



***Feasibility Study  
PID 260  
141MW Plant***

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# Energy Resource Interconnection Service

## 1. Introduction

This Energy Resource Interconnection Service (ERIS) is based on the Customer's request for 141MW interconnection on Entergy's transmission system on the proposed 161kV transmission line between the proposed Grandview substation (located on the Eureka Springs - Table Rock 161kV transmission line) and the Osage Creek substation. The proposed commercial operation date of the project is December 31, 2014. The objective of this study is to assess the reliability impact of the new facility on the Entergy transmission system as well as its effects on the system's existing short circuit current capability. 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. ERIS does not in and of itself convey any transmission service.

The Feasibility 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. A short circuit analysis is performed to determine if the generation would cause the available fault current to surpass the fault duty of existing equipment within the Entergy transmission system. The load flow results from the ERIS study are for informational purposes only.

This Feasibility Study was based on information provided by the Customer 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 estimated cost of interconnection facilities is \$8.5 Million; which covers the cost of the construction of a new 161kV, 3-element ring bus substation at the Customer's point of interconnection.

Southwest Power Pool has been identified as an affected system. The customer will need to satisfy the requirements deemed necessary by SPP.

## 2. Short circuit Analysis/Breaker Rating Analysis

### 2.1 Model Information

The short circuit analysis was performed on the Entergy system short circuit model using ASPEN software. This model includes all generators interconnected to the Entergy system or interconnected to an adjacent system and having an impact on this interconnection request, IPP's with signed IOAs, and approved future transmission projects on the Entergy transmission system.

### 2.2 Short Circuit Analysis

The method used to determine if any short circuit problems would be caused by the addition of the PID 260 generation is as follows:

Three phase and single phase to ground faults were simulated on the Entergy base case short circuit model and the worst case short circuit level was determined at

each station. The PID 260 generator was then modeled in the base case to generate a revised short circuit model. The base case short circuit results were then compared with the results from the revised model to identify any breakers that were under-rated as a result of additional short circuit contribution from PID 260 generation. Any breakers identified to be upgraded through this comparison are mandatory upgrades.

### 2.3 Analysis Results

The results of the short circuit analysis indicated that the additional generation due to PID 260 generation caused no increase in short circuit current such that they exceeded the fault interrupting capability of the high voltage circuit breakers within the vicinity of the PID 260 plant **with and without priors**. Priors included are: 221, 231, 238, 240, 244, 247, 250, 251, 252, 253, 255, 256, 257, and 259.

### 2.4 Problem Resolution

As a result of the short circuit analysis findings, no resolution was required on the Entergy Transmission System.

## 3. Load Flow Analysis

### 3.1 Model Information

The load flow analysis was performed based on the projected 2015 summer peak load flow model. Approved future transmission projects in the 2011-2013 ICT Base Plan were used in the models for scenarios three and four. These upgrades can be found on Entergy's OASIS web page <http://www.oatioasis.com/EES/EESDocs/Disclaimer.html>. 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 2015 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 PID 260 generation interconnection point was modeled on the proposed Grandview – Osage Creek 161kV transmission line. These associated facilities were then modeled in the case to build a revised case for the load flow analysis. Transfers were simulated between thirteen (13) control areas and Entergy using the requesting generator as the source and adjacent control area as sink.

This study considered the following four scenarios:

Scenario No.	Approved Future Transmission Projects	Pending Transmission Service & Study Requests
1	Not Included	Not Included
2	Not Included	Included
3	Included	Not Included
4	Included	Included

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

## 3.2 Load Flow Analysis

### 3.2.1 Load Flow Analysis:

The load flow analysis was performed as a DC analysis using PSS/E and PSS/MUST software by Power Technologies Incorporated (PTI). A Transmission Reliability Margin (TRM) that effectively reduced line ratings by 5% was used in the model. 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. The details of each scenario list each limiting element, the contingency for the limiting element, and the Available Transfer Capacity (ATC). The ATC is equal to the FCITC.

### 3.2.2 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.

### 3.2.3 Analysis Results

It was determined there are no Entergy Transmission System upgrades required for this ERIS request. Summary of the analysis results are documented in Table 3.2.1 for each scenario. Detailed results for each of the 13 studied interfaces for Scenarios 1, 2, 3 and 4 are included in Tables 3.2.2 - 3.2.5.

