kV	PONTOTOC MS (TVA) - BANKHEAD TP (TVA) 161kV	2262
Mark Tree - Twist 161kV	Ebony North - Marion 161 kV	2265
Hot Springs Village - Cheetah 115kV	Dardanelle - Dardanelle Dam SPA 161kV	2289
Batesville - Moorefield 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2312
Calico Rock - Norfolk 161kV	Base Case	2334
Black Rock AECC - Walnut Ridge 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2345
Bee Branch AECC - Quitman 161kV	Batesville - Moorefield 161kV	2356
Batesville - Moorefield 161kV	Newport - Newport Industrial 161kV	2359
Batesville - Moorefield 161kV	Newport AB - Newport Industrial 161kV	2391
Batesville - Moorefield 161kV	Cash - Newport AB 161kV	2457
Batesville - Moorefield 161kV	Newport - Swifton 161kV	2458
Batesville - Moorefield 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	2503
Batesville - Moorefield 161kV	WPLAIN (AECI) - KOSH (AECI) 161kV	2537
Batesville - Moorefield 161kV	NEWMAD (AECI) - STGRANCISTP (AECI) 345kV	2675

Limiting Element	Contingency Element	ATC
Jonesboro SPA - Jonesboro 161kV	KENNETT (SPA) - PARAGLD (SPA) 161kV	2811
Batesville - Moorefield 161kV	FLETCH (AECI) - GOBKNOB (AECI) 345kV	2828
NEWMAD (AECI) - N MADRD (SWPA) 161kV	ESSEX (AECI) - NEWMAD (AECI) 345kV	2886
SALEM (AECI) 345/161kV transformer	FRANKS (AECI) - SALEM (AECI) 345kV	2914
Newport - Swifton 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	3073
Black Rock AECC - Walnut Ridge 161kV	NEWMAD (AECI) - STGRANCISTP (AECI) 345kV	3203
Bee Branch AECC - Quitman 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	3289
Kosh (AECI) - Coxcrk (AECI) 161kV	FLETCH (AECI) - GOBKNOB (AECI) 345kV	3460

DUKE

Limiting Element	Contingency Element	ATC
Trumann - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	-2552
Trumann - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	-2243
Horn Lake - Green Brook 115kV	Getwell 230/115kV transformer	-2235
Horn Lake - Green Brook 115kV Supplemental Upgrade	Getwell 230/115kV transformer	-2235
Trumann - Trumann West AECC 161kV	Cash - Newport AB 161kV	-1599
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-1082
Trumann - Trumann West AECC 161kV	Cash - Jonesboro 161kV	-1029
PALMYRA (AMRN) 345/161kV transformer	PALMY TAP (AMRN) - SUB T (MEC) 345kV	-597
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-249
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	488
Getwell - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	1121
Getwell - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	1122
Getwell - Hernando 115kV	UNION MS (TVA) - WELLSPRNG MS (TVA) 161kV	1297
Getwell - Hernando 115kV	Riverbend - Fancy Point 230kV	1478
Getwell - Hernando 115kV	WELLSPRING MS (TVA) - BANKHEAD TP 161kV	1507
Getwell - Hernando 115kV	CALHOUNCITY (TVA) - SW BRUCE TP (TVA) 161kV	1562
Getwell - Hernando 115kV	Twinkle Town - Robinsonville 230kV	1599
Getwell - Hernando 115kV	PONTOTOC MS (TVA) - BANKHEAD TP (TVA) 161kV	1603
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Paragould 161 kV	2002
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	2113
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	2134
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	2281
Independence SES - Moorefield 161kV	Newport - Newport Industrial 161kV	2304
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	2356
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Jonesboro North (AECC) 161kV	2377
Independence SES - Moorefield 161kV	Newport AB - Newport Industrial 161kV	2378
Calico Rock - Melborne 161kV	Hollands Bottom - ISES 500kV	2382
Independence SES - Moorefield 161kV	Hollands Bottom - ISES 500kV	2400
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	2419
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	2513

