

**SOUTHERN REGIONAL TRANSMISSION  
PLANNING PROCESS**

**2010 Economic Planning Studies  
Preliminary Results**

September 2010

**SOUTH MISSISSIPPI ELECTRIC**  
POWER ASSOCIATION

**PowerSOUTH™**  
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## **Executive Summary**

The Regional Planning Stakeholder Group (“RPSG”) identified five Economic Planning Scenarios to be evaluated under the Southeastern Regional Transmission Planning (“SERTP”) process. The SERTP Sponsors have performed analyses to assess the performance of the transmission systems of the participating Transmission Owners for these five transfer scenarios. The assessments include the identification of potentially limiting facilities, the impact of the transfers on these facilities, and the contingency conditions causing the limitations. The assessments also provide potential solutions to alleviate the limitations, planning-level cost estimates, and the projected need-date for projects to accommodate the power flows associated with the transfers in the five Economic Planning Scenarios. Additionally, projects are identified as potential solutions to address the identified constraints and are based on the economic assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. The information contained in this report does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study dates. The assessment cases model the currently projected improvements to the transmission system. However, changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. Planning staff of the participating Transmission Owners performed the assessments and the results are summarized in this report.

## **Study Assumptions**

- The year evaluated for the five economic studies, as selected by the stakeholders, was 2016. Each request was evaluated for that particular year.
- The load levels evaluated were Summer Peak and Shoulder (93% of Summer Peak load).
- The following economic transfer scenarios were assessed according to the reliability criteria of each of the participating Transmission Owners:
  - Birmingham, AL to Georgia Integrated Transmission System (“ITS”) – 1000 MW
    - Year: 2016
    - Type of Transfer: Generation to Generation
    - Source: New generator interconnecting to the South Bessemer 500 kV substation near Birmingham, AL.
    - Sink: Generation within the Georgia ITS.
    - Additionally, this study provides an estimate of the transfer level, above the requested amount, that could result in an angular instability event.
  - TVA Border to Southern Balancing Authority (“SBA”) – 1500 MW

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- Year: 2016
- Type of Transfer: Load to Generation
- Source: Uniform load scale of the TVA area
- Sink: Generation within the SBA
  
- SCPSA Border to SBA – 200 MW
  - Year: 2016
  - Type of Transfer: Load to Generation
  - Source: Uniform load scale of SCPSA area.
  - Sink: Generation within the SBA.
  
- Duke Border to Southern Balancing Authority (“SBA”) – 2000 MW
  - Year: 2016
  - Type of Transfer: Load to Generation
  - Source: Uniform load scale of the Duke area.
  - Sink: Generation within the SBA.
  
- North Georgia to Mississippi – 600 MW
  - Year: 2016
  - Type of Transfer: Generation to Generation
  - Source: New Generator interconnecting to the 500 kV near Murray County, GA
  - Sink: Generation within SMEPA’s and Mississippi Power Company’s (“MPC”) territory
    - Amount of generation to be displaced within SMEPA and MPC was determined by the load ratio of SMEPA and MPC
    - SMEPA’s portion of the sink was 126 MW
    - MPC’s portion of the sink was 474 MW
  
- PSS/E and/or MUST will be used for the study.
- Generation, interchange, and other assumptions will be coordinated between participating Transmission Owners and Stakeholders.

### Study Criteria

The study criteria with which results were evaluated included the following reliability elements:

- NERC Reliability Standards
- SERC requirements
- Individual company criteria (voltage, thermal, stability, and short circuit)

## **Case Development**

- For all evaluations, the “2010 Series, Version 2C”, 2016 cases were used as a starting point for the analysis of the five economic study requests.

## **Methodology**

- Initially, power flow analyses were performed based on the assumption that thermal limits were the controlling limit for the reliability plan. Voltage, stability, and short circuit studies were performed if circumstances warranted.

## **Technical Analysis and Study Results**

The technical analysis was performed in accordance with the study methodology. Results from the technical analysis were reported throughout the study area to identify transmission elements approaching their limits such that all participating Transmission Owners and Stakeholders would be aware of any potential issues and, as such, suggest appropriate solutions to address the potential issues if necessary. The SERTP reported results on elements of 115 kV and greater within their respective service area based on:

- Thermal loadings greater than 100% (with potential solutions).
- Thermal loadings greater than 90% that increase with the addition of the transfer.
- Voltages appropriate to each participating Transmission Owner's planning criteria (with potential solutions if criteria were violated).

## **Assessment and Problem Identification**

- The participating Transmission Owners ran assessments in order to identify any constraints within the participating Transmission Owners' service territory as a result of the five economic planning study requests. Any reliability constraints identified were documented and reviewed by each participating Transmission Owner.

## **Solution Development**

- The participating Transmission Owners, with input from the Stakeholders, will develop potential solution alternatives due to the economic studies requested by the stakeholders.
- The participating Transmission Owners will test the effectiveness of the potential solution alternatives using the same cases, methodologies, assumptions and criteria described above.

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- The participating Transmission Owners will develop rough, planning-level cost estimates and construction schedules for the selected solution alternatives.

### **Report on the Study Results**

The participating Transmission Owners compiled all the study results and prepared a report for review by the Stakeholders. The report contains the following:

- A description of the study approach and key assumptions for the five Economic Planning Studies
- For each Economic Planning Study, the results of that study including:
  1. Limits to the transfer
  2. Selected solution alternatives to address the limit
  3. Rough, planning-level cost estimates and construction schedules for the selected solution alternatives

PRELIMINARY

***Birmingham, AL to the Georgia  
Integrated Transmission System  
("GA-ITS")***

***1000 MW***

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**Study Structure and Assumptions**

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
Birmingham, AL to GA-ITS	1000 MW	Birmingham, AL	GA-ITS	2016
<b>Load Flow Cases</b>				
2010 Series Version 2C Cases: Summer Peak and Shoulder (93% load level)				
<b>Source Modeled</b>				
The source for this transfer was assumed to be a new generator interconnecting to the existing South Bessemer 500 kV Substation near Birmingham, AL.				

**Transmission System Impacts**

Tables 1.1 through Table 1.5 below identify thermal constraints attributable to the requested transfer for the contingency and scenario that resulted in the highest facility loading for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

**Table 1.1. Pass 0 – Transmission System Impacts With No Enhancements – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) without any enhancements to the transmission system. The 1000 MW transfer from Birmingham, AL to the GA-ITS results in overloads of several 230 kV facilities. Projects were first identified to alleviate these constraints before alleviating the remaining constraints because the proposed enhancements significantly alter load flow in the SBA.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	89.1	110.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	13	P1
SBA	4508 MONTG SS 230 5500 AUTAUG6 230 1	1243	98.2	109.8	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	7	P1
SBA	125 FORTSON 230 130 GOAT ROCK 230 1	1192	99.3	107.1	130 GOAT ROCK 230 1530 CAMP MCKENZ 230 1	16	P1
SBA	4965 DANWAYSS 230 5310 HILLABEE 230 1	602	94.2	104.7	5180 N.OPEL6 230 5310 HILLABEE 230 1	9	P1
SBA	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	693	95.5	104.1	2500 RACCOON CK 500 3021 LONGLEAF 500 1	24	P1
SBA	5180 N.OPEL6 230 5310 HILLABEE 230 1	602	91.1	101.6	4965 DANWAYSS 230 5310 HILLABEE 230 1	9	P1
SBA	4400 GASTON 230 4996 POWERSYS 230 1	497	89.6	100.8	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	18	P1

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	130 GOAT ROCK 230 1530 CAMP MCKENZ 230 1	1204	93.5	100.8	125 FORTSON 230 130 GOAT ROCK 230 1	16	P1
SBA	4488 N SELMA3 115 4489 N SELMA6 230 1	302	96.3	100.5	4488 N SELMA3 115 4489 N SELMA6 230 2	2	P1
SBA	4598 PINCK 6 230 5138 PIKE CO6 230 1	478	87.6	100.3	4512 SNOWDN8 500 4600 FARLEY 8 500 1	6	P1
SBA	125 FORTSON 230 1530 CAMP MCKENZ 230 1	1192	92.8	100.2	125 FORTSON 230 130 GOAT ROCK 230 1	16	P1
SBA	4374 S.BESS 6 230 5036 S BESS 3 115 1	480	86.2	100.0	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	14	P1

**Table 1.2. Pass 1 – Transmission System Impacts With Proposed Enhancement “P1” – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) with the proposed enhancement “P1” applied to the transmission system. Enhancements were identified to alleviate the remaining constraints.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	2522 SONAT ELL J 230 3020 TALBOT CO 1 230 1	433	95.1	104.7	13 BONAIRE 500 2345 SMARR 500 1	16	P5
SBA	461 JACKSON LK 115 1917 S COV J 115 1	71	96.4	104.1	746 S GRIFFIN 115 750 GA BRD CORR 115 1	15	P3
SBA	117 WAYNESBORO 230 562 WAYNESBORO 115 1	280	99.0	102.2	117 WAYNESBORO 230 118 WADLEY PRI 230 1	15	P2
SBA	4740 GKN W LD 115 5257 HALACLTP 115 1	107	97.8	101.7	4514 S MONTG3 115 4547 PINEDALE 115 1	6	P6
SBA	4311 GS STEEL 115 4334 MORG XRD 115 1	112	99.2	101.6	4324 GADSDEN 115 4854 BLACK CK TP 115 1	27	P4
SBA	251 E POINT B2 115 264 E POINT 4 115 1	187	99.5	101.2	240 E POINT B1 115 303 COL PK #3 J 115 1	3	P7
SBA	5203 AIRPT LN 115 5706 BNTBRKTP 115 1	138	99.4	101.1	4374 S.BESS 6 230 5036 S BESS 3 115 1	12	P8



