SERTP 2012 Economic Study Results
-Preliminary-
September 2012

Southeastern Regional Transmission Planning Process

2012 Economic Planning Studies Preliminary Results

September 2012

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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 load levels evaluated were Summer Peak and Shoulder (93% of Summer Peak load).
- Each request was evaluated for the particular year identified below, as selected by the RPSG
- The following Economic Planning Scenarios were assessed according to the reliability criteria of each of the participating Transmission Owners:
  - TVA Border to Southern – 500 MW
    - Year: 2017
    - Type of Transfer: Load to Generation.
    - Source: Uniform load scale of TVA area.
    - Sink: Southern Generation.
  - PJM West to Southern Balancing Authority ("SBA") – 3500 MW
    - Year: 2017
    - Type of Transfer: Generation to Generation.
    - Source: New generator interconnecting to the Sullivan 765 kV substation in AEP (Bus #: 243210 – Indiana).

    - Sink: Generation within the SBA.
- SBA to TVA Border – 1000 MW
    - Year: 2013
    - Type of Transfer: Generation to Load.
    - Source: Generation within the SBA.
    - Sink: Uniform load scale of TVA area.

- SCPSA Border to EES Border – 500 MW
    - Year: 2013
    - Type of Transfer: Load to Load.
    - Source: Uniform load scale of SCPSA area.
    - Sink: Uniform load scale of EES area.

- SCPSA Border to GTC – 200 MW
    - Year: 2013
    - Type of Transfer: Load to Generation.
    - Source: Uniform load scale of SCPSA area.
    - Sink: GTC Generation.

- PSS/E and/or MUST were used for the study.
- Generation, interchange, and other assumptions were 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
- Individual company criteria (voltage, thermal, stability, and short circuit)

Case Development

- For all evaluations, the "2012 Series, Version 2A", cases were used as a starting point for the analysis of the Economic Planning Scenarios.

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' footprint as a result of the Economic Planning Scenarios. 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 Planning Scenarios 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.
- 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 Economic Planning Scenarios
- For each Economic Planning Scenario, 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 in-service dates for the selected solution alternatives

TVA Border to Southern

500 MW

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Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
TVA Border to Southern	500 MW	TVA Border	Southern	2017
Load Flow Cases				
2012 Series Version 2A Cases: Summer Peak and Shoulder (93% load level)				
Source Modeled				
The source for this transfer was a uniform load reduction in TVA.				

Transmission System Impacts

Table 1.1 below identifies 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.

Southern Balancing Authority

Table 1.1. Pass 0 – Transmission System Impacts With No Enhancements – *Southern Balancing Authority*
The following table identifies constraints in the Southern Balancing Authority ("SBA") without any enhancements to the transmission system.

			Thermal Loadings (%)				
AREA	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
The following constraints have been identified as directly attributable to the above defined transfer.							
SBA	208 NELSON 230 954 NELSON 115 2	176	99.5	100.5	208 NELSON 230 954 NELSON 115 1	1	P1

Scenario Explanations:
1) Vogtle Unit #2 Offline, Summer Peak Case

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Table 1.2. Pass 1 – Transmission System Impacts With Proposed Enhancements – *Southern Balancing Authority*

The following table identifies constraints in the Southern Balancing Authority ("SBA") with the proposed enhancements "P1" 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 2017 study year.

			Thermal Loadings (%)				
AREA	Limiting Element	Rating (MVA)	Without Request	With Request	Contingency	Scenario	Project
The following facilities could become potential constraints in future years or with different queuing assumptions							
SBA	618 S COLUMBUS 115 4462 SEALE RD 115 1	151	89.2	99.9	618 S COLUMBUS 115 1503 FT BENN J 115 1	7	--
SBA	384 DAW FOREST 115 2043 BURNT STAND 115 1	124	97.7	99.5	11 S HALL 500 2035 S HALL 230 1	26	--
SBA	461 JACKSON LK 115 752 LLOYD SHL 115 1	72	91.9	99.3	746 S GRIFFIN 115 750 GA BRD CORR 115 1	21	--
SBA	4240 LEEDSTS3 115 4762 LEHGH TP 115 1	212	85.9	99.2	4233 CLAY 3 115 4246 SPRINGVL 115 1	24	--
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	92.3	97.8	3 NORCROSS 500 11 S HALL 500 1	6	--
SBA	9021 MCINTOSH 115 9121 GP RINCON 115 1	181	96.6	97.8	9001 MCINTOSH 230 9176 CEMTRY HILL 230 1	13	--
SBA	4128 JWALTTP 161 4978 BERRY 161 1	193	92.0	97.5	4157 MILLER8 500 5307 WVERN SS 500 1	22	--
SBA	4549 MERRY TP 115 17987 CECIL TP 115 1	112	96.9	97.3	4512 SNOWDN8 500 4600 FARLEY 8 500 1	3	--
SBA	4638 CHICK 6 230 4642 BIG CK 6 230 1	807	96.5	97.1	4638 CHICK 6 230 4700 BARRY 6 230 1	2	--
SBA	4552 UNION SP 115 17987 CECIL TP 115 1	112	96.6	97.0	4512 SNOWDN8 500 4600 FARLEY 8 500 1	20	--
SBA	50 BULL SLUICE 230 52 N SPRINGS 230 1	539	95.7	96.9	3 NORCROSS 500 4 BULL SLUICE 500 1	17	--
SBA	37 NORTHWEST 1 230 275 NORTHWEST 115 1	280	96.7	96.8	36 JACK MCD 230 41 PEACHTREE 230 1	16	--
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	92.4	96.7	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	23	--
SBA	4621 ENTER TP 115 4719 WESTGATE 115 1	86	95.0	96.6	4598 PINCK 6 230 5351 S.ENTER TS6 230 1	2	--
SBA	4621 ENTER TP 115 4787 SENTPRSE 115 1	86	95.0	96.6	4598 PINCK 6 230 5351 S.ENTER TS6 230 1	20	--
SBA	4660 SPAN FT 115 4661 BELFORST 115 1	212	96.5	96.6	4638 CHICK 6 230 5341 EST SHR TAP 230 1	20	--
SBA	719 S COWETA 115 1934 SHARPSBG TP 115 1	155	95.3	96.5	123 YATES + 230 2730 DYER ROAD 230 1	8	--
SBA	5180 N.OPEL6 230 5310 HILLABEE 230 1	602	92.9	96.4	4965 DANWAYSS 230 5310 HILLABEE 230 1	21	--
SBA	472 AIRLINE 1 115 473 BIO 115 1	249	94.9	96.3	94 BIO 230 105 VANNA 230 1	13	--
SBA	181 ROCKY MTN 230 1155 N COOSA 230 1	807	91.8	96.0	181 ROCKY MTN 230 1155 N COOSA 230 2	9	--
SBA	104 LEXINGTON 230 339100 6RUSSEL 230 1	596	93.2	96.0	11 S HALL 500 306008 8OCONEE 500 1	12	--
SBA	94 BIO 230 105 VANNA 230 1	433	93.1	95.7	11 S HALL 500 306008 8OCONEE 500 1	12	--
SBA	8114 FORINDT2 115 336898 3MORTON 115 1	155	93.9	95.7	360654 8CHOCTAW MS 500 360688 8CLAY 500 1	27	--
SBA	8270 HATBG SW 230 303222 6ANGIE 230 1	420	93.8	95.6	8425 LOGTWN W 230 303223 6FRNBRA 230 1	10	--
SBA	4131 OAKMANTP 161 4978 BERRY 161 1	193	89.9	95.3	4157 MILLER8 500 5307 WVERN SS 500 1	22	--
SBA	888 DALTON 115 893 DALTON 9 115 1	155	90.1	95.2	1122 DALTON 6 230 2498 LOOPERS ITS 230 1	9	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	86 CUMMING 230 88 MCGRAU FORD 230 1	596	93.9	95.2	11 S HALL 500 2035 S HALL 230 1	16	--
SBA	4131 OAKMANTP 161 4135 GORGAS 161 1	193	89.5	94.9	4157 MILLER8 500 5307 WVERN SS 500 1	1	--
SBA	181 ROCKY MTN 230 1155 N COOSA 230 2	807	90.8	94.9	181 ROCKY MTN 230 1155 N COOSA 230 1	9	--
SBA	363 HOPEWELL 115 396 BRANDYWINE 115 1	207	94.7	94.9	1302 SUWANEE 115 1321 OLD ATLANTA 115 1	22	--
SBA	4692 HALLMILL 115 4693 NAVCO TP 115 1	135	94.1	94.7	4638 CHICK 6 230 4642 BIG CK 6 230 1	1	--
SBA	4693 NAVCO TP 115 4694 NAVCO 115 1	135	94.1	94.7	4638 CHICK 6 230 4642 BIG CK 6 230 1	2	--
SBA	1302 SUWANEE 115 1321 OLD ATLANTA 115 1	207	94.5	94.7	363 HOPEWELL 115 396 BRANDYWINE 115 1	2	--
SBA	33 ADAMSVILLE 230 36 JACK MCD 230 1	485	94.0	94.6	36 JACK MCD 230 41 PEACHTREE 230 1	19	--
SBA	262 WILNGHAM DR 115 264 E POINT 4 115 1	187	94.2	94.6	252 DAVIS ST 115 2216 UNIV CTR 115 1	16	--
SBA	624 RAGLAND ST 115 625 LAGRANGE PR 115 1	155	94.5	94.6	123 YATES + 230 2730 DYER ROAD 230 1	17	--
SBA	748 SPALDING 115 876 BROOKS 115 1	155	94.4	94.5	171 OHARA 230 1629 WOOLSEY 230 1	16	--
SBA	4400 GASTON 230 5220 BYNUM6 230 1	502	75.6	94.3	4234 CLAY 6 230 4247 ONEONTA6 230 1	24	--
SBA	240 E POINT B1 115 303 COL PK #3 J 115 1	138	93.9	94.2	251 E POINT B2 115 264 E POINT 4 115 1	3	--
SBA	1049 N TIFTON 115 1858 TIFTON J 115 1	188	94.1	94.2	222 N TIFTON 230 1875 E MOULTRIE 230 1	15	--
SBA	160 HATCH + 230 164 UNION SCHL 230 1	509	94.1	94.2	15 THALMANN 500 2380 THAL LS1 230 1	16	--
SBA	623 LAGRANGE 3 115 624 RAGLAND ST 115 1	155	94.1	94.2	123 YATES + 230 2730 DYER ROAD 230 1	17	--
SBA	7320 NICEVLE 115 17212 BLUEWTER 115 1	216	93.4	94.1	7310 SHOAL RV 230 7915 SHAKY JO 230 1	25	--
SBA	4965 DANWAYSS 230 5310 HILLABEE 230 1	641	90.5	93.9	5180 N.OPEL6 230 5310 HILLABEE 230 1	21	--
SBA	469 AVALON 115 1379 GUMLOG J 115 1	188	92.0	93.8	94 BIO 230 105 VANNA 230 1	13	--
SBA	52 N SPRINGS 230 1229 NORTHPARK 230 1	539	92.5	93.7	3 NORCROSS 500 4 BULL SLUICE 500 1	16	--
SBA	170 S GRIFFIN 230 746 S GRIFFIN 115 1	298	92.3	93.6	736 OHARA 115 739 BONANZA 115 1	4	--
SBA	935 CARTERSVL 115 938 CARTERVL 4 115 1	298	93.5	93.6	194 S ACWORTH 230 943 S ACWORTH 115 1	12	--
SBA	383 DAHLONEGA 115 2043 BURNT STAND 115 1	124	91.6	93.4	11 S HALL 500 2035 S HALL 230 1	26	--
SBA	471 N LAVONIA 115 2405 TNS JS 115 1	216	91.6	93.2	94 BIO 230 105 VANNA 230 1	5	--
SBA	4153 GORGAS#1 115 5023 DRUMTAPB 115 1	138	93.1	93.2	4217 TUSC TS 115 5903 SOKLPKTP 115 1	13	--
SBA	4359 VANCE 115 4360 BLOCTON 115 1	138	92.6	93.0	4156 MILLER6 230 4157 MILLER8 500 1	22	--
SBA	961 MAR ROSW RD 115 1704 MARIETTA 4 115 1	188	92.5	92.8	48 PARKAIRE 230 319 PARKAIRE 115 1	17	--
SBA	4638 CHICK 6 230 5341 EST SHR TAP 230 1	807	92.0	92.5	4638 CHICK 6 230 4640 SILVER 6 230 2	2	--
SBA	209 HOPEWELL 230 1931 R_HOPEWL 230 1	497	90.0	92.4	20 BOWEN 500 21 MOSTELLER 500 1	4	--
SBA	143 MITCHELL 230 681 MITCHELL 115 1	400	90.7	92.4	678 ALBANY 115 2502 ALBANY 230 1	13	--
SBA	4424 WALSBORO 115 4425 JORDN DM 115 1	140	88.7	92.3	2500 RACCOON CK 500 4600 FARLEY 8 500 1	21	--
SBA	164 UNION SCHL 230 224 OFFERMAN 230 1	509	92.0	92.2	15 THALMANN 500 2380 THAL LS1 230 1	3	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	150 BONAIRE 230 804 BONAIRE 115 1	400	90.0	92.1	150 BONAIRE 230 804 BONAIRE 115 2	11	--
SBA	150 BONAIRE 230 804 BONAIRE 115 2	400	90.0	92.1	150 BONAIRE 230 804 BONAIRE 115 1	11	--
SBA	1044 DOUGLAS 115 1074 OAK PARK 115 1	100	91.7	91.9	223 DOUGLAS 230 1810 WILSONVILLE 230 1	16	--
SBA	335 DAWSON CROS 230 2032 DAWSON CROS 115 1	344	76.4	91.8	208 NELSON 230 954 NELSON 115 1	13	--
SBA	4297 MOODY SS 115 4762 LEHGH TP 115 1	212	78.6	91.8	4233 CLAY 3 115 4246 SPRINGVL 115 1	16	--
SBA	3067 CANDLER 230 3073 BRASELTON 230 1	509	86.2	91.8	3 NORCROSS 500 11 S HALL 500 1	24	--
SBA	104 LEXINGTON 230 133 R_E WATKNVL 230 1	602	89.0	91.7	11 S HALL 500 306008 8OCONEE 500 1	2	--
SBA	4640 SILVER 6 230 5341 EST SHR TAP 230 1	807	91.1	91.7	4638 CHICK 6 230 4640 SILVER 6 230 2	13	--
SBA	200 E DALTON 230 1792 E DALTON 1 115 1	280	90.3	91.5	200 E DALTON 230 892 E DALTON 2 115 1	9	--
SBA	73 KLONDIKE 230 1210 SMYRNA CH 230 1	497	90.6	91.5	13 BONAIRE 500 18 SCHERER + 500 1	14	--
SBA	387 GAINESVL #1 115 413 GV1-GV2J 115 1	182	90.9	91.5	2020 E HALL 230 2035 S HALL 230 1	16	--
SBA	564 WADLEY PRI 115 1485 WADLEY 115 1	135	91.4	91.5	8 VOGTLE 500 9 W MCINTOSH 500 1	26	--
SBA	396 BRANDYWINE 115 1781 HWY 141 115 1	188	91.1	91.3	1302 SUWANEE 115 1321 OLD ATLANTA 115 1	1	--
SBA	13 BONAIRE 500 150 BONAIRE 230 1	1344	81.6	91.2	13 BONAIRE 500 14 HATCH 500 1	4	--
SBA	1783 RIDGE RD 115 1956 BLANKETS CK 115 1	188	84.9	91.2	20 BOWEN 500 21 MOSTELLER 500 1	12	--
SBA	960 MARIETTA 5 115 1751 SANDY PLAIN 115 1	187	91.0	91.2	957 WOODSTOCK 115 967 MTN PARK 115 1	16	--
SBA	4311 GS STEEL 115 4334 MORG XRD 115 1	112	77.6	91.1	4234 CLAY 6 230 4247 ONEONTA6 230 1	16	--
SBA	1676 SLEEPY HOL 115 2319 PCH BLOSSOM 115 1	124	89.2	91.1	804 BONAIRE 115 806 96 HWY 115 1	18	--
SBA	742 STOCKBRIDGE 115 1643 FLIPPEN 115 1	269	90.8	91.1	73 KLONDIKE 230 1972 S KLONDIKE 230 1	24	--
SBA	4189 PRATCTY3 115 4190 PRATCTY6 230 1	398	87.9	91.0	5144 ACIPCO6 230 5145 ACIPCO3 115 1	2	--
SBA	4638 CHICK 6 230 4640 SILVER 6 230 2	807	90.5	91.0	4638 CHICK 6 230 5341 EST SHR TAP 230 1	23	--
SBA	4425 JORDN DM 115 4954 RUSEL TP 115 1	138	87.1	90.7	2500 RACCOON CK 500 4600 FARLEY 8 500 1	21	--
SBA	123 YATES + 230 2730 DYER ROAD 230 1	693	88.2	90.6	13 BONAIRE 500 18 SCHERER + 500 1	3	--
SBA	17048 CLAYHAT3 115 17300 DALE CO 115 1	157	89.6	90.6	5351 S.ENTER TS6 230 17149 OPP 6 230 1	4	--
SBA	17407 GRDNVL J 115 17437 TRICKEM_JCT 115 1	134	90.4	90.6	4512 SNOWDN8 500 4600 FARLEY 8 500 1	20	--
SBA	4233 CLAY 3 115 4234 CLAY 6 230 1	398	84.9	90.5	4234 CLAY 6 230 5039 ARGO DS 230 1	23	--
SBA	36 JACK MCD 230 41 PEACHTREE 230 1	1192	90.1	90.4	4 BULL SLUICE 500 19 BIG SHANTY 500 1	16	--
SBA	1155 N COOSA 230 1156 N COOSA 115 1	400	86.4	90.2	182 HAMMOND + 230 1155 N COOSA 230 1	9	--
SBA	88 MCGRAU FORD 230 1931 R_HOPEWL 230 1	509	87.9	90.2	20 BOWEN 500 21 MOSTELLER 500 1	13	--