Limiting Element	Contingency Element	ATC
Independence SES - Moorefield 161kV	Cash - Newport AB 161kV	2535
Calico Rock - Melborne 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2548
Independence SES - Moorefield 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2568
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	2609
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	2613
Coldwater - Hernando 115kV	Batesville - Moon Lake 230kV	2641
Independence SES - Moorefield 161kV	Dell - Independence SES 500kV	2642
Calico Rock - Melborne 161kV	Sage - Guion 161kV	2646
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	2651
Calico Rock - Norfolk 161kV	Hollands Bottom - ISES 500kV	2652
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	2671
Independence SES - Moorefield 161kV	Cash - Jonesboro 161kV	2673
Trumann - Trumann West AECC 161kV	Jonesboro - Jonesboro North (AECC) 161kV	2686
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	2688
Independence SES - Moorefield 161kV	Newport - Swifton 161kV	2692
Hergett JCWL - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	2737
Independence SES - Moorefield 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	2749
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	2844
Calico Rock - Norfolk 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2848
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	2983
Calico Rock - Norfolk 161kV	Sage - Guion 161kV	2985
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	2990
Calico Rock - Norfolk 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	3043
Hergett JCWL - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	3045
Trumann - Trumann West AECC 161kV	Dell - Manilla AECC 161kV	3110
Getwell - Hernando 115kV	Base Case	3228
Trumann - Trumann West AECC 161kV	Manilla AECC - Monette 161kV	3232
Hoxies AECC - Walnut Ridge 161kV	Independence SES - Moorefield 161kV	3445
Coldwater - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	3467
Coldwater - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	3468

PJM

Limiting Element	Contingency Element	ATC
Horn Lake - Green Brook 115kV	Getwell 230/115kV transformer	-2551
Horn Lake - Green Brook 115kV Supplemental Upgrade	Getwell 230/115kV transformer	-2551
Trumann - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	-1965
Trumann - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	-1728
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-1655
Trumann - Trumann West AECC 161kV	Cash - Newport AB 161kV	-1232
Trumann - Trumann West AECC 161kV	Cash - Jonesboro 161kV	-793
PALMYRA (AMRN) 345/161kV transformer	PALMY TAP (AMRN) - SUB T (MEC) 345kV	-396
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-292
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	558

Limiting Element	Contingency Element	ATC
Getwell - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	1280
Getwell - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	1281
Parkin - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	1454
Getwell - Hernando 115kV	UNION MS (TVA) - WELLSPRNG MS (TVA) 161kV	1478
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	1590
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Paragould 161 kV	1604
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	1606
Getwell - Hernando 115kV	Riverbend - Fancy Point 230kV	1689
Getwell - Hernando 115kV	WELLSRING MS (TVA) - BANKHEAD TP 161kV	1717
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	1726
Independence SES - Moorefield 161kV	Newport - Newport Industrial 161kV	1743
Getwell - Hernando 115kV	CALHOUNCITY (TVA) - SW BRUCE TP (TVA) 161kV	1762
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	1764
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	1783
Independence SES - Moorefield 161kV	Dell - Independence SES 500kV	1787
Independence SES - Moorefield 161kV	Newport AB - Newport Industrial 161kV	1800
Getwell - Hernando 115kV	Twinkle Town - Robinsonville 230kV	1805
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	1821
Getwell - Hernando 115kV	PONTOTOC MS (TVA) - BANKHEAD TP (TVA) 161kV	1826
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	1901
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Jonesboro North (AECC) 161kV	1904
Mark Tree - Twist 161kV	West Memphis EHV - West Memphis LEHI 161kV	1914
Independence SES - Moorefield 161kV	Cash - Newport AB 161kV	1918
Calico Rock - Melborne 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1936
Calico Rock - Melborne 161kV	Hollands Bottom - ISES 500kV	1936
Independence SES - Moorefield 161kV	Hollands Bottom - ISES 500kV	1951
Independence SES - Moorefield 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	1951
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	1977
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	2006
Calico Rock - Melborne 161kV	Sage - Guion 161kV	2008
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	2021
Independence SES - Moorefield 161kV	Cash - Jonesboro 161kV	2023
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	2034
Independence SES - Moorefield 161kV	Newport - Swifton 161kV	2037
Independence SES - Moorefield 161kV	Kosh (AECI) - Coxcrk (AECI) 161kV	2091
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	2103
Hergett JCWL - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	2108
Trumann - Trumann West AECC 161kV	Jonesboro - Jonesboro North (AECC) 161kV	2152
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	2152
Calico Rock - Norfolk 161kV	Hollands Bottom - ISES 500kV	2156
Calico Rock - Norfolk 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2164