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**Table 1.3. Pass 4 – Transmission System Impacts With All Proposed Enhancements – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with all proposed enhancements applied to the transmission system. The resulting facilities in the table below could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2016 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following facilities could become potential constraints in future years or with different queuing assumptions</b>							
SBA	165 W BRUNSWICK 230 2592 THALMANN 2 230 1	509	99.8	99.9	2380 THAL LS1 230 2591 THALMANN 1 230 1	15	--
SBA	4639 CHICK 3 115 4659 KIMCLARK 115 1	250	99.0	99.5	4655 N MOBILE 115 5159 CHKBOGSS 115 1	5	--
SBA	571 SYLVANIA 115 581 KING MFG + 115 1	63	72.7	99.5	8 VOGTLE 500 9 W MCINTOSH 500 1	15	--
SBA	7500 ALFORD T 115 7910 BAY CNTY 115 1	67	98.3	99.4	7310 SHOAL RV 230 7915 SHAKY JO 230 1	24	--
SBA	4485 FAUNSDAL 115 4744 SONGALTP 115 1	138	93.7	99.2	4471 GREENCO6 230 4489 N SELMA6 230 1	19	--
SBA	1010 BEMISS 115 1065 PINE GROVE 115 1	91	98.3	98.6	1885 W VALDOSTA 230 1886 W VALDOSTA 115 1	3	--
SBA	748 SPALDING 115 876 BROOKS 115 1	155	94.3	98.4	171 OHARA 230 1629 WOOLSEY 230 1	3	--
SBA	193 WOODSTOCK 230 1211 RAGSDALE RD 230 1	497	95.3	98.3	4 BULL SLUICE 500 19 BIG SHANTY 500 1	3	--
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	97.0	97.9	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	24	--
SBA	508 LANGSTON 115 575 STATESBORO 115 1	124	87.9	97.6	843 VIDALIA 115 1625 LOOP RD 115 1	21	--
SBA	581 KING MFG + 115 1483 DOVER TP 115 1	63	70.8	97.6	8 VOGTLE 500 9 W MCINTOSH 500 1	15	--
SBA	129 S COWETA 230 719 S COWETA 115 1	400	95.1	97.5	16 OHARA 500 171 OHARA 230 1	22	--
SBA	232 S COBB DR 115 1265 OAKDALE J 115 1	112	97.3	97.4	977 HICKS RD 115 998 W MARIETTA 115 1	22	--
SBA	4113 FISH RV CAP 115 17996 FISHRVTP 115 1	135	97.1	97.2	4141 SW FOLEY 115 4641 SILVER 3 115 1	5	--
SBA	363 HOPEWELL 115 1714 BIRMINGHAM 115 1	188	96.9	97.0	956 HOLLY SP 115 1722 NEWLIGHT CH 115 1	4	--
SBA	4443 THURLOW 115 4445 YATESDAM 115 1	117	95.4	97.0	4534 AUB MONT 115 5136 MADPARK3 115 1	6	--
SBA	960 MARIETTA 5 115 1751 SANDY PLAIN 115 1	187	96.4	96.9	322 ROSWELL 115 971 MCPHERSON 115 1	4	--
SBA	741 JONESBORO 115 1911 SPIVEY LK 115 1	298	94.9	96.9	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	3	--
SBA	24 N TIFTON 500 222 N TIFTON 230 1	1536	94.2	96.6	2500 RACCOON CK 500 2510 RACCOON CK 230 1	24	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	95.1	96.4	4374 S.BESS 6 230 5036 S BESS 3 115 1	12	--
SBA	848 PINEGROVE 115 1464 HAZLE J 115 1	114	88.8	96.3	844 E VIDALIA 115 1476 W LYONS J2 115 1	26	--
SBA	208 NELSON 230 954 NELSON 115 2	176	95.7	95.9	208 NELSON 230 954 NELSON 115 1	26	--
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	89.2	95.8	4374 S.BESS 6 230 5036 S BESS 3 115 1	14	--
SBA	5060 GREENWD 115 5203 AIRPT LN 115 1	216	94.3	95.6	4374 S.BESS 6 230 5036 S BESS 3 115 1	12	--
SBA	681 MITCHELL 115 682 LESTER 115 1	124	93.5	95.4	24 N TIFTON 500 222 N TIFTON 230 1	24	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	36 JACK MCD 230 41 PEACHTREE 230 1	1192	92.5	94.9	36 JACK MCD 230 2265 CUMBERLAND 230 1	4	--
SBA	8273 HWY 11 115 8275 HBG CNTY 115 1	135	94.0	94.3	8260 28AVE TP 115 8271 HATBG SW 115 1	1	--
SBA	4629 EMCSTOCK 115 4701 BARRY 3 115 1	212	93.6	94.3	4612 BREWT TP 115 4622 N BREW 3 115 1	5	--
SBA	943 S ACWORTH 115 1741 WEST OAK 115 1	207	93.2	94.3	193 WOODSTOCK 230 957 WOODSTOCK 115 1	22	--
SBA	612 FIRST AVE + 115 616 BLNCHARD IP 115 1	199	93.1	94.2	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	7	--
SBA	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	344	92.4	94.2	741 JONESBORO 115 1911 SPIVEY LK 115 1	3	--
SBA	150 BONAIRE 230 804 BONAIRE 115 2	400	79.7	94.2	150 BONAIRE 230 804 BONAIRE 115 1	3	--
SBA	150 BONAIRE 230 804 BONAIRE 115 1	400	79.7	94.2	150 BONAIRE 230 804 BONAIRE 115 2	3	--
SBA	4480 LIVINGST 115 4968 MANINGTP 115 1	91	93.8	94.1	4475 DEMOP TS 115 4476 CEMEX 115 1	20	--
SBA	224 OFFERMAN 230 1093 OFFERMAN 115 2	155	92.8	94.1	224 OFFERMAN 230 1093 OFFERMAN 115 1	24	--
SBA	1811 BUSHNELL 115 2517 LAKE BEA 115 1	63	88.6	94.0	223 DOUGLAS 230 2516 STUMP CRK 230 1	15	--
SBA	693 SAWHATCHEE 115 1569 BLAKELY 1 115 1	135	93.4	93.8	692 BLAKELY 2 115 1890 YELLOWPINEJ 115 1	24	--
SBA	736 OHARA 115 738 KING ST 115 1	187	92.8	93.8	310 FAIRBURN 115 1900 LINE CREEK 115 1	22	--
SBA	977 HICKS RD 115 993 FONTAINE J 115 1	135	93.6	93.7	216 JACK MCD2 115 232 S COBB DR 115 1	4	--
SBA	160 HATCH + 230 164 UNION SCHL 230 1	509	92.0	93.7	15 THALMANN 500 2380 THAL LS1 230 1	24	--
SBA	4475 DEMOP TS 115 4744 SONGALTP 115 1	159	88.8	93.7	4471 GREENCO6 230 4489 N SELMA6 230 1	19	--
SBA	615 VICTORY DR 115 616 BLNCHARD IP 115 1	199	92.5	93.6	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	6	--
SBA	66 SCOTTDAL 230 357 SCOTTDAL 115 1	280	92.5	93.2	379 MORELAND AV 115 1215 R_GRADY 115 1	3	--
SBA	74 MORROW 230 2684 POLEBRDGE A 230 1	539	82.9	93.5	73 KLONDIKE 230 1919 R_KLONDIKE 230 1	3	--
SBA	4753 PCLEARTP 115 4956 FAIRHCAP 115 1	91	93.2	93.3	4141 SW FOLEY 115 4641 SILVER 3 115 1	5	--
SBA	4988 S.JEFF 3 115 5041 BLUELKNL 115 1	212	93.1	93.2	4292 NHELENA3 115 4816 VALDAL34 115 1	13	--
SBA	4475 DEMOP TS 115 4832 NAHEO SS 115 1	112	92.0	93.1	4470 GREENCO3 115 5243 BW-BOGUE 115 1	1	--
SBA	621 YATES 115 1551 CLEM 115 1	155	89.2	93.1	2469 BRIGHT STAR 230 2480 YELLOW DIRT 230 1	17	--
SBA	938 CARTERVL 4 115 983 CARTERVL 1J 115 1	269	92.6	92.9	194 S ACWORTH 230 943 S ACWORTH 115 1	22	--
SBA	1055 BARNEYVILLE 115 1883 ADEL 1J 115 1	142	92.3	92.6	220 PINE GROVE 230 222 N TIFTON 230 1	24	--
SBA	4292 NHELENA3 115 4816 VALDAL34 115 1	212	92.3	92.5	4988 S.JEFF 3 115 5041 BLUELKNL 115 1	13	--
SBA	224 OFFERMAN 230 1093 OFFERMAN 115 1	160	91.2	92.5	224 OFFERMAN 230 1093 OFFERMAN 115 2	24	--
SBA	4534 AUB MONT 115 5136 MADPARK3 115 1	216	87.3	92.5	23 WANSLEY 500 5123 BILLNGSS 500 1	10	--
SBA	4485 FAUNSDAL 115 5305 BROWN TP 115 1	138	86.7	92.2	4471 GREENCO6 230 4489 N SELMA6 230 1	19	--
SBA	309 FIFE 115 311 OWENS 2 TAP 115 1	79	89.1	92.1	621 YATES 115 1551 CLEM 115 1	22	--
SBA	935 CARTERSVL 115 938 CARTERVL 4 115 1	298	91.7	92.0	194 S ACWORTH 230 943 S ACWORTH 115 1	22	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4361 MCADORTP 115 5706 BNTBRKTP 115 1	138	90.0	91.9	4374 S.BESS 6 230 5036 S BESS 3 115 1	12	--
SBA	289 MURRAY LK J 115 297 MORROW 115 1	135	87.8	91.9	285 GRADY 3 115 286 GRADY 1&2 115 1	4	--
SBA	170 S GRIFFIN 230 746 S GRIFFIN 115 1	298	88.0	91.6	736 OHARA 115 739 BONANZA 115 1	3	--
SBA	1627 FRITO LAY + 115 2263 WATERFORD 115 1	124	44.1	91.6	150 BONAIRE 230 1603 KATHLEEN 230 1	7	--
SBA	164 UNION SCHL 230 224 OFFERMAN 230 1	509	89.9	91.5	15 THALMANN 500 2380 THAL LS1 230 1	24	--
SBA	4329 LOOK MTN 115 4331 ATTALLA3 115 1	112	88.8	91.5	4324 GADSDEN 115 5289 ELMWOOD 115 1	27	--
SBA	4338 CED COVE 115 5037 MERCEDES 115 1	159	91.3	91.4	4919 CAFJCTTP 115 5036 S BESS 3 115 1	11	--
SBA	130 GOAT ROCK 230 3023 FRANKLIN 1 230 1	1244	91.1	91.2	Base Case	26	--
SBA	144 COTTON 230 1882 N CAMILLA 230 1	509	90.3	91.2	218 S BAINBRIDGE 230 4601 FARLEY 6 230 1	24	--
SBA	228 LOCKWIND J 115 1707 MAR 12 J 115 1	155	91.0	91.1	216 JACK MCD2 115 231 KING SP RD 115 1	4	--
SBA	5257 HALACLTP 115 17995 HARDWYTP 115 1	107	86.1	91.0	4514 S MONTG3 115 4547 PINEDALE 115 1	6	--
SBA	4189 PRATCTY3 115 4190 PRATCTY6 230 1	398	90.0	90.9	5144 ACIPCO6 230 5145 ACIPCO3 115 1	13	--
SBA	8560 WGNS 5AV 115 8562 COASTPAP 115 1	107	90.7	90.8	8530 LANDON 115 8532 HWY 53 115 1	27	--
SBA	1109 SPRING CRK 115 1822 PINEHILL J1 115 1	79	89.0	90.8	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	24	--
SBA	26 UNION CITY 230 74 MORROW 230 1	497	84.7	90.8	26 UNION CITY 230 74 MORROW 230 2	3	--
SBA	270 ATKINSON + 115 1976 AWW-BD J 115 1	199	88.6	90.7	211 HEMPHILL AJ 115 275 NORTHWEST 115 1	3	--
SBA	4240 LEEDSTS3 115 4762 LEHGH TP 115 1	212	90.0	90.7	4233 CLAY 3 115 4246 SPRINGVL 115 1	17	--
SBA	8245 PETAL 115 8251 HATBG NO 115 1	155	89.9	90.7	8271 HATBG SW 115 8273 HWY 11 115 1	1	--
SBA	2408 ETOWAH 115 2435 REAVIS MTN 115 1	124	87.9	88.8	88 MCGRAU FORD 230 335 DAWSON CROS 230 1	26	--
SBA	1096 LOWNDES 115 1886 W VALDOSTA 115 1	187	89.5	90.6	220 PINE GROVE 230 1885 W VALDOSTA 230 1	16	--
SBA	1035 E BAINBRIDGE 115 2515 PROPEX J 115 1	79	88.7	90.5	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	24	--
SBA	1822 PINEHILL J1 115 2515 PROPEX J 115 1	79	88.7	90.5	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	24	--
SBA	933 BOWEN 115 1787 BROWN FARMJ 115 1	155	87.8	90.5	196 CARTERSVL 230 935 CARTERSVL 115 2	22	--
SBA	4700 BARRY 6 230 7057 ECUA 230 1	602	89.5	90.2	4638 CHICK 6 230 4700 BARRY 6 230 1	5	--
SBA	208 NELSON 230 954 NELSON 115 1	180	90.0	90.2	208 NELSON 230 954 NELSON 115 2	26	--
SBA	286 GRADY 1&2 115 1215 R_GRADY 115 1	249	87.5	90.1	66 SCOTTDAL 230 357 SCOTTDAL 115 1	3	--

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**Scenario Explanations:**

- 1) Barry Unit #5 Offline, Summer Peak Case
- 2) Barry Unit #5 Offline, Shoulder (93% Load Level) Case
- 3) Branch Unit #4 Offline, Summer Peak Case
- 4) Bowen Unit #4 Offline, Summer Peak Case
- 5) Crist Unit #7 Offline, Summer Peak Case
- 6) Farley Unit #1 Offline, Summer Peak Case
- 7) Farley Unit #2 Offline, Summer Peak Case
- 8) Farley Unit #2 Offline, Shoulder (93% Load Level) Case
- 9) Franklin Unit #2 Offline, Summer Peak Case
- 10) Franklin Unit #2 Offline, Shoulder (93% Load Level) Case
- 11) Gorgas Unit #10 Offline, Summer Peak Case
- 12) Gorgas Unit #10 Offline, Shoulder (93% Load Level) Case
- 13) Gaston Unit #5 Offline, Summer Peak Case
- 14) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case
- 15) Hatch Unit #1 Offline, Summer Peak Case
- 16) Hatch Unit #2 Offline, Summer Peak Case
- 17) Hammond Unit #4 Offline, Shoulder (93% Load Level) Case
- 18) Harris Unit #1 Offline, Summer Peak Case
- 19) Harris Unit #1 Offline, Shoulder (93% Load Level) Case
- 20) Kemper Offline, Summer Peak Case
- 21) Kraft Unit #3 Offline, Summer Peak Case
- 22) McDonough Unit #5 Offline, Summer Peak Case
- 23) Miller Unit #1 Offline, Summer Peak Case
- 24) Smith Unit #3 Offline, Summer Peak Case
- 25) Vogtle Unit #1 Offline, Summer Peak Case
- 26) Vogtle Unit #2 Offline, Summer Peak Case
- 27) Watson Unit #5 Offline, Summer Peak Case

**Stability Impacts**

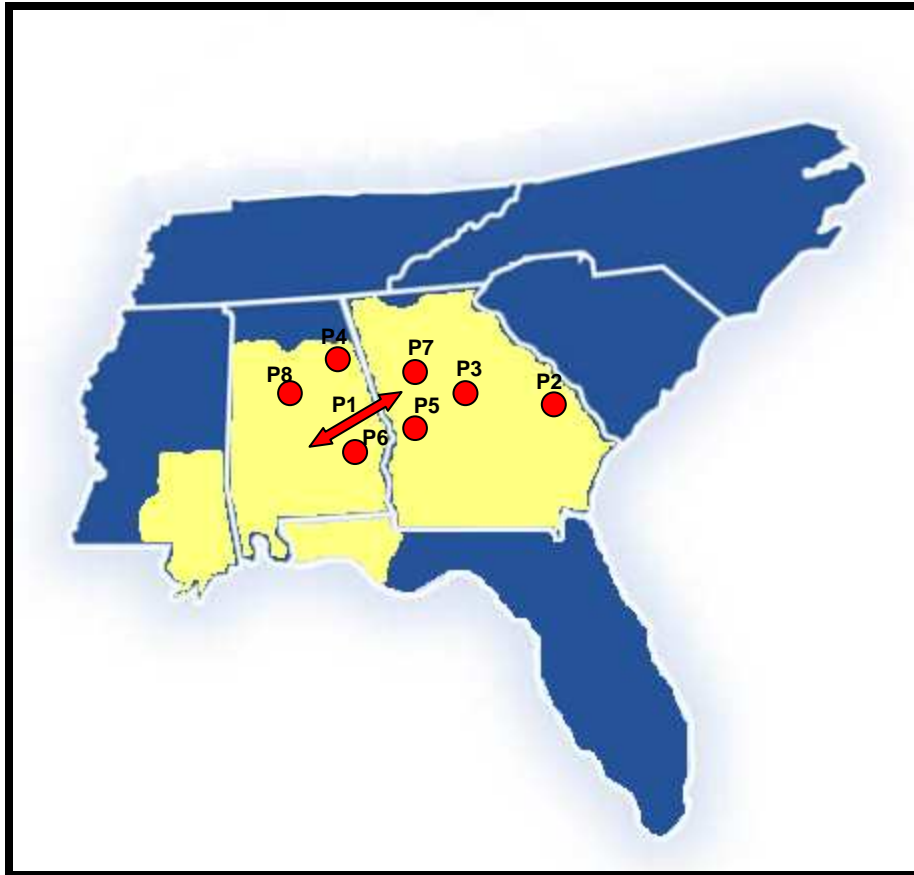
Assessments of the stability impact of delivering 1000 MW from Birmingham, AL to the GA-ITS are currently being performed.

**Table 1.4. Potential Solutions for Identified Constraints – Southern Balancing Authority**

The following projects are potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the current projected enhancements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. These potential solutions only address constraints identified within the Southern Balancing Area that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	<ul style="list-style-type: none"> <li>Construct approximately 100 miles of new 3-1113 ACSR 500 kV transmission line at 100 °C from Billingsley to Wansley.</li> </ul>	2016	\$286,000,000
P2	<ul style="list-style-type: none"> <li>Install a 400 MVA 230 / 115 kV transformer at Waynesboro Substation</li> </ul>	2016	\$6,300,000
P3	<ul style="list-style-type: none"> <li>Upgrade approximately 5.6 miles of 397 ACSR from 50 °C to 100 °C from Jackson Lake to South Covington.</li> </ul>	2016	\$1,100,000
P4	<ul style="list-style-type: none"> <li>Upgrade approximately 2.5 miles of 397 ACSR from 75 °C to 100 °C from Gulf States Steel to Morgans Crossroads.</li> </ul>	2016	\$500,000
P5	<ul style="list-style-type: none"> <li>Reconductor approximately 8.5 miles with 1033 ACSR 230 kV transmission line at 100 °C from Southern Natural Gas to Talbot County #1.</li> </ul>	2016	\$7,500,000
P6	<ul style="list-style-type: none"> <li>Reconductor approximately 3.1 miles with 795 ACSR 115 kV transmission line at 100 °C from Halla Climate Control to Gkn Westalnd Aerospace.</li> </ul>	2016	\$1,100,000
P7	<ul style="list-style-type: none"> <li>Reconductor approximately 2.7 miles with 1033 ACSR 115 kV transmission line at 100 °C from Willingham Drive to East Point.</li> </ul>	2016	\$2,400,000
P8	<ul style="list-style-type: none"> <li>Reconductor approximately 0.34 miles with 1033 ACSR 115 kV transmission line at 100 °C from Bent Brook to Airport Lane.</li> </ul>	2016	\$300,000
<b>TOTAL (2016\$)</b>			<b>\$305,200,000</b>

**Diagram 1.1. Approximate Location of Potential Solutions**



PRELIMINARY

## Interchange Assumptions

**Table 1.5. Additional Transactions Modeled in Cases**

<b>OASIS Ref. #</b>	<b>POR</b>	<b>POD</b>	<b>Amount (MW)</b>
735231	<i>SOCO</i>	<i>Duke</i>	50
735232	<i>SOCO</i>	<i>Duke</i>	25
823644	<i>SOCO</i>	<i>Duke</i>	90
823646	<i>SOCO</i>	<i>Duke</i>	90
787707	<i>SOCO</i>	<i>TVA</i>	73
672440	<i>TVA</i>	<i>SOCO</i>	208
77603	<i>SOCO</i>	<i>PSEC</i>	114
765080	<i>PSEC</i>	<i>SOCO</i>	1092
--	<i>SOCO</i>	<i>PSEC</i>	5
--	<i>MEAG</i>	<i>PSEC</i>	62
--	<i>GTC</i>	<i>PSEC</i>	30
--	<i>SOCO</i>	<i>PSEC</i>	267
--	<i>SEPA</i>	<i>SOCO</i>	681
--	<i>SBA</i>	<i>FRCC</i>	2435 / 3700 <sup>(1)</sup>

<sup>(1)</sup>Southern performed studies with both 2435 MW and 3700 MW of interchange between Florida and the SBA

**Table 1.6. Additional Transactions Modeled in Cases**

<b>OASIS Ref. #</b>	<b>POR</b>	<b>POD</b>	<b>Amount (MW)</b>
869848	<i>EES</i>	<i>SOCO</i>	150
814051	<i>EES</i>	<i>SOCO</i>	50
854479	<i>EES</i>	<i>SOCO</i>	196
705288	<i>EES</i>	<i>Duke</i>	50
705289	<i>EES</i>	<i>Duke</i>	100
869847	<i>Duke</i>	<i>SOCO</i>	50
147617	<i>SC</i>	<i>GTC</i>	296
147616	<i>SCEG</i>	<i>GTC</i>	285
147615	<i>Duke</i>	<i>GTC</i>	465
147613	<i>TVA</i>	<i>GTC</i>	310
72133712	<i>Duke</i>	<i>MEAG</i>	50

**Table 1.7. Capacity Benefit Margin Modeled (CBM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>Duke</i>	310
<i>Southern</i>	<i>TVA</i>	400
<i>Southern</i>	<i>EES</i>	100
<i>Southern</i>	<i>SCPSA</i>	120
<i>Southern</i>	<i>SCEG</i>	120
<i>GTC</i>	<i>TVA</i>	221
<i>GTC</i>	<i>Duke</i>	104
<i>GTC</i>	<i>SCEG</i>	47
<i>GTC</i>	<i>SCPSA</i>	28

For more information on Southern's CBM, click [here](#).