**Table 3.2.1: Summary of Results for PID 260 – ERIS Load Flow Study**

Interface		Summer Peak Case Used	FCITC Available for Scenario 1	FCITC Available for Scenario 2	FCITC Available for Scenario 3	FCITC Available for Scenario 4
AECI	Associated Electric Cooperative, Inc.	2015	141	-122	141	-166
AEPW	American Electric Power West	2015	-1254	-157	141	-212
AMRN	Ameren Transmission	2015	-189	-2263	-219	-2047
CLEC	CLECO	2015	-283	-2567	-235	-2205
EES	Entergy	2015	-90	-2149	-105	-986
EMDE	Empire District Electric Co	2015	141	141	141	141
Lafa	Lafayette Utilities System	2015	-469	-859	-79	-742
LAGN	Louisiana Generating, LLC	2015	-74	-885	-85	-797
LEPA	Louisiana Energy & Power Authority	2015	-986	-1176	-53	-506
OKGE	Oklahoma Gas & Electric Company	2015	141	-166	141	-225

<b>Interface</b>		<b>Summer Peak Case Used</b>	<b>FCITC Available for Scenario 1</b>	<b>FCITC Available for Scenario 2</b>	<b>FCITC Available for Scenario 3</b>	<b>FCITC Available for Scenario 4</b>
SMEPA	South Mississippi Electric Power Assoc.	2015	-957	-1337	-733	-1199
SOCO	Southern Company	2015	-62	-724	-71	-669
SPA	Southwest Power Administration	2015	141	141	141	141
TVA	Tennessee Valley Authority	2015	-88	-1048	-101	-947

#### **4. Facilities at the Point of Interconnection**

The Interconnection Customer’s designated Point of Interconnection (POI) is a new 161kV substation that will be constructed and cut-in on Entergy’s proposed Grandview – Osage Creek 161kV transmission line. The estimated cost for a 161kV, 3-element ring bus configuration substation is \$8.5 Million. This cost is based on parametric estimating techniques for a “typical” site. Cost may significantly change based on specific project parameters that are not known at this time. Costs specific to this interconnection will be developed during the Facility Study. The interconnection customer is responsible for constructing all facilities needed to deliver generation to the POI.

**TABLE 3.2.2: DETAILS OF SCENARIO 1 RESULTS: (WITHOUT FUTURE PROJECTS AND WITHOUT PENDING TRANSMISSION SERVICE & STUDY REQUEST)**

Limiting Elements	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Bonin - Cecelia 138kV	11,760,000									X					
Brookhaven - Mallalieu (MEPA) 115kV	Included in 2011 ICT Base Plan											X			
Champagne - Plaisance (CLECO) 138kV	10,920,000							X		X					
Colonial Academy - Richard 138kV	9,240,000							X							
Coughlin - Plaisance 138kV (CLECO)	Other Ownership							X		X					
French Settlement - Sorrento 230kV	7,200,000											X			
Habetz - Richard 138kV	Included in 2011 ICT Base Plan				X			X		X					
International Paper - Mansfield 138kV (CLECO)	Other Ownership		X												
International Paper - Wallake 138kV (CLECO)	Other Ownership		X												
Jackson Miami - Jackson Monument Street 115kV	2,520,000											X			
Judice - Scott1 138kV	6,720,000									X					
North Crowley - Scott1 138kV	14,280,000							X		X					
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Other Ownership							X							
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Committed to by others			X	X	X		X	X	X		X	X		X

<b>Limiting Elements</b>	<b>Est. Cost</b>	<b>AECI</b>	<b>AEPW</b>	<b>AMRN</b>	<b>CLECO</b>	<b>EES</b>	<b>EMDE</b>	<b>LAFa</b>	<b>LAgN</b>	<b>LEPA</b>	<b>OKGE</b>	<b>SMEPA</b>	<b>SOCO</b>	<b>SPA</b>	<b>TVA</b>
Richard - Scott1 138kV	23,520,000							X		X					
Scott1 - Bonin 138kV	4,200,000							X		X					
Semere - Scott2 138kV	13,440,000							X		X					
Willow Glen - Evergreen 230kV ckt 2	3,600,000									X					



**TABLE 3.2.3: DETAILS OF SCENARIO 2 RESULTS: (WITHOUT FUTURE PROJECTS AND WITH PENDING TRANSMISSION SERVICE & STUDY REQUEST)**