Limiting Element	Contingency Element	ATC
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	2257
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	2262
Calico Rock - Norfolk 161kV	Sage - Guion 161kV	2265
Hergett JCWL - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	2345
Trumann - Trumann West AECC 161kV	Dell - Manilla AECC 161kV	2469
Hoxies AECC - Walnut Ridge 161kV	Independence SES - Moorefield 161kV	2503
Hoxies AECC - Walnut Ridge 161kV	Newport - Newport Industrial 161kV	2526
Trumann - Trumann West AECC 161kV	Manilla AECC - Monette 161kV	2565
Hoxies AECC - Walnut Ridge 161kV	Newport AB - Newport Industrial 161kV	2667
Hoxies AECC - Walnut Ridge 161kV	STFRANCISTP (AECI) - GOBKNOB (AECI) 345kV	2686
MARN TAP (AMRN) - PENOCRK (AMRN) 161kV	PALM TAP (AMRN) - SPENCER (AMRNT) 345kV	2744
Trumann - Trumann West AECC 161kV	N MADRD (SPA) - KENNETT (SPA) 161kV	2785
Hergett JCWL - Trumann West AECC 161kV	Cash - Newport AB 161kV	2842
Hoxies AECC - Walnut Ridge 161kV	Batesville - Moorefield 161kV	2884
Hoxies AECC - Walnut Ridge 161kV	Cash - Newport AB 161kV	2963
Russellville East - Russellville North 161kV	ANO - Fort Smith 500kV	3072
Coldwater - Hernando 115kV	Batesville - Moon Lake 230kV	3093
Hoxies AECC - Walnut Ridge 161kV	Cash - Jonesboro 161kV	3225
Hergett JCWL - Trumann West AECC 161kV	Cash - Jonesboro 161kV	3280
Jonesboro SPA - Jonesboro 161kV	N MADRD (SPA) - KENNETT (SPA) 161kV	3360
Bee Branch AECC - Quitman 161kV	ANO - Fort Smith 500kV	3378
Parkin - Twist 161kV	Ebony North - West Memphis LEHI 161 kV	3444
Parkin - Twist 161kV	Ebony North - Marion 161 kV	3455
PALMYRA (AMRN) - MARBHD N (AMRN) 138kV	SIoux (AMRN) - MEPPEN T (AMRN) 138kV	3459
Hoxies AECC - Walnut Ridge 161kV	GOBKNOB (AECI) COXCRK (AECI) 161kV	3473
Bee Branch AECC - Quitman 161kV	Hilltop - Dardanelle Dam SPA 161kV	3494

SOCO

Limiting Element	Contingency Element	ATC
Coughlin (CLECO) - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-5405
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-3737
Trumann - Trumann West AECC 161kV	Newport - Newport Industrial 161kV	-3651
Coughlin (CLECO) - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-3570
Trumann - Trumann West AECC 161kV	Newport AB - Newport Industrial 161kV	-3210
Trumann - Trumann West AECC 161kV	Cash - Newport AB 161kV	-2288
Coughlin (CLECO) - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-2282
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-1903
Horn Lake - Green Brook 115kV	Getwell 230/115kV transformer	-1784
Horn Lake - Green Brook 115kV Supplemental Upgrade	Getwell 230/115kV transformer	-1784
Trumann - Trumann West AECC 161kV	Cash - Jonesboro 161kV	-1473
Edwards - Vicksburg East 115kV	Baxter Wilson - Ray Braswell 500kV	-1301
PALMYRA (AMRN) 345/161kV transformer	PALMY TAP (AMRN) - SUB T (MEC) 345kV	-1001
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-672
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-649

