Southeastern Regional TRANSMISSION PLANNING

2023 Economic Planning Studies

SERTP Southeastern Regional Transmission Planning

Economic Planning Studies
Preliminary Results

Associated Electric Cooperative Inc.

Dalton UTILITIES

DUKE ENERGY

GeorgiaTransmission

LG&E KU

MEAGPOWER

PowerSouth ENERGY COOPERATIVE

Southern Company

TVA

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Overview of Economic Planning Studies

Executive Summary

The Regional Planning Stakeholder Group ("RPSG") identified five (5) economic planning studies to be evaluated under the Southeastern Regional Transmission Planning ("SERTP") process. The SERTP Sponsors have performed analyses to assess potential constraints on the transmission systems of the participating transmission owners for the stakeholder requested economic planning studies selected by the Regional Planning Stakeholder Group ("RPSG"). 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 identify potential transmission enhancements within the footprint of the participating transmission owners necessary to accommodate the economic planning study requests, planning-level cost estimates, and the projected need-date for projects to accommodate the economic planning study requests. 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 specific assumptions selected for these evaluations were:

- Each request was evaluated for the year identified below, as selected by the RPSG
- The following economic planning studies were assessed:

1) **MISO to TVA – 2900 MW**
   - Year: 2028
   - Load Level: Winter Peak
   - Type of Transfer: Generation to Generation
   - Source: Generation within MISO
   - Sink: Generation within TVA

2) **South Georgia to North Georgia – 1600 MW**
   - Year: 2028
   - Load Level: Summer Peak
   - Type of Transfer: Generation to Generation
   - Source: Generation within South Georgia
   - Sink: Generation within North Georgia

3) **TVA to North Georgia – 1600 MW**
   - Year: 2028
   - Load Level: Summer Peak
   - Type of Transfer: Generation to Generation
   - Source: Generation within TVA
   - Sink: Generation within North Georgia

4) **MISO to LGE/KU – 1242 MW**
   - Year: 2028
   - Load Level: Summer Peak
   - Type of Transfer: Generation to Generation
   - Source: Generation within MISO
   - Sink: Generation within LGE/KU

5) **SOCO to DEC – 500 MW**
   - Year: 2033
   - Load Level: Summer Peak
   - Type of Transfer: Generation to Generation
   - Source: Generation within SOCO
   - Sink: Generation within DEC

Case Development

- For all evaluations, the ***2023 Series Version 1 SERTP Regional Models*** were used as a starting point load flow cases for the analysis of the Economic Planning Scenarios.

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 as applicable)

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, at a minimum, results for monitored transmission elements within the participating transmission owners' footprint based on:

- Thermal loadings greater than 90% for facilities that are negatively impacted by the proposed transfers and change by +5% of applicable rating with the addition of the transfer(s)
- 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 to identify any constraints within the participating transmission owners' footprint as a result of the economic planning study requests. Each participating transmission owner applied their respective reliability criteria for its facilities and any 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 studies requested by the RPSG.

- 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 general, planning-level cost estimates and in-service dates 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 study request, the results of that study including:
    1. Limit(s) to the transfer
    2. Selected solution alternatives to address the limit(s)
    3. General, planning-level cost estimates and in-service dates for the selected transmission solution alternatives