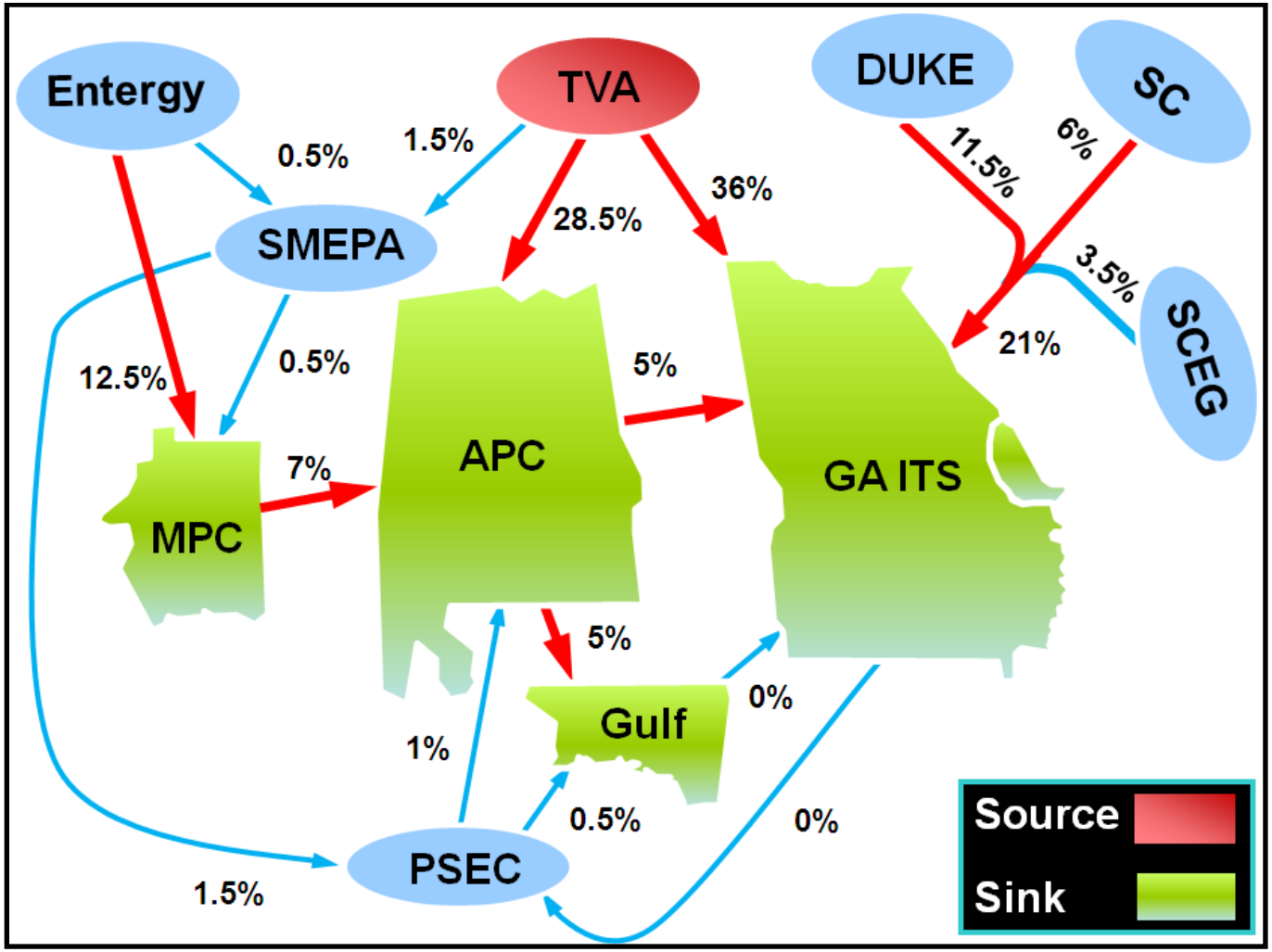
Scenario Explanations

1) Bowen Unit #4 Offline, Summer Peak Case

2) Crist Offline, Summer Peak Case

3) Farley Unit #4 Offline, Summer Peak Case
4) Franklin Unit #2 Offline, Summer Peak Case
5) Gorgas Offline, Summer Peak Case
6) Hatch Unit #1 Offline, Summer Peak Case
7) Hatch Unit #2 Offline, Summer Peak Case
8) Hillabee CC Offline, Summer Peak Case
9) Hammond Offline, Summer Peak Case
10) Kemper IGCC Unit Offline, Summer Peak Case
11) Loopers Farm CC Offline, Summer Peak Case
12) McDonough Unit #5 Offline, Summer Peak Case
13) McDonough Unit #6 Offline, Summer Peak Case
14) McIntosh CC #10 Offline, Summer Peak Case
15) Smith Unit #3 Offline, Summer Peak Case
16) Vogtle Unit #1 Offline, Summer Peak Case
17) Vogtle Unit #2 Offline, Summer Peak Case
18) Wansley Unit #7 Offline, Summer Peak Case
19) Wansley Unit #9 Offline, Summer Peak Case
20) Farley Unit #1 Offline, Shoulder (93% Load Level) Case
21) Franklin Unit #2 Offline, Shoulder (93% Load Level) Case
22) Gorgas Offline, Shoulder (93% Load Level) Case
23) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case
24) Hammond Offline, Shoulder (93% Load Level) Case
25) Smith Unit #3, Shoulder (93% Load Level) Case
26) Hartwell Unit #1 Offline, Shoulder (93% Load Level) Case
27) Kemper IGCC Offline, Shoulder (93% Load Level) Case

TVA Border to Southern: Transfer Flows within the SERTP



Note: Red arrows indicate transfer percentages of greater than 5%.

Potential Solutions for Identified Constraints

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 SERTP Sponsors' areas that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Table 1.3. Potential Solutions for Identified Constraints – *Southern Balancing Authority*

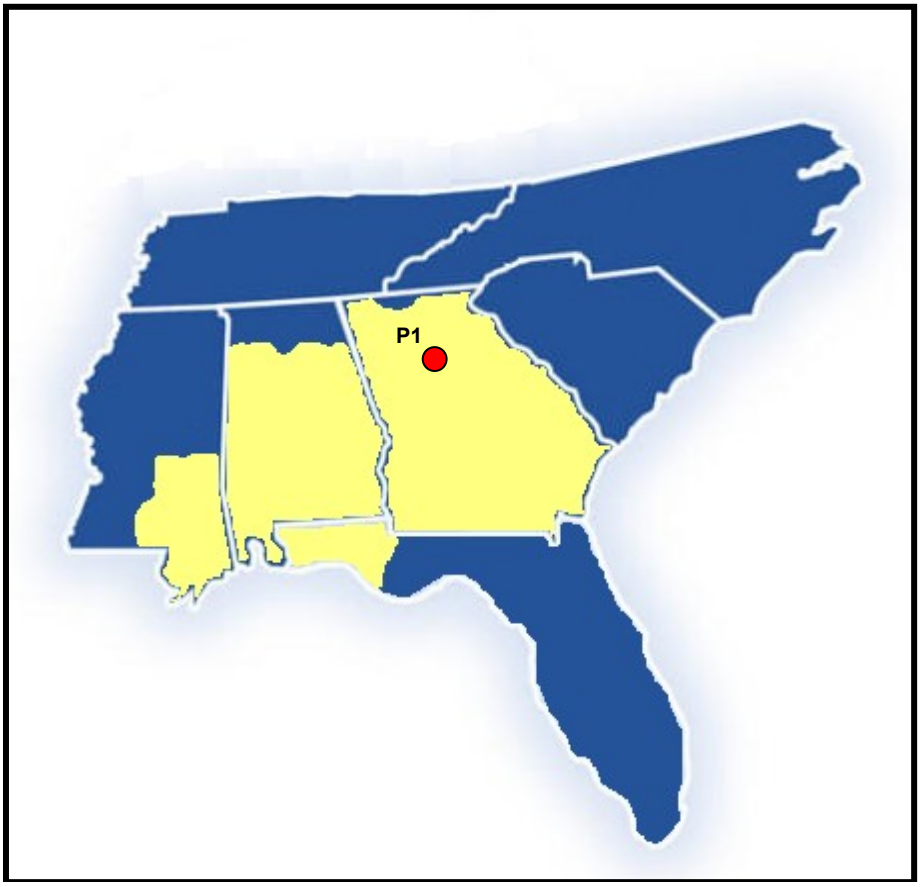
Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	**Nelson Substation** • Replace the two (2) 230 / 115 kV transformers at Nelson with a 400 MVA, 230 / 115 kV transformer	2017	$6,200,000
SBA Total ($2012)			$6,200,000

Table 1.4. Total Cost of the TVA Border to SBA 500 MW Transfer

Area	Estimated Cost
SBA Total	$6,200,000
TOTAL ($2012)	**$6,200,000**[(1)]

[(1)] Total cost does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by 6/1/2017. The studied transfer depends on these projects being in-service by 6/1/2017. If any of these projects are delayed or cancelled, the cost to support the study transfer could be greater than the total shown above.

Diagram 1.1. Approximate Location of Potential Solutions



Interchange Assumptions

Table 1.5. Transactions Modeled in Starting Point Cases

OASIS Ref. #	POR	POD	Amount (MW)
891294	*SOCO*	*Duke*	*40*
982928	*SOCO*	*Duke*	*60*
911948	*EES*	*GTC*	*50*
921615	*EES*	*GTC*	*50*
787707	*SOCO*	*TVA*	*41*
672440	*TVA*	*SOCO*	*207*
882565	*SCPSA*	*SOCO*	*50*
77603	*SOCO*	*PSEC*	*110*
765080	*PSEC*	*SOCO*	*970*
--	*SOCO*	*PSEC*	*5*
--	*MEAG*	*PSEC*	*125*
--	*SOCO*	*PSEC*	*267*
--	*SEPA*	*SOCO*	*676*
--	*SBA*	*FRCC*	*3700*

Table 1.6. Additional Transactions Modeled in Cases

OASIS Ref. #	POR	POD	Amount (MW)
903932	*EES*	*SOCO*	*500*
854479	*EES*	*SOCO*	*148*
967100	*EES*	*SOCO*	*150*
946923	*EES*	*GTC*	*100*
869847	*Duke*	*SOCO*	*50*
954730	*TVA*	*SOCO*	*500*
147617	*SC*	*GTC*	*296*
147616	*SCEG*	*GTC*	*285*
147615	*Duke*	*GTC*	*465*
147613	*TVA*	*GTC*	*310*
72133712	*Duke*	*MEAG*	*50*

Table 1.7. 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*

Table 1.8. Transmission Reliability Margins Modeled (TRM)

Transmission Owner	Interface	Amount (MW)
Southern	*From Duke*	*194*
GTC	*From Duke*	*106*
MEAG	*From Duke*	*25*
Dalton	*From Duke*	*3*
Southern	*From Entergy*	*206*
Southern	*From TVA*	*232*
GTC	*From TVA*	*51*
MEAG	*From TVA*	*12*
Dalton	*From TVA*	*1*

PJM West to Southern Balancing Authority ("SBA")

3500 MW

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Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
PJM West to SBA	3500 MW	PJM West	SBA	2017
Load Flow Cases				
2012 Series Version 2A Cases: Summer Peak and Shoulder (93% load level)				
Source Modeled				
The source for this transfer was assumed to be a new generator interconnecting to the existing Sullivan 765 kV Substation in AEP (Indiana)				

Transmission System Impacts

The 3500 MW transfer from PJM West to the SBA results in overloads of several 500 kV, 230 kV, 161 kV, and 115 kV facilities. 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.