Limiting Elements	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Acadia GSU - Colonial Academy 138kV	6,720,000							X							
Bonin - Cecelia 138kV	11,760,000									X					
Brookhaven - Mallalieu (MEPA) 115kV	Included in 2011 ICT Base Plan											X			
Bull Shoals - Midway AECC 161kV	7,830,000	X	X	X	X	X		X	X	X	X	X	X		X
Champagne - Plaisance (CLECO) 138kV	10,920,000							X		X					
Colonial Academy - Richard 138kV	9,240,000							X		X					
Coly - Vignes 230kV - Supplemental Upgrade	Committed to by others									X					
Coughlin - Plaisance 138kV (CLECO)	Other Ownership							X		X					
Cypress 500/138kV transformer 1	18,770,000					X									
Flander - Segura 138kV (CLECO)	Other Ownership									X					
Florence - South Jackson 115kV - Supplemental Upgrade	Committed to by others											X			
French Settlement - Sorrento 230kV	7,200,000											X			
Grimes - Bentwater 138kV	21,840,000							X							
Grimes - Grimes 345/138kV transformer 1	19,884,587				X	X		X	X	X		X			

Limiting Elements	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	LAFa	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Grimes - Grimes 345/138kV transformer 2	19,884,587				X	X		X	X	X		X			
Grimes - Mt. Zion 138kV	15,960,000					X		X	X						
Habetz - Richard 138kV	Included in 2011 ICT Base Plan				X			X		X					
Hartburg - Inland Orange 230kV	Included in 2011 ICT Base Plan					X									
Hartburg - Inland Orange 230kV - Supplemental Upgrade	Committed to by others					X									
Helbig - McLewis 230kV	Included in 2011 ICT Base Plan					X									
Inland - McLewis 230kV	Included in 2011 ICT Base Plan					X									
Inland - McLewis 230kV - Supplemental Upgrade	Committed to by others					X									
Jackson Miami - Jackson Monument Street 115kV	2,520,000											X			
Jackson Miami - Rex Brown 115kV	Included in 2011 ICT Base Plan											X			
Judice - Scott1 138kV	6,720,000									X					
LINE 558 TAP - MT. Zion 138 kV	4,200,000					X		X	X						
Mallalieu (MEPA) - Norfield 115kV	Included in 2011 ICT Base Plan											X			
North Crowley - Richard 138kV	10,080,000							X							

Limiting Elements	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	Lafa	Lagn	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
North Crowley - Scott1 138kV	14,280,000							X		X					
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Other Ownership							X	X	X					
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Committed to by others			X	X	X		X	X	X		X	X		X
Richard - Scott1 138kV	23,520,000							X		X					
Scott1 - Bonin 138kV	4,200,000							X		X					
Semere - Scott2 138kV	13,440,000							X		X					
Willow Glen - Evergreen 230kV ckt 2	3,600,000									X					

**TABLE 3.2.4: DETAILS OF SCENARIO 3 RESULTS: (WITH FUTURE PROJECTS AND WITHOUT PENDING TRANSMISSION SERVICE & STUDY REQUEST)**

Limiting Element	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	LAFA	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Bonin - Cecelia 138kV	11,760,000									X					
Champagne - Plaisance (CLECO) 138kV	10,920,000							X							
Coughlin - Plaisance 138kV (CLECO)	Other Ownership							X		X					
Jackson Miami - Jackson Monument Street 115kV	2,520,000											X			
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Committed to by others			X	X	X		X	X	X		X	X		X

**TABLE 3.2.5: DETAILS OF SCENARIO 4 RESULTS: (WITH FUTURE PROJECTS AND WITH PENDING TRANSMISSION SERVICE & STUDY REQUEST)**

Limiting Element	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	LAFa	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Bonin - Cecelia 138kV	11,760,000									X					
Brookhaven - Mallalieu (MEPA) 115kV	Included in 2011 ICT Base Plan											X			
Bull Shoals - Midway AECC 161kV	7,830,000	X	X	X	X	X		X	X	X	X	X	X		X
Champagne - Plaisance (CLECO) 138kV	10,920,000							X		X					
Coughlin - Plaisance 138kV (CLECO)	Other Ownership							X		X					
Florence - South Jackson 115kV - Supplemental Upgrade	TBD											X			
Grimes - Bentwater 138kV	21,840,000							X							
Grimes - Grimes 345/138kV transformer 1	19,884,587				X	X		X	X	X		X			
Grimes - Grimes 345/138kV transformer 2	19,884,587				X	X		X	X	X		X			
Grimes - Mt. Zion 138kV	15,960,000					X		X	X						
Hartburg - Inland Orange 230kV - Supplemental Upgrade	Committed to by others						X								
Inland - McLewis 230kV - Supplemental Upgrade	Committed to by others						X								