1. Study Request 1 Results

MISO to TVA – Winter 2028

2900 MW

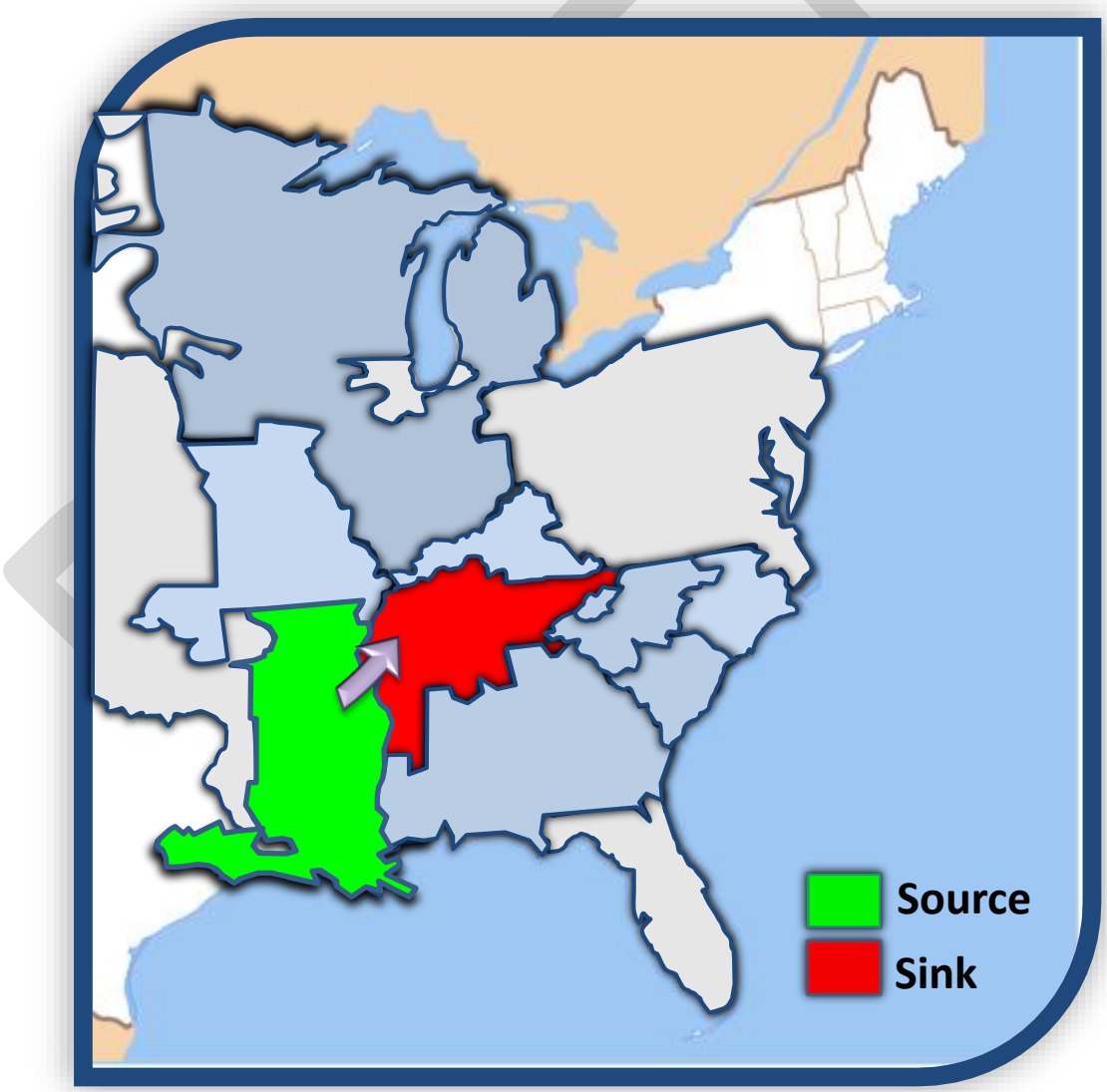
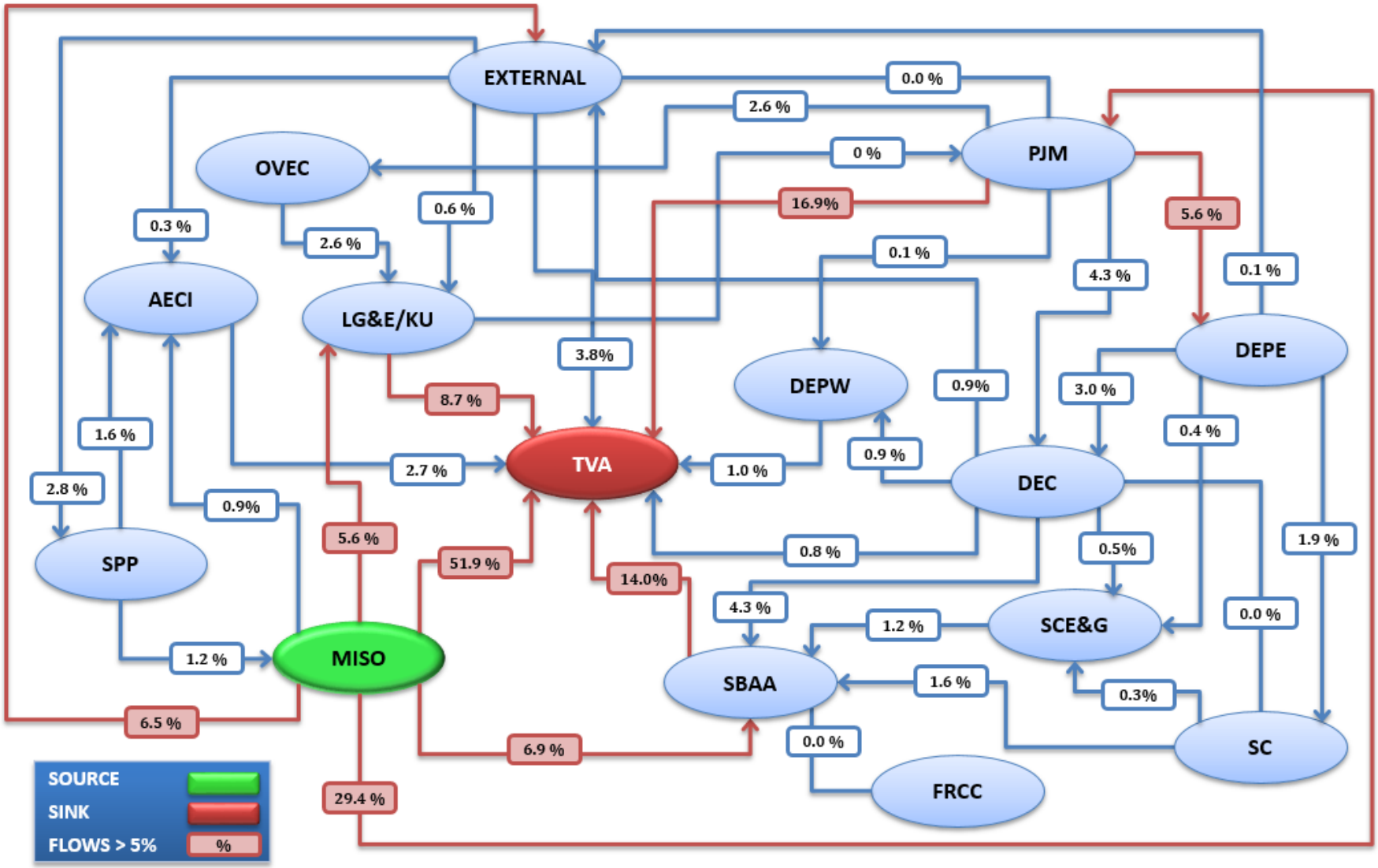