Southern Balancing Authority

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. Projects were first identified to alleviate these constraints before alleviating the remaining constraints because the proposed enhancements could significantly alter load flow in the SBA.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
The following constraints have been identified as directly attributable to the above defined transfer.							
SBA	7120 MUNSON 115 17424 HOLT 115 1	100	99.7	100.0	7061 CRIST 115 7110 PACE 115 1	7	P1
SBA	691 BLAKELY PR 115 692 BLAKELY 2 115 1	125	98.7	100.4	715 CEDAR SP J 115 4594 WEBB 3 115 1	7	P1
SBA	4424 WALSBORO 115 5343 HALLSCHPLTP 115 1	140	85.3	100.5	2500 RACCOON CK 500 4600 FARLEY 8 500 1	13	P1

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	4660 SPAN FT 115 4661 BELFORST 115 1	212	96.5	100.6	4638 CHICK 6 230 5341 EST SHR TAP 230 1	2	P1
SBA	4443 THURLOW 115 4924 MTVMILTP 115 1	138	90.6	100.6	2500 RACCOON CK 500 4600 FARLEY 8 500 1	3	P1
SBA	125 FORTSON 230 1530 CAMP MCKENZ 230 1	1192	95.3	101.0	125 FORTSON 230 130 GOAT ROCK 230 1	6	P1
SBA	130 GOAT ROCK 230 1530 CAMP MCKENZ 230 1	1204	95.4	101.0	125 FORTSON 230 130 GOAT ROCK 230 1	6	P1
SBA	4638 CHICK 6 230 4642 BIG CK 6 230 1	807	96.5	101.1	4638 CHICK 6 230 4700 BARRY 6 230 1	2	P1
SBA	4260 SO PARK 115 4261 ALAMETAL 115 1	246	83.5	101.7	4157 MILLER8 500 5312 CLAY 8 500 1	15	P1
SBA	4189 PRATCTY3 115 4261 ALAMETAL 115 1	246	83.7	102.0	4157 MILLER8 500 5312 CLAY 8 500 1	15	P1
SBA	491 E ATHENS 115 492 E WATKINSVL 115 1	124	79.7	102.2	102 E WATKNSV 1 230 122 E WATKNSV 2 230 1	6	P1
SBA	4425 JORDN DM 115 4954 RUSEL TP 115 1	138	86.8	102.2	2500 RACCOON CK 500 4600 FARLEY 8 500 1	13	P1
SBA	7320 NICEVLE 115 17212 BLUEWTER 115 1	216	93.4	103.0	7310 SHOAL RV 230 7915 SHAKY JO 230 1	17	P1
SBA	4249 RED MTN 115 4252 SMISTEEL 115 1	216	74.6	103.2	4157 MILLER8 500 5312 CLAY 8 500 1	15	P1
SBA	400 BUFORD 115 1303 BUF2 J N 115 1	182	76.8	103.4	3 NORCROSS 500 11 S HALL 500 1	6	P1
SBA	11 S HALL 500 2035 S HALL 230 1	2016	75.9	103.6	3 NORCROSS 500 11 S HALL 500 1	6	P1
SBA	4240 LEEDSTS3 115 4762 LEHGH TP 115 1	212	79.7	103.6	4233 CLAY 3 115 4246 SPRINGVL 115 1	16	P1
SBA	11 S HALL 500 306008 8OCONEE 500 1	3063	71.6	103.7	21 MOSTELLER 500 2499 CONASAUGA 500 1	6	P1
SBA	4424 WALSBORO 115 4425 JORDN DM 115 1	140	88.4	103.7	2500 RACCOON CK 500 4600 FARLEY 8 500 1	13	P1
SBA	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	693	98.7	103.8	2500 RACCOON CK 500 4600 FARLEY 8 500 1	14	P1
SBA	4156 MILLER6 230 4172 BOYLESM1 230 1	602	84.3	104.5	4157 MILLER8 500 5312 CLAY 8 500 1	15	P1
SBA	693 SAWHATCHEE 115 1569 BLAKELY 1 115 1	135	99.9	105.0	2500 RACCOON CK 500 4600 FARLEY 8 500 1	14	P1
SBA	4549 MERRY TP 115 17987 CECIL TP 115 1	112	96.7	105.5	4512 SNOWDN8 500 4600 FARLEY 8 500 1	12	P1
SBA	4552 UNION SP 115 17987 CECIL TP 115 1	112	96.6	105.5	4512 SNOWDN8 500 4600 FARLEY 8 500 1	12	P1
SBA	102 E WATKNSV 1 230 492 E WATKINSVL 115 1	332	84.6	105.7	102 E WATKNSV 1 230 122 E WATKNSV 2 230 1	6	P1
SBA	4233 CLAY 3 115 4234 CLAY 6 230 1	398	85.4	106.1	4234 CLAY 6 230 5039 ARGO DS 230 1	15	P1
SBA	88 MCGRAU FORD 230 1931 R_HOPEWL 230 1	509	86.2	106.2	20 BOWEN 500 21 MOSTELLER 500 1	8	P1
SBA	4311 GS STEEL 115 5069 NRAINBOW 115 1	112	72.5	106.4	21 MOSTELLER 500 2499 CONASAUGA 500 1	15	P1
SBA	93 CENTER PR 230 99 NEW HAVEN 230 1	433	78.0	106.6	11 S HALL 500 306008 8OCONEE 500 1	9	P1
SBA	21 MOSTELLER 500 2499 CONASAUGA 500 1	3429	76.3	107.3	11 S HALL 500 306008 8OCONEE 500 1	11	P1
SBA	888 DALTON 115 893 DALTON 9 115 1	155	88.0	107.6	1122 DALTON 6 230 2498 LOOPERS ITS 230 1	16	P1
SBA	4241 LEEDSTS6 230 5039 ARGO DS 230 1	602	71.3	107.8	4156 MILLER6 230 4157 MILLER8 500 1	15	P1
SBA	4182 BLOUNT 115 360280 3GUNTERSV HP115 1	92.8	71.5	108.7	21 MOSTELLER 500 2499 CONASAUGA 500 1	4	P1
SBA	209 HOPEWELL 230 1931 R_HOPEWL 230 1	497	88.3	108.7	20 BOWEN 500 21 MOSTELLER 500 1	8	P1
SBA	94 BIO 230 3000 HW ENERGY 230 1	828	85.3	109.2	11 S HALL 500 306008 8OCONEE 500 1	10	P1

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	1783 RIDGE RD 115 1954 LITTLERIVER 115 1	188	74.3	110.1	20 BOWEN 500 21 MOSTELLER 500 1	5	P1
SBA	199 OOSTANAULA 230 1122 DALTON 6 230 1	664	84.3	110.2	21 MOSTELLER 500 2499 CONASAUGA 500 1	16	P1
SBA	102 E WATKNSV 1 230 133 R_E WATKNVL 230 1	662	80.6	110.3	11 S HALL 500 306008 8OCONEE 500 1	9	P1
SBA	25 MCGRAU FORD 500 88 MCGRAU FORD 230 1	2016	85.1	110.3	20 BOWEN 500 21 MOSTELLER 500 1	11	P1
SBA	4234 CLAY 6 230 5039 ARGO DS 230 1	602	73.8	110.3	4156 MILLER6 230 4157 MILLER8 500 1	15	P1
SBA	87 R_VANNA 230 99 NEW HAVEN 230 1	433	82.0	110.9	11 S HALL 500 306008 8OCONEE 500 1	9	P1
SBA	4311 GS STEEL 115 4331 ATTALLA3 115 1	138	67.9	111.0	21 MOSTELLER 500 2499 CONASAUGA 500 1	15	P1
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2783	79.8	118.0	11 S HALL 500 306008 8OCONEE 500 1	1	P1
SBA	1783 RIDGE RD 115 1956 BLANKETS CK 115 1	188	84.9	120.2	20 BOWEN 500 21 MOSTELLER 500 1	5	P1

Scenario Explanations

1) Conasauga Unit Offline, Summer Peak Case
2) Crist Offline, Summer Peak Case
3) Franklin Unit #1 Offline, Summer Peak Case
4) Hillabee Unit Offline, Summer Peak Case
5) McDonough Unit #5 Offline, Summer Peak Case
6) McDonough Unit #6 Offline, Summer Peak Case
7) Smith Unit #3 Offline, Summer Peak Case
8) Vogtle Unit #2 Offline, Summer Peak Case
9) Wansley Unit #1 Offline, Summer Peak Case
10) Wansley Unit #7 Offline, Summer Peak Case
11) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case
12) Farley Unit #1 Offline, Shoulder (93% Load Level) Case
13) Franklin Unit #1 Offline, Shoulder (93% Load Level) Case
14) Hatch Unit #2 Offline, Shoulder (93% Load Level) Case
15) Hillabee Unit Offline, Shoulder (93% Load Level) Case
16) Hammond Offline, Shoulder (93% Load Level) Case
17) Smith Unit #3 Offline, Shoulder (93% Load Level) Case
18) Vogtle Unit #1 Offline, Summer Peak Case

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Table 2.2. 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 these constraints.

			Thermal Loadings (%)				
AREA	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
The following constraints have been identified as directly attributable to the above defined transfer.							
SBA	86 CUMMING 230 88 MCGRAU FORD 230 1	596	93.9	103.7	11 S HALL 500 2035 S HALL 230 1	6	P2
SBA	384 DAW FOREST 115 2043 BURNT STAND 115 1	124	97.7	105.9	11 S HALL 500 2035 S HALL 230 1	8	P2
SBA	471 N LAVONIA 115 2405 TNS JS 115 1	216	91.6	107.4	94 BIO 230 105 VANNA 230 1	4	P2
SBA	104 LEXINGTON 230 133 R_E WATKNVL 230 1	602	88.4	108.1	11 S HALL 500 306008 8OCONEE 500 1	2	P2
SBA	472 AIRLINE 1 115 473 BIO 115 1	249	94.9	108.5	94 BIO 230 105 VANNA 230 1	5	P2
SBA	94 BIO 230 105 VANNA 230 1	433	91.2	109.4	11 S HALL 500 306008 8OCONEE 500 1	1	P2
SBA	469 AVALON 115 1379 GUMLOG J 115 1	188	92.0	110.2	94 BIO 230 105 VANNA 230 1	5	P2
SBA	104 LEXINGTON 230 339100 6RUSSEL 230 1	596	92.6	112.6	11 S HALL 500 306008 8OCONEE 500 1	2	P2

Scenario Explanations

1) Hatch Unit #1 Offline, Summer Peak Case
2) Hammond Offline, Summer Peak Case
3) Kemper IGCC Unit Offline, Summer Peak Case
4) McDonough Unit #5 Offline, Summer Peak Case
5) McDonough Unit #6 Offline, Summer Peak Case
6) Vogtle Unit #1 Offline, Summer Peak Case
7) Farley Unit #1 Offline, Summer Peak Case
8) Hartwell Energy Unit #1 Offline, Summer Peak Case

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Table 2.3. Pass 2 – Transmission System Impacts With Proposed Enhancements "P1" through "P2" – *Southern Balancing Authority*
The following table identifies constraints in the Southern Balancing Authority ("SBA") with the proposed enhancements "P1" and "P2" applied to the transmission system. Enhancements were identified to alleviate the remaining constraints.

			Thermal Loadings (%)				
AREA	Limiting Element	Rating (MVA)	Without Request	With Request	Contingency	Scenario	Project
The following constraints have been identified as directly attributable to the above defined transfer.							
SBA	73 KLONDIKE 230 1210 SMYRNA CH 230 1	497	90.6	100.3	13 BONAIRE 500 18 SCHERER + 500 1	6	P20
SBA	208 NELSON 230 954 NELSON 115 2	176	99.5	100.7	208 NELSON 230 954 NELSON 115 1	6	P4
SBA	19 BIG SHANTY 500 189 BIG SHANTY 230 1	1344	81.8	101.2	4 BULL SLUICE 500 19 BIG SHANTY 500 1	3	P15
SBA	9021 MCINTOSH 115 9121 GP RINCON 115 1	181	94.6	101.4	9001 MCINTOSH 230 312721 6PURRYSB 230 1	5	P19
SBA	1599 POSSUM BR 115 1748 TISINGER 115 1	188	87.2	102.2	123 YATES + 230 2730 DYER ROAD 230 1	1	P11
SBA	90 LAWRENCEVL 230 2031 PURCELL RD 230 1	509	90.7	102.4	11 S HALL 500 2035 S HALL 230 1	14	P10
SBA	4200 BESSEMER 115 4202 BESSGRCO 230 1	392	92.4	102.8	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	11	P17
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 2	111	75.7	103.4	4234 CLAY 6 230 4247 ONEONTA6 230 1	12	P7
SBA	33 ADAMSVILLE 230 36 JACK MCD 230 1	485	93.8	103.6	36 JACK MCD 230 41 PEACHTREE 230 1	8	P6
SBA	8114 FORINDT2 115 336898 3MORTON 115 1	155	93.9	104.6	360654 8CHOCTAW MS 500 360688 8CLAY 500 1	13	P8
SBA	719 S COWETA 115 1934 SHARPSBG TP 115 1	155	95.3	105.3	123 YATES + 230 2730 DYER ROAD 230 1	2	P12
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 1	99	83.4	106.0	4331 ATTALLA3 115 4332 ATTALLA5 161 2	11	P7
SBA	95 WINDER P 230 3073 BRASELTON 230 1	497	75.1	107.0	3 NORCROSS 500 11 S HALL 500 1	4	P13
SBA	52 N SPRINGS 230 1229 NORTHPARK 230 1	539	92.5	107.6	3 NORCROSS 500 4 BULL SLUICE 500 1	7	P14
SBA	1378 BOGGS RD 230 2031 PURCELL RD 230 1	509	98.0	109.8	11 S HALL 500 2035 S HALL 230 1	14	P9
SBA	461 JACKSON LK 115 752 LLOYD SHL 115 1	72	96.9	110.3	746 S GRIFFIN 115 750 GA BRD CORR 115 1	10	P18
SBA	50 BULL SLUICE 230 52 N SPRINGS 230 1	539	95.8	111.0	3 NORCROSS 500 4 BULL SLUICE 500 1	6	P14
SBA	434 LAWRENCEVL 115 1363 LAWRNCEVL 3 115 1	188	96.5	111.2	438 FIVE FORKS 115 442 SNELLVIL PR 115 1	6	P16
SBA	4332 ATTALLA5 161 360283 5ALBERTVILLE161 1	193	95.0	113.2	4234 CLAY 6 230 4247 ONEONTA6 230 1	12	P7
SBA	4131 OAKMANTP 161 4135 GORGAS 161 1	193	89.5	115.0	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	4131 OAKMANTP 161 4978 BERRY 161 1	193	89.9	115.5	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	4128 JWALTTP 161 4978 BERRY 161 1	193	92.0	117.6	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	3067 CANDLER 230 3073 BRASELTON 230 1	509	86.2	118.0	3 NORCROSS 500 11 S HALL 500 1	4	P13
SBA	2035 S HALL 230 3067 CANDLER 230 1	509	92.3	124.2	3 NORCROSS 500 11 S HALL 500 1	4	P13
SBA	4128 JWALTTP 161 4979 BANKSTON 161 1	193	100.1(1)	125.8	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	4121 FAYET TS 161 4127 FAY COTN 161 1	193	101.9(1)	127.6	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	4127 FAY COTN 161 4979 BANKSTON 161 1	193	101.9(1)	127.6	4157 MILLER8 500 5307 WVERN SS 500 1	9	P5
SBA	9021 MCINTOSH 115 370475 3JASPER T 115 1	254	97.4	128.2	9001 MCINTOSH 230 312721 6PURRYSB 230 1	5	P3

(1) A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient

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Scenario Explanations

1) Franklin Unit #2 Offline, Summer Peak Case
2) Hillabee Unit Offline, Summer Peak Case
3) McDonough Unit #5 Offline, Summer Peak Case
4) McDonough Unit #6 Offline, Summer Peak Case
5) McIntosh CC Offline, Summer Peak Case
6) Vogtle Unit #1 Offline, Summer Peak Case
7) Vogtle Unit #2 Offline, Summer Peak Case
8) Wansley Unit #1 Offline, Summer Peak Case
9) Gorgas Offline, Shoulder (93% Load Level) Case
10) Hatch Unit #2 Offline, Shoulder (93% Load Level) Case
11) Hillabee Offline, Shoulder (93% Load Level) Case
12) Hammond Offline, Shoulder (93% Load Level) Case
13) Kemper IGCC Unit Offline, Shoulder (93% Load Level) Case
14) Vogtle Unit #1 Offline, Shoulder (93% Load Level) Case

Table 2.4. Pass 3 – Transmission System Impacts With All Proposed Enhancements– *Southern Balancing Authority*

The following table depicts loadings of transmission facilities 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 2017 study year.