Limiting Element	Est. Cost	AECI	AEPW	AMRN	CLECO	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SPA	TVA
Jackson Miami - Jackson Monument Street 115kV	2,520,000											X			
Jackson Miami - Rex Brown 115kV	1,680,000											X			
LINE 558 TAP - MT. Zion 138 kV	4,200,000					X		X	X						
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Other Ownership							X	X	X					
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	TBD			X	X	X		X	X	X		X	X		X

## APPENDIX A: Prior Generation Interconnection and Transmission Service Requests in Study Models

Prior Generation Interconnection NRIS requests that were included in this study:

PID	Substation	MW	In Service Date
PID 223	PID-223 Tap	125	10/1/2010
PID 224	PID-224 Tap	100	12/1/2009

Prior transmission service requests that were included in this study:

OASIS #		PSE	MW	Begin	End
74597193		NRG Power Marketing	300	1/1/2013	1/1/2018
74597198		NRG Power Marketing	300	1/1/2013	1/1/2018
74728369		Brazos Electric Cooperative	100	1/1/2012	1/1/2017
74728395	Not modeled	Brazos Electric Cooperative	100	1/1/2012	1/1/2017
74728400	Not modeled	Brazos Electric Cooperative	100	1/1/2012	1/1/2017
74728415	Not modeled	Brazos Electric Cooperative	100	1/1/2012	1/1/2017
74728420	Not modeled	Brazos Electric Cooperative	100	1/1/2012	1/1/2017
74799834		Cargill Power Markets	101	7/1/2012	7/1/2017
74799836		Cargill Power Markets	101	7/1/2012	7/1/2017
74799837		Cargill Power Markets	101	7/1/2012	7/1/2017
74799848		Cargill Power Markets	101	7/1/2013	7/1/2018
74799851		Cargill Power Markets	101	7/1/2013	7/1/2018
74799853		Cargill Power Markets	101	7/1/2013	7/1/2018
74846159		AEPM	65	1/1/2015	1/1/2020
74899933		Entergy Services (SPO)	322	2/1/2011	2/1/2041
74899972		Entergy Services (SPO)	1	1/1/2015	1/1/2045
74899974		Entergy Services (SPO)	1	1/1/2015	1/1/2045
74899976		Entergy Services (SPO)	1	1/1/2015	1/1/2045
74899980		Entergy Services (SPO)	584	1/1/2015	1/1/2045
74899988		Entergy Services (SPO)	1	6/1/2012	6/1/2042
74899989		Entergy Services (SPO)	485	6/1/2012	6/1/2042
74899996		Entergy Services (SPO)	450	6/1/2012	6/1/2042
74900000		Entergy Services (SPO)	620	6/1/2012	6/1/2042
74900014		Entergy Services (SPO)	35	6/1/2012	6/1/2042
74900016		Entergy Services (SPO)	20	6/1/2012	6/1/2042
75009400		Entergy Services (SPO)	1	1/1/2012	1/1/2042
75009407		Entergy Services (SPO)	1	1/1/2012	1/1/2042
75206836		ETEC	125	1/1/2015	2/1/2020

## APPENDIX B: Detailed Results for Scenario 1 – 2015

### AECI

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### AEPW

Limiting Element	Contingency Element	ATC
International Paper - Mansfield 138kV (CLECO)	Dolet Hills - S.W. Shreveport 345kV (CLECO)	-1254
International Paper - Wallake 138kV (CLECO)	Dolet Hills - S.W. Shreveport 345kV (CLECO)	-506

### AMRN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-189

### CLECO

Limiting Element	Contingency Element	ATC
Habetz - Richard 138kV	Wells 500/230kV transformer	-283
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-214

### EES

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-90

### EMDE

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### Lafa

Limiting Element	Contingency Element	ATC
Coughlin - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-469
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-386
Semere - Scott2 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-360
Coughlin - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-340
Semere - Scott2 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-324
Habetz - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-265
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-257
Habetz - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-226
North Crowley - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-188
Semere - Scott2 138kV	Wells 500/230kV transformer	-174
North Crowley - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-157
North Crowley - Scott1 138kV	Richard - Scott1 138kV	-126
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-72



Limiting Element	Contingency Element	ATC
Semere - Scott2 138kV	Bonin - Cecelia 138kV	-66
North Crowley - Scott1 138kV	Wells 500/230kV transformer	-57
Habetz - Richard 138kV	Wells 500/230kV transformer	-56
Habetz - Richard 138kV	Acadian - Bonin 230kV (LAFA)	-38
Scott1 - Bonin 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-1
Richard - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	11
Scott1 - Bonin 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	40
Richard - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	41
Habetz - Richard 138kV	Flander - Acadian 230kV (LAFA)	54
Colonial Academy - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	70
Colonial Academy - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	107
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	129
Richard - Scott1 138kV	Wells 500/230kV transformer	138