Table I.1.1. Total Cost Identified by the SERTP Sponsors

Balancing Authority Area	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$21,500,000
TOTAL ($2023)	$21,500,000

Diagram I.1.1. Transfer Flow Diagram (% of Total Transfer)



Associated Electric Cooperative Balancing Authority Area (AECI) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.2.1. Pass 0 – Transmission System Impacts with No Enhancements – *AECI*

The following table identifies significant ***AECI*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.2.2. Pass 1 – Potential Future Transmission System Impacts – *AECI*

The following table depicts thermal loadings of ***AECI*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.2.3. Potential Solutions for Identified Problems – *AECI*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
AECI TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Carolinas Balancing Authority Area (DEC) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.3.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEC*

The following table identifies significant ***DEC*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

<u>Table I.3.2.</u> Pass 1 – Potential Future Transmission System Impacts – *DEC*

The following table depicts thermal loadings of ***DEC*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.3.3. Potential Solutions for Identified Problems – *DEC*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEC TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress East Balancing Authority Area (DEPE) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.4.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPE*

The following table identifies significant ***DEPE*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.4.2. Pass 1 – Potential Future Transmission System Impacts – *DEPE*

The following table depicts thermal loadings of ***DEPE*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.4.3. Potential Solutions for Identified Problems – *DEPE*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPE TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress West (DEPW) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.5.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPW*

The following table identifies significant ***DEPW*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.5.2. Pass 1 – Potential Future Transmission System Impacts – *DEPW*

The following table depicts thermal loadings of ***DEPW*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.5.3. Potential Solutions for Identified Problems – *DEPW*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPW TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Louisville Gas & Electric and Kentucky Utilities Balancing Authority Area (LG&E/KU) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.6.1. Pass 0 – Transmission System Impacts with No Enhancements – *LG&E/KU*

The following table identifies significant ***LG&E/KU*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

<u>Table I.6.2.</u> Pass 1 – Potential Future Transmission System Impacts – *LG&E/KU*

The following table depicts thermal loadings of ***LG&E/KU*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.6.3. Potential Solutions for Identified Problems – *LG&E/KU*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	None Required	--	--
LG&E/KU TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

PowerSouth Planning Authority Area (PS) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.7.1. Pass 0 – Transmission System Impacts with No Enhancements – *PS*

The following table identifies significant ***PS*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

<u>Table I.7.2.</u> Pass 1 – Potential Future Transmission System Impacts – *PS*

The following table depicts thermal loadings of ***PS*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.7.3. Potential Solutions for Identified Problems – *PS*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
PS TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southern Balancing Authority Area (SBAA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.8.1. Pass 0 – Transmission System Impacts with No Enhancements – *SBAA*

The following table identifies significant **SBAA** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBAA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.8.2. Pass 1 – Potential Future Transmission System Impacts – *SBAA*