For more information on GTC's CBM, click [here](#).

**Table 1.8. Transmission Reliability Margins Modeled (TRM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>From Duke</i>	<i>199.46</i>
<i>GTC</i>	<i>From Duke</i>	<i>100.65</i>
<i>MEAG</i>	<i>From Duke</i>	<i>26.26</i>
<i>Dalton</i>	<i>From Duke</i>	<i>3.53</i>
<i>Southern</i>	<i>From Entergy</i>	<i>205.01</i>
<i>Southern</i>	<i>From TVA</i>	<i>233.43</i>
<i>GTC</i>	<i>From TVA</i>	<i>48.57</i>
<i>MEAG</i>	<i>From TVA</i>	<i>12.67</i>
<i>Dalton</i>	<i>From TVA</i>	<i>1.70</i>

For more information on the Southern Balancing Authority's TRM, click [here](#).

PRELIMINARY



***TVA Border to the Southern Balancing  
Authority (“SBA”)***

***1500 MW***

PRELIMINARY

## Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
TVA Border to SBA	1500 MW	TVA	SBA	2016
<b>Load Flow Cases</b>				
2010 Series Version 2C Cases: Summer Peak and Shoulder (93% load level)				
<b>Source Modeled</b>				
The source for this transfer was a uniform load reduction in TVA				

## Transmission System Impacts

Tables 2.1 through 2.3 below identify thermal constraints attributable to the requested transfer for the contingency and scenario that resulted in the highest facility loading for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

**Table 2.1. Pass 0 – Transmission System Impacts With No Enhancements – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) without any enhancements to the transmission system. The 1500 MW transfer from TVA to the SBA results in overloads of several 230 kV and 115 kV facilities. Projects were first identified to alleviate major problems within the SBA because the proposed enhancements significantly alter load flow in the SBA.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	4332 ATTALLA5 161 360283 5ALBERTVILLE161 1	193	82.7	124.8	4234 CLAY 6 230 4247 ONEONTA6 230 1	3	P1
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 1	99	63.0	121.2	4331 ATTALLA3 115 4332 ATTALLA5 161 2	3	P1
SBA	916 CALHOUN RD 115 917 CELANESE 115 1	79	94.8	117.4	181 ROCKY MTN 230 182 HAMMOND 230 1	5	P2
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 2	111	75.5	114.0	4234 CLAY 6 230 4247 ONEONTA6 230 1	3	P1
SBA	4399 DELTA 115 5199 FRIENDSH 115 1	113	98.7	112.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	2	P3
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2598	92.6	110.6	11 S HALL 500 306105 8OCONEE 500 1	1	N/A <sup>(1)</sup>
SBA	104 LEXINGTON 230 339100 6RUSSEL 230 1	596	94.9	108.9	11 S HALL 500 306105 8OCONEE 500 1	8	P4
SBA	4399 DELTA 115 4401 LINEVILL 115 1	113	95.0	108.5	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	2	P3
SBA	4965 DANWAYSS 230 5310 HILLABEE 230 1	602	99.4	105.4	5180 N.OPEL6 230 5310 HILLABEE 230 1	1	P5
SBA	471 N LAVONIA 115 2405 TNS JS 115 1	216	98.0	104.1	94 BIO 230 105 VANNA 230 1	8	P4

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4410 SUNLEVTP 115 5059 KELLYTON 115 1	113	93.8	104.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	2	P6
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	91.4	102.7	3 NORCROSS 500 11 S HALL 500 1	8	P4
SBA	5180 N.OPEL6 230 5310 HILLABEE 230 1	602	96.3	102.2	4965 DANWAYSS 230 5310 HILLABEE 230 1	1	P5
SBA	193 WOODSTOCK 230 1211 RAGSDALE RD 230 1	497	98.2	101.6	4 BULL SLUICE 500 19 BIG SHANTY 500 1	11	P7
SBA	2522 SONAT ELL J 230 3020 TALBOT CO 1 230 1	433	98.1	101.3	13 BONAIRE 500 2345 SMARR 500 1	4	P8
SBA	208 NELSON 230 954 NELSON 115 2	176	97.8	100.8	208 NELSON 230 954 NELSON 115 1	11	P4
SBA	4400 GASTON 230 4996 POWERSYS 230 1	497	97.8	100.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	6	P5

<sup>(1)</sup> The limiting element of this 500 kV tie-line constraint is located within TVA.

**Scenario Explanations:**

- |  |  |
|--|--|
| 1) Bowen Unit #4 Offline, Summer Peak Case                 | 7) Kemper Unit Offline, Shoulder (93% Load Level) Case     |
| 2) Farley Unit #2 Offline, Shoulder Case                   | 8) McDonough Unit #5 Offline, Summer Peak Case             |
| 3) Gadsden Unit #2 Offline, Shoulder (93% Load Level) Case | 9) Scherer Unit #1 Offline, Summer Peak Case               |
| 4) Hatch Unit #2 Offline, Summer Peak Case                 | 10) Scholz Unit #2 Offline, Shoulder (93% Load Level) Case |
| 5) Hammond Unit #4 Offline, Summer Peak Case               | 11) Vogtle Unit #2 Offline, Summer Peak Case               |
| 6) Harris Unit #1 Offline, Summer Peak Case                |  |

**Table 2.2. Pass 1 – Transmission System Impacts With Proposed Enhancements P1 through P9 – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with the proposed enhancements “P1” through “P9” applied to the transmission system. Enhancements were identified in order to alleviate the remaining constraints within the SBA.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	4311 GS STEEL 115 5069 NRAINBOW 115 1	112	57.4	123.6	4323 EGADSDEN 115 4324 GADSDEN 115 1	5	P10
SBA	5069 NRAINBOW 115 5419 KEYSTONE TP 115 1	112	43.3	110.0	4323 EGADSDEN 115 4324 GADSDEN 115 1	5	P10
SBA	4311 GS STEEL 115 4331 ATTALLA3 115 1	138	50.7	107.5	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2	P9
SBA	4310 RAINBOW 115 5419 KEYSTONE TP 115 1	112	37.5	104.5	4323 EGADSDEN 115 4324 GADSDEN 115 1	5	P10
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2598	92.6	101.8	11 S HALL 500 306105 8OCONEE 500 1	1	N/A <sup>(1)</sup>
SBA	4489 N SELMA6 230 5500 AUTAUG6 230 1	404	78.2	101.1	4374 S.BESS 6 230 4375 S.BESS 8 500 1	4	P11

<sup>(1)</sup> The limiting element of this 500 kV tie-line constraint is located within TVA.

**Scenario Explanations:**

- 1) Bowen Unit #4 Offline, Summer Peak Case
- 2) Gadsden Unit #2 Offline, Shoulder (93% Load Level) Case
- 3) Gaston Unit #5 Offline, Summer Peak Case

- 4) Kemper Unit Offline, Shoulder (93% Load Level) Case
- 5) Scholz Unit #2 Offline, Shoulder (93% Load Level) Case

**Table 2.3. Pass 3 – Transmission System Impacts With All Proposed Enhancements – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with all proposed enhancements applied to the transmission system. The resulting facilities in the table below could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2016 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following facilities could become potential constraints in future years or with different queuing assumptions</b>							
SBA	4412 ALEX TAP 115 5059 KELLYTON 115 1	113	91.7	100.0	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	6	--
SBA	165 W BRUNSWICK 230 2592 THALMANN 2 230 1	509	99.6	99.8	2380 THAL LS1 230 2591 THALMANN 1 230 1	10	--
SBA	4537 CARTHILL 115 4538 HOLT ST 115 1	135	95.8	99.4	4510 W MONTG3 115 4527 MAX AFB 115 1	23	--
SBA	208 NELSON 230 954 NELSON 115 2	176	97.8	99.1	208 NELSON 230 954 NELSON 115 1	21	--
SBA	4612 BREWT TP 115 4622 N BREW 3 115 1	243	99.0	99.1	4629 EMCSTOCK 115 4701 BARRY 3 115 1	5	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	96.3	98.7	4374 S.BESS 6 230 5036 S BESS 3 115 1	14	--
SBA	434 LAWRENCEVL 115 1363 LAWRNCEVL 3 115 1	188	97.0	98.6	1937 BAY CREEK 115 2070 LAWVL 4J 115 1	21	--
SBA	1010 BEMISS 115 1065 PINE GROVE 115 1	91	98.5	98.6	1885 W VALDOSTA 230 1886 W VALDOSTA 115 1	11	--
SBA	4428 MITCHDAM 115 4733 CRH TAP 115 1	138	84.7	98.1	4489 N SELMA6 230 5500 AUTAUG6 230 1	13	--
SBA	318004 PURVIS 161 318007 5MOROW161 161 1	296	93.4	98.0	318004 PURVIS 161 318007 5MOROW161 161 2	22	--
SBA	318004 PURVIS 161 318007 5MOROW161 161 2	296	93.3	97.9	318004 PURVIS 161 318007 5MOROW161 161 1	22	--
SBA	748 SPALDING 115 876 BROOKS 115 1	155	96.4	97.9	171 OHARA 230 1629 WOOLSEY 230 1	20	--
SBA	5060 GREENWD 115 5203 AIRPT LN 115 1	216	95.6	97.9	4374 S.BESS 6 230 5036 S BESS 3 115 1	14	--
SBA	363 HOPEWELL 115 1714 BIRMINGHAM 115 1	188	97.5	97.8	956 HOLLY SP 115 1722 NEWLIGHT CH 115 1	3	--
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	93.8	97.6	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	8	--
SBA	4430 BOULDDAM 115 4518 ELMORE 115 1	171	88.2	97.0	4529 FORBESRD 115 5067 WET DSTP 115 1	24	--
SBA	4310 RAINBOW 115 5415 N CEDAR TP 115 1	112	29.1	97.3	4323 EGADSDEN 115 4324 GADSDEN 115 1	18	--
SBA	4612 BREWT TP 115 4627 FLOMATON 115 1	212	97.1	97.2	4629 EMCSTOCK 115 4701 BARRY 3 115 1	5	--
SBA	938 CARTERVL 4 115 983 CARTERVL 1J 115 1	269	95.2	97.1	194 S ACWORTH 230 943 S ACWORTH 115 1	16	--
SBA	4504 CLANT TP 115 4733 CRH TAP 115 1	138	83.7	97.1	4489 N SELMA6 230 5500 AUTAUG6 230 1	13	--
SBA	4189 PRATCTY3 115 4190 PRATCTY6 230 1	398	92.3	96.8	5144 ACIPCO6 230 5145 ACIPCO3 115 1	8	--
SBA	688 SLAPPEY DR 115 1566 ALBANY 2J 115 1	155	90.7	96.7	1519 ALBANY 7J 115 1567 ALBANY 7 115 1	17	--
SBA	741 JONESBORO 115 1911 SPIVEY LK 115 1	298	96.2	96.5	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	20	--
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	96.4	96.5	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	19	--

**Thermal Loadings  
(%)**

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	1811 BUSHNELL 115 2517 LAKE BEA 115 1	63	95.1	96.3	223 DOUGLAS 230 2516 STUMP CRK 230 1	10	--
SBA	4629 EMCSTOCK 115 4701 BARRY 3 115 1	212	95.4	96.0	4612 BREWT TP 115 4622 N BREW 3 115 1	5	--
SBA	935 CARTERSVL 115 938 CARTERVL 4 115 1	298	94.1	95.9	194 S ACWORTH 230 943 S ACWORTH 115 1	16	--
SBA	911 ARMUCHEE J 115 914 GALEY&LORD+ 115 1	96	92.4	95.9	907 HAMMOND 115 2403 COOSA J1 115 1	12	--
SBA	914 GALEY&LORD+ 115 915 PINSON 115 1	96	92.4	95.9	907 HAMMOND 115 2403 COOSA J1 115 1	12	--
SBA	4361 MCADORTP 115 5706 BNTBRKTP 115 1	138	92.0	95.7	4374 S.BESS 6 230 5036 S BESS 3 115 1	14	--
SBA	571 SYLVANIA 115 581 KING MFG + 115 1	63	91.2	95.4	8 VOGTLE 500 9 W MCINTOSH 500 1	10	--
SBA	681 MITCHELL 115 682 LESTER 115 1	124	94.7	95.1	24 N TIFTON 500 222 N TIFTON 230 1	10	--
SBA	4425 JORDN DM 115 4430 BOULDDAM 115 2	138	81.2	94.5	4425 JORDN DM 115 4430 BOULDDAM 115 1	24	--
SBA	848 PINEGROVE 115 1464 HAZLE J 115 1	114	93.0	94.8	844 E VIDALIA 115 1476 W LYONS J2 115 1	21	--
SBA	4192 USS #8 115 4916 APEX DS 115 1	108	88.9	94.5	4153 GORGAS#1 115 5707 EP SHORT 115 1	8	--
SBA	4534 AUB MONT 115 5344 MCLEMORE TP 115 1	216	90.9	94.4	3021 LONGLEAF 500 4600 FARLEY 8 500 1	4	--
SBA	95 WINDER P 230 2021 CLARKSBORO 230 1	433	68.9	94.4	11 S HALL 500 306105 8OCONEE 500 1	3	--
SBA	150 BONAIRE 230 804 BONAIRE 115 1	400	93.0	94.1	150 BONAIRE 230 804 BONAIRE 115 2	2	--
SBA	150 BONAIRE 230 804 BONAIRE 115 2	400	93.0	94.1	150 BONAIRE 230 804 BONAIRE 115 1	2	--
SBA	4156 MILLER6 230 4172 BOYLESM1 230 1	602	86.9	94.0	4157 MILLER8 500 5312 CLAY 8 500 1	8	--
SBA	4189 PRATCTY3 115 4261 ALAMETAL 115 1	246	86.7	94.0	4157 MILLER8 500 5312 CLAY 8 500 1	8	--
SBA	4260 SO PARK 115 4261 ALAMETAL 115 1	246	86.4	93.7	4157 MILLER8 500 5312 CLAY 8 500 1	8	--
SBA	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	344	93.4	93.6	741 JONESBORO 115 1911 SPIVEY LK 115 1	20	--
SBA	194 S ACWORTH 230 943 S ACWORTH 115 1	400	92.8	93.6	935 CARTERSVL 115 938 CARTERVL 4 115 1	16	--
SBA	4374 S.BESS 6 230 4950 DUNCANVL 230 1	502	72.7	93.6	5123 BILLGSS 500 5178 AUTAUSS8 500 1	13	--
SBA	8702 DANIEL 230 8705 MSPT EFR 230 1	866	91.0	93.6	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--
SBA	581 KING MFG + 115 1483 DOVER TP 115 1	63	89.3	93.5	8 VOGTLE 500 9 W MCINTOSH 500 1	10	--
SBA	4988 S.JEFF 3 115 5041 BLUELKNL 115 1	212	93.1	93.4	4292 NHELENA3 115 4816 VALDAL34 115 1	8	--
SBA	4374 S.BESS 6 230 5036 S BESS 3 115 1	480	89.7	93.4	5123 BILLGSS 500 5178 AUTAUSS8 500 1	9	--
SBA	508 LANGSTON 115 575 STATESBORO 115 1	124	93.1	93.3	843 VIDALIA 115 1625 LOOP RD 115 1	15	--
SBA	208 NELSON 230 954 NELSON 115 1	180	91.9	93.2	208 NELSON 230 954 NELSON 115 2	21	--
SBA	160 HATCH + 230 164 UNION SCHL 230 1	509	92.5	92.9	15 THALMANN 500 2380 THAL LS1 230 1	19	--
SBA	4292 NHELENA3 115 4816 VALDAL34 115 1	212	92.4	92.6	4988 S.JEFF 3 115 5041 BLUELKNL 115 1	8	--
SBA	198 PINSON 230 2434 KINGSTON 230 1	664	85.0	92.6	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	3	--
SBA	4443 THURLOW 115 4924 MTV/MILTP 115 1	138	91.7	92.4	3021 LONGLEAF 500 4600 FARLEY 8 500 1	3	--
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	91.4	92.3	3 NORCROSS 500 11 S HALL 500 1	16	--
SBA	672 ALBANY 9 115 1566 ALBANY 2J 115 1	135	85.0	92.3	1519 ALBANY 7J 115 1567 ALBANY 7 115 1	17	--
SBA	4179 DC SHORT 115 4191 MAYTOWN 115 1	128	88.1	92.3	4153 GORGAS#1 115 5707 EP SHORT 115 1	8	--
SBA	915 PINSON 115 1754 METAL CON 115 1	135	79.3	92.2	181 ROCKY MTN 230 182 HAMMOND 230 1	12	--