### LAGN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-74

### LEPA

Limiting Element	Contingency Element	ATC
Semere - Scott2 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-986
Semere - Scott2 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-887
Habetz - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-884
Habetz - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-755
Coughlin - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-707
North Crowley - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-652
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-583
North Crowley - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-546
Coughlin - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-512
North Crowley - Scott1 138kV	Richard - Scott1 138kV	-392
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-388
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	-310
North Crowley - Scott1 138kV	Wells 500/230kV transformer	-224
Habetz - Richard 138kV	Wells 500/230kV transformer	-214
Bonin - Cecelia 138kV	Acadia GSU - Colonial Academy 138kV	-140
Habetz - Richard 138kV	Acadian - Bonin 230kV (LAFA)	-135
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-46
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	-28
Judice - Scott1 138kV	Sellers Road (CLECO) - Labbe (LAFA) 230kV	-22
Judice - Scott1 138kV	Sellers Road (CLECO) - Segura (CLECO) 230kV	-19
Judice - Scott1 138kV	Segura (CLECO) 230/138kV transformer'	-14
Scott1 - Bonin 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-11
Willow Glen - Evergreen 230kV ckt 2	Willow Glen - Evergreen 230kV ckt 1	6
Richard - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	37
Semere - Scott2 138kV	Greenwood - Terrebone 115kV	134

**OKGE**

Limiting Element	Contingency Element	ATC
NONE	NONE	141

**SMEPA**

Limiting Element	Contingency Element	ATC
French Settlement - Sorrento 230kV	Bogalusa - Franklin 500kV	-957
French Settlement - Sorrento 230kV	Bogalusa - Adams Creek 500/230kV transformer	-957
Jackson Miami - Jackson Monument Street 115kV	South Jackson 230/115kV transformer 1	-860
French Settlement - Sorrento 230kV	Fairview - Gypsy 230kV	-190
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Ray Braswell 115kV	-180
French Settlement - Sorrento 230kV	Fairview - Madisonville 230kV	-161
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - Rex Brown E 115kV	-147
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - North Jackson 115kV	-147
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-38
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Southwest Jackson 115kV	-33
Jackson Miami - Jackson Monument Street 115kV	Klean - Jackson Northeast 115kV	14
Jackson Miami - Jackson Monument Street 115kV	Ray Braswell - West Jackson 115kV	41
Jackson Miami - Jackson Monument Street 115kV	Klean - Flowood 115kV	75
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Franklin 500kV	80
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Adams Creek 500/230kV transformer	80
Jackson Miami - Jackson Monument Street 115kV	North Jackson - Jackson Canton Road 115kV	116

**SOCO**

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-62

**SPA**

Limiting Element	Contingency Element	ATC
NONE	NONE	141

**TVA**

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-88

## APPENDIX C: Detailed Results for Scenario 2 – 2015

### AECI

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-122
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	45

### AEPW

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-157
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	58

### AMRN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-2263
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-119
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	44

### CLECO

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-2567
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-937
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-937
Habetz - Richard 138kV	Wells 500/230kV transformer	-460
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-126
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	46

### EES

Limiting Element	Contingency Element	ATC
Inland - McLewis 230kV	Cypress - Hartburg 500kV	-2149
Hartburg - Inland Orange 230kV - Supplemental Upgrade	Cypress - Hartburg 500kV	-1731
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	-1729
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	-1647
Inland - McLewis 230kV - Supplemental Upgrade	Cypress - Hartburg 500kV	-1210
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-1083
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-510
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-510
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-506
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-175
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-116

Limiting Element	Contingency Element	ATC
Cypress 500/138kV transformer 1	Cypress 500/230kV transformer	-25
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	15
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	43