			Thermal Loadings (%)				
AREA	Limiting Element	Rating (MVA)	Without Request	With Request	Contingency	Scenario	Project
The following facilities could become potential constraints in future years or with different queuing assumptions							
SBA	57 ALPHARETTA 230 1750 ARNOLD MILL 230 1	497	86.3	99.9	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	170 S GRIFFIN 230 746 S GRIFFIN 115 1	298	92.3	99.7	736 OHARA 115 739 BONANZA 115 1	5	--
SBA	13 BONAIRE 500 150 BONAIRE 230 1	1344	82.5	99.3	13 BONAIRE 500 14 HATCH 500 1	3	--
SBA	4638 CHICK 6 230 4642 BIG CK 6 230 1	807	96.5	99.2	4638 CHICK 6 230 4700 BARRY 6 230 1	2	--
SBA	384 DAW FOREST 115 2043 BURNT STAND 115 1	124	97.7	99.0	11 S HALL 500 2035 S HALL 230 1	23	--
SBA	51 WOODLAWN 230 1959 R_NMAR-BULL 230 1	602	82.2	99.0	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	4660 SPAN FT 115 4661 BELFORST 115 1	212	96.5	98.6	4638 CHICK 6 230 5341 EST SHR TAP 230 1	2	--
SBA	42 BOULEVARD 230 2215 VIRGINIA AV 230 1	468	78.7	98.6	73 KLONDIKE 230 1919 R_KLONDIKE 230 1	15	--
SBA	4240 LEEDSTS3 115 4762 LEHGH TP 115 1	212	79.7	98.4	4233 CLAY 3 115 4246 SPRINGVL 115 1	22	--
SBA	193 WOODSTOCK 230 1211 RAGSDALE RD 230 1	596	86.7	98.2	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	123 YATES + 230 2730 DYER ROAD 230 1	693	87.9	97.9	13 BONAIRE 500 18 SCHERER + 500 1	8	--
SBA	4202 BESSGRCO 230 4374 S.BESS 6 230 1	497	71.1	97.9	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	21	--
SBA	7320 NICEVLE 115 17212 BLUEWTER 115 1	216	93.4	97.7	7310 SHOAL RV 230 7915 SHAKY JO 230 1	26	--
SBA	4692 HALLMILL 115 4693 NAVCO TP 115 1	135	94.1	97.6	4638 CHICK 6 230 4642 BIG CK 6 230 1	2	--
SBA	4693 NAVCO TP 115 4694 NAVCO 115 1	135	94.1	97.6	4638 CHICK 6 230 4642 BIG CK 6 230 1	2	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	189 BIG SHANTY 230 190 N MARIETTA 230 1	596	82.4	97.6	4 BULL SLUICE 500 19 BIG SHANTY 500 1	15	--
SBA	48 PARKAIRE 230 1961 R_NMAR-PARK 230 1	596	81.1	97.6	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	50 BULL SLUICE 230 59 TILLY MILL 230 1	718	83.1	97.5	3 NORCROSS 500 4 BULL SLUICE 500 1	14	--
SBA	4233 CLAY 3 115 4234 CLAY 6 230 1	398	85.4	97.3	4234 CLAY 6 230 5039 ARGO DS 230 1	21	--
SBA	2032 DAWSON CROS 115 2408 ETOWAH 115 1	124	88.5	97.2	88 MCGRAU FORD 230 335 DAWSON CROS 230 1	14	--
SBA	1930 SUMMER GRV 115 1934 SHARPSBG TP 115 1	155	71.0	97.1	123 YATES + 230 2730 DYER ROAD 230 1	8	--
SBA	86 CUMMING 230 88 MCGRAU FORD 230 1	596	93.9	97.0	11 S HALL 500 2035 S HALL 230 1	14	--
SBA	9022 GOSHEN 115 9121 GP RINCON 115 1	181	87.5	96.9	9001 MCINTOSH 230 312721 6PURRYSB 230 1	13	--
SBA	240 E POINT B1 115 303 COL PK #3 J 115 1	138	93.9	96.5	251 E POINT B2 115 264 E POINT 4 115 1	15	--
SBA	472 AIRLINE 1 115 473 BIO 115 1	249	94.9	96.3	94 BIO 230 105 VANNA 230 1	12	--
SBA	13 BONAIRE 500 18 SCHERER + 500 1	2439	85.2	96.1	15 THALMANN 500 2158 MCCALL RD 500 1	7	--
SBA	262 WILNGHAM DR 115 264 E POINT 4 115 1	187	94.2	96.0	252 DAVIS ST 115 2216 UNIV CTR 115 1	15	--
SBA	1312 SALEM GT J 115 1318 VISY PAPER+ 115 1	188	84.8	95.5	73 KLONDIKE 230 1210 SMYRNA CH 230 1	14	--
SBA	4156 MILLER6 230 4172 BOYLESM1 230 1	602	84.3	95.4	4157 MILLER8 500 5312 CLAY 8 500 1	21	--
SBA	19 BIG SHANTY 500 20 BOWEN 500 1	3429	75.6	94.9	19 BIG SHANTY 500 20 BOWEN 500 2	11	--
SBA	19 BIG SHANTY 500 20 BOWEN 500 2	3429	75.6	94.9	19 BIG SHANTY 500 20 BOWEN 500 1	11	--
SBA	4234 CLAY 6 230 5039 ARGO DS 230 1	602	73.8	94.7	4156 MILLER6 230 4157 MILLER8 500 1	21	--
SBA	961 MAR ROSW RD 115 1704 MARIETTA 4 115 1	188	92.6	94.6	48 PARKAIRE 230 319 PARKAIRE 115 1	14	--
SBA	469 AVALON 115 1379 GUMLOG J 115 1	188	92.0	94.5	94 BIO 230 105 VANNA 230 1	12	--
SBA	8110 FOREST 115 8113 FORINDT1 115 1	155	83.0	94.5	360654 8CHOCTAW MS 500 360688 8CLAY 500 1	24	--
SBA	150 BONAIRE 230 804 BONAIRE 115 1	400	90.4	94.4	150 BONAIRE 230 804 BONAIRE 115 2	13	--
SBA	150 BONAIRE 230 804 BONAIRE 115 2	400	90.4	94.4	150 BONAIRE 230 804 BONAIRE 115 1	13	--
SBA	4638 CHICK 6 230 5341 EST SHR TAP 230 1	807	92.0	94.2	4638 CHICK 6 230 4640 SILVER 6 230 2	2	--
SBA	8270 HATBG SW 230 303222 6ANGIE 230 1	463	85.1	93.9	8425 LOGTWN W 230 303223 6FRNBRA 230 1	10	--
SBA	1676 SLEEPY HOL 115 2319 PCH BLOSSOM 115 1	124	89.6	93.8	804 BONAIRE 115 806 96 HWY 115 1	16	--
SBA	4189 PRATCTY3 115 4190 PRATCTY6 230 1	398	88.4	93.8	5144 ACIPCO6 230 5145 ACIPCO3 115 1	21	--
SBA	1155 N COOSA 230 1156 N COOSA 115 1	400	86.4	93.8	182 HAMMOND + 230 1155 N COOSA 230 1	9	--
SBA	5203 AIRPT LN 115 5706 BNTBRKTP 115 1	138	89.8	93.8	4374 S.BESS 6 230 5036 S BESS 3 115 1	20	--
SBA	746 S GRIFFIN 115 750 GA BRD CORR 115 1	124	88.0	93.7	462 PORTERDALE 115 1917 S COV J 115 1	27	--
SBA	1211 RAGSDALE RD 230 1750 ARNOLD MILL 230 1	596	82.1	93.6	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	471 N LAVONIA 115 2405 TNS JS 115 1	216	91.6	93.5	94 BIO 230 105 VANNA 230 1	12	--
SBA	4640 SILVER 6 230 5341 EST SHR TAP 230 1	807	91.1	93.4	4638 CHICK 6 230 4640 SILVER 6 230 2	2	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	335 DAWSON CROS 230 2032 DAWSON CROS 115 1	344	76.4	93.4	208 NELSON 230 954 NELSON 115 1	14	--
SBA	17048 CLAYHAT3 115 17300 DALE CO 115 1	157	89.6	93.1	5351 S.ENTER TS6 230 17149 OPP 6 230 1	18	--
SBA	400 BUFORD 115 1303 BUF2 J N 115 1	182	83.8	93.0	1304 REST HAVEN 115 1927 SHOAL CREEK 115 1	12	--
SBA	383 DAHLONEGA 115 2043 BURNT STAND 115 1	124	91.6	92.9	11 S HALL 500 2035 S HALL 230 1	23	--
SBA	742 STOCKBRIDGE 115 1643 FLIPPEN 115 1	269	90.8	92.9	73 KLONDIKE 230 1972 S KLONDIKE 230 1	14	--
SBA	4638 CHICK 6 230 4640 SILVER 6 230 2	807	90.5	92.7	4638 CHICK 6 230 5341 EST SHR TAP 230 1	2	--
SBA	20 BOWEN 500 360065 8WID CRK FP 500 1	3429	--	92.7	21 MOSTELLER 500 2499 CONASAUGA 500 1	1	--
SBA	143 MITCHELL 230 681 MITCHELL 115 1	400	91.0	92.4	2510 RACCOON CK 230 3012 SOWEGA 230 1	4	--
SBA	59 TILLY MILL 230 76 GLAZE DR 230 1	718	78.0	92.4	3 NORCROSS 500 4 BULL SLUICE 500 1	14	--
SBA	960 MARIETTA 5 115 1751 SANDY PLAIN 115 1	187	91.0	92.2	957 WOODSTOCK 115 967 MTN PARK 115 1	15	--
SBA	4241 LEEDSTS6 230 5039 ARGO DS 230 1	602	71.3	92.2	4156 MILLER6 230 4157 MILLER8 500 1	21	--
SBA	188 W MARIETTA 230 1280 JOHNWARD RD 230 1	497	58.1	92.2	4 BULL SLUICE 500 19 BIG SHANTY 500 1	11	--
SBA	252 DAVIS ST 115 2216 UNIV CTR 115 1	298	88.7	92.1	36 JACK MCD 230 41 PEACHTREE 230 1	15	--
SBA	735 FAYETTEVL 115 736 OHARA 115 1	188	86.0	92.1	1523 TURIN EAST 230 1594 DRESDEN 230 1	16	--
SBA	4189 PRATCTY3 115 4261 ALAMETAL 115 1	246	83.7	91.8	4157 MILLER8 500 5312 CLAY 8 500 1	21	--
SBA	47 SANDY SPR 230 50 BULL SLUICE 230 1	596	80.9	91.8	36 JACK MCD 230 41 PEACHTREE 230 1	11	--
SBA	2499 CONASAUGA 500 360662 8BRADLEY TN 500 1	2783	118.0	91.7	20 BOWEN 500 360065 8WID CRK FP 500 1	17	--
SBA	1134 BREMEN B2 115 1731 N MOUNTZION 115 1	188	88.1	91.6	976 SAND HILL 115 2486 HICKORY LVL 115 1	16	--
SBA	4260 SO PARK 115 4261 ALAMETAL 115 1	246	83.5	91.6	4157 MILLER8 500 5312 CLAY 8 500 1	21	--
SBA	4864 PHIL TAP 161 360263 5WILSON HP 161 1	302	81.3	91.2	4156 MILLER6 230 4157 MILLER8 500 1	6	--
SBA	4249 RED MTN 115 4252 SMISTEEL 115 1	216	74.6	91.2	4157 MILLER8 500 5312 CLAY 8 500 1	21	--
SBA	4755 FULTON 115 5293 BASSETTCK3 115 1	112	84.5	91.0	5065 LPAC TP 115 5293 BASSETTCK3 115 1	19	--
SBA	8280 COLLINS 115 8295 TAYLRSVL 115 1	99	84.2	91.0	336897 3PELAHE 115 336898 3MORTON 115 1	24	--
SBA	4297 MOODY SS 115 4762 LEHGH TP 115 1	212	72.4	91.0	4233 CLAY 3 115 4246 SPRINGVL 115 1	22	--
SBA	113 PEACH ORCHD 230 114 GOSHEN 230 1	497	88.6	90.8	1413 THOMSON 230 1490 THOMSON 500 1	25	--
SBA	4200 BESSEMER 115 5060 GREENWD 115 1	216	88.3	90.8	4374 S.BESS 6 230 5036 S BESS 3 115 1	20	--
SBA	954 NELSON 115 1733 N KEITHSBRG 115 1	180	86.8	90.7	956 HOLLY SP 115 1956 BLANKETS CK 115 1	15	--
SBA	4311 GS STEEL 115 5069 NRAINBOW 115 1	112	83.0	90.4	4302 JAXSHOAL 115 5205 HONDA 115 1	21	--
SBA	189 BIG SHANTY 230 190 N MARIETTA 230 3	596	76.2	90.3	4 BULL SLUICE 500 19 BIG SHANTY 500 1	14	--
SBA	5351 S.ENTER TS6 230 17149 OPP 6 230 1	498	87.1	90.2	4512 SNOWDN8 500 4600 FARLEY 8 500 1	18	--
SBA	3 NORCROSS 500 65 NORCROSS 230 2	2016	85.7	90.1	3 NORCROSS 500 65 NORCROSS 230 1	12	--

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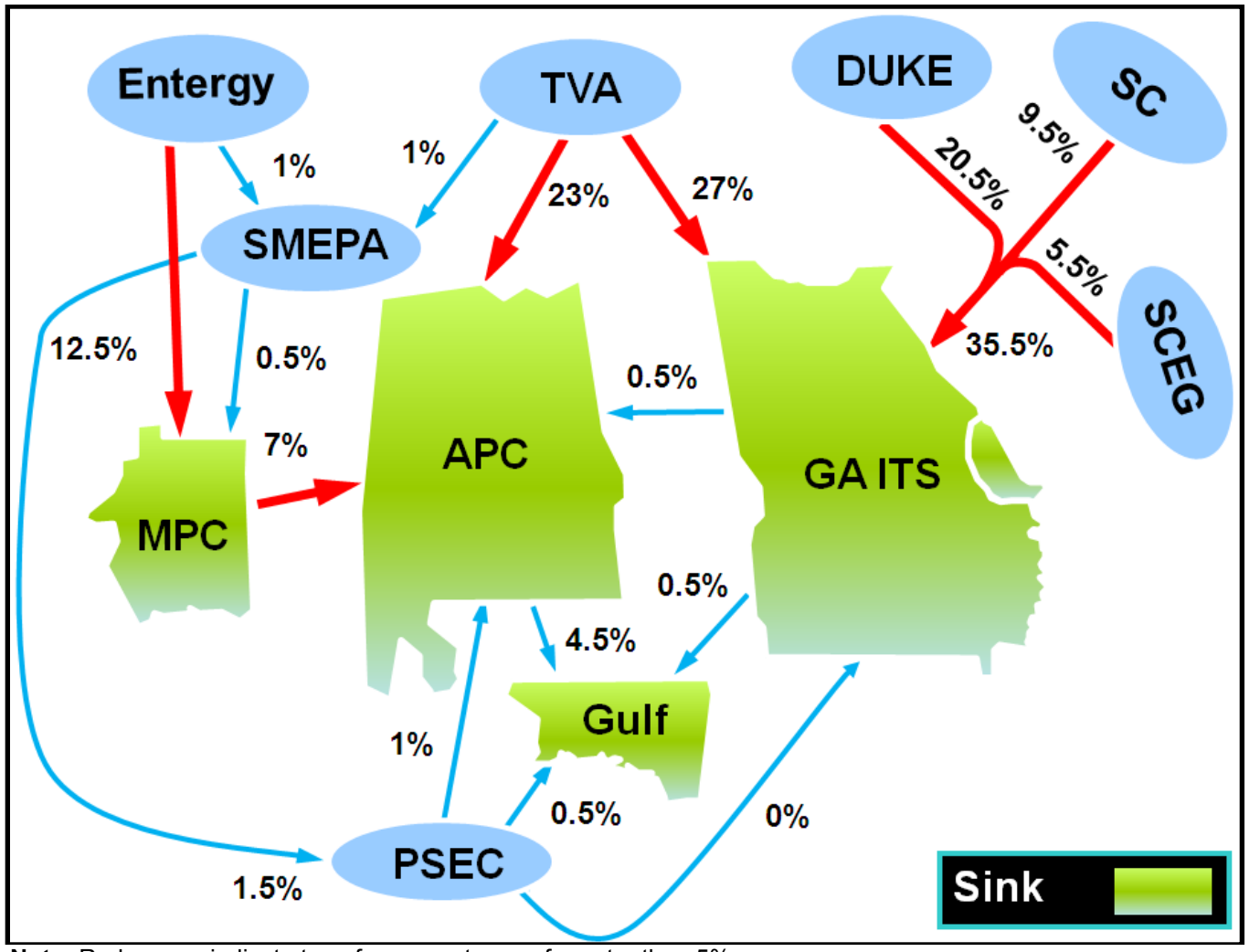
Scenario Explanations:

1) Bowen Unit #4 Offline, Summer Peak Case
2) Crist Offline, Summer Peak Case
3) Farley Unit #2 Offline, Summer Peak Case
4) Franklin Unit #1 Offline, Summer Peak Case
5) Franklin Unit #2 Offline, Summer Peak Case
6) Gorgas Offline, Summer Peak Case
7) Hatch Unit #2 Offline, Summer Peak Case
8) Hillabee Offline, Summer Peak Case
9) Hammond Offline, Summer Peak Case
10) Kemper IGCC Unit Offline, Summer Peak Case
11) McDonough Unit #5 Offline, Summer Peak Case
12) McDonough Unit #6 Offline, Summer Peak Case
13) McIntosh CC Offline, Summer Peak Case
14) Vogtle Unit #1 Offline, Summer Peak Case
15) Vogtle Unit #2 Offline, Summer Peak Case
16) Yates Unit #7 Offline, Summer Peak Case
17) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case
18) Farley Unit #1 Offline, Shoulder (93% Load Level) Case
19) Green County Unit #1 Offline, Shoulder (93% Load Level) Case
20) Gorgas Offline, Shoulder (93% Load Level) Case
21) Hillabee Offline, Shoulder (93% Load Level) Case
22) Hammond Offline, Shoulder (93% Load Level) Case
23) Hartwell Energy Unit #1 Offline, Shoulder (93% Load Level)
24) Kemper IGCC Unit Offline, Shoulder (93% Load Level) Case
25) McDonough Unit #6 Offline, Shoulder (93% Load Level) Case
26) Smith Unit #3 Offline, Shoulder (93% Load Level) Case
27) Vogtle Unit #1 Offline, Shoulder (93% Load Level) Case

PJM West to the SBA: Transfer Flows within the SERTP



Note: Red arrows indicate transfer percentages of greater than 5%

Potential Solutions for Identified Constraints

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 SERTP Sponsors' areas that are associated with the proposed transfer. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Table 2.5. Potential Solutions for Identified Constraints – *Southern Balancing Authority*

Item	Potential Solution	Estimated Need Date	Estimated Cost
P1	**Widows Creek (TVA) – Bowen 500 kV T.L.** • Construct approximately 60 miles of new 500 kV transmission line from Widows Creek (TVA) to Bowen (SOCO) with bundled (3) 1113 ACSR at 100°C.	2017	$141,000,000(1)
P2	**Russell Dam – Athena 230 kV T.L.** • Construct approximately 45 miles of new 230 kV transmission line from Russell Dam to Athena with bundled (2) 1351 ACSR at 100°C.	2017	$60,000,000
P3	**McIntosh – Yemassee (SCE&G) 115 kV T.L.** • Reconductor approximately 4.49 miles of 115 kV TL with bundled 2-795 ACSR @ 100°C from McIntosh to Jasper.	2017	$2,100,000(1)
P4	**Nelson Substation** • Replace the two (2) 230 / 115 kV transformers at Nelson with a 400 MVA, 230 / 115 kV transformer	2017	$6,200,000
P5	**Fayette – Gorgas 161 kV T.L.** • Reconductor approximately 38.8 miles along the Fayette – Gorgas 161 kV T.L. with 1351 ACSR at 100 °C.	2017	$21,300,000
P6	**Adamsville – Jack McDonough 230 kV T.L.** • Upgrade the 230 kV line from Adamsville to Jack McDonough to 100°C operation.	2017	$1,500,000
P7	**Attalla – Albertville (TVA) 161 kV T.L.** • Replace the two (2) 161 / 115 kV Autobanks at Attalla substation with two (2) 200 MVA Autobanks. • Reconductor approximately 19.5 miles of the 19.6 mile 161 kV transmission line with 1351 ACSR at 100°C from Attalla to Albertville	2017	$19,800,000(1)
P8	**Morton (EES) – Forest Industrial 115 kV T.L.** • Reconductor approximately 3.9 miles along the Morton – Forest Industrial 115 kV T.L. with 636 ACSR at 100°C.	2017	$1,500,000(1)
P9	**Lawrenceville – Norcross 230 kV T.L.** • Reconductor approximatately 2.6 miles of the Lawrenceville – Norcross 230 kV T.L. with 1351 ACSS at 170 °C from Boggs Road to Purcell Road.	2017	$2,400,000

Item	Potential Solution	Estimated Need Date	Estimated Cost
P10	**Lawrenceville – Norcross 230 kV T.L.** • Reconductor approximately 3.3 miles of the Lawrenceville – Norcross 230 kV T.L. with 1351 ACSS at 170°C from Lawenceville to Purcell Road.	2017	$3,000,000
P11	**Possum Branch – Yates 115 kV T.L.** • Reconductor the 1.4 mile section from Possum Branch to Tisinger along the Possum Branch to Yates 115 kV T.L. with 795 ACSS at 160°C.	2017	$600,000
P12	**South Coweta – Yates 115 kV T.L.** • Reconductor the 6.5 mile section South Coweta to Sharpsburg Tap along the South Coweta to Yates 115 kV T.L. with 1033 ACSR at 100°C.	2017	$2,800,000
P13	**South Hall – Winder Primary 230 kV T.L.** • Reconductor 16.2 miles of 230 kV transmission line from South Hall to Winder Primary 230 kV T.L. with bundled (2) 1351 ACSR at 100°C.	2017	$17,400,000
P14	**Bull Sluice – North Park 230 kV T.L.** • Reconductor approximately 4 miles along the Bull Sluice – North Park 230 kV T.L. with bundled 1351 ACSS at 160°C.	2017	$3,200,000
P15	**Big Shanty Substation** • Replace the existing 1344 MVA, 500 / 230 kV transformer at Big Shanty with a 2016 MVA, 500 / 230 kV transformer.	2017	$34,000,000
P16	**Lawrenceville – Moon Road 115 kV T.L.** • Reconductor approximately 3 miles from Lawrenceville to Lawrenceville #3 along the Lawrenceville – Moon Road 115 kV T.L. with 1351 ACSR at 100°C.	2017	$1,700,000
P17	**Bessemer Substation** • Install a parallel 400 MVA, 230 / 115 kV transformer at Bessemer substation.	2017	$6,200,000
P18	**Lloyd Shoals – Porterdale Primary 115 kV T.L.** • Upgrade approximately 10.2 miles from Jackson Lake to Lloyd Shoals along the Lloyd Shoals – Porterdale Primary 115 kV T.L. to 100°C operation	2017	$2,000,000
P19	**Goshen – McIntosh 115 kV T.L.** • Reconductor approximately 1.6 miles from McIntosh to Georgia Pacific Rincon along the Goshen to McIntosh 115 kV T.L. with 1033 ACSR at 100°C.	2017	$700,000
P20	**Porterdale Substation** • Replace the 1200 A line trap at Porterdale Substation with a 2000 A line trap on the Klondike – Porterdale 230 kV T.L.	2017	$250,000
SBA Total ($2012)			$327,650,000

(1) 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

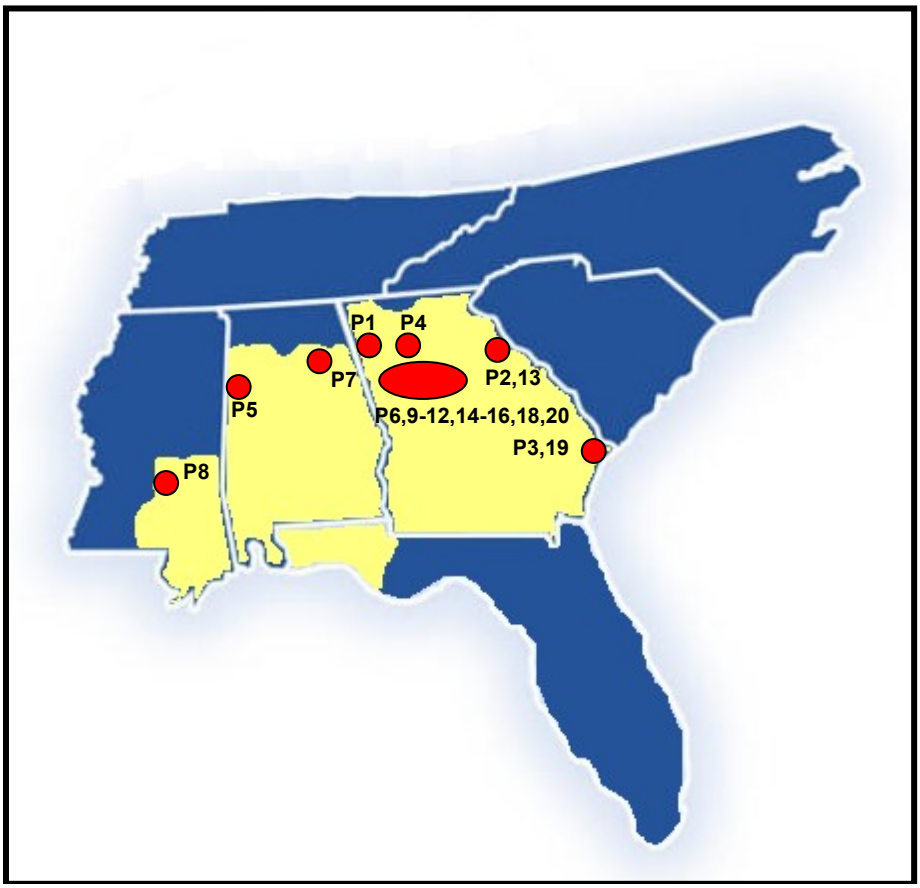
solution is only for the portion of solution that is located within the participating Transmission Owners' territory. This solution effectively alleviates the identified constraint(s), however, the impacts to adjacent transmission systems that are external to the participating Transmission Owners were 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").

Table 2.6. Total Cost of the PJM West to SBA 3500 MW Transfer

Area	Estimated Cost
SBA Total	$327,650,000
TOTAL ($2012)	**$327,650,000[(1)]**

[(1)] Total cost does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by 6/1/2017. The studied transfer depends on these projects being in-service by 6/1/2017. If any of these projects are delayed or cancelled, the cost to support the study transfer could be greater than the total shown above.

Diagram 2.1. Approximate Location of Potential Solutions



Interchange Assumptions

Table 2.7. Transactions Modeled in Starting Point Cases

OASIS Ref. #	POR	POD	Amount (MW)
891294	*SOCO*	*Duke*	*40*
982928	*SOCO*	*Duke*	*60*
911948	*EES*	*GTC*	*50*
921615	*EES*	*GTC*	*50*
787707	*SOCO*	*TVA*	*41*
672440	*TVA*	*SOCO*	*207*
882565	*SCPSA*	*SOCO*	*50*
77603	*SOCO*	*PSEC*	*110*
765080	*PSEC*	*SOCO*	*970*
--	*SOCO*	*PSEC*	*5*
--	*MEAG*	*PSEC*	*125*
--	*SOCO*	*PSEC*	*267*
--	*SEPA*	*SOCO*	*676*
--	*SBA*	*FRCC*	*3700*

Table 2.8. Additional Transactions Modeled in Cases

OASIS Ref. #	POR	POD	Amount (MW)
903932	*EES*	*SOCO*	*500*
854479	*EES*	*SOCO*	*148*
967100	*EES*	*SOCO*	*150*
946923	*EES*	*GTC*	*100*
869847	*Duke*	*SOCO*	*50*
954730	*TVA*	*SOCO*	*500*
147617	*SC*	*GTC*	*296*
147616	*SCEG*	*GTC*	*285*
147615	*Duke*	*GTC*	*465*
147613	*TVA*	*GTC*	*310*
72133712	*Duke*	*MEAG*	*50*

Table 2.9. 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*

Table 2.10. Transmission Reliability Margins Modeled (TRM)

Transmission Owner	Interface	Amount (MW)
Southern	*From Duke*	*194*
GTC	*From Duke*	*106*
MEAG	*From Duke*	*25*
Dalton	*From Duke*	*3*
Southern	*From Entergy*	*206*
Southern	*From TVA*	*232*
GTC	*From TVA*	*51*
MEAG	*From TVA*	*12*
Dalton	*From TVA*	*1*

Southern Balancing Authority ("SBA") to TVA Border

1000 MW

Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
SBA to TVA Border	1000 MW	SBA	TVA	2013
Load Flow Cases				
2012 Series Version 2A Cases: Summer Peak and Shoulder (93% load level)				
Source Modeled				
The source for this transfer was generation in the SBA.				

Transmission System Impacts

The 1000 MW transfer from the SBA to TVA Border results in no thermal constraints attributable to the requested transfer.