The following table depicts thermal loadings of ***SBAA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table I.8.3. Potential Solutions for Identified Problems – *SBAA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
SBAA TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Tennessee Valley Authority Balancing Authority Area (TVA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to TVA	2900 MW	MISO	TVA	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table I.9.1. Pass 0 – Transmission System Impacts with No Enhancements – *TVA*

The following table identifies significant ***TVA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Freeport-Cordova 500 kV	1732.1	68.2	117.6	Sans Souci-Driver 500 kV	1	1
TVA	Freeport-Cordova 500 kV	1732.1	62.5	111.9	Driver-Sandy Bayou 500 kV	1	1
TVA	Oakville-Southeast Gate 161 kV	223.1	68.8	111.5	Freeport-Cordova 500 kV	1	2
TVA	Freeport-Oakville 161 kV	279.4	72.7	106.5	Freeport-Cordova 500 kV	1	1
TVA	Freeport-Cordova 500 kV	1732.1	56.0	105.3	Sandy Bayou-Shelby 500 kV	1	1
TVA	Shelby Drive-Southeast Gate 161 kV	253.8	66.1	103.6	Freeport-Cordova 500 kV	1	2
TVA	Freeport-Southeast Gate 161 kV	279.4	69.0	103.6	Freeport-Cordova 500 kV	1	1
TVA	Freeport-Cordova 500 kV	1732.1	57.5	103.3	Dell-Sans Souci 500 kV	1	1
TVA	Freeport-Cordova 500 kV	1732.1	60.1	102.8	ISES-Powerline Road 500 kV	1	1
TVA	Freeport-Cordova 500 kV	1732.1	56.7	100.1	Powerline Road-Dell 500 kV	1	1
TVA	Freeport-Shelby Drive 161 kV	302.3	68.8	100.1	Freeport-Cordova 500 kV	1	1

Scenario Explanations:

1. N/A

Table I.9.2. Pass 1 – Potential Future Transmission System Impacts – *TVA*

The following table depicts thermal loadings of ***TVA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Freeport-Cordova 500 kV	1732.1	58.7	97.8	Freeport 500/161 kV	1	
TVA	Union City-South Fifth Union City Tap 161 kV	334.6	57.6	96.7	Sans Souci-Driver 500 kV	1	
TVA	Batesville-Tallahatchie Valley Industrial Park 161 kV	334.6	79.6	94.8	None	1	
TVA	Freeport-Cordova 500 kV	1732.1	54.9	91.5	Choctaw-Clay 500 kV	1	
TVA	Brookfield-Southeast Gate 161 kV	223.1	63.6	91.0	Freeport-Cordova 500 kV	1	
TVA	West Memphis-Birmingham Steel 500 kV	2546.0	50.7	91.0	Sans Souci-Driver 500 kV	1	
TVA	South Primary-Southern Avenue 161 kV	223.1	71.8	90.7	Freeport-Cordova 500 kV	1	
TVA	Tiptonville-Polk Tap 161 kV	398.5	57.7	90.7	Sans Souci-Driver 500 kV	1	
TVA	Freeport-Mendenhall Road 161 kV	253.8	64.3	90.4	Freeport-Cordova 500 kV	1	
TVA	Northeast Gate-Shady Grove 161 kV	188.2	59.4	90.4	Freeport-Cordova 500 kV	1	
TVA	Hopkinsville-Lewisburg 161 kV	217.8	84.5	90.3	Lost City-Paradise 161 kV	1	

Scenario Explanations:

1. No Unit Out of Service

Table I.9.3. Potential Solutions for Identified Problems – *TVA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
1	Reconductor the Freeport-Oakville 161 kV TL (approximately 10 miles) with 150C ACSS 795. Reconductor the Freeport-Southeast Gate 161 kV TL (approximately 14 miles) with 150C ACSS 795. Upgrade terminal equipment at Freeport 500 kV substation.	2028	$20,000,000
2	Upgrade terminal equipment at Memphis Light Gas & Water's Southeast Gate and Oakville 161 kV substations.	2028	$1,500,000
TVA TOTAL ($2023)			**$21,500,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