**Thermal Loadings  
(%)**

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4154 GORGAS#4 115 4179 DC SHORT 115 1	128	88.0	92.2	4153 GORGAS#1 115 5707 EP SHORT 115 1	8	--
SBA	4700 BARRY 6 230 7057 ECUA 230 1	602	91.7	91.8	4638 CHICK 6 230 4700 BARRY 6 230 1	5	--
SBA	170 S GRIFFIN 230 746 S GRIFFIN 115 1	298	90.9	91.7	736 OHARA 115 739 BONANZA 115 1	2	--
SBA	1055 BARNEYVILLE 115 1883 ADEL 1J 115 1	142	90.5	91.2	220 PINE GROVE 230 222 N TIFTON 230 1	19	--
SBA	4924 MTVMILTP 115 5116 TUSK TAP 115 1	138	90.2	90.9	3021 LONGLEAF 500 4600 FARLEY 8 500 1	3	--
SBA	164 UNION SCHL 230 224 OFFERMAN 230 1	509	90.4	90.8	15 THALMANN 500 2380 THAL LS1 230 1	19	--
SBA	50 BULL SLUICE 230 52 N SPRINGS 230 1	539	88.3	90.7	3 NORCROSS 500 4 BULL SLUICE 500 1	21	--
SBA	4234 CLAY 6 230 5039 ARGO DS 230 1	602	76.7	90.3	4156 MILLER6 230 4157 MILLER8 500 1	8	--
SBA	1729 W V RICA 115 2486 HICKORY LVL 115 1	124	85.0	90.3	184 BREMEN 230 969 BREMEN 115 1	7	--
SBA	8705 MSPT EFR 230 8710 MOSSPT E 230 1	866	87.7	90.3	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--

**Scenario Explanations:**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1) Barry Unit #5 Offline, Summer Peak Case</li> <li>2) Branch Unit #4 Offline, Summer Peak Case</li> <li>3) Bowen Unit #4 Offline, Summer Peak Case</li> <li>4) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case</li> <li>5) Crist Unit #7 Offline, Summer Peak Case</li> <li>6) Farley Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>7) Greene County Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>8) Gaston Unit #5 Offline, Summer Peak Case</li> <li>9) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case</li> <li>10) Hatch Unit #1 Offline, Summer Peak Case</li> <li>11) Hatch Unit #2 Offline, Summer Peak Case</li> </ul> | <ul style="list-style-type: none"> <li>12) Hammond Unit #4 Offline, Summer Peak Case</li> <li>13) Kemper Unit Offline, Summer Peak Case</li> <li>14) Kemper Unit Offline, Shoulder (93% Load Level) Case</li> <li>15) Kraft Unit #3 Offline, Summer Peak Case</li> <li>16) McDonough Unit #5 Offline, Summer Peak Case</li> <li>17) McDonough Unit #5 Offline, Shoulder (93% Load Level) Case</li> <li>18) Scholz Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>19) Smith Unit #3 Offline, Summer Peak Case</li> <li>20) Vogtle Unit #1 Offline, Summer Peak Case</li> <li>21) Vogtle Unit #2 Offline, Summer Peak Case</li> <li>22) Watson Unit #5 Offline, Summer Peak Case</li> </ul> |
|--|---|

**Table 2.4. Potential Solutions for Identified Constraints – Southern Balancing Authority**

The following projects are potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the current projected enhancements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. These potential solutions only address constraints identified within the Southern Balancing Area that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	<ul style="list-style-type: none"> <li>Reconductor approximately 0.05 miles of the 19.6 mile 161 kV transmission line with 1351 ACSR at 100°C from Attalla to Albertville.</li> <li>Replace the two (2) 161 / 115 kV Autobanks at Attalla substation with two (2) 200 MVA Autobanks.</li> </ul>	2016	\$6,600,000 <sup>(1)</sup>
P2	<ul style="list-style-type: none"> <li>Upgrade approximately 3.3 miles of 477 ACSR at 50°C to 75°C operation from Celanese to Calhoun Road</li> </ul>	2016	\$765,000
P3	<ul style="list-style-type: none"> <li>Upgrade approximately 17.12 miles of 397 ACSR at 75°C to 100°C operation from Friendship to Lineville.</li> </ul>	2016	\$3,971,000
P4	<ul style="list-style-type: none"> <li>Construct approximately 36 miles of new 2-1033 bundled ACSR 230 kV transmission line at 100°C from Hartwell Dam to Athena.</li> </ul>	2016	\$46,762,000 <sup>(1)</sup>
P5	<ul style="list-style-type: none"> <li>Construct approximately 60 miles of new 1351 ACSR 230 kV transmission line at 100°C from Hillabee to LaGrange.</li> </ul>	2016	\$51,766,000
P6	<ul style="list-style-type: none"> <li>Upgrade approximately 1.1 miles of 397 ACSR at 75°C to 100°C operation from Sunny Level Tap to Kellyton</li> </ul>	2016	\$255,000
P7	<ul style="list-style-type: none"> <li>Replace the existing 1200 A line trap at Woodstock substation with a 1600 A line trap on the Ragsdale 230 kV transmission line.</li> </ul>	2016	\$200,000
P8	<ul style="list-style-type: none"> <li>Reconductor approximately 8.5 miles of 795 ACSR at 100°C with 1351 ACSR at 100°C from Sonat EII Junction to Talbot County</li> </ul>	2016	\$5,422,000
P9	<ul style="list-style-type: none"> <li>Reconductor approximately 2.5 miles of 397 ACSR at 75°C with 795 ACSR at 100°C from Attalla to Gulf States Steel.</li> </ul>	2016	\$1,015,000
P10	<ul style="list-style-type: none"> <li>Reconductor approximately 5.44 miles of 397 ACSR at 75°C with 795 ACSR at 100°C from Gulf States Steel to Rainbow City.</li> </ul>	2016	\$2,208,000
P11	<ul style="list-style-type: none"> <li>Upgrade approximately 25.9 miles of 1033 ACSR at 75°C to 100°C operation from North Selma to Autaugaville.</li> </ul>	2016	\$6,847,000
TOTAL (\$2016)			\$125,811,000

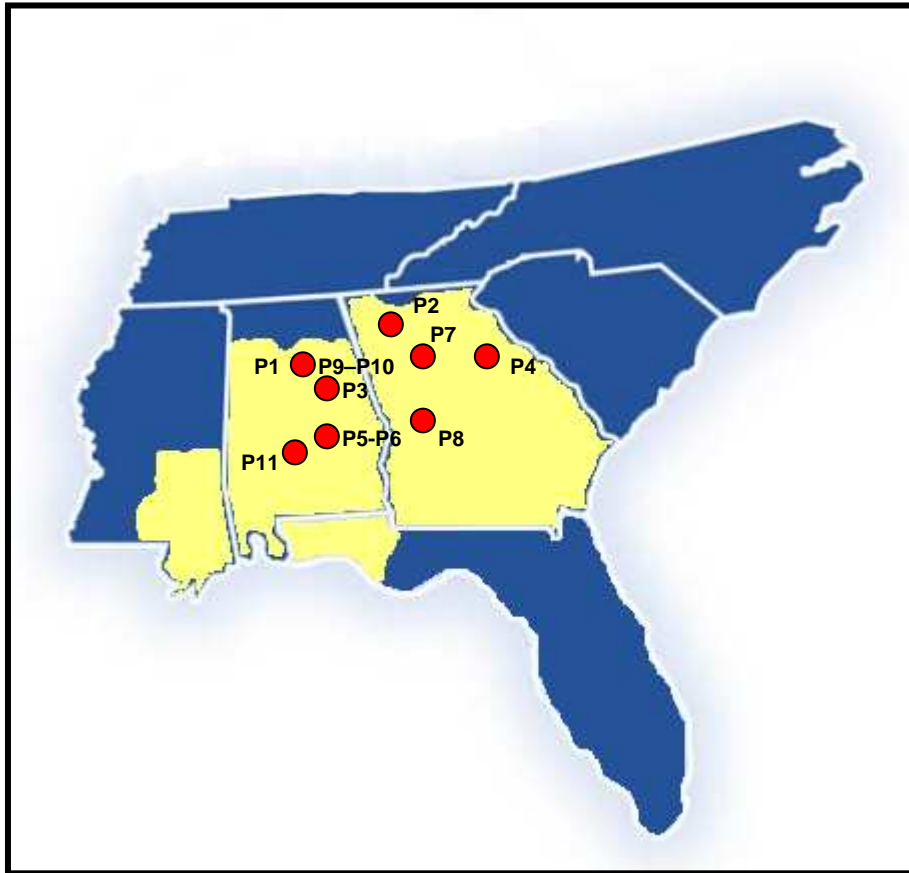
<sup>(1)</sup> This transmission solution was proposed to alleviate the loading of a tie-line constraint between the SBA and a non-participating Transmission Owner. Therefore, the cost associated with the transmission solution is only for the portion of solution that is located within the participating Transmission Owners' territory. This solution effectively alleviates the identified constraint(s), however, the impacts to adjacent

transmission systems that are external to the participating Transmission Owners were not evaluated. These impacts, as well as coordinated transmission solutions to alleviate any identified constraints, can be determined if this transfer is brought forth to be evaluated in the Southeast Inter-Regional Participation Process ("SIRPP").

PRELIMINARY



**Diagram 2.1. Approximate Location of Potential Solutions**



PRELIMINARY

## Interchange Assumptions

**Table 2.5. Transactions Modeled in Starting Point Cases**

OASIS Ref. #	POR	POD	Amount (MW)
735231	SOCO	Duke	50
735232	SOCO	Duke	25
823644	SOCO	Duke	90
823646	SOCO	Duke	90
787707	SOCO	TVA	73
672440	TVA	SOCO	208
77603	SOCO	PSEC	114
765080	PSEC	SOCO	1092
--	SOCO	PSEC	5
--	MEAG	PSEC	62
--	GTC	PSEC	30
--	SOCO	PSEC	267
--	SEPA	SOCO	681
--	SBA	FRCC	2435 / 3700 <sup>(1)</sup>

<sup>(1)</sup>Southern performed studies with both 2435 MW and 3700 MW of interchange between Florida and the SBA

**Table 2.6. Additional Transactions Modeled in Cases**

OASIS Ref. #	POR	POD	Amount (MW)
869848	EES	SOCO	150
814051	EES	SOCO	50
854479	EES	SOCO	196
705288	EES	Duke	50
705289	EES	Duke	100
869847	Duke	SOCO	50
147617	SC	GTC	296
147616	SCEG	GTC	285
147615	Duke	GTC	465
147613	TVA	GTC	310
72133712	Duke	MEAG	50

**Table 2.7. Capacity Benefit Margin Modeled (CBM)**

Transmission Owner	Interface	Amount (MW)
Southern	Duke	310
Southern	TVA	400
Southern	EES	100
Southern	SCPSA	120
Southern	SCEG	120
GTC	TVA	221
GTC	Duke	104
GTC	SCEG	47
GTC	SCPSA	28

For more information on Southern's CBM, click [here](#).

For more information on GTC's CBM, click [here](#).

**Table 2.8. Transmission Reliability Margins Modeled (TRM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>From Duke</i>	<i>199.46</i>
<i>GTC</i>	<i>From Duke</i>	<i>100.65</i>
<i>MEAG</i>	<i>From Duke</i>	<i>26.26</i>
<i>Dalton</i>	<i>From Duke</i>	<i>3.53</i>
<i>Southern</i>	<i>From Entergy</i>	<i>205.01</i>
<i>Southern</i>	<i>From TVA</i>	<i>233.43</i>
<i>GTC</i>	<i>From TVA</i>	<i>48.57</i>
<i>MEAG</i>	<i>From TVA</i>	<i>12.67</i>
<i>Dalton</i>	<i>From TVA</i>	<i>1.70</i>

For more information on the Southern Balancing Authority's TRM, click [here](#).