## EMDE

Limiting Element	Contingency Element	ATC
NONE	NONE	141

## Lafa

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-859
Coughlin - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-740
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-654
Coughlin - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-610
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-525
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-500
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-500
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-459
Semere - Scott2 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-429
Semere - Scott2 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-393
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-332
Habetz - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-323
Habetz - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-285
Semere - Scott2 138kV	Richard - Wells 500kV	-260
North Crowley - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-258
North Crowley - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-227
North Crowley - Scott1 138kV	Richard - Scott1 138kV	-224
Semere - Scott2 138kV	Wells 500/230kV transformer	-220
Semere - Scott2 138kV	Bonin - Cecelia 138kV	-215
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-156
Semere - Scott2 138kV	Habetz - Richard 138kV	-130
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-123
North Crowley - Scott1 138kV	Wells 500/230kV transformer	-105
Habetz - Richard 138kV	Acadian - Bonin 230kV (Lafa)	-93
Habetz - Richard 138kV	Wells 500/230kV transformer	-91
North Crowley - Scott1 138kV	Richard - Wells 500kV	-82
Richard - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-59
Grimes - Bentwater 138kV	Grimes - Mt. Zion 138kV	-33
Richard - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-28
Scott1 - Bonin 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-15
Habetz - Richard 138kV	Richard - Wells 500kV	-12
Habetz - Richard 138kV	Flander - Acadian 230kV (Lafa)	-1
Colonial Academy - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	0
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	13
Scott1 - Bonin 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	26

Limiting Element	Contingency Element	ATC
Colonial Academy - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	37
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	45
Richard - Scott1 138kV	North Crowley - Richard 138kV	78
Richard - Scott1 138kV	Wells 500/230kV transformer	90
Richard - Scott1 138kV	North Crowley - Scott1 138kV	123
Grimes - Bentwater 138kV	LINE 558 TAP - MT. Zion 138 kV	125
Acadia GSU - Colonial Academy 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	127
North Crowley - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	141

## LAGN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-885
Rapides (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-735
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-510
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-510
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-468
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-159
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-122
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	13
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	45

## LEPA

Limiting Element	Contingency Element	ATC
Semere - Scott2 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-1176
Coughlin - Plaisance 138kV (CLECO)	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-1116
Habetz - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-1078
Semere - Scott2 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-1076
Champagne - Plaisance (CLECO) 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-987
Habetz - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-949
Coughlin - Plaisance 138kV (CLECO)	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-920
North Crowley - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-893
Champagne - Plaisance (CLECO) 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-791
North Crowley - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-787
North Crowley - Scott1 138kV	Richard - Scott1 138kV	-699
Willow Glen - Evergreen 230kV ckt 2	Willow Glen - Evergreen 230kV ckt 1	-628
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-592
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-592
Coly - Vignes 230kV - Supplemental Upgrade	A.A.C. - Polsky Carville 230kV	-587
Coly - Vignes 230kV - Supplemental Upgrade	A.A.C. - Licar 230kV	-560
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-554
Rapides (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-501
Coly - Vignes 230kV - Supplemental Upgrade	Belle Helene - Licar 230kV	-472
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	-424
North Crowley - Scott1 138kV	Wells 500/230kV transformer	-413

Limiting Element	Contingency Element	ATC
Semere - Scott2 138kV	Richard - Wells 500kV	-389
Habetz - Richard 138kV	Wells 500/230kV transformer	-348
Habetz - Richard 138kV	Acadian - Bonin 230kV (LAFa)	-330
Coughlin - Plaisance 138kV (CLECO)	Wells (CLECO) - West Fork (CLECO) 230kV	-286
Bonin - Cecelia 138kV	Acadia GSU - Colonial Academy 138kV	-254
Richard - Scott1 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-204
Coly - Vignes 230kV - Supplemental Upgrade	Belle Helene - Woodstock 230kV	-179
Coly - Vignes 230kV - Supplemental Upgrade	Vulchlor - Woodstock 230kV	-178
North Crowley - Scott1 138kV	Richard - Wells 500kV	-150
Champagne - Plaisance (CLECO) 138kV	Wells (CLECO) - West Fork (CLECO) 230kV	-147
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	-141
Scott1 - Bonin 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	-129
Judice - Scott1 138kV	Sellers Road (CLECO) - Labbe (LAFa) 230kV Sellers Road (CLECO) - Segura (CLECO) 230kV	-129
Judice - Scott1 138kV		-126
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-121
Judice - Scott1 138kV	Segura (CLECO) 230/138kV transformer'	-120
Richard - Scott1 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	-97
Habetz - Richard 138kV	Richard - Wells 500kV	-23
Habetz - Richard 138kV	Flander - Acadian 230kV (LAFa)	-2
Colonial Academy - Richard 138kV	Cocodrie (CLECO) - Vil Plat (CLECO) 230kV	1
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	44
Semere - Scott2 138kV	Greenwood - Terrebone 115kV	54
Flander - Segura 138kV (CLECO)	Sellers Road (CLECO) - Labbe (LAFa) 230kV Sellers Road (CLECO) - Segura (CLECO) 230kV	80
Flander - Segura 138kV (CLECO)		83
Flander - Segura 138kV (CLECO)	Segura (CLECO) 230/138kV transformer'	90
Colonial Academy - Richard 138kV	Vil Plat (CLECO) - West Fork (CLECO) 230kV	101