2. Study Request 2 Results

South Georgia to North Georgia – Summer 2028

1600 MW

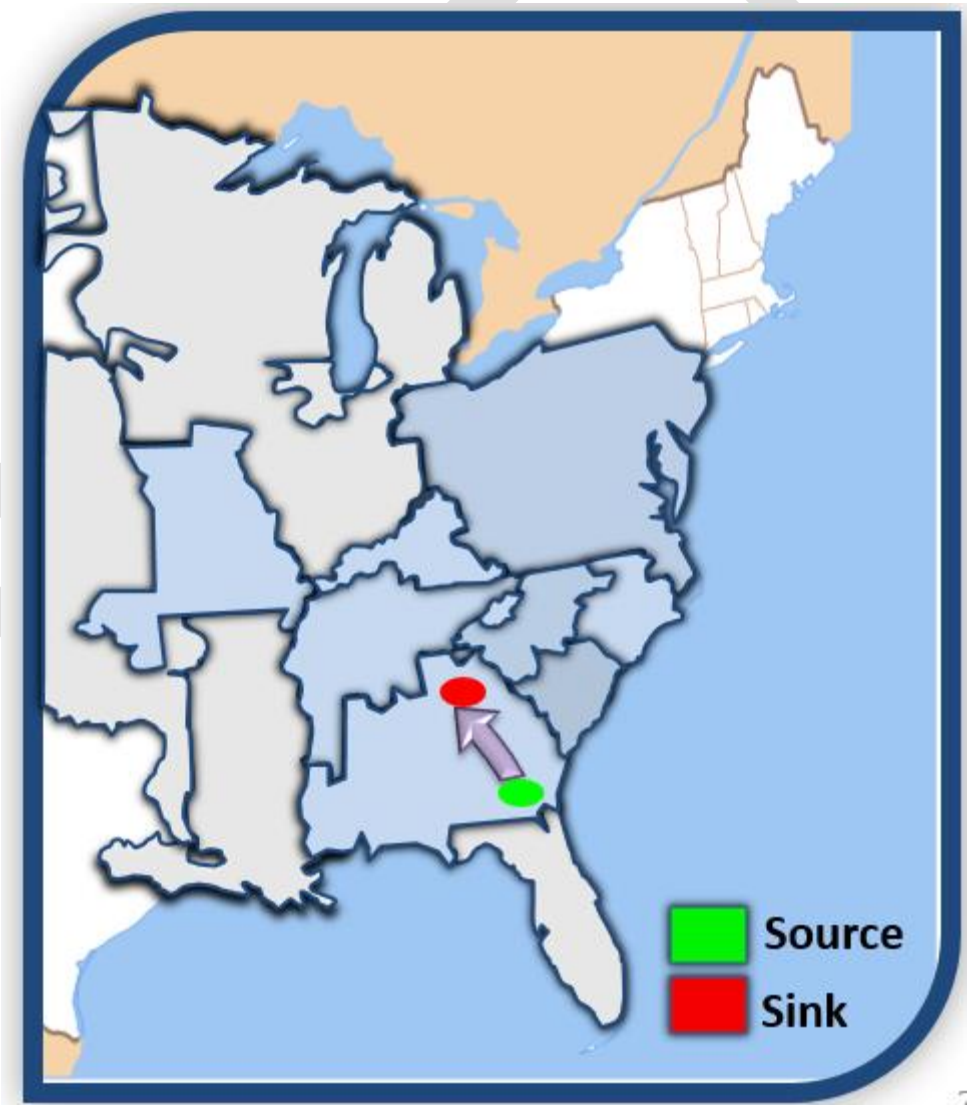
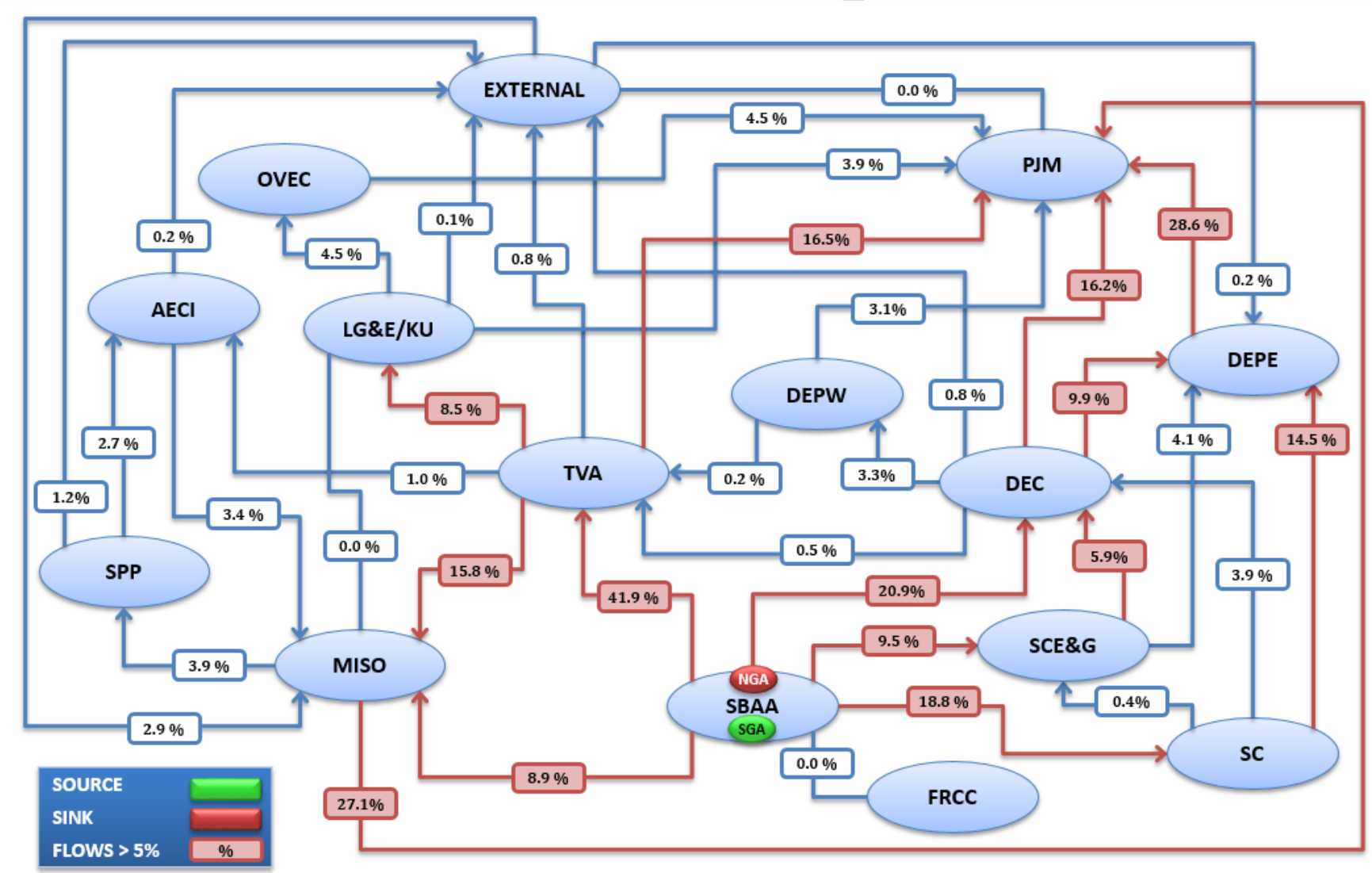