PRELIMINARY

***SCPSA Border to the Southern  
Balancing Authority (“SBA”)***

***200 MW***

PRELIMINARY

## Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
SCPSA Border to SBA	200 MW	SCPSA	SBA	2016
<b>Load Flow Cases</b>				
2010 Series Version 2C Cases: Summer Peak and Shoulder (93% load level)				
<b>Source Modeled</b>				
The source for this transfer was a uniform load reduction in SCPSA				

## Transmission System Impacts

**Table 3.1. Pass 0 – Transmission System Impacts With All Proposed Enhancements – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with all proposed enhancements applied to the transmission system. The resulting facilities in the table below could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2016 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following facilities could become potential constraints in future years or with different queuing assumptions</b>							
SBA	165 W BRUNSWICK 230 2592 THALMANN 2 230 1	509	99.6	99.7	2380 THAL LS1 230 2591 THALMANN 1 230 1	12	--
SBA	5003 GRANTMIL 115 5191 MTSITETP 115 1	138	98.6	99.5	4156 MILLER6 230 4157 MILLER8 500 1	17	--
SBA	17290 BAYSP J 115 17295 SLOC JCT 115 1	142	99.1	99.2	4601 FARLEY 6 230 5518 COTONWD6 230 1	18	--
SBA	17221 LIBERTY6 230 17222 LIBERTY3 115 1	168	98.5	98.6	17221 LIBERTY6 230 17222 LIBERTY3 115 2	18	--
SBA	4400 GASTON 230 4996 POWERSYS 230 1	497	97.8	98.6	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	15	--
SBA	4443 THURLOW 115 4445 YATESDAM 115 1	117	98.3	98.5	4534 AUB MONT 115 5136 MADPARK3 115 1	6	--
SBA	2522 SONAT ELL J 230 3020 TALBOT CO 1 230 1	433	97.7	98.4	13 BONAIRE 500 2345 SMARR 500 1	13	--
SBA	130 GOAT ROCK 230 1530 CAMP MCKENZ 230 1	1204	97.7	97.9	125 FORTSON 230 130 GOAT ROCK 230 1	13	--
SBA	4740 GKN W LD 115 5257 HALACLTP 115 1	107	97.6	97.9	4514 S MONTG3 115 4547 PINEDALE 115 1	6	--
SBA	434 LAWRENCEVL 115 1363 LAWRNCEVL 3 115 1	188	97.4	97.6	1937 BAY CREEK 115 2070 LAWVL 4J 115 1	16	--
SBA	916 CALHOUN RD 115 917 CELANESE 115 1	79	93.9	97.6	181 ROCKY MTN 230 182 HAMMOND 230 1	14	--
SBA	125 FORTSON 230 1530 CAMP MCKENZ 230 1	1192	97	97.2	125 FORTSON 230 130 GOAT ROCK 230 1	12	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	96.8	97.1	4374 S.BESS 6 230 5036 S BESS 3 115 1	9	--

**Thermal Loadings  
(%)**

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4996 POWERSYS 230 5058 FAYETVIL 230 1	502	96.3	97.1	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	15	--
SBA	104 LEXINGTON 230 339100 6RUSSEL 230 1	596	94.5	96.9	11 S HALL 500 306105 8OCONEE 500 1	16	--
SBA	4488 N SELMA3 115 4489 N SELMA6 230 1	302	96.4	96.5	4488 N SELMA3 115 4489 N SELMA6 230 2	2	--
SBA	5060 GREENWD 115 5203 AIRPT LN 115 1	216	96	96.3	4374 S.BESS 6 230 5036 S BESS 3 115 1	9	--
SBA	17079 OPINE RD 115 17147 OPP SW 3 115 1	157	96	96.1	17010 COFFEE SP JC115 17222 LIBERTY3 115 1	18	--
SBA	24 N TIFTON 500 222 N TIFTON 230 1	1536	95.7	96	2500 RACCOON CK 500 2510 RACCOON CK 230 1	18	--
SBA	17407 GRDNVL J 115 17437 TRICKEM 115 1	134	95.5	95.8	4512 SNOWDN8 500 4600 FARLEY 8 500 1	6	--
SBA	1811 BUSHNELL 115 2517 LAKE BEA 115 1	63	95.1	95.8	223 DOUGLAS 230 2516 STUMP CRK 230 1	12	--
SBA	693 SAWHATCHEE 115 1569 BLAKELY 1 115 1	135	95.6	95.7	692 BLAKELY 2 115 1890 YELLOWPINEJ 115 1	18	--
SBA	681 MITCHELL 115 682 LESTER 115 1	124	95.4	95.5	24 N TIFTON 500 222 N TIFTON 230 1	18	--
SBA	5058 FAYETVIL 230 5897 CO LINE6 230 1	502	94.7	95.5	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	15	--
SBA	4598 PINCK 6 230 5138 PIKE CO6 230 1	478	94.4	94.8	4512 SNOWDN8 500 4600 FARLEY 8 500 1	6	--
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2598	93.9	94.7	11 S HALL 500 306105 8OCONEE 500 1	3	--
SBA	4499 RF HENRY 115 17437 TRICKEM 115 1	142	94.3	94.5	4512 SNOWDN8 500 4600 FARLEY 8 500 1	6	--
SBA	4508 MONTG SS 230 5897 CO LINE6 230 1	502	94.0	94.3	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	8	--
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	92.4	94.3	3 NORCROSS 500 11 S HALL 500 1	16	--
SBA	612 FIRST AVE + 115 616 BLNCHARD IP 115 1	199	93.7	93.8	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	8	--
SBA	1109 SPRING CRK 115 1822 PINEHILL J1 115 1	79	93.5	93.7	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	18	--
SBA	131 FIRST AVE A 230 612 FIRST AVE + 115 1	298	93.5	93.6	132 FIRST AVE B 230 612 FIRST AVE + 115 1	7	--
SBA	1035 E BAINBRDGE 115 2515 PROPEX J 115 1	79	93.3	93.4	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	18	--
SBA	1822 PINEHILL J1 115 2515 PROPEX J 115 1	79	93.3	93.4	1109 SPRING CRK 115 2527 FLOYDTOWN 115 1	18	--
SBA	848 PINEGROVE 115 1464 HAZLE J 115 1	114	93.0	93.4	843 VIDALIA 115 1476 W LYONS J2 115 1	19	--
SBA	615 VICTORY DR 115 616 BLNCHARD IP 115 1	199	93.1	93.2	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	6	--
SBA	4361 MCADORTP 115 5706 BNTBRKTP 115 1	138	92.6	93.2	4374 S.BESS 6 230 5036 S BESS 3 115 1	9	--
SBA	4233 CLAY 3 115 4234 CLAY 6 230 1	398	92.9	93	4234 CLAY 6 230 5039 ARGO DS 230 1	11	--
SBA	911 ARMUCHEE J 115 914 GALEY&LORD+ 115 1	96	92.4	92.9	907 HAMMOND 115 2403 COOSA J1 115 1	14	--
SBA	914 GALEY&LORD+ 115 915 PINSON 115 1	96	92.4	92.8	907 HAMMOND 115 2403 COOSA J1 115 1	14	--
SBA	104 LEXINGTON 230 133 R_E WATKNVL 230 1	602	90.5	92.8	11 S HALL 500 306105 8OCONEE 500 1	16	--
SBA	4640 SILVER 6 230 4641 SILVER 3 115 1	336	92.6	92.7	4640 SILVER 6 230 4641 SILVER 3 115 2	5	--
SBA	94 BIO 230 105 VANNA 230 1	433	90.2	92.6	11 S HALL 500 306105 8OCONEE 500 1	16	--
SBA	160 HATCH + 230 164 UNION SCHL 230 1	509	92.3	92.5	15 THALMANN 500 2380 THAL LS1 230 1	6	--
SBA	4508 MONTG SS 230 4513 S MONTG6 230 1	807	92.3	92.5	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	8	--
SBA	17221 LIBERTY6 230 17222 LIBERTY3 115 2	168	92.0	92.1	17221 LIBERTY6 230 17222 LIBERTY3 115 1	18	--
SBA	3 NORCROSS 500 65 NORCROSS 230 2	2016	91.8	92.1	3 NORCROSS 500 65 NORCROSS 230 1	16	--

**Thermal Loadings  
(%)**

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	571 SYLVANIA 115 581 KING MFG + 115 1	63	91.2	91.9	8 VOGTLE 500 9 W MCINTOSH 500 1	12	--
SBA	4489 N SELMA6 230 5500 AUTAUG6 230 1	404	88.7	91.9	8008 KEMPER 230 8009 KEMPER1 230 1	9	--
SBA	1096 LOWNDES 115 1886 W VALDOSTA 115 1	187	91.4	91.5	220 PINE GROVE 230 1885 W VALDOSTA 230 1	13	--
SBA	130 GOAT ROCK 230 3023 FRANKLIN 1 230 1	1244	91.2	91.3	Base Case	12	--
SBA	17077 PERYSTRJ 115 17079 OPINE RD 115 1	157	91.2	91.3	17010 COFFEE SP JC115 17222 LIBERTY3 115 1	18	--
SBA	4655 N MOBILE 115 4674 KUSHLA 115 1	212	91.0	91.2	4112 LYNDEL TP 115 4840 COTHILLS 115 1	4	--
SBA	8702 DANIEL 230 8705 MSPT EFR 230 1	866	91.0	91.2	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--
SBA	4549 MERRY TP 115 17987 CECIL TP 115 1	112	90.7	91.1	4512 SNOWDN8 500 4600 FARLEY 8 500 1	6	--
SBA	4521 PRTMNTTP 115 4942 E.PRATVL 115 1	216	90.3	90.4	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	8	--
SBA	164 UNION SCHL 230 224 OFFERMAN 230 1	509	90.1	90.3	15 THALMANN 500 2380 THAL LS1 230 1	6	--
SBA	4528 N MONTGY 115 4529 FORBESRD 115 1	210	89.9	90.1	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	8	--

**Scenario Explanations:**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1) Barry Unit #5 Offline, Summer Peak Case</li> <li>2) Barry Unit #5 Offline, Shoulder (93% Load Level) Case</li> <li>3) Bowen Unit #4 Offline, Summer Peak Case</li> <li>4) Crist Unit #7 Offline, Summer Peak Case</li> <li>5) Daniel CC Unit #Offline, Summer Peak Case</li> <li>6) Farley Unit #1 Offline, Summer Peak Case</li> <li>7) Farley Unit #1 Offline, Shoulder (93% Load Level) Case</li> <li>8) Farley Unit #2 Offline, Summer Peak Case</li> <li>9) Greene Co. Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>10) Gadsden Unit #2 Offline, Summer Peak Case</li> </ul> | <ul style="list-style-type: none"> <li>11) Gaston Unit #5 Offline, Summer Peak Case</li> <li>12) Hatch Unit #1 Offline, Summer Peak Case</li> <li>13) Hatch Unit #2 Offline, Summer Peak Case</li> <li>14) Hammond Unit #4 Offline, Summer Peak Case</li> <li>15) Harris Unit #1 Offline, Summer Peak Case</li> <li>16) McDonough Unit #5 Offline, Summer Peak Case</li> <li>17) Miller Unit #1 Offline, Summer Peak Case</li> <li>18) Smith Unit #3 Offline, Summer Peak Case</li> <li>19) Vogtle Unit #2 Offline, Summer Peak Case</li> </ul> |
|---|---|

**Table 3.2. Potential Solutions for Identified Constraints – Southern Balancing Authority**

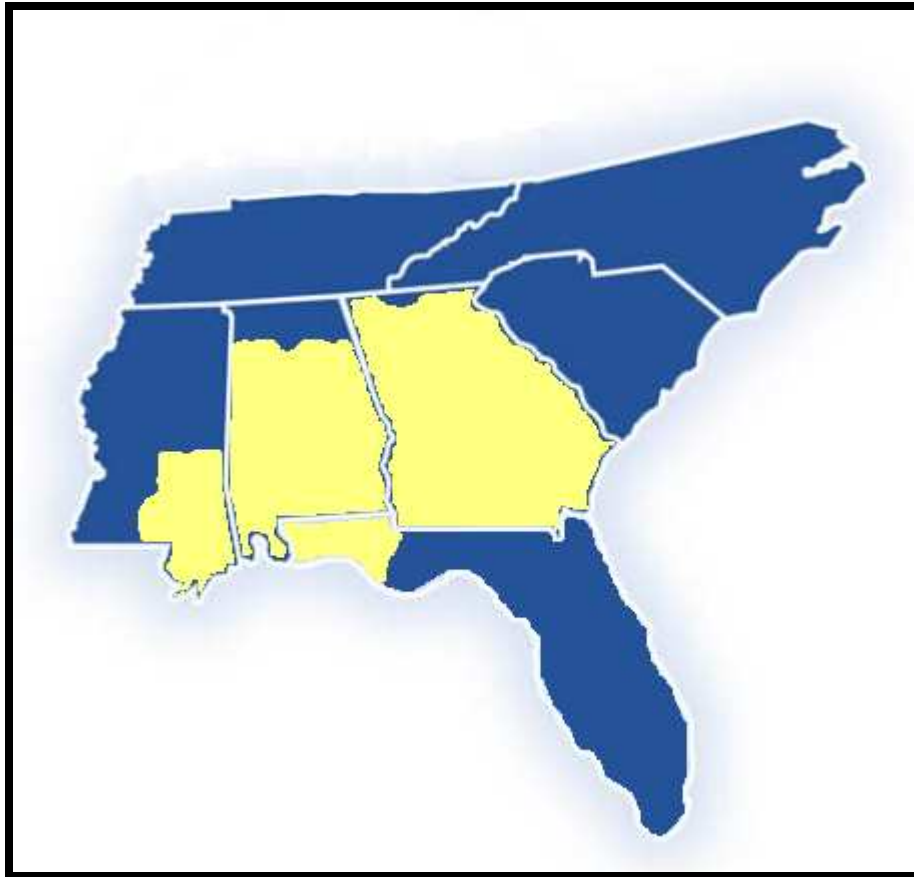
The following projects are potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the current projected enhancements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. These potential solutions only address constraints identified within the Southern Balancing Area that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Item	Potential Solution	Estimated Need Date	Estimated Cost
N/A	--	--	--
<b>TOTAL (2016\$)</b>			<b>\$0</b>

PRELIMINARY



**Diagram 3.1. Approximate Location of Potential Solutions**



PRELIMINARY

## Interchange Assumptions

**Table 3.3. Transactions Modeled in Starting Point Cases**

OASIS Ref. #	POR	POD	Amount (MW)
735231	SOCO	Duke	50
735232	SOCO	Duke	25
823644	SOCO	Duke	90
823646	SOCO	Duke	90
787707	SOCO	TVA	73
672440	TVA	SOCO	208
77603	SOCO	PSEC	114
765080	PSEC	SOCO	1092
--	SOCO	PSEC	5
--	MEAG	PSEC	62
--	GTC	PSEC	30
--	SOCO	PSEC	267
--	SEPA	SOCO	681
--	SBA	FRCC	2435 / 3700 <sup>(1)</sup>

<sup>(1)</sup>Southern performed studies with both 2435 MW and 3700 MW of interchange between Florida and the SBA

**Table 3.4. Additional Transactions Modeled in Cases**

OASIS Ref. #	POR	POD	Amount (MW)
869848	EES	SOCO	150
814051	EES	SOCO	50
854479	EES	SOCO	196
705288	EES	Duke	50
705289	EES	Duke	100
869847	Duke	SOCO	50
147617	SC	GTC	296
147616	SCEG	GTC	285
147615	Duke	GTC	465
147613	TVA	GTC	310
72133712	Duke	MEAG	50

**Table 3.5. Capacity Benefit Margin Modeled (CBM)**

Transmission Owner	Interface	Amount (MW)
Southern	Duke	310
Southern	TVA	400
Southern	EES	100
Southern	SCPSA	120
Southern	SCEG	120
GTC	TVA	221
GTC	Duke	104
GTC	SCEG	47
GTC	SCPSA	28

For more information on Southern's CBM, click [here](#).

For more information on GTC's CBM, click [here](#).

**Table 3.6. Transmission Reliability Margins Modeled (TRM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>From Duke</i>	<i>199.46</i>
<i>GTC</i>	<i>From Duke</i>	<i>100.65</i>
<i>MEAG</i>	<i>From Duke</i>	<i>26.26</i>
<i>Dalton</i>	<i>From Duke</i>	<i>3.53</i>
<i>Southern</i>	<i>From Entergy</i>	<i>205.01</i>
<i>Southern</i>	<i>From TVA</i>	<i>233.43</i>
<i>GTC</i>	<i>From TVA</i>	<i>48.57</i>
<i>MEAG</i>	<i>From TVA</i>	<i>12.67</i>
<i>Dalton</i>	<i>From TVA</i>	<i>1.70</i>

For more information on the Southern Balancing Authority's TRM, click [here](#).