Southern Balancing Authority

Table 3.1. Pass 0 – Transmission System Impacts With No Enhancements – *Southern Balancing Authority*
The following table depicts loadings of transmission facilities in the Southern Balancing Authority ("SBA") that could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2013 study year.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
The following facilities could become potential constraints in future years or with different queuing assumptions							
SBA	8351 HURR 115 115 8555 WIGNS SS 115 1	107	97.1	99.9	8530 LANDON 115 8532 HWY 53 115 1	17	--
SBA	571 SYLVANIA 115 581 KING MFG + 115 1	63	98.0	99.8	8 VOGTLE 500 9 W MCINTOSH 500 1	11	--
SBA	4303 COLDWATR 115 5153 FLATBRTP 115 1	417	98.3	99.6	4305 ANISTON6 230 5220 BYNUM6 230 1	7	--
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	96.7	99.1	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	10	--
SBA	848 PINEGROVE 115 1464 HAZLE J 115 1	114	98.4	98.9	843 VIDALIA 115 1476 W LYONS J2 115 1	11	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	756 ARKWRIGHT 115 1659 BASS RD J 115 1	145	96.6	98.7	767 S MACON 115 2305 VINEVILLE 115 1	8	--
SBA	1044 DOUGLAS 115 1074 OAK PARK 115 1	100	96.5	97.5	223 DOUGLAS 230 1810 WILSONVILLE 230 1	9	--
SBA	624 RAGLAND ST 115 625 LAGRANGE PR 115 1	155	96.0	97.5	719 S COWETA 115 1934 SHARPSBG TP 115 1	12	--
SBA	8810 LUCEDALE 115 8811 SRSLUCE 115 1	86	89.7	97.0	8700 DANIEL 500 335836 8MCKNT 500 1	4	--
SBA	709 SYLVESTER J 115 1507 ASHBURN J 115 1	63	92.3	97.0	707 CRISP 2 115 1899 E AMER J 115 1	16	--
SBA	8523 OLSON CE 115 8525 PASS CHR 115 1	155	81.0	96.9	8400 KILN 230 8500 WATSON 230 1	6	--
SBA	709 SYLVESTER J 115 1049 N TIFTON 115 1	63	92.2	96.9	707 CRISP 2 115 1899 E AMER J 115 1	16	--
SBA	4304 ANISTON3 115 4861 CCAST HD 115 1	112	91.0	96.7	4302 JAXSHOAL 115 5205 HONDA 115 1	2	--
SBA	8760 INGALL T 115 8770 GAUTIER 115 1	155	92.8	96.4	8800 OCNSP NE 230 8801 OCNSP NE 115 1	1	--
SBA	4303 COLDWATR 115 4767 OXFORDTP 115 1	417	95.0	96.4	4305 ANISTON6 230 5220 BYNUM6 230 1	7	--
SBA	623 LAGRANGE 3 115 624 RAGLAND ST 115 1	155	94.1	95.6	719 S COWETA 115 1934 SHARPSBG TP 115 1	3	--
SBA	581 KING MFG + 115 1483 DOVER TP 115 1	63	93.1	94.9	8 VOGTLE 500 9 W MCINTOSH 500 1	11	--
SBA	4431 N AUBURN 115 4438 LAF CITY 115 1	112	93.0	94.5	4304 ANISTON3 115 4774 W END DS 115 1	3	--
SBA	4861 CCAST HD 115 5100 OHATCHEE 115 1	112	88.6	94.4	4302 JAXSHOAL 115 5205 HONDA 115 1	2	--
SBA	4755 FULTON 115 5365 LS_STL1 TP 115 1	112	85.3	94.2	8700 DANIEL 500 335836 8MCKNT 500 1	5	--
SBA	598 GREENSCUT J 115 1425 CLARK RD 115 1	124	93.7	94.2	117 WAYNESBORO 230 562 WAYNESBORO 115 1	13	--
SBA	681 MITCHELL 115 682 LESTER 115 1	124	87.2	93.3	24 N TIFTON 500 222 N TIFTON 230 1	9	--
SBA	4304 ANISTON3 115 4767 OXFORDTP 115 1	417	91.5	92.8	4305 ANISTON6 230 5220 BYNUM6 230 1	7	--
SBA	1653 FISHINGCK J 115 1664 W MILLEDGVL 115 1	188	91.5	92.5	147 BRANCH + 230 148 GORDON 230 1	15	--
SBA	1612 FISHING CRK 115 1653 FISHINGCK J 115 1	188	91.5	92.4	147 BRANCH + 230 148 GORDON 230 1	15	--
SBA	4293 NHELENA6 230 4400 GASTON 230 1	502	90.9	92.2	4400 GASTON 230 5281 12 OAKS 230 1	14	--
SBA	4131 OAKMANTP 161 4135 GORGAS 161 1	193	80.1	92.2	360030 8LOWNDES MS 500 360605 8VALLEYV 500 1	18	--
SBA	4131 OAKMANTP 161 4978 BERRY 161 1	193	80.1	92.2	360030 8LOWNDES MS 500 360605 8VALLEYV 500 1	18	--
SBA	4307 NATCEMTP 115 5100 OHATCHEE 115 1	112	86.0	91.8	4302 JAXSHOAL 115 5205 HONDA 115 1	2	--
SBA	4306 HENRYDAM 115 4307 NATCEMTP 115 1	112	85.9	91.7	4302 JAXSHOAL 115 5205 HONDA 115 1	2	--
SBA	144 COTTON 230 1882 N CAMILLA 230 1	509	89.1	91.6	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	10	--
SBA	611 N COLUMBUS 115 612 FIRST AVE + 115 1	149	90.1	91.2	130 GOAT ROCK 230 609 GOAT ROCK 115 1	3	--
SBA	1829 HOLT 115 2517 LAKE BEA 115 1	63	89.3	91.2	223 DOUGLAS 230 2516 STUMP CRK 230 1	13	--
SBA	149 S MACON 230 767 S MACON 115 2	280	90.1	91.1	149 S MACON 230 767 S MACON 115 1	8	--
SBA	8770 GAUTIER 115 8775 SR MALL 115 1	155	87.2	90.8	8800 OCNSP NE 230 8801 OCNSP NE 115 1	1	--
SBA	4582 THOMV DS 115 5365 LS_STL1 TP 115 1	112	81.9	90.7	8700 DANIEL 500 335836 8MCKNT 500 1	5	--
SBA	4310 RAINBOW 115 5419 KEYSTONE TP 115 1	112	82.7	90.6	4234 CLAY 6 230 4247 ONEONTA6 230 1	6	--

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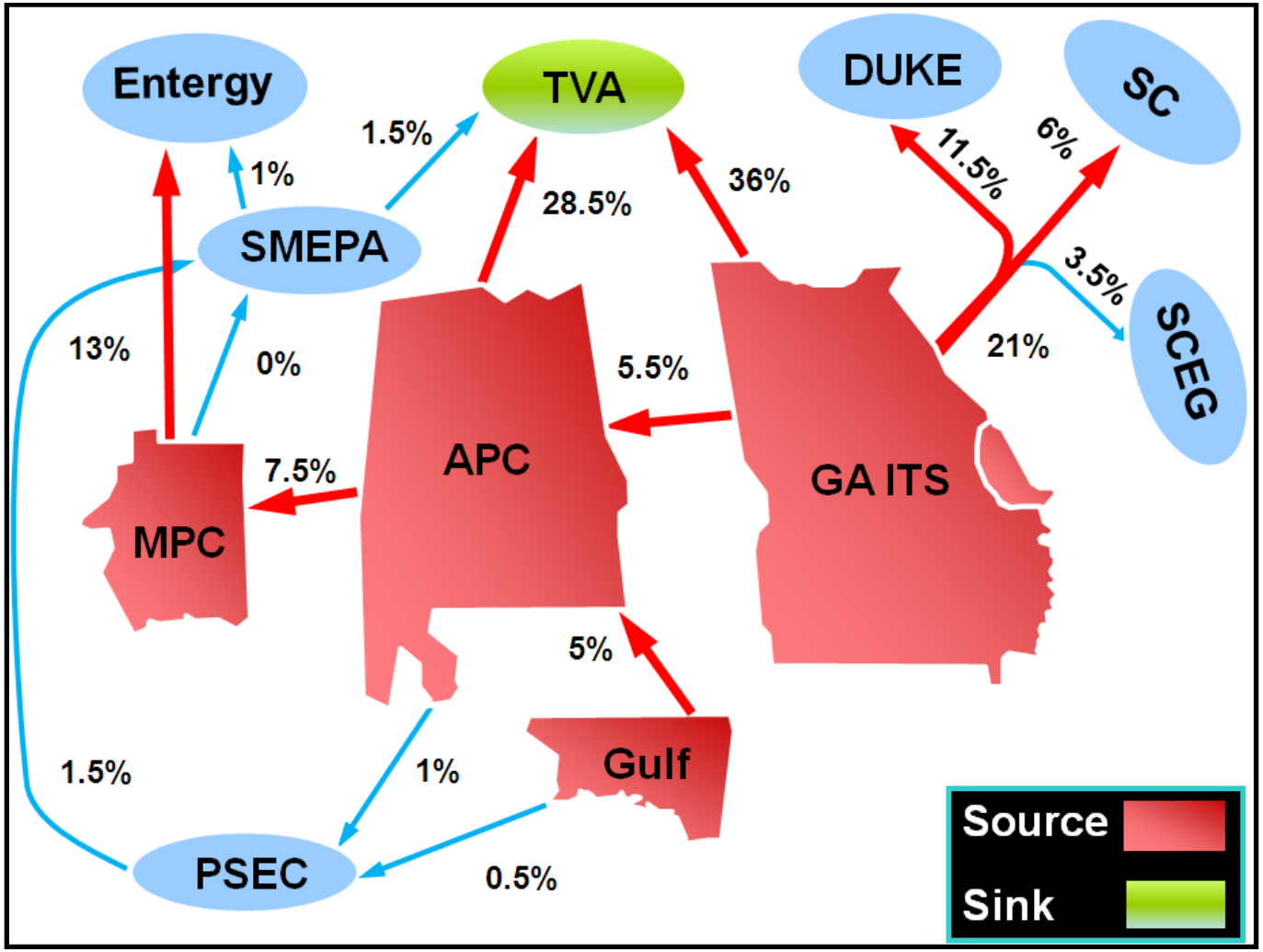
AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	149 S MACON 230 767 S MACON 115 1	280	89.5	90.5	149 S MACON 230 767 S MACON 115 2	8	--
SBA	5 UNION CITY 500 26 UNION CITY 230 1	1350	89.6	90.5	16 OHARA 500 171 OHARA 230 1	3	--

Scenario Explanations

1) Watson Unit #5 Offline, Shoulder (93% Load Level) Case
2) Miller Unit #2 Offline, Shoulder (93% Load Level) Case
3) McDonough Unit #6 Offline, Shoulder (93% Load Level) Case
4) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case
6) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case
7) Bowen Unit #1 Offline, Shoulder (93% Load Level) Case
8) Yates Unit #7 Offline, Summer Peak Case
9) Vogtle Unit #2 Offline, Summer Peak Case
10) Smith Unit #3 Offline, Summer Peak Case
11) McIntosh CC Unit #10 Offline, Summer Peak Case
12) McDonough Unit #5 Offline, Summer Peak Case
13) Hatch Unit #1 Offline, Summer Peak Case
14) Gorgas Unit #10 Offline, Summer Peak Case
15) Franklin Unit #2 Offline, Summer Peak Case
16) Franklin Unit #1 Offline, Summer Peak Case
17) Central Alabama CC Offline, Summer Peak Case
18) Barry Unit #5 Offline, Summer Peak Case

SBA to TVA Border: Transfer Flows within the SERTP



Note: Red arrows indicate transfer percentages of greater than 5%.

Potential Solutions for Identified Constraints

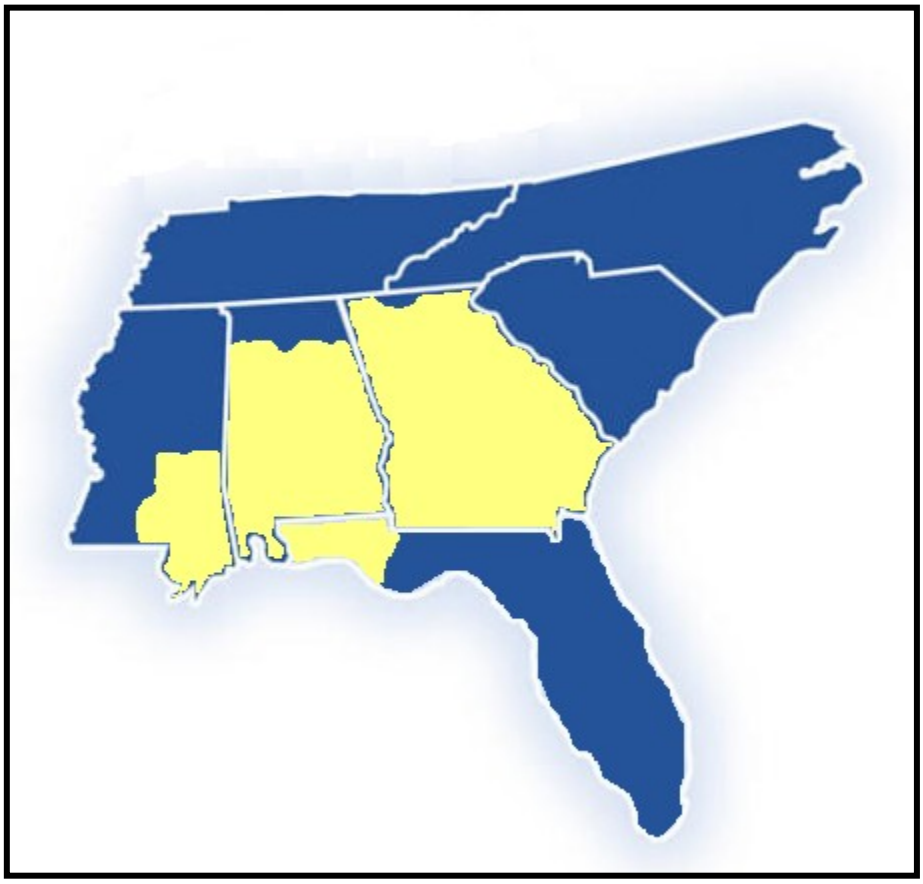
There were no identified constraints based on the assumptions used in this study and, and therefore, no potential solutions were identified. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the 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. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Table 3.2. Total Cost of the SBA to TVA Border 1000 MW Transfer

Area	Estimated Cost
TOTAL ($2012)	**$0**[(1)]

[(1)] Total cost does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by 6/1/2013. The studied transfer depends on these projects being in-service by 6/1/2013. If any of these projects are delayed or cancelled, the cost to support the study transfer could be greater than the total shown above.

Diagram 3.1. Approximate Location of Potential Solutions



Interchange Assumptions

Table 3.3. Transactions Modeled in Starting Point Cases

OASIS Ref. #	POR	POD	Amount (MW)
891294	*SOCO*	*Duke*	*37*
911948	*EES*	*GTC*	*50*
921615	*EES*	*GTC*	*50*
787707	*SOCO*	*TVA*	*38*
672440	*TVA*	*SOCO*	*192*
882565	*SCPSA*	*SOCO*	*50*
77603	*SOCO*	*PSEC*	*110*
765080	*PSEC*	*SOCO*	*926*
--	*SOCO*	*PSEC*	*5*
--	*SOCO*	*PSEC*	*230*
--	*SOCO*	*PSEC*	*267*
--	*SEPA*	*SOCO*	*676*
--	*SBA*	*FRCC*	*3700*

Table 3.4. Additional Transactions Modeled in Cases

OASIS Ref. #	POR	POD	Amount (MW)
959840	*SOCO*	*Duke*	*88*
959841	*SOCO*	*Duke*	*88*
982928	*SOCO*	*Duke*	*60*
73509914	*GTC*	*TVA*	*200*

SCPSA Border to EES Border

500 MW

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Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
SCPSA Border to EES Border	500 MW	SCPSA Border	EES Border	2013
Load Flow Cases				
2012 Series Version 2A Cases: Summer Peak and Shoulder (93% load level)				
Source Modeled				
The source for this transfer was a uniform load reduction in the SCPSA area.				

Transmission System Impacts

The 500 MW transfer from the SCPSA Border to EES Border results in no thermal constraints attributable to the requested transfer.

Southern Balancing Authority

Table 4.1. Pass 0 – Transmission System Impacts With No Enhancements – *Southern Balancing Authority*
The following table depicts loadings of transmission facilities in the Southern Balancing Authority ("SBA") that could become potential constraints in future years or with different queuing assumptions, but are not overloaded in the 2013 study year.
.