## OKGE

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-166
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	61

## SMEPA

Limiting Element	Contingency Element	ATC
Jackson Miami - Jackson Monument Street 115kV	South Jackson 230/115kV transformer 1	-1337
French Settlement - Sorrento 230kV	Bogalusa - Franklin 500kV	-993
French Settlement - Sorrento 230kV	Bogalusa - Adams Creek 500/230kV transformer	-993
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-915
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-915
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Adams Creek 500/230kV transformer	-588
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Franklin 500kV	-588
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - Rex Brown E 115kV	-550

Limiting Element	Contingency Element	ATC
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - North Jackson 115kV	-550
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Ray Braswell 115kV	-547
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-452
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Southwest Jackson 115kV	-400
Jackson Miami - Jackson Monument Street 115kV	Klean - Jackson Northeast 115kV	-359
Jackson Miami - Jackson Monument Street 115kV	Klean - Flowood 115kV	-298
Jackson Miami - Jackson Monument Street 115kV	North Jackson - Jackson Canton Road 115kV	-287
Jackson Miami - Jackson Monument Street 115kV	Ray Braswell - West Jackson 115kV	-273
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-118
Jackson Miami - Rex Brown 115kV	South Jackson 230/115kV transformer 1	-114
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	-70
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Franklin 500kV	-70
Mallalieu (MEPA) - Norfield 115kV	Bogalusa - Adams Creek 500/230kV transformer	-38
Mallalieu (MEPA) - Norfield 115kV	Bogalusa - Franklin 500kV	-38
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	43
Florence - South Jackson 115kV - Supplemental Upgrade	Choctaw MS (TVA) - Clay (TVA) 500kV	104
Florence - South Jackson 115kV - Supplemental Upgrade	South Jackson - Pop Spring 115kV	121

### SOCO

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-742
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-115
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	42

### SPA

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### TVA

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-1048
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-113
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	41

## APPENDIX D: Detailed Results for Scenario 3 – 2015

### AECI

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### AEPW

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### AMRN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-219

### CLECO

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-235

### EES

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-105

### EMDE

Limiting Element	Contingency Element	ATC
NONE	NONE	141

### LAFA

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-79
Coughlin - Plaisance 138kV (CLECO)	Cocodrie - Vil Plat 230kV	14
Champagne - Plaisance (CLECO) 138kV	Cocodrie - Vil Plat 230kV	132

### LAGN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-85

### LEPA

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-53
Coughlin - Plaisance 138kV (CLECO)	Cocodrie - Vil Plat 230kV	16
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	86



**OKGE**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
NONE	NONE	141

**SMEPA**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Jackson Miami - Jackson Monument Street 115kV	South Jackson 230/115kV transformer 1	-733
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-43
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Ray Braswell 115kV	-15
Jackson Miami - Jackson Monument Street 115kV	Klean - Jackson Northeast 115kV	111
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Southwest Jackson 115kV	128

**SOCO**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-71

**SPA**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
NONE	NONE	141

**TVA**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-101

## APPENDIX E: Detailed Results for Scenario 4 – 2015

### AECI

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-166
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### AEPW

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-212
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### AMRN

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-2047
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-161
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### CLECO

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-2205
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-791
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-791
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-170
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### EES

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-986
Hartburg - Inland Orange 230kV - Supplemental Upgrade	Cypress - Hartburg 500kV	-488
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-440
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-440
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-428
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-157
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-93
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2
Inland - McLewis 230kV - Supplemental Upgrade	Cypress - Hartburg 500kV	85
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	99

**EMDE**

Limiting Element	Contingency Element	ATC
NONE	NONE	141

**LAFA**

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-742
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-422
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-422
Coughlin - Plaisance 138kV (CLECO)	Cocodrie - Vil Plat 230kV	-389
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-380
Champagne - Plaisance (CLECO) 138kV	Cocodrie - Vil Plat 230kV	-267
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-239
Coughlin - Plaisance 138kV (CLECO)	Vil Plat - West Fork 230kV	-213
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-166
Champagne - Plaisance (CLECO) 138kV	Vil Plat - West Fork 230kV	-91
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-82
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2
Grimes - Bentwater 138kV	Grimes - Mt. Zion 138kV	29
Coughlin - Plaisance 138kV (CLECO)	Wells (CLECO) - West Fork (CLECO) 230kV	62
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	86