PRELIMINARY

***Duke Border to the Southern Balancing  
Authority (“SBA”)***

***2000 MW***

PRELIMINARY

## Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
Duke Border to SBA	2000 MW	Duke	SBA	2016
<b>Load Flow Cases</b>				
2010 Series Version 2C Cases: Summer Peak and Shoulder (93% load level)				
<b>Source Modeled</b>				
The source for this transfer was a uniform load reduction in Duke				

## Transmission System Impacts

Tables 4.1 through 4.3 below identify thermal constraints attributable to the requested transfer for the contingency and scenario that resulted in the highest facility loading for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

**Table 4.1. Pass 0 – Transmission System Impacts With No Enhancements – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) without any enhancements to the transmission system. The 2000 MW transfer from Duke Border to the SBA results in overloads of several 115 kV, 230 kV and 500 kV facilities. Projects were first identified to alleviate these constraints before alleviating the remaining constraints because the proposed enhancements significantly alter load flow in the SBA.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	104 LEXINGTON 230 339100 6RUSSEL 230 1	596	94.5	125.6	11 S HALL 500 306105 8OCONEE 500 1	17	P1
SBA	104 LEXINGTON 230 133 R_E WATKNVL 230 1	602	90.3	121.0	11 S HALL 500 306105 8OCONEE 500 1	3	P1
SBA	94 BIO 230 105 VANNA 230 1	433	92.9	117.2	11 S HALL 500 306105 8OCONEE 500 1	17	P1
SBA	11 S HALL 500 306105 8OCONEE 500 1	2598	84.2	112.6	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	3	N/A <sup>(1)</sup>
SBA	102 E WATKNSV 1 230 133 R_E WATKNVL 230 1	662	82.0	109.9	11 S HALL 500 306105 8OCONEE 500 1	3	P1
SBA	94 BIO 230 3000 HW ENERGY 230 1	828	88.6	108.4	11 S HALL 500 306105 8OCONEE 500 1	17	P1
SBA	102 E WATKNSV 1 230 492 E WATKINSVL 115 1	332	88.4	110.0	102 E WATKNSV 1 230 122 E WATKNSV 2 230 1	17	P1
SBA	87 R_VANNA 230 99 NEW HAVEN 230 1	433	82.6	106.9	11 S HALL 500 306105 8OCONEE 500 1	17	P1
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2598	92.6	106.7	11 S HALL 500 306105 8OCONEE 500 1	3	N/A <sup>(2)</sup>

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	472 AIRLINE 1 115 2003 AIRLINE 2 115 1	269	87.6	104.9	94 BIO 230 105 VANNA 230 1	17	P1
SBA	93 CENTER PR 230 99 NEW HAVEN 230 1	433	79.8	104.1	11 S HALL 500 306105 8OCONEE 500 1	17	P1
SBA	11 S HALL 500 2035 S HALL 230 1	2016	76.9	102.5	3 NORCROSS 500 11 S HALL 500 1	7	P1

<sup>(1)</sup> The limiting element of this 500 kV tie-line constraint is located within DUKE.

<sup>(2)</sup> The limiting element of this 500 kV tie-line constraint is located within TVA.

**Table 4.2. Pass 1 – Transmission System Impacts With Proposed Enhancement “P1”– Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) with the proposed enhancement “P1” applied to the transmission system. Before additional enhancements were determined for remaining constraints, only enhancements that could significantly change load flow in surrounding areas were identified in the table below.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	91.2	128.4	3 NORCROSS 500 11 S HALL 500 1	18	P5
SBA	93 CENTER PR 230 1311 ATHENA 230 1	596	19.8	125.4	11 S HALL 500 306105 8OCONEE 500 1	17	P2
SBA	4332 ATTALLA5 161 360283 5ALBERTVILLE161 1	193	72.0	123.7	4234 CLAY 6 230 4247 ONEONTA6 230 1	6	P6
SBA	3067 CANDLER 230 3073 BRASELTON 230 1	509	84.4	121.6	3 NORCROSS 500 11 S HALL 500 1	18	P5
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 1	99	63.1	116.9	4331 ATTALLA3 115 4332 ATTALLA5 161 2	6	P6
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 2	111	67.1	113.2	4234 CLAY 6 230 4247 ONEONTA6 230 1	5	P6
SBA	95 WINDER PR 230 2021 CLARKSBORO 230 1	433	69.5	107.2	11 S HALL 500 306105 8OCONEE 500 1	17	P4
SBA	93 CENTER PR 230 2021 CLARKSBORO 230 1	373	46.2	103.5	11 S HALL 500 306105 8OCONEE 500 1	17	P3
SBA	11 S HALL 500 306105 8OCONEE 500 1	2598	84.2	102.5	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	3	N/A <sup>(1)</sup>

<sup>(1)</sup> The limiting element of this 500 kV tie-line constraint is located within DUKE.

**Table 4.3. Pass 2 – Transmission System Impacts With Proposed Enhancement “P1” through “P6” – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) with the proposed enhancement “P1” through “P6” applied to the transmission system. Before additional enhancements were determined for remaining constraints, only enhancements that could significantly change load flow in surrounding areas were identified in the table below.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	4311 GS STEEL 115 5069 NRAINBOW 115 1	112	66.9	124.3	4323 EGADSDEN 115 4324 GADSDEN 115 1	8	P11
SBA	916 CALHOUN RD 115 917 CELANESE 115 1	79	94.8	115.8	181 ROCKY MTN 230 182 HAMMOND 230 1	12	P13
SBA	5069 NRAINBOW 115 5419 KEYSTONE TP 115 1	112	53.0	110.7	4323 EGADSDEN 115 4324 GADSDEN 115 1	8	P11
SBA	4310 RAINBOW 115 5419 KEYSTONE TP 115 1	112	47.3	105.2	4323 EGADSDEN 115 4324 GADSDEN 115 1	8	P11
SBA	4311 GS STEEL 115 4331 ATTALLA3 115 1	138	67.2	102.5	4324 GADSDEN 115 5289 ELMWOOD 115 1	8	P10
SBA	434 LAWRENCEVL 115 1363 LAWRNCEVL 3 115 1	188	97.1	102.5	1937 BAY CREEK 115 2070 LAWVL 4J 115 1	17	P12
SBA	4489 N SELMA6 230 5500 AUTAUG6 230 1	404	78.2	101.5	4374 S.BESS 6 230 4375 S.BESS 8 500 1	16	P9
SBA	4996 POWERSYS 230 5058 FAYETVIL 230 1	502	96.3	101.1	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	14	P8
SBA	165 W BRUNSWICK 230 2592 THALMANN 2 230 1	509	99.6	100.3	2380 THAL LS1 230 2591 THALMANN 1 230 1	9	P7

**Table 4.4. Pass 3 – Transmission System Impacts With All Proposed Enhancements – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with all proposed enhancements applied to the transmission system. The resulting facilities in the table below could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2016 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following facilities could become potential constraints in future years or with different queuing assumptions</b>							
SBA	5058 FAYETVIL 230 5897 CO LINE6 230 1	502	94.7	99.9	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	14	--
SBA	4428 MITCHDAM 115 4733 CRH TAP 115 1	138	84.7	99.8	4489 N SELMA6 230 5500 AUTAUG6 230 1	15	--
SBA	4504 CLANT TP 115 4733 CRH TAP 115 1	138	83.7	98.8	4489 N SELMA6 230 5500 AUTAUG6 230 1	15	--
SBA	1385 TNS MILLS 115 2405 TNS JS 115 1	124	83.5	98.8	2405 TNS JS 115 2406 TNS JN 115 1	3	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	96.3	98.7	4374 S.BESS 6 230 5036 S BESS 3 115 1	16	--
SBA	11 S HALL 500 2035 S HALL 230 1	2016	76.9	98.7	3 NORCROSS 500 11 S HALL 500 1	3	--
SBA	2522 SONAT ELL J 230 3020 TALBOT CO 1 230 1	433	97.7	98.4	13 BONAIRE 500 2345 SMARR 500 1	11	--
SBA	5060 GREENWD 115 5203 AIRPT LN 115 1	216	95.6	98.0	4374 S.BESS 6 230 5036 S BESS 3 115 1	16	--

**Thermal Loadings  
(%)**

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4537 CARTHILL 115 4538 HOLT ST 115 1	135	96.4	97.7	4510 W MONTG3 115 4527 MAX AFB 115 1	2	--
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	96.4	97.0	218 S BAINBRIDGE 230 4601 FARLEY 6 230 1	19	--
SBA	4310 RAINBOW 115 5415 N CEDAR TP 115 1	112	38.9	97.0	4323 EGADSDEN 115 4324 GADSDEN 115 1	8	--
SBA	571 SYLVANIA 115 581 KING MFG + 115 1	63	91.2	96.9	8 VOGTLE 500 9 W MCINTOSH 500 1	14	--
SBA	4189 PRATCTY3 115 4190 PRATCTY6 230 1	398	92.4	96.4	5144 ACIPCO6 230 5145 ACIPCO3 115 1	7	--
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	90.6	96.1	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	7	--
SBA	11 S HALL 500 2035 S HALL 230 1	2016	76.8	95.7	3 NORCROSS 500 11 S HALL 500 1	17	--
SBA	911 ARMUCHEE J 115 914 GALEY&LORD+ 115 1	96	92.4	95.4	907 HAMMOND 115 2403 COOSA J1 115 1	12	--
SBA	914 GALEY&LORD+ 115 915 PINSON 115 1	96	92.4	95.3	907 HAMMOND 115 2403 COOSA J1 115 1	12	--
SBA	581 KING MFG + 115 1483 DOVER TP 115 1	63	89.3	95.0	8 VOGTLE 500 9 W MCINTOSH 500 1	9	--
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	91.2	94.4	3 NORCROSS 500 11 S HALL 500 1	18	--
SBA	1729 W V RICA 115 2486 HICKORY LVL 115 1	124	86.1	94.1	184 BREMEN 230 969 BREMEN 115 1	8	--
SBA	4374 S.BESS 6 230 4950 DUNCANVL 230 1	502	72.7	93.7	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	15	--
SBA	4374 S.BESS 6 230 5036 S BESS 3 115 1	480	89.7	92.9	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	8	--
SBA	8702 DANIEL 230 8705 MSPT EFR 230 1	866	91.0	92.7	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--
SBA	488 ATHENA 115 1311 ATHENA 230 1	357	40.3	92.7	93 CENTER PR 230 1311 ATHENA 230 1	17	--
SBA	131 FIRST AVE A 230 612 FIRST AVE + 115 1	298	92.0	92.4	132 FIRST AVE B 230 3011 LEE ROAD 230 1	10	--
SBA	94 BIO 230 473 BIO 115 2	300	85.2	92.0	94 BIO 230 473 BIO 115 1	3	--
SBA	915 PINSON 115 1754 METAL CON 115 1	135	80.3	91.9	181 ROCKY MTN 230 182 HAMMOND 230 1	12	--
SBA	93 CENTER PR 230 1311 ATHENA 230 1	596	19.8	91.3	11 S HALL 500 306105 8OCONEE 500 1	17	--
SBA	93 CENTER PR 230 2021 CLARKSBORO 230 1	373	46.2	90.3	11 S HALL 500 306105 8OCONEE 500 1	17	--

**Scenario Explanations:**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1) Barry Unit #5 Offline, Summer Peak Case</li> <li>2) Bowen Unit #1 Offline, Shoulder (93% Load Level) Case</li> <li>3) Bowen Unit #4 Offline, Summer Peak Case</li> <li>4) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case</li> <li>5) Franklin Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>6) Gadsden Unit #2 Offline, Shoulder (93% Load Level) Case</li> <li>7) Gaston Unit #5 Offline, Summer Peak Case</li> <li>8) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case</li> <li>9) Hatch Unit #1 Offline, Summer Peak Case</li> <li>10) Hatch Unit #1 Offline, Shoulder (93% Load Level) Case</li> </ul> | <ul style="list-style-type: none"> <li>11) Hatch Unit #2 Offline, Summer Peak Case</li> <li>12) Hammond Unit #4 Offline, Summer Peak Case</li> <li>13) Hammond Unit #4 Offline, Shoulder (93% Load Level) Case</li> <li>14) Harris Unit #1 Offline, Summer Peak Case</li> <li>15) Kemper Co. Unit #Offline, Summer Peak Case</li> <li>16) Kemper Co. Unit #Offline, Shoulder (93% Load Level) Case</li> <li>17) McDonough Unit #5 Offline, Summer Peak Case</li> <li>18) Scherer Unit #1 Offline, Summer Peak Case</li> <li>19) Smith Unit #3 Offline, Summer Peak Case</li> </ul> |
|--|--|



**Table 4.5. Potential Solutions for Identified Constraints – Southern Balancing Authority**

The following projects are potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the current projected enhancements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. These potential solutions only address constraints identified within the Southern Balancing Area that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

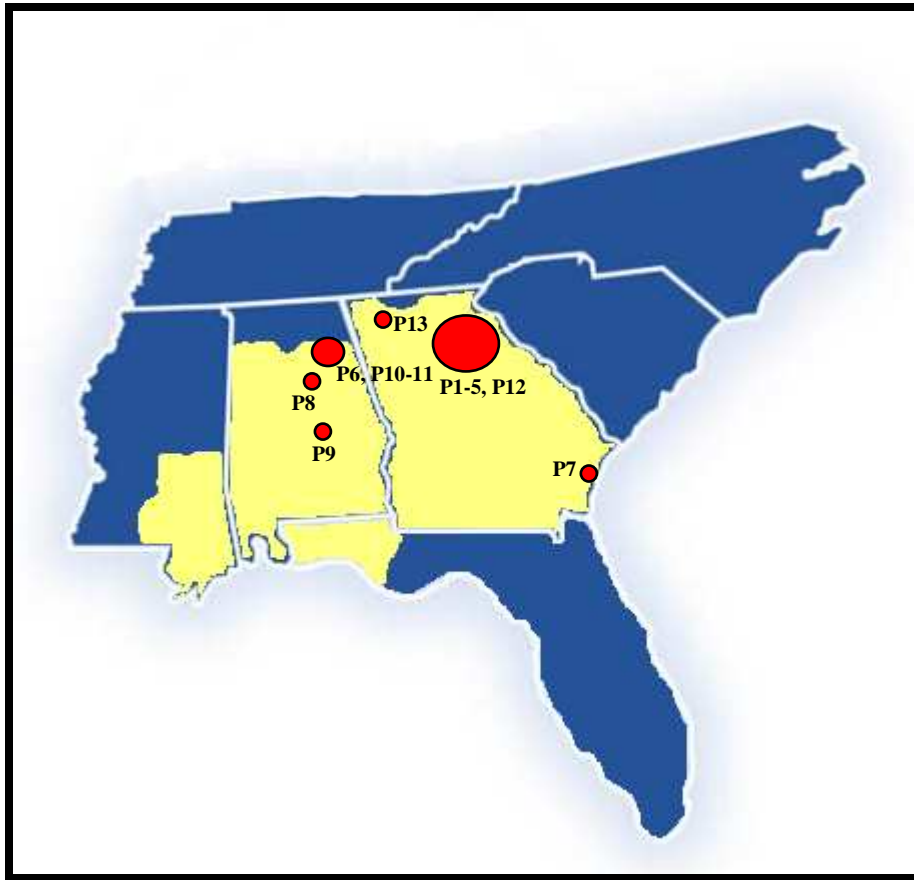
Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	<ul style="list-style-type: none"> <li>Construct approximately 36 miles of bundled 2-1351 ACSR 230 kV transmission line at 100°C from Hartwe II Dam to Athena.</li> </ul>	2016	\$50,128,000 <sup>(1)</sup>
P2	<ul style="list-style-type: none"> <li>Replace the existing 1590 AAC jumpers and main bus at Athena with 2-1590 AAC jumpers/bus.</li> </ul>	2016	\$165,000
P3	<ul style="list-style-type: none"> <li>Replace the existing 750 AAC jumpers at Center with 2-750 AAC jumpers</li> </ul>	2016	\$51,000
P4	<ul style="list-style-type: none"> <li>Reconductor approximately 14.0 miles of 230 kV transmission line with 1351 ACSR at 100 °C from Winder Primary to Clarksboro</li> </ul>	2016	\$8,930,000
P5	<ul style="list-style-type: none"> <li>Reconductor approximately 8.39 miles of 230 kV transmission line with bundled 2-1033 ACSR at 100 °C from South Hall to Spout.</li> <li>Construct approximately 12 miles of 1351 ACSR 230 kV transmission line at 100 °C from Suwanee to Spout.</li> </ul>	2016	\$20,113,000
P6	<ul style="list-style-type: none"> <li>Reconductor approximately 0.05 miles of the 19.6 mile 161 kV transmission line with 1351 ACSR at 100 °C from Attalla to Albertville.</li> <li>Replace the existing two (2) 161/115 kV Autobanks with two (2) 200 MVA Autobanks.</li> </ul>	2016	\$6,600,000 <sup>(1)</sup>
P7	<ul style="list-style-type: none"> <li>Reconductor approximately 6.8 miles of 230 kV transmission line with 1351 ACSR at 100 °C from West Brunswick to Thalmann.</li> </ul>	2016	\$4,337,000
P8	<ul style="list-style-type: none"> <li>Reconductor approximately 7.03 miles of 230 kV transmission line with 1351 ACSR at 100 °C from Power Systems Development Facility to Fayetteville.</li> </ul>	2016	\$4,484,000
P9	<ul style="list-style-type: none"> <li>Upgrade approximately 25.9 miles of 1033 ACSR 230 kV transmission line from 75 °C to 100 °C operation from North Selma to Autaugaville.</li> </ul>	2016	\$6,847,000
P10	<ul style="list-style-type: none"> <li>Reconductor approximately 2.5 miles of 795 ACSR 115 kV transmission line at 100 °C from Attalla to Gulf States Steel.</li> </ul>	2016	\$1,015,000
P11	<ul style="list-style-type: none"> <li>Reconductor approximately 5.44 miles of 115 kV transmission line with 795 ACSR at 100 °C from Gulf States Steel to Rainbow City.</li> </ul>	2016	\$2,208,000
P12	<ul style="list-style-type: none"> <li>Reconductor approximately 2.98 miles of 115 kV transmission line with 1351 ACSR at 100 °C from Lawrenceville to Lawrenceville #3.</li> </ul>	2016	\$1,382,000
P13	<ul style="list-style-type: none"> <li>Upgrade approximately 3.3 miles of 477 ACSR 115 kV transmission line from 50 °C to 75 °C operation from Celanese to Calhoun Road.</li> </ul>	2016	\$765,000