Table II.1.1. Total Cost Identified by the SERTP Sponsors

Balancing Authority Area	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$99,396,000
Tennessee Valley Authority (TVA)	$925,000
TOTAL ($2023)	**$100,321,000**

Diagram II.1.1. Transfer Flow Diagram (% of Total Transfer)



Associated Electric Cooperative Balancing Authority Area (AECI) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.2.1. Pass 0 – Transmission System Impacts with No Enhancements – *AECI*

The following table identifies significant ***AECI*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.2.2. Pass 1 – Potential Future Transmission System Impacts – *AECI*

The following table depicts thermal loadings of ***AECI*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.2.3. Potential Solutions for Identified Problems – *AECI*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
AECI TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Carolinas Balancing Authority Area (DEC) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.3.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEC*

The following table identifies significant ***DEC*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.3.2. Pass 1 – Potential Future Transmission System Impacts – *DEC*

The following table depicts thermal loadings of ***DEC*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.3.3. Potential Solutions for Identified Problems – *DEC*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEC TOTAL ($2023)			$0 (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress East Balancing Authority Area (DEPE) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.4.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPE*

The following table identifies significant ***DEPE*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.4.2. Pass 1 – Potential Future Transmission System Impacts – *DEPE*

The following table depicts thermal loadings of ***DEPE*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
--	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.4.3. Potential Solutions for Identified Problems – *DEPE*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPE TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress West (DEPW) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.5.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPW*

The following table identifies significant ***DEPW*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.5.2. Pass 1 – Potential Future Transmission System Impacts – *DEPW*

The following table depicts thermal loadings of ***DEPW*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.5.3. Potential Solutions for Identified Problems – *DEPW*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	$0
DEPW TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Louisville Gas & Electric and Kentucky Utilities Balancing Authority Area (LG&E/KU) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.6.1. Pass 0 – Transmission System Impacts with No Enhancements – *LG&E/KU*

The following table identifies significant ***LG&E/KU*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.6.2. Pass 1 – Potential Future Transmission System Impacts – *LG&E/KU*

The following table depicts thermal loadings of ***LG&E/KU*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.6.3. Potential Solutions for Identified Problems – *LG&E/KU*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	None Required	--	--
LG&E/KU TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

PowerSouth Planning Authority Area (PS) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.7.1. Pass 0 – Transmission System Impacts with No Enhancements – *PS*

The following table identifies significant ***PS*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.7.2. Pass 1 – Potential Future Transmission System Impacts – *PS*