Limiting Element	Contingency Element	ATC
Coughlin (CLECO) - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-626
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-196
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	387
Getwell - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	929
Getwell - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	929
Bolton - Edwards 115kV	Baxter Wilson - Ray Braswell 500kV	934
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	1008
Getwell - Hernando 115kV	UNION MS (TVA) - WELLSPRNG MS (TVA) 161kV	1026
Getwell - Hernando 115kV	Riverbend - Fancy Point 230kV	1179
Getwell - Hernando 115kV	WELLSRING MS (TVA) - BANKHEAD TP 161kV	1192
Getwell - Hernando 115kV	CALHOUNCITY (TVA) - SW BRUCE TP (TVA) 161kV	1246
Getwell - Hernando 115kV	PONTOTOC MS (TVA) - BANKHEAD TP (TVA) 161kV	1268
Getwell - Hernando 115kV	Twinkle Town - Robinsonville 230kV	1283
Coughlin (CLECO) - Plaisance 138kV (CLECO)	West Fork - Wells 230kV	2043
Coldwater - Hernando 115kV	Batesville - Moon Lake 230kV	2080
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Paragould 161 kV	2539
Getwell - Hernando 115kV	Base Case	2575
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	2748
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Franklin 500kV	2748
Calico Rock - Melborne 161kV	Hollands Bottom - ISES 500kV	2804
Independence SES - Moorefield 161kV	Hollands Bottom - ISES 500kV	2826
Coldwater - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	2871
Coldwater - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	2872
Coldwater - Hernando 115kV	Union MS 500/161kV transformer (TVA)	2891
Florence - South Jackson 115kV - Supplemental Upgrade	Choctaw MS (TVA) - Clay (TVA) 500kV	2945
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	2993
Trumann - Trumann West AECC 161kV	Paragould South (AECC) - Jonesboro North (AECC) 161kV	3014
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	3022
Calico Rock - Norfolk 161kV	Hollands Bottom - ISES 500kV	3123
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	3212
Independence SES - Moorefield 161kV	Newport - Newport Industrial 161kV	3243
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	3318
Independence SES - Moorefield 161kV	Newport AB - Newport Industrial 161kV	3349
Trumann - Trumann West AECC 161kV	Jonesboro - Jonesboro North (AECC) 161kV	3406
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	3426

TVA

Limiting Element	Contingency Element	ATC
Horn Lake - Green Brook 115kV	Getwell 230/115kV transformer	-2730
Horn Lake - Green Brook 115kV Supplemental Upgrade	Getwell 230/115kV transformer	-2730

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-1250
Getwell - Hernando 115kV	Batesville - Moon Lake 230kV	-293
Getwell - Hernando 115kV	Union MS 500/161kV transformer (TVA)	567
Getwell - Hernando 115kV	PLEASANT HL (TVA) - BENTON MS (TVA) 500kV	1306
Getwell - Hernando 115kV	UNION MS (TVA) - PLEASANT HL (TVA) 500kV	1307
Getwell - Hernando 115kV	UNION MS (TVA) - WELLSPRNG MS (TVA) 161kV	1600
Getwell - Hernando 115kV	Riverbend - Fancy Point 230kV	1795
Getwell - Hernando 115kV	WELLSRING MS (TVA) - BANKHEAD TP 161kV	1859
Getwell - Hernando 115kV	Twinkle Town - Robinsonville 230kV	1973
Getwell - Hernando 115kV	PONTOTOC MS (TVA) - BANKHEAD TP (TVA) 161kV	1978
Getwell - Hernando 115kV	CALHOUNCITY (TVA) - SW BRUCE TP (TVA) 161kV	1983
Coldwater - Hernando 115kV	Batesville - Moon Lake 230kV	3108
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	3344
Independence SES - Moorefield 161kV	ANO - Fort Smith 500kV	3376

APPENDIX A: Approved Construction Plan Projects

The list of approved construction plan projects can be found on line at:

http://www.oatioasis.com/EES/EESdocs/Entergy_2012-2016_Final_Construction_Plan_Update_2.pdf