**LAGN**

Limiting Element	Contingency Element	ATC
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-797
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-457
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-441
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-441
Grimes - Mt. Zion 138kV	Grimes - Bentwater 138kV	-397
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-165
Grimes - Mt. Zion 138kV	Bentwater - Walden 138kV	-85
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2
LINE 558 TAP - MT. Zion 138 kV	Grimes - Bentwater 138kV	90

**LEPA**

Limiting Element	Contingency Element	ATC
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-506
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-506
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-495
Coughlin - Plaisance 138kV (CLECO)	Cocodrie - Vil Plat 230kV	-440
Rapidies (CLECO) - Rodemacher (CLECO) 230kV	Rodemacher (CLECO) - Sherwood (CLECO) 230kV	-330
Champagne - Plaisance (CLECO) 138kV	Cocodrie - Vil Plat 230kV	-302

Limiting Element	Contingency Element	ATC
Coughlin - Plaisance 138kV (CLECO)	Vil Plat - West Fork 230kV	-242
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-164
Champagne - Plaisance (CLECO) 138kV	Vil Plat - West Fork 230kV	-103
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	5
Coughlin - Plaisance 138kV (CLECO)	Wells (CLECO) - West Fork (CLECO) 230kV	70

### OKGE

Limiting Element	Contingency Element	ATC
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-225
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### SMEPA

Limiting Element	Contingency Element	ATC
Jackson Miami - Jackson Monument Street 115kV	South Jackson 230/115kV transformer 1	-1199
Grimes - Grimes 345/138kV transformer 1	Grimes - Grimes 345/138kV transformer 2	-790
Grimes - Grimes 345/138kV transformer 2	Grimes - Grimes 345/138kV transformer 1	-790
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-405
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Ray Braswell 115kV	-378
Jackson Miami - Jackson Monument Street 115kV	Klean - Jackson Northeast 115kV	-252
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - North Jackson 115kV	-239
Jackson Miami - Jackson Monument Street 115kV	Jackson HICO - Rex Brown E 115kV	-239
Jackson Miami - Jackson Monument Street 115kV	Jackson Forrest Hill - Southwest Jackson 115kV	-236
Jackson Miami - Jackson Monument Street 115kV	Klean - Flowood 115kV	-194
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-160
Jackson Miami - Jackson Monument Street 115kV	Ray Braswell - West Jackson 115kV	-118
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Franklin 500kV	-112
Florence - South Jackson 115kV - Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	-112
Jackson Miami - Jackson Monument Street 115kV	Lake Castle - Lakeover 230kV	-78
Jackson Miami - Rex Brown 115kV	South Jackson 230/115kV transformer 1	-5
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2
Florence - South Jackson 115kV - Supplemental Upgrade	Choctaw MS (TVA) - Clay (TVA) 500kV	25
Florence - South Jackson 115kV - Supplemental Upgrade	South Jackson - Pop Spring 115kV	48
Florence - South Jackson 115kV - Supplemental Upgrade	Kemper (SOCO) - Kemper1 (SOCO) 230kV	54
Florence - South Jackson 115kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	62
Florence - South Jackson 115kV - Supplemental Upgrade	Georgetown - Pop Spring 115kV	69
Florence - South Jackson 115kV - Supplemental Upgrade	Georgetown - Silver Creek 115kV	75
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Adams Creek 500/230kV transformer	89
Brookhaven - Mallalieu (MEPA) 115kV	Bogalusa - Franklin 500kV	89

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Florence - South Jackson 115kV - Supplemental Upgrade	Sturgis MS (TVA) - NW Louisville (TVA) 161kV	106
Florence - South Jackson 115kV - Supplemental Upgrade	Ellicott (SOCO) - BarryCC2 (SOCO) 230kV	109

### **SOCO**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-669
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-156
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2

### **SPA**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
NONE	NONE	141

### **TVA**

<b>Limiting Element</b>	<b>Contingency Element</b>	<b>ATC</b>
Ray Braswell - Baxter Wilson 500kV - Supplemental Upgrade	Franklin - Grand Gulf 500kV	-947
Bull Shoals - Midway AECC 161kV	Independence SES - Moorefield 161kV	-153
Bull Shoals - Midway AECC 161kV	Batesville - Moorefield 161kV	2