The following table depicts thermal loadings of ***PS*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table II.7.3. Potential Solutions for Identified Problems – *PS*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
PS TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southern Balancing Authority Area (SBAA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.8.1. Pass 0 – Transmission System Impacts with No Enhancements – *SBAA*

The following table identifies significant ***SBAA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	380084 6FAIRBURN 1 230.00 382709 6UNIONCTY B2 230.00 1	602	89.0	106.4	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	P1
SBAA	380084 6FAIRBURN 1 230.00 381932 6LINE CREEK 230.00 1	596	90.6	108.2	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	P2
SBAA	381932 6LINE CREEK 230.00 382708 6UNIONCTY B1 230.00 1	602	89.9	107.4	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	NA*
SBAA	380147 6BRANCH 230.00 381689 6FORREST LK 230.00 1	596	91.4	101.0	380152 6EATONTON SW 230.00 382436 6OASIS 230.00 1	2	P3
SBAA	380152 6EATONTON SW 230.00 382436 6OASIS 230.00 1	602	93.8	103.2	380147 6BRANCH 230.00 381689 6FORREST LK 230.00 1	1	P4
SBAA	384403 3CROOK CK 115.00 385200 3SWAGG 115.00 1	140	73.3	101.5	380010 8FORTSON 500.00 383033 8TENASKA GA 500.00 1	1	P5

*Project not in current version of models, but is in the 2023 Expansion Plan

Scenario Explanations:

1. McDonough Unit 6 Offline
2. Wansley Unit 7 Offline

Table II.8.2. Pass 1 – Potential Future Transmission System Impacts – *SBAA*

The following table depicts thermal loadings of ***SBAA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	381331 3SIGMAN RD 115.00 381914 3CORNISH MTN 115.00 1	188	88.1	93.9	380096 6CONYERS 230.00 380465 3CONYERS 115.00 1	1	--
SBAA	380288 3FAYTVL RD J 115.00 380289 3MURRAY LK J 115.00 1	140	86.2	92.4	380297 3MORROW B1 115.00 381237 3FT GILLEM 115.00 1	1	--
SBAA	380289 3MURRAY LK J 115.00 382707 3MORROW B3 115.00 1	135	89.4	95.8	380297 3MORROW B1 115.00 381237 3FT GILLEM 115.00 1	1	--
SBAA	380300 3BARNETT RD 115.00 382701 3MTN VIEW B2 115.00 1	138	83.5	92.0	380028 6WELCOME ALL 230.00 382708 6UNIONCTY B1 230.00 1	1	--
SBAA	380734 3BERNHARD RD 115.00 381296 3HARP RD 115.00 1	174	79.5	94.4	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	2	--
SBAA	382480 6YELLOW DIRT 230.00 382485 6HICK LVL B1 230.00 1	776	80.1	93.8	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	2	--
SBAA	382028 3JEFFERSN RD 115.00 382036 3RUSSELL 115.00 1	124	92.0	97.7	380430 3WINDER P B1 115.00 382758 3WINDER P B2 115.00 1	1	--
SBAA	381579 6MULBERRY GR 230.00 381598 6HOPEWELL CH 230.00 1	509	75.9	91.0	380010 8FORTSON 500.00 383033 8TENASKA GA 500.00 1	2	--
SBAA	381579 6MULBERRY GR 230.00 382231 6FORTSON B1 230.00 1	509	78.1	93.1	380010 8FORTSON 500.00 383033 8TENASKA GA 500.00 1	2	--
SBAA	380604 3W PT DAM 115.00 380605 3PITTMAN RD 115.00 1	124	86.9	93.1	380603 3W POINT 2 115.00 384459 3W PT DS 115.00 1	1	--
SBAA	380159 6EATONTON AB 230.00 381689 6FORREST LK 230.00 1	596	88.3	97.9	380152 6EATONTON SW 230.00 382436 6OASIS 230.00 1	1	--
SBAA	380153 3ROBINS SP 115.00 381613 3KAOLIN J 115.00 1	115	83.2	92.5	380317 8ROCKVILLE 500.00 383052 8WARTHEN 500.00 1	1	--
SBAA	380137 6PITTS 230.00 381603 6KATHLEEN 230.00 1	433	65.4	92.0	380013 8BONAIRE 500.00 380014 8HATCH 500.00 1	1	--
SBAA	380137 6PITTS 230.00 383201 6RED PEBBLE 230.00 1	433	76.7	98.0	380013 8BONAIRE 500.00 380014 8HATCH 500.00 1	1	--
SBAA	380159 6EATONTON AB 230.00 382368 6NEWBORN RD 230.00 1	602	85.2	94.6	380152 6EATONTON SW 230.00 382436 6OASIS 230.00 1	1	--
SBAA	384404 3MORR XRD 115.00 384405 3RANBURNE 115.00 1	135	67.4	96.4	380010 8FORTSON 500.00 383033 8TENASKA GA 500.00 1	1	--
SBAA	384404 3MORR XRD 115.00 385200 3SWAGG 115.00 1	140	70.8	98.9	380010 8FORTSON 500.00 383033 8TENASKA GA 500.00 1	1	--
SBAA	384924 3MTVMILTP 115.00 385116 3TUSK TAP 115.00 1	138	75.6	92.3	382500 8RACCOON CK 500.00 384600 8FARLEY 8 500.00 1	1	--
SBAA	384924 3MTVMILTP 115.00 385947 3THURLOW B2 115.00 1	138	80.0	96.7	382500 8RACCOON CK 500.00 384600 8FARLEY 8 500.00 1	1	--
SBAA	317096 6CHATOM 6 230.00 318001 6WAYNE230 230.00 1	335	85.0	90.8	317105 6LOWMAN6 230.00 384586 6W MCTSH6 230.00 1	2	--