Item	Potential Solution	Estimated Need Date	Estimated Cost
<b>TOTAL (2016\$)</b>			\$107,790,000

<sup>(1)</sup> This transmission solution was proposed to alleviate the loading of a tie-line constraint between the SBA and a non-participating Transmission Owner. Therefore, the cost associated with the transmission solution is only for the portion of solution that is located within the participating Transmission Owners' territory. This solution effectively alleviates the identified constraint(s), however, the impacts to adjacent transmission systems that are external to the participating Transmission Owners were not evaluated. These impacts, as well as coordinated transmission solutions to alleviate any identified constraints, can be determined if this transfer is brought forth to be evaluated in the Southeast Inter-Regional Participation Process ("SIRPP").

PRELIMINARY

**Diagram 4.1. Approximate Location of Potential Solutions**



PRELIMINARY

## Interchange Assumptions

**Table 4.6. Transactions Modeled in Starting Point Cases**

OASIS Ref. #	POR	POD	Amount (MW)
735231	SOCO	Duke	50
735232	SOCO	Duke	25
823644	SOCO	Duke	90
823646	SOCO	Duke	90
787707	SOCO	TVA	73
672440	TVA	SOCO	208
77603	SOCO	PSEC	114
765080	PSEC	SOCO	1092
--	SOCO	PSEC	5
--	MEAG	PSEC	62
--	GTC	PSEC	30
--	SOCO	PSEC	267
--	SEPA	SOCO	681
--	SBA	FRCC	2435 / 3700 <sup>(1)</sup>

<sup>(1)</sup>Southern performed studies with both 2435 MW and 3700 MW of interchange between Florida and the SBA

**Table 4.7. Additional Transactions Modeled in Cases**

OASIS Ref. #	POR	POD	Amount (MW)
869848	EES	SOCO	150
814051	EES	SOCO	50
854479	EES	SOCO	196
705288	EES	Duke	50
705289	EES	Duke	100
869847	Duke	SOCO	50
147617	SC	GTC	296
147616	SCEG	GTC	285
147615	Duke	GTC	465
147613	TVA	GTC	310
72133712	Duke	MEAG	50

**Table 4.8. Capacity Benefit Margin Modeled (CBM)**

Transmission Owner	Interface	Amount (MW)
Southern	Duke	310
Southern	TVA	400
Southern	EES	100
Southern	SCPSA	120
Southern	SCEG	120
GTC	TVA	221
GTC	Duke	104
GTC	SCEG	47
GTC	SCPSA	28

For more information on Southern's CBM, click [here](#).

For more information on GTC's CBM, click [here](#).

**Table 4.9. Transmission Reliability Margins Modeled (TRM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>From Duke</i>	<i>199.46</i>
<i>GTC</i>	<i>From Duke</i>	<i>100.65</i>
<i>MEAG</i>	<i>From Duke</i>	<i>26.26</i>
<i>Dalton</i>	<i>From Duke</i>	<i>3.53</i>
<i>Southern</i>	<i>From Entergy</i>	<i>205.01</i>
<i>Southern</i>	<i>From TVA</i>	<i>233.43</i>
<i>GTC</i>	<i>From TVA</i>	<i>48.57</i>
<i>MEAG</i>	<i>From TVA</i>	<i>12.67</i>
<i>Dalton</i>	<i>From TVA</i>	<i>1.70</i>

For more information on the Southern Balancing Authority's TRM, click [here](#).

PRELIMINARY

***Murray County, GA to Mississippi***

***600 MW***

PRELIMINARY

## Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
Murray Co., GA to MS	600 MW	Murray County, GA.	MS	2016
<b>Load Flow Cases</b>				
2010 Series Version 2C Cases: Summer Peak and Shoulder (93% load level)				
<b>Source Modeled</b>				
The source for this transfer was assumed to be a new generator interconnecting to the 500 kV near Murray County, GA.				
<b>Sink Modeled</b>				
The sink for this transfer was SMEPA and Mississippi Power Company Generation allocated based on their respective load serving ratios in the 2016 load flow cases utilized.				

## Transmission System Impacts

Tables 5.1 through 5.2 below identify thermal constraints attributable to the requested transfer for the contingency and scenario that resulted in the highest facility loading for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

**Table 5.1. Pass 0 – Transmission System Impacts With No Enhancements – Southern Balancing Authority**

The following table identifies significant constraints in the Southern Balancing Authority (“SBA”) without any enhancements to the transmission system. The 600 MW transfer from Murray County, GA to Mississippi results in overloads of several 115 kV and 230 kV facilities.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following constraints have been identified as directly attributable to the above defined transfer.</b>							
SBA	4475 DEMOP TS 115 4476 CEMEX 115 1	138	95.4	100.1	4471 GREENCO6 230 8006 MDN EAST 230 1	4	P1
SBA	4480 LIVINGST 115 4968 MANINGTP 115 1	91	93.8	100.2	4475 DEMOP TS 115 4476 CEMEX 115 1	4	P2
SBA	251 E POINT B2 115 264 E POINT 4 115 1	187	99.9	100.2	240 E POINT B1 115 303 COL PK #3 J 115 1	24	P3
SBA	4475 DEMOP TS 115 4832 NAHEO SS 115 1	112	92.0	100.3	4470 GREENCO3 115 5243 BW-BOGUE 115 1	10	P4
SBA	5203 AIRPT LN 115 5706 BNTBRKTP 115 1	138	99.4	100.3	4374 S.BESS 6 230 5036 S BESS 3 115 1	31	P5
SBA	17012 BREWTON 115 17014 3EXXON_PS 115 1	85	91.1	101.8	4612 BREWT TP 115 4622 N BREW 3 115 1	2	P6
SBA	4996 POWERSYS 230 5058 FAYETVIL 230 1	502	96.6	101.1	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	19	P7
SBA	4400 GASTON 230 4996 POWERSYS 230 1	497	97.8	102.6	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	19	P8

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	4740 GKN W LD 115 5257 HALACLTP 115 1	107	97.8	103.0	4514 S MONTG3 115 4547 PINEDALE 115 1	13	P9

**Table 5.2. Pass 2 – Transmission System Impacts With All Proposed Enhancements – Southern Balancing Authority**

The following table identifies constraints in the Southern Balancing Authority (“SBA”) with all proposed enhancements applied to the transmission system. The resulting facilities in the table below could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2016 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
<b>The following facilities could become potential constraints in future years or with different queuing assumptions</b>							
SBA	165 W BRUNSWICK 230 2592 THALMANN 2 230 1	509	99.8	100.0	2380 THAL LS1 230 2591 THALMANN 1 230 1	16	--
SBA	618 S COLUMBUS 115 1102 FT MITCHELL 115 1	104	98.6	100.0	10 FORTSON 500 24 N TIFTON 500 1	14	--
SBA	4942 E.PRATVL 115 5898 CO LINE3 115 1	216	98.4	99.6	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	14	--
SBA	117 WAYNESBORO 230 562 WAYNESBORO 115 1	280	99.0	99.4	117 WAYNESBORO 230 118 WADLEY PRI 230 1	16	--
SBA	4556 E GRENVL 115 4557 GREENVL3 115 1	138	98.5	99.4	4510 W MONTG3 115 4846 WELLRDTP 115 1	10	--
SBA	4508 MONTG SS 230 5500 AUTAUG6 230 1	1243	98.2	99.2	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	14	--
SBA	5003 GRANTMIL 115 5191 MTSITETP 115 1	138	96.7	98.9	4988 S.JEFF 3 115 4989 S.JEFF 6 230 1	15	--
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	96.9	98.8	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	22	--
SBA	461 JACKSON LK 115 1917 S COV J 115 1	71	96.4	98.6	746 S GRIFFIN 115 750 GA BRD CORR 115 1	16	--
SBA	17014 3EXXON_PS 115 17023 WNDCKJCT 115 1	85	87.8	98.5	4612 BREWT TP 115 4622 N BREW 3 115 1	2	--
SBA	193 WOODSTOCK 230 1211 RAGSDALE RD 230 1	497	95.6	97.7	4 BULL SLUICE 500 19 BIG SHANTY 500 1	25	--
SBA	591 HINESVILLE 115 2140 DORCHESTER 115 1	216	97.1	97.6	9052 LT OGEECHEE 115 9144 RICH HL TAP 115 1	16	--
SBA	232 S COBB DR 115 1265 OAKDALE J 115 1	112	97.3	97.5	977 HICKS RD 115 998 W MARIETTA 115 1	21	--
SBA	363 HOPEWELL 115 1714 BIRMINGHAM 115 1	188	96.9	97.3	956 HOLLY SP 115 1722 NEWLIGHT CH 115 1	11	--
SBA	4488 N SELMA3 115 4489 N SELMA6 230 1	302	96.3	97.3	4488 N SELMA3 115 4489 N SELMA6 230 2	27	--
SBA	4113 FISH RV CAP 115 4664 FAIRHOPE 115 1	135	95.9	97.1	4141 SW FOLEY 115 4641 SILVER 3 115 1	12	--
SBA	7500 ALFORD T 115 7910 BAY CNTY 115 1	67	94.9	97.1	7527 SINAICEM 230 7836 L SMITH 230 1	22	--
SBA	4700 BARRY 6 230 5148 SSAB 230 1	662	92.5	97.0	4638 CHICK 6 230 4700 BARRY 6 230 1	3	--
SBA	4113 FISH RV CAP 115 17996 FISHRVTP 115 1	135	95.8	96.9	4141 SW FOLEY 115 4641 SILVER 3 115 1	12	--
SBA	4443 THURLOW 115 4445 YATESDAM 115 1	117	95.4	96.4	4534 AUB MONT 115 5136 MADPARK3 115 1	13	--
SBA	208 NELSON 230 954 NELSON 115 2	176	94.7	96.1	208 NELSON 230 954 NELSON 115 1	1	--
SBA	8025 MERIDIAN 115 8055 FLINTKTE 115 1	78	91.5	96.1	8065 SWEATT 230 8066 SWEATT 115 1	3	--



AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	596 RICEBORO 115 2142 CAY CRK 115 1	188	95.1	96.0	15 THALMANN 500 2158 MCCALL RD 500 1	17	--
SBA	741 JONESBORO 115 1911 SPIVEY LK 115 1	298	95.8	95.9	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	24	--
SBA	8273 HWY 11 115 8275 HBG CNTY 115 1	135	92.3	95.9	8245 PETAL 115 8251 HATBG NO 115 1	10	--
SBA	434 LAWRENCEVL 115 1363 LAWRNCEVL 3 115 1	188	95.4	95.7	1937 BAY CREEK 115 2070 LAWVL 4J 115 1	7	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	95.1	95.7	4374 S.BESS 6 230 5036 S BESS 3 115 1	31	--
SBA	2522 SONAT ELL J 230 3020 TALBOT CO 1 230 1	433	95.0	95.7	13 BONAIRE 500 2345 SMARR 500 1	17	--
SBA	4640 SILVER 6 230 4641 SILVER 3 115 2	336	93.5	95.3	4640 SILVER 6 230 4641 SILVER 3 115 1	3	--
SBA	4484 CUBA 115 8045 KEWNE TP 115 1	117	84.9	95.3	4471 GREENCO6 230 8006 MDN EAST 230 1	4	--
SBA	4640 SILVER 6 230 4641 SILVER 3 115 1	336	93.4	95.2	4640 SILVER 6 230 4641 SILVER 3 115 2	3	--
SBA	5060 GREENWD 115 5203 AIRPT LN 115 1	216	94.3	94.9	4374 S.BESS 6 230 5036 S BESS 3 115 1	31	--
SBA	4594 WEBB 3 115 4602 ECI WEBB 115 1	216	87.8	94.9	4595 WEBB 6 230 4598 PINCK 6 230 1	2	--
SBA	131 FIRST AVE A 230 612 FIRST AVE + 115 1	298	94.0	94.6	132 FIRST AVE B 230 612 FIRST AVE + 115 1	28	--
SBA	4600 FARLEY 8 500 4601 FARLEY 6 230 1	1195	88.5	94.5	4600 FARLEY 8 500 4601 FARLEY 6 230 2	13	--
SBA	4600 FARLEY 8 500 4601 FARLEY 6 230 2	1195	88.5	94.5	4600 FARLEY 8 500 4601 FARLEY 6 230 1	13	--
SBA	4400 GASTON 230 4996 POWERSYS 230 1	497	89.5	94.3	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	19	--
SBA	1055 BARNEYVILLE 115 1883 ADEL 1J 115 1	142	92.1	94.2	220 PINE GROVE 230 222 N TIFTON 230 1	22	--
SBA	17015 FREEMAN 115 17023 WNDCKJCT 115 1	85	83.3	94.1	4612 BREWT TP 115 4622 N BREW 3 115 1	2	--
SBA	202 CARTERS DAM 230 3502 CARTERSDAM1 13. 1	157	93.8	93.9	Base Case	26	--
SBA	202 CARTERS DAM 230 3503 CARTERSDAM2 13. 1	157	93.8	93.9	Base Case	26	--
SBA	4470 GREENCO3 115 5243 BW-BOGUE 115 1	138	85.9	93.8	4475 DEMOP TS 115 4832 NAHEO SS 115 1	10	--
SBA	977 HICKS RD 115 993 FONTAINE J 115 1	135	93.5	93.7	216 JACK MCD2 115 232 S COBB DR 115 1	21	--
SBA	612 FIRST AVE + 115 616 BLNCHARD IP 115 1	199	93.1	93.4	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	14	--
SBA	742 STOCKBRIDGE 115 1913 STOCKBRIDGE 230 1	344	93.2	93.3	741 JONESBORO 115 1911 SPIVEY LK 115 1	23	--
SBA	224 OFFERMAN 230 1093 OFFERMAN 115 2	155	92.8	93.3	224 OFFERMAN 230 1093 OFFERMAN 115 1	6	--
SBA	8245 PETAL 115 8251 HATBG NO 115 1	155	89.9	93.3	8271 HATBG SW 115 8273 HWY 11 115 1	10	--
SBA	6783 LSMITH 3 18. 7837 SMITH#3CB 230 1	250	92.8	93.0	Base Case	29	--
SBA	938 CARTERVL 4 115 983 CARTERVL 1J 115 1	269	92.6	93.0	194 S ACWORTH 230 943 S ACWORTH 115 1	5	--
SBA	4753 PCLEARTP 115 4956 FAIRHCAP 115 1	91	91.9	93.0	4141 SW FOLEY 115 4641 SILVER 3 115 1	12	--
SBA	4996 POWERSYS 230 5058 FAYETVIL 230 1	502	88.2	92.9	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	19	--
SBA	66 SCOTTDAL 230 357 SCOTTDAL 115 1	280	92.5	92.8	286 GRADY 1&2 115 1215 R_GRADY 115 1	9	--
SBA	132 FIRST AVE B 230 612 FIRST AVE + 115 1	298	92.1	92.8	131 FIRST AVE A 230 612 FIRST AVE + 115 1	28	--
SBA	615 VICTORY DR 115 616 BLNCHARD IP 115 1	199	92.4	92.7	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	14	--
SBA	160 HATCH + 230 164 UNION SCHL 230 1	509	92.0	92.6	15 THALMANN 500 2380 THAL LS1 230 1	14	--
SBA	1093 OFFERMAN 115 1106 BLKSHEAR J 115 1	124	91.6	92.3	223 DOUGLAS 230 1810 WILSONVILLE 230 1	22	--