			Thermal Loadings (%)				
AREA	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
The following facilities could become potential constraints in future years or with different queuing assumptions							
SBA	7310 SHOAL RV 230 7311 SHOAL RV 115 1	284	98.1	99.9	7280 WRIGHT 230 7310 SHOAL RV 230 1	2	--
SBA	719 S COWETA 115 1934 SHARPSBG TP 115 1	155	98.3	99.2	1599 POSSUM BR 115 1748 TISINGER 115 1	6	--
SBA	471 N LAVONIA 115 2003 AIRLINE 2 115 1	216	96.3	99.0	94 BIO 230 105 VANNA 230 1	14	--
SBA	4374 S.BESS 6 230 4950 DUNCANVL 230 1	502	96.9	98.2	5123 BILLNGSS 500 5178 AUTAUSS8 500 1	10	--

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AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	1882 N CAMILLA 230 2510 RACCOON CK 230 1	509	96.7	97.5	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	7	--
SBA	950 MAR 8 J 115 1260 MARIETTA JW 115 1	149	96.8	97.5	965 MARIETTA 7 115 1262 MAR 14 JB 115 1	16	--
SBA	950 MAR 8 J 115 952 LOCKHEED JW 115 1	149	96.8	97.5	965 MARIETTA 7 115 1262 MAR 14 JB 115 1	16	--
SBA	4737 HOPEHULL 115 5513 LAMAR TP 115 1	138	93.1	97.2	4511 SNOWDN6 230 4558 GREENVL6 230 1	1	--
SBA	4740 GKN W LD 115 5257 HALACLTP 115 1	107	95.7	97.1	4514 S MONTG3 115 4547 PINEDALE 115 1	3	--
SBA	1379 GUMLOG J 115 2406 TNS JN 115 1	188	94.0	97.1	94 BIO 230 105 VANNA 230 1	14	--
SBA	1626 KATHLEEN 115 1627 FRITO LAY + 115 1	124	94.5	96.9	150 BONAIRE 230 1603 KATHLEEN 230 1	9	--
SBA	598 GREENSCUT J 115 1425 CLARK RD 115 1	124	92.7	96.0	115 VOGTLE + 230 116 WILSON 230 1	12	--
SBA	147 BRANCH + 230 148 GORDON 230 1	497	95.0	95.8	13 BONAIRE 500 18 SCHERER + 500 1	13	--
SBA	4561 ECIGREEN 115 4562 COASTFOR 115 1	138	91.4	95.0	4622 N BREW 3 115 4623 N BREW 6 230 1	1	--
SBA	821 MILLEDGEVL 115 1612 FISHING CRK 115 1	188	93.3	94.4	147 BRANCH + 230 148 GORDON 230 1	13	--
SBA	8760 INGALL T 115 8770 GAUTIER 115 1	155	92.8	94.4	8800 OCNSP NE 230 8801 OCNSP NE 115 1	8	--
SBA	735 FAYETTEVL 115 736 OHARA 115 1	188	93.7	94.2	129 S COWETA 230 719 S COWETA 115 1	11	--
SBA	4350 STOKES 115 4937 BSANDYTP 115 1	138	90.5	94.1	4471 GREENCO6 230 4950 DUNCANVL 230 1	4	--
SBA	4504 CLANT TP 115 4926 TRAN TAP 115 1	138	90.2	94.0	4489 N SELMA6 230 5500 HARRIS SS 230 1	4	--
SBA	4600 FARLEY 8 500 4601 FARLEY 6 230 1	1195	91.5	94.0	4600 FARLEY 8 500 4601 FARLEY 6 230 2	3	--
SBA	4600 FARLEY 8 500 4601 FARLEY 6 230 2	1195	91.5	94.0	4600 FARLEY 8 500 4601 FARLEY 6 230 1	3	--
SBA	1883 ADEL 1J 115 1884 S ADEL J 115 1	124	92.6	93.8	220 PINE GROVE 230 222 N TIFTON 230 1	7	--
SBA	9052 LT OGEECHEE 115 9144 RICH HL TAP 115 1	255	90.6	93.7	2152 DORCHESTER 230 9051 LT OGEECHEE 230 1	12	--
SBA	149 S MACON 230 767 S MACON 115 2	280	92.4	93.1	149 S MACON 230 767 S MACON 115 1	15	--
SBA	4293 NHELENA6 230 4400 GASTON 230 1	502	90.9	93.0	4400 GASTON 230 5281 12 OAKS 230 1	5	--
SBA	8520 LONG BCH 115 8523 OLSON CE 115 1	155	87.4	92.9	8400 KILN 230 8500 WATSON 230 1	16	--
SBA	150 BONAIRE 230 1603 KATHLEEN 230 1	433	91.9	92.8	24 N TIFTON 500 222 N TIFTON 230 1	3	--
SBA	4475 DEMOP TS 115 4476 CEMEX 115 1	138	89.4	92.6	4471 GREENCO6 230 8006 LAUDRDL E 230 1	8	--
SBA	17018 BELLVIL3 115 17225 CSTLBRYJ 115 1	142	91.2	92.5	4612 BREWT TP 115 4622 N BREW 3 115 1	2	--
SBA	1049 N TIFTON 115 1858 TIFTON J 115 1	180	91.3	92.5	222 N TIFTON 230 1875 E MOULTRIE 230 1	7	--
SBA	149 S MACON 230 767 S MACON 115 1	280	91.8	92.5	149 S MACON 230 767 S MACON 115 2	15	--
SBA	8810 LUCEDALE 115 8811 SRSLUCE 115 1	86	90.7	92.5	8700 DANIEL 500 335836 8MCKNT 500 1	5	--
SBA	472 AIRLINE 1 115 473 BIO 115 1	249	90.0	92.4	94 BIO 230 105 VANNA 230 1	14	--
SBA	4304 ANISTON3 115 4861 CCAST HD 115 1	112	91.0	92.4	4302 JAXSHOAL 115 5205 HONDA 115 1	17	--
SBA	4562 COASTFOR 115 4563 ECIGEORG 115 1	138	88.6	92.2	4622 N BREW 3 115 4623 N BREW 6 230 1	1	--
SBA	4594 WEBB 3 115 4602 ECI WEBB 115 1	215	88.5	92.0	4595 WEBB 6 230 4598 PINCK 6 230 1	1	--

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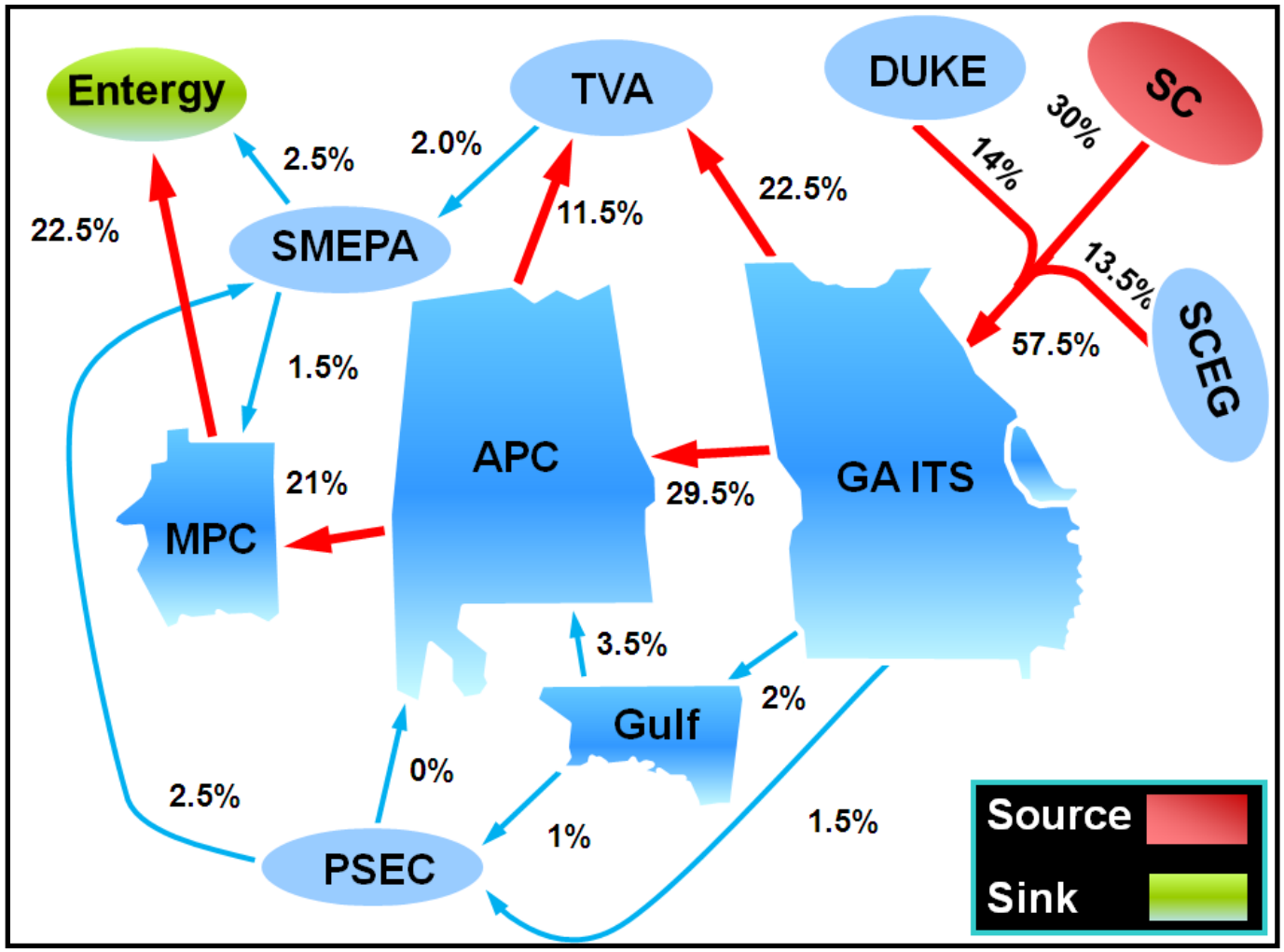
AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	4155 GORGAS 6 230 4156 MILLER6 230 2	602	91.3	91.8	4156 MILLER6 230 5299 MILSCRUB 230 1	5	--
SBA	469 AVALON 115 1379 GUMLOG J 115 1	188	88.5	91.6	94 BIO 230 105 VANNA 230 1	14	--
SBA	4611 SAMSON 230 7310 SHOAL RV 230 1	427	87.7	90.5	4700 BARRY 6 230 7057 ECUA 230 1	2	--
SBA	471 N LAVONIA 115 2405 TNS JS 115 1	216	87.8	90.5	94 BIO 230 105 VANNA 230 1	14	--
SBA	1055 BARNEYVILLE 115 1883 ADEL 1J 115 1	142	89.4	90.4	220 PINE GROVE 230 222 N TIFTON 230 1	7	--

Scenario Explanations

1) Barry Unit #5 Offline, Summer Peak Case
2) Crist Unit #7 Offline, Summer Peak Case
3) Farley Unit #1 Offline, Summer Peak Case
4) Green County Unit #1 Offline, Summer Peak Case
5) Gorgas Unit #10 Offline, Summer Peak Case
6) Hillabee CC Offline, Summer Peak Case
7) Smith Unit #3 Offline, Summer Peak Case
8) Watson Unit #5 Offline, Summer Peak Case
3) Farley Unit #2 Offline, Summer Peak Case
10) Green County Unit #2 Offline, Summer Peak Case
11) Gaston Unit #5 Offline, Summer Peak Case
12) Hatch Unit #1 Offline, Summer Peak Case
13) Hatch Unit #2 Offline, Summer Peak Case
14) McDonough Unit #6 Offline, Summer Peak Case
15) Yates Unit #7 Offline, Summer Peak Case
16) Bowen Unit #4 Offline, Shoulder (93% Load Level) Case
17) Miller Unit #2 Offline, Shoulder (93% Load Level) Case

SCPSA Border to EES Border: Transfer Flows within the SERTP



Note: Red arrows indicate transfer percentages of greater than 5%.

Potential Solutions for Identified Constraints

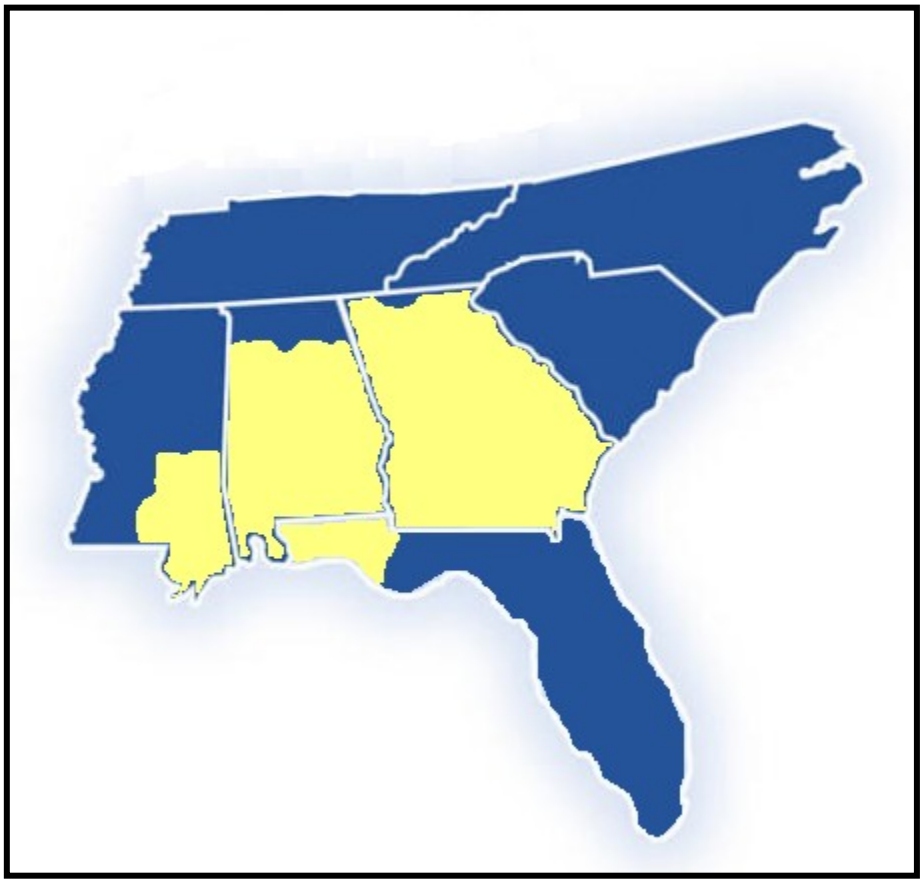
There were no identified constraints based on the assumptions used in this study and, and therefore, no potential solutions were identified. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the 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. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Table 4.2. Total Cost of the SCPSA Border to EES Border 1000 MW Transfer

Area	Estimated Cost
TOTAL ($2012)	**$0**[(1)]

[(1)] Total cost does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by 6/1/2013. The studied transfer depends on these projects being in-service by 6/1/2013. If any of these projects are delayed or cancelled, the cost to support the study transfer could be greater than the total shown above.

Diagram 4.1. Approximate Location of Potential Solutions



Interchange Assumptions

Table 4.3. Transactions Modeled in Starting Point Cases

OASIS Ref. #	POR	POD	Amount (MW)
891294	*SOCO*	*Duke*	*37*
911948	*EES*	*GTC*	*50*
921615	*EES*	*GTC*	*50*
787707	*SOCO*	*TVA*	*38*
672440	*TVA*	*SOCO*	*192*
882565	*SCPSA*	*SOCO*	*50*
77603	*SOCO*	*PSEC*	*110*
765080	*PSEC*	*SOCO*	*926*
--	*SOCO*	*PSEC*	*5*
--	*SOCO*	*PSEC*	*230*
--	*SOCO*	*PSEC*	*267*
--	*SEPA*	*SOCO*	*676*
--	*SBA*	*FRCC*	*3700*

Table 4.4. Additional Transactions Modeled in Cases

OASIS Ref. #	POR	POD	Amount (MW)
903932	*EES*	*SOCO*	*500*
854479	*EES*	*SOCO*	*138*
967100	*EES*	*SOCO*	*150*
946923	*EES*	*GTC*	*100*
869847	*Duke*	*SOCO*	*50*
954730	*TVA*	*SOCO*	*500*
147617	*SC*	*GTC*	*296*
147616	*SCEG*	*GTC*	*285*
147615	*Duke*	*GTC*	*465*
147613	*TVA*	*GTC*	*310*
72133712	*Duke*	*MEAG*	*50*

Table 4.5. Transmission Reliability Margins Modeled (TRM)

Transmission Owner	Interface	Amount (MW)
Southern	*From Duke*	*194*
GTC	*From Duke*	*106*
MEAG	*From Duke*	*25*
Dalton	*From Duke*	*3*
Southern	*From Entergy*	*206*
Southern	*From TVA*	*232*
GTC	*From TVA*	*51*
MEAG	*From TVA*	*12*
Dalton	*From TVA*	*1*

SCPSA Border to GTC

200 MW

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Study Structure and Assumptions

Transfer Sensitivity	Transfer Amount	Transfer Source	Transfer Sink	Study Year
SCPSA Border to GTC	200 MW	SCPSA	GTC	2013
Load Flow Cases				
2012 Series Version 2A Cases: Summer Peak and Shoulder (93% load level)				
Source Modeled				
The source for this transfer was a uniform load reduction in SCPSA.				

Transmission System Impacts

The 200 MW transfer from the SCPSA Border to GTC results in no thermal constraints attributable to the requested transfer.

Southern Balancing Authority

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.

AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
The following constraints have been identified as directly attributable to the above defined transfer.							
SBA	1653 FISHINGCK J 115 1664 W MILLEDGVL 115 1	188	99.1	99.6	147 BRANCH + 230 148 GORDON 230 1	7	--
SBA	1612 FISHING CRK 115 1653 FISHINGCK J 115 1	188	99.0	99.6	147 BRANCH + 230 148 GORDON 230 1	7	--
SBA	4331 ATTALLA3 115 4332 ATTALLA5 161 2	111	98.5	99.1	4234 CLAY 6 230 4247 ONEONTA6 230 1	13	--
SBA	471 N LAVONIA 115 2003 AIRLINE 2 115 1	216	96.3	98.0	94 BIO 230 105 VANNA 230 1	8	--
SBA	4612 BREWT TP 115 4627 FLOMATON 115 1	212	97.7	97.9	4629 EMCSTOCK 115 4701 BARRY 3 115 1	3	--
SBA	33 ADAMSVILLE 230 36 JACK MCD 230 1	485	97.4	97.9	36 JACK MCD 230 41 PEACHTREE 230 1	11	--
SBA	4638 CHICK 6 230 4700 BARRY 6 230 1	833	96.9	97.1	4638 CHICK 6 230 4642 BIG CK 6 230 1	3	--
SBA	1379 GUMLOG J 115 2406 TNS JN 115 1	188	94.0	96.0	94 BIO 230 105 VANNA 230 1	8	--
SBA	916 CALHOUN RD 115 1754 METAL CON 115 1	155	95.4	95.8	181 ROCKY MTN 230 182 HAMMOND + 230 1	5	--

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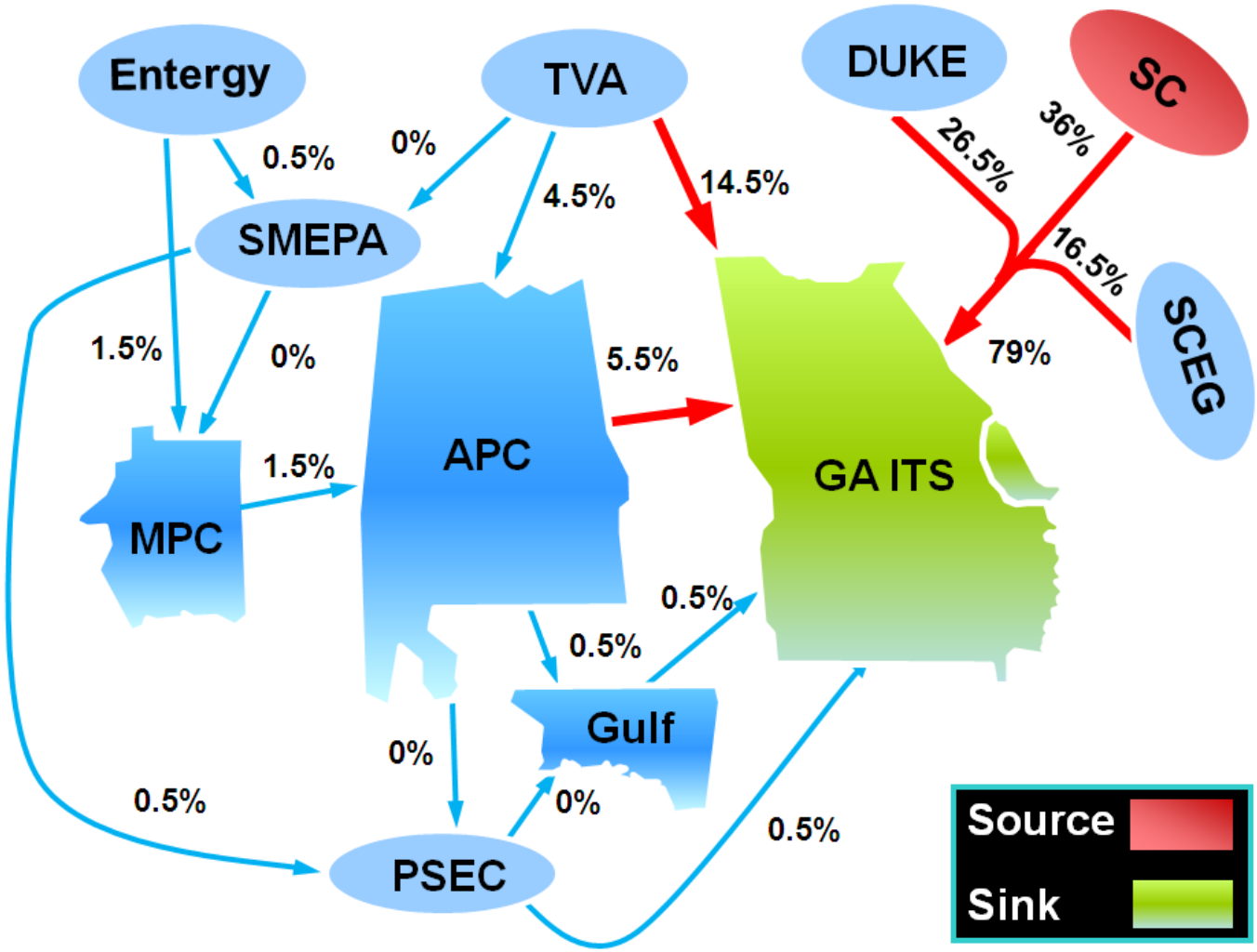
AREA	Limiting Element	Rating (MVA)	Thermal Loadings (%) Without Request	Thermal Loadings (%) With Request	Contingency	Scenario	Project
SBA	888 DALTON 115 892 E DALTON 2 115 2	166	95.5	95.7	888 DALTON 115 892 E DALTON 2 115 1	2	--
SBA	615 VICTORY DR 115 1500 CHLORIDE + 115 1	124	95.3	95.7	612 FIRST AVE + 115 1561 RIVERFRONTJ 115 1	10	--
SBA	147 BRANCH + 230 148 GORDON 230 1	497	95.0	95.6	13 BONAIRE 500 18 SCHERER + 500 1	7	--
SBA	1626 KATHLEEN 115 1627 FRITO LAY + 115 1	124	94.5	94.8	150 BONAIRE 230 1603 KATHLEEN 230 1	4	--
SBA	598 GREENSCUT J 115 1425 CLARK RD 115 1	124	92.7	94.0	115 VOGTLE + 230 116 WILSON 230 1	6	--
SBA	821 MILLEDGEVL 115 1612 FISHING CRK 115 1	188	93.3	93.9	147 BRANCH + 230 148 GORDON 230 1	7	--
SBA	181 ROCKY MTN 230 182 HAMMOND + 230 1	807	93.5	93.7	181 ROCKY MTN 230 198 PINSON 230 1	5	--
SBA	709 SYLVESTER J 115 1049 N TIFTON 115 1	63	92.2	93.4	707 CRISP 2 115 1899 E AMER J 115 1	9	--
SBA	709 SYLVESTER J 115 1507 ASHBURN J 115 1	63	92.2	93.1	707 CRISP 2 115 1899 E AMER J 115 1	9	--
SBA	218 S BAINBRDGE 230 4601 FARLEY 6 230 1	693	92.6	92.8	2500 RACCOON CK 500 4600 FARLEY 8 500 1	6	--
SBA	149 S MACON 230 767 S MACON 115 2	280	92.4	92.8	149 S MACON 230 767 S MACON 115 1	11	--
SBA	149 S MACON 230 767 S MACON 115 1	280	91.8	92.2	149 S MACON 230 767 S MACON 115 2	11	--
SBA	298 TYRONE TP 115 1900 LINE CREEK 115 1	188	91.7	92.0	129 S COWETA 230 719 S COWETA 115 1	6	--
SBA	9052 LT OGEECHEE 115 9144 RICH HL TAP 115 1	255	90.6	91.9	2152 DORCHESTER 230 9051 LT OGEECHEE 230 1	6	--
SBA	8705 MSPT EFR 230 8710 MOSSPT E 230 1	866	91.4	91.6	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--
SBA	472 AIRLINE 1 115 473 BIO 115 1	249	90.0	91.5	94 BIO 230 105 VANNA 230 1	8	--
SBA	910 REDMONDJ 115 1744 OLD DALTON 115 1	96	90.7	91.1	181 ROCKY MTN 230 182 HAMMOND + 230 1	5	--
SBA	4700 BARRY 6 230 7057 ECUA 230 1	602	90.5	90.9	4638 CHICK 6 230 4700 BARRY 6 230 1	3	--
SBA	4121 FAYET TS 161 4127 FAY COTN 161 1	193	90.1	90.4	4156 MILLER6 230 4157 MILLER8 500 1	12	--
SBA	4127 FAY COTN 161 4979 BANKSTON 161 1	193	90.1	90.4	4156 MILLER6 230 4157 MILLER8 500 1	12	--
SBA	469 AVALON 115 1379 GUMLOG J 115 1	188	88.5	90.4	94 BIO 230 105 VANNA 230 1	8	--
SBA	4644 N THEO 6 230 8710 MOSSPT E 230 1	574	90.0	90.3	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--
SBA	8816 WADE SS 115 8832 HARLESTN 115 1	107	89.7	90.1	4642 BIG CK 6 230 8702 DANIEL 230 1	1	--

Scenario Explanations

1) Barry Unit #5 Offline, Summer Peak Case
2) Bowen Unit #1 Offline, Summer Peak Case
3) Crist Unit #7 Offline, Summer Peak Case
4) Franklin Unit #2 Offline, Summer Peak Case
5) Gaston Unit #5 Offline, Summer Peak Case
6) Hatch Unit #1 Offline, Summer Peak Case
7) Hatch Unit #2 Offline, Summer Peak Case
8) McDonough Unit #6 Offline, Summer Peak Case
9) Scholz Unit #2 Offline, Summer Peak Case
10) Wansley Unit #1 Offline, Summer Peak Case
11) Yates Unit #7 Offline, Summer Peak Case
12) Gorgas Unit #10 Offline, Shoulder (93% Load Level) Case
13) Gaston Unit #5 Offline, Shoulder (93% Load Level) Case

SCPSA Border to GTC: Transfer Flows within the SERTP



Note: Red arrows indicate transfer percentages of greater than 5%.

Potential Solutions for Identified Constraints

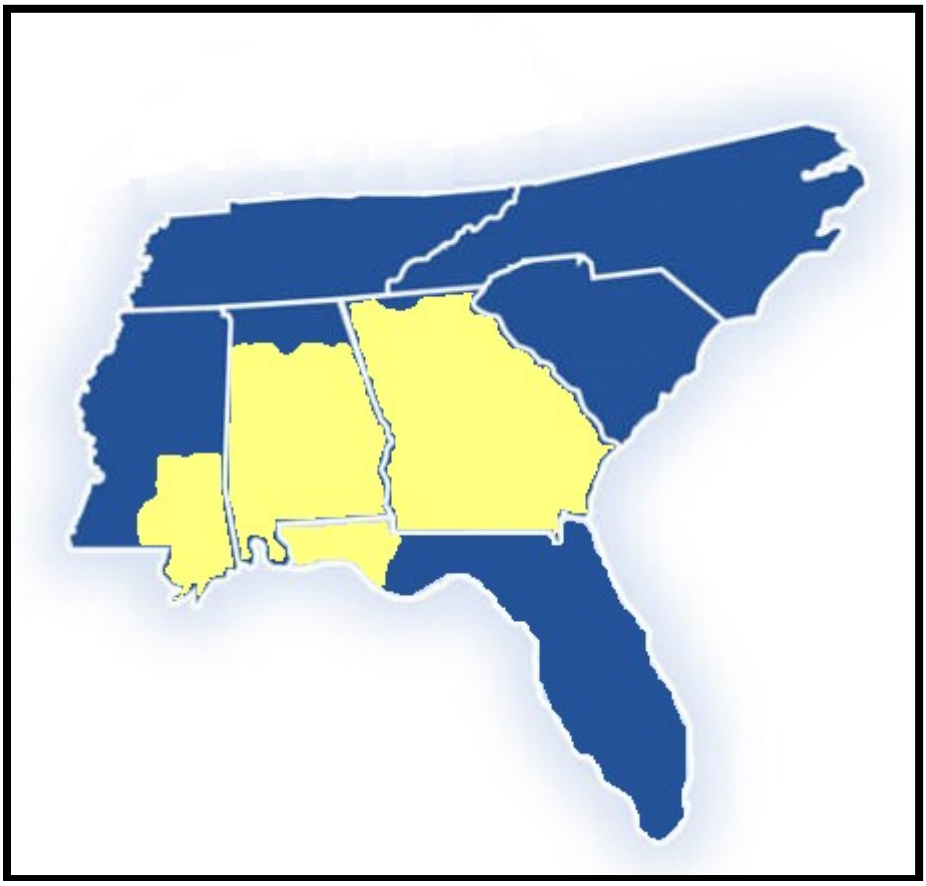
There were no identified constraints based on the assumptions used in this study and, and therefore, no potential solutions were identified. It must be noted that changes to the load forecast, and/or changes in the expansion plan could occur, and would impact the results of this study. In addition, the 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. Other Balancing Areas were not monitored which could result in additional limitations and required system improvements.

Table 5.2. Total Cost of the SCPSA Border to GTC 200 MW Transfer

Area	Estimated Cost
TOTAL ($2012)	**$0**[1]

[1] Total cost does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by 6/1/2013. The studied transfer depends on these projects being in-service by 6/1/2013. If any of these projects are delayed or cancelled, the cost to support the study transfer could be greater than the total shown above.

Diagram 5.1. Approximate Location of Potential Solutions



Interchange Assumptions

Table 5.3. Transactions Modeled in Starting Point Cases

OASIS Ref. #	POR	POD	Amount (MW)
891294	*SOCO*	*Duke*	*37*
911948	*EES*	*GTC*	*50*
921615	*EES*	*GTC*	*50*
787707	*SOCO*	*TVA*	*38*
672440	*TVA*	*SOCO*	*192*
882565	*SCPSA*	*SOCO*	*50*
77603	*SOCO*	*PSEC*	*110*
765080	*PSEC*	*SOCO*	*926*
--	*SOCO*	*PSEC*	*5*
--	*SOCO*	*PSEC*	*230*
--	*SOCO*	*PSEC*	*267*
--	*SEPA*	*SOCO*	*676*
--	*SBA*	*FRCC*	*3700*

Table 5.4. Additional Transactions Modeled in Cases

OASIS Ref. #	POR	POD	Amount (MW)
903932	*EES*	*SOCO*	*500*
854479	*EES*	*SOCO*	*138*
967100	*EES*	*SOCO*	*150*
946923	*EES*	*GTC*	*100*
869847	*Duke*	*SOCO*	*50*
954730	*TVA*	*SOCO*	*500*
147617	*SC*	*GTC*	*296*
147616	*SCEG*	*GTC*	*285*
147615	*Duke*	*GTC*	*465*
147613	*TVA*	*GTC*	*310*
72133712	*Duke*	*MEAG*	*50*

Table 5.5. Transmission Reliability Margins Modeled (TRM)

Transmission Owner	Interface	Amount (MW)
Southern	*From Duke*	*194*
GTC	*From Duke*	*106*
MEAG	*From Duke*	*25*
Dalton	*From Duke*	*3*
Southern	*From Entergy*	*206*
Southern	*From TVA*	*232*
GTC	*From TVA*	*51*
MEAG	*From TVA*	*12*
Dalton	*From TVA*	*1*