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBA	621 YATES 115 3643 YATES 3 13.1	125	92.0	92.1	Base Case	30	--
SBA	935 CARTERSVL 115 938 CARTERVL 4 115 1	298	91.7	92.1	194 S ACWORTH 230 943 S ACWORTH 115 1	5	--
SBA	194 S ACWORTH 230 943 S ACWORTH 115 1	400	91.6	92.1	935 CARTERSVL 115 938 CARTERVL 4 115 1	5	--
SBA	2140 DORCHESTER 115 2152 DORCHESTER 230 1	373	91.3	92.1	15 THALMANN 500 2158 MCCALL RD 500 1	17	--
SBA	144 COTTON 230 1882 N CAMILLA 230 1	509	90.2	92.0	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	22	--
SBA	17018 BELLVIL3 115 17225 CSTLBRYJ 115 1	142	89.7	91.9	4629 EMCSTOCK 115 4701 BARRY 3 115 1	12	--
SBA	224 OFFERMAN 230 1093 OFFERMAN 115 1	160	91.2	91.7	224 OFFERMAN 230 1093 OFFERMAN 115 2	6	--
SBA	4508 MONTG SS 230 5897 CO LINE6 230 1	502	88.9	91.5	4512 SNOWDN8 500 5178 AUTAUSS8 500 1	14	--
SBA	5257 HALACLTP 115 17995 HARDWYTP 115 1	107	86.1	91.3	4514 S MONTG3 115 4547 PINEDALE 115 1	13	--
SBA	5058 FAYETVIL 230 5897 CO LINE6 230 1	502	86.5	91.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	20	--
SBA	4599 DOTHAN 115 4602 ECI WEBB 115 1	216	84.1	91.2	4595 WEBB 6 230 4598 PINCK 6 230 1	2	--
SBA	228 LOCKWIND J 115 1707 MAR 12 J 115 1	155	91.0	91.1	216 JACK MCD2 115 231 KING SP RD 115 1	11	--
SBA	8560 WGNS 5AV 115 8562 COASTPAP 115 1	107	90.8	91.1	8530 LANDON 115 8532 HWY 53 115 1	8	--
SBA	4554 LAMAR RD 115 4737 HOPEHULL 115 1	138	83.6	91.1	4557 GREENVL3 115 4558 GREENVL6 230 1	10	--
SBA	4574 MCINOLIN 115 5160 TATELYLE 115 1	216	84.0	91.0	4586 W MCTSH6 230 5313 CALVRTSS 230 1	10	--
SBA	5125 ELLICOTT 230 5175 GEORGETN 230 1	485	83.6	91.0	4638 CHICK 6 230 4700 BARRY 6 230 1	3	--
SBA	4361 MCADORTP 115 5706 BNTBRKTP 115 1	138	90.0	90.9	4374 S.BESS 6 230 5036 S BESS 3 115 1	31	--
SBA	1049 N TIFTON 115 1858 TIFTON J 115 1	180	88.7	90.7	222 N TIFTON 230 1875 E MOULTRIE 230 1	22	--
SBA	4576 LINDENTS 115 5243 BW-BOGUE 115 1	138	82.8	90.7	4475 DEMOP TS 115 4832 NAHEO SS 115 1	10	--
SBA	911 ARMUCHEE J 115 914 GALEY&LORD+ 115 1	96	90.1	90.6	907 HAMMOND 115 2403 COOSA J1 115 1	18	--
SBA	914 GALEY&LORD+ 115 915 PINSON 115 1	96	90.1	90.6	907 HAMMOND 115 2403 COOSA J1 115 1	18	--
SBA	17012 BREWTON 115 17225 CSTLBRYJ 115 1	142	88.3	90.5	4629 EMCSTOCK 115 4701 BARRY 3 115 1	12	--
SBA	5160 TATELYLE 115 5327 FL GAS TAP 115 1	216	83.5	90.5	4586 W MCTSH6 230 5313 CALVRTSS 230 1	10	--
SBA	208 NELSON 230 954 NELSON 115 1	180	89.0	90.4	208 NELSON 230 954 NELSON 115 2	1	--
SBA	164 UNION SCHL 230 224 OFFERMAN 230 1	509	89.8	90.4	15 THALMANN 500 2380 THAL LS1 230 1	22	--
SBA	2140 DORCHESTER 115 2142 CAY CRK 115 1	216	89.6	90.4	15 THALMANN 500 2158 MCCALL RD 500 1	17	--
SBA	130 GOAT ROCK 230 609 GOAT ROCK 115 1	312	90.0	90.1	131 FIRST AVE A 230 612 FIRST AVE + 115 1	28	--

**Scenario Explanations:**

- 1) Scherer Unit #1 Offline, Summer Peak Case
- 2) Crist Unit #7 Offline, Summer Peak Case
- 3) Daniel CC Unit #2 Offline, Summer Peak Case
- 4) Kemper Unit #1 Offline, Summer Peak Case
- 5) McDonough Unit #5 Offline, Summer Peak Case

- 6) Smith Unit #3 Offline, Summer Peak Case
- 7) Vogtle Unit #1 Offline, Summer Peak Case
- 8) Watson Unit #5 Offline, Summer Peak Case
- 9) Athens Area CTs Offline, Summer Peak Case
- 10) Barry Unit #5 Offline, Summer Peak Case

- 11) Bowen Unit #4 Offline, Summer Peak Case
- 12) Crist Unit #7 Offline, Summer Peak Case
- 13) Farley Unit #1 Offline, Summer Peak Case
- 14) Farley Unit #2 Offline, Summer Peak Case
- 15) Gorgas Unit #10 Offline, Summer Peak Case
- 16) Hatch Unit #1 Offline, Summer Peak Case
- 17) Hatch Unit #2 Offline, Summer Peak Case
- 18) Hammond Unit #4 Offline, Summer Peak Case
- 19) Harris Unit #1 Offline, Summer Peak Case
- 20) Harris Unit #2 Offline, Summer Peak Case

- 21) McDonough Unit #5 Offline, Summer Peak Case
- 22) Smith Unit #3 Offline, Summer Peak Case
- 23) Vogtle Unit #1 Offline, Summer Peak Case
- 24) Vogtle Unit #2 Offline, Summer Peak Case
- 25) Yates Unit #7 Offline, Summer Peak Case
- 26) Barry Unit #5 Offline, Shoulder (93% Load Level) Case
- 27) Farley Unit #1 Offline, Shoulder (93% Load Level) Case
- 28) Farley Unit #2 Offline, Shoulder (93% Load Level) Case
- 29) Franklin Unit #2 Offline, Shoulder (93% Load Level) Case
- 30) Gorgas Unit #10 Offline, Shoulder (93% Load Level) Case

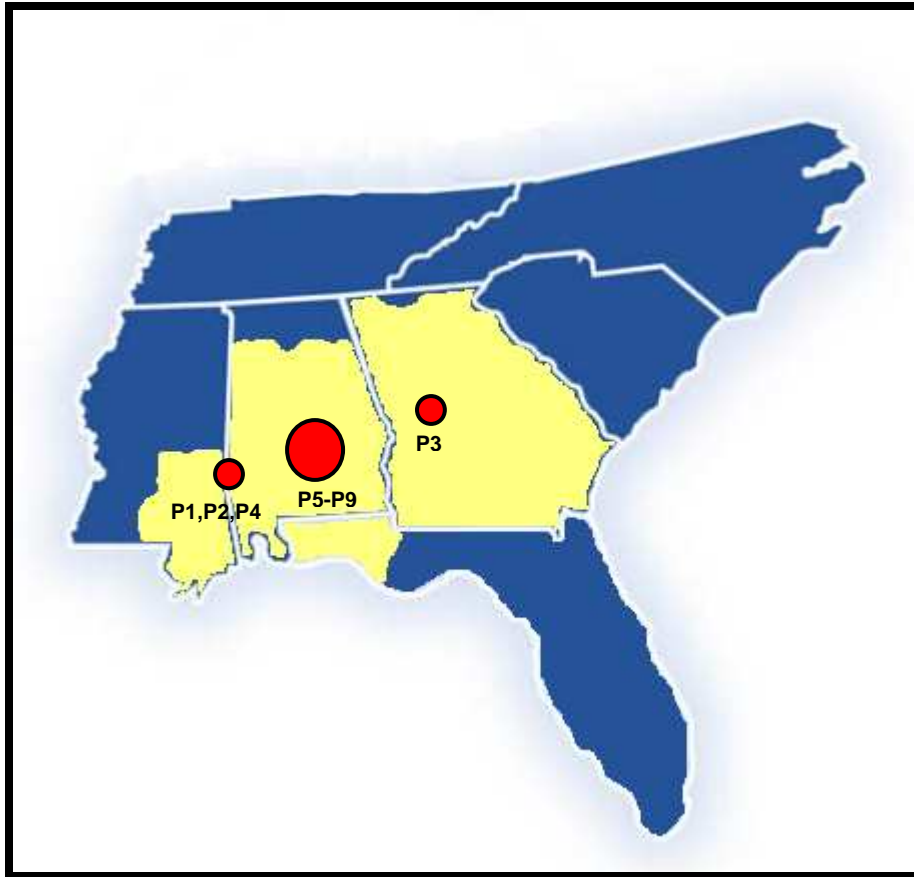
PRELIMINARY

**Table 5.3. Potential Solutions for Identified Constraints – Southern Balancing Authority**

The following projects are potential solutions to address the identified constraints and are based on the assumptions used in this study. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the current projected enhancements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission system expansion plans could also impact the results of this study. These potential solutions only address constraints identified within the Southern Balancing Area that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	<ul style="list-style-type: none"> <li>Reconductor approximately 0.7 miles of 397 ACSR 115 kV transmission line with 795 26/7 ACSR at 100 °C from Demopolis TS to CEMEX.</li> </ul>	2016	\$304,000
P2	<ul style="list-style-type: none"> <li>Reconductor approximately 5.1 miles of 4/0 ACSR 115 kV transmission line with 795 26/7 ACSR at 100 °C from Livingston to Mannington.</li> </ul>	2016	\$2,366,000
P3	<ul style="list-style-type: none"> <li>Reconductor approximately 2.7 miles with 1033 ACSR 115 kV transmission line at 100 °C from Willingham Drive to East Point.</li> </ul>	2016	\$2,400,000
P4	<ul style="list-style-type: none"> <li>Upgrade approximately 28.3 miles of 397.5 26/7 ACSR at 75°C 115 kV transmission line to 100 °C operation from Demopolis TS to Naheola SS.</li> </ul>	2016	\$6,564,000
P5	<ul style="list-style-type: none"> <li>Reconductor approximately 0.34 miles of 397 ACSR 115 kV transmission line with 795 26/7 ACSR 100 °C Airport Lane to Bentbrook Tap.</li> </ul>	2016	\$148,000
P6	<ul style="list-style-type: none"> <li>Construct a new 795 ACSS at 160 °C 115 kV transmission line from the North Brewton T.S. – North Brewton D.S. Also a new Normally Open point would be created between Brewton tap and Brewton T.S.</li> </ul>	2016	\$6,409,000
P7	<ul style="list-style-type: none"> <li>Reconductor approximately 8 miles of 795 ACSR 230 kV transmission line with 1033 54/7 ACSS at 160 °C from Power Systems Development Facility to Fayetteville.</li> </ul>	2016	\$9,278,000
P8	<ul style="list-style-type: none"> <li>Replace the existing 230 kV line traps on the Gaston to Power Systems Development Facility 230 kV transmission line with 2000 A line traps.</li> </ul>	2016	\$300,000
P9	<ul style="list-style-type: none"> <li>Reconductor approximately 3.1 miles of 266.8 ACSR 115 kV transmission line with 795 26/7 ACSR at 100 °C from GKN Westland Aerospace to Halla Climate Control Tap.</li> </ul>	2016	\$1,100,000
<b>TOTAL (2016\$)</b>			<b>\$ 28,869,000</b>

**Diagram 5.1. Approximate Location of Potential Solutions**



## Interchange Assumptions

**Table 5.4. Transactions Modeled in Starting Point Cases**

OASIS Ref. #	POR	POD	Amount (MW)
735231	SOCO	Duke	50
735232	SOCO	Duke	25
823644	SOCO	Duke	90
823646	SOCO	Duke	90
787707	SOCO	TVA	73
672440	TVA	SOCO	208
77603	SOCO	PSEC	114
765080	PSEC	SOCO	1092
--	SOCO	PSEC	5
--	MEAG	PSEC	62
--	GTC	PSEC	30
--	SOCO	PSEC	267
--	SEPA	SOCO	681
--	SBA	FRCC	2435 / 3700 <sup>(1)</sup>

<sup>(1)</sup>Southern performed studies with both 2435 MW and 3700 MW of interchange between Florida and the SBA

**Table 5.5. Additional Transactions Modeled in Cases**

OASIS Ref. #	POR	POD	Amount (MW)
869848	EES	SOCO	150
814051	EES	SOCO	50
854479	EES	SOCO	196
705288	EES	Duke	50
705289	EES	Duke	100
869847	Duke	SOCO	50
147617	SC	GTC	296
147616	SCEG	GTC	285
147615	Duke	GTC	465
147613	TVA	GTC	310
72133712	Duke	MEAG	50

**Table 5.6. Capacity Benefit Margin Modeled (CBM)**

Transmission Owner	Interface	Amount (MW)
Southern	Duke	310
Southern	TVA	400
Southern	EES	100
Southern	SCPSA	120
Southern	SCEG	120
GTC	TVA	221
GTC	Duke	104
GTC	SCEG	47
GTC	SCPSA	28

For more information on Southern's CBM, click [here](#).

For more information on GTC's CBM, click [here](#).

**Table 5.7. Transmission Reliability Margins Modeled (TRM)**

<b>Transmission Owner</b>	<b>Interface</b>	<b>Amount (MW)</b>
<i>Southern</i>	<i>From Duke</i>	<i>199.46</i>
<i>GTC</i>	<i>From Duke</i>	<i>100.65</i>
<i>MEAG</i>	<i>From Duke</i>	<i>26.26</i>
<i>Dalton</i>	<i>From Duke</i>	<i>3.53</i>
<i>Southern</i>	<i>From Entergy</i>	<i>205.01</i>
<i>Southern</i>	<i>From TVA</i>	<i>233.43</i>
<i>GTC</i>	<i>From TVA</i>	<i>48.57</i>
<i>MEAG</i>	<i>From TVA</i>	<i>12.67</i>
<i>Dalton</i>	<i>From TVA</i>	<i>1.70</i>

For more information on the Southern Balancing Authority's TRM, click [here](#).

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