Scenario Explanations:

1. McDonough Unit 6 Offline
2. Wansley Unit 7 Offline

Table II.8.3. Potential Solutions for Identified Problems – *SBAA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
P1	Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace the 2000A line trap at Union City with 4000A line trap. Replace switches at Union City with 4000A switches. Replace switch at Fairburn #1 with 4000A switch.	Summer 2028	$8,750,000
P2	Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace switch at Fairburn #1 with 4000A switch. Replace the 1590 AAC jumper at Fairburn #1 with 3-1590 AAC jumper.	Summer 2028	$10,650,000
P3	Rebuild the line with 160C 1351 ACSS conductor. Replace the 2-750 AAC jumper at Eatonton Primary with 2-1590 AAC.	Summer 2028	$3,691,000
P4	Rebuild the line with 160C 1351 ACSS conductor. Replace the 1590 AAC jumper at Branch with 2-1590 AAC.	Summer 2028	$71,905,000
P5	Advance the project to reconductor the line from 397 30/7 ACSR 100°C to 795 26/7 ACSR 100°C from Crooked Creek TS to Indian Creek Metering Station.	Summer 2028	$4,400,000
SBAA TOTAL ($2023)			**$99,396,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Tennessee Valley Authority Balancing Authority Area (TVA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
South Georgia to North Georgia	1600 MW	South Georgia	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table II.9.1. Pass 0 – Transmission System Impacts with No Enhancements – *TVA*

The following table identifies significant ***TVA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Charleston-Hiwassee River 161 kV	289.5	108.7	118.6	Sequoyah-Bradley 500 kV	1	1
TVA	Hiwassee River-East Cleveland 161 kV	289.5	99.6	109.6	Sequoyah-Bradley 500 kV	1	1
TVA	Chickamauga-Hawthorne 161 kV	226.7	103.2	108.4	Bradley-Conasauga 500 kV	1	2
TVA	Chickamauga-Hawthorne 161 kV	226.7	103.2	108.4	Conasauga-Mosteller 500 kV	1	2

Scenario Explanations:

1. No Unit Out of Service

Table II.9.2. Pass 1 – Potential Future Transmission System Impacts – *TVA*

The following table depicts thermal loadings of ***TVA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Sequoyah-Concord 161 kV	350.0	89.7	97.2	Sequoyah-Bradley 500 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	90.5	95.9	East Point 500/161 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	90.2	95.6	East Point-Fairview Tap 161 kV	1	
TVA	Oglethorpe 161/230 kV	289.5	88.2	95.0	Concord 161/230 kV	1	
TVA	Oglethorpe 161/230 kV	289.5	88.0	94.8	West Ringgold-Concord 230 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	88.9	94.2	Fairview Tap-Arab 161 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	88.0	93.5	Lowndes-Valley View 500 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	87.0	92.0	Decatur-Priceville Tap 161 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	83.3	91.7	Arab-Guntersville 161 kV	1	
TVA	Trafford-Fultondale 115 kV	92.8	85.7	90.8	Priceville Tap-Winton 161 kV	1	

Scenario Explanations:

1. No Unit Out of Service

Table II.9.3. Potential Solutions for Identified Problems – *TVA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
1	Upgrade terminal equipment at Charleston and East Cleveland 161 kV substations.	2028	$775,000
2	Upgrade terminal equipment at Chickamauga Hydro Plant.	2028	$150,000
TVA TOTAL ($2023)			**$925,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

3. Study Request 3 Results

TVA to North Georgia – Summer 2028

1600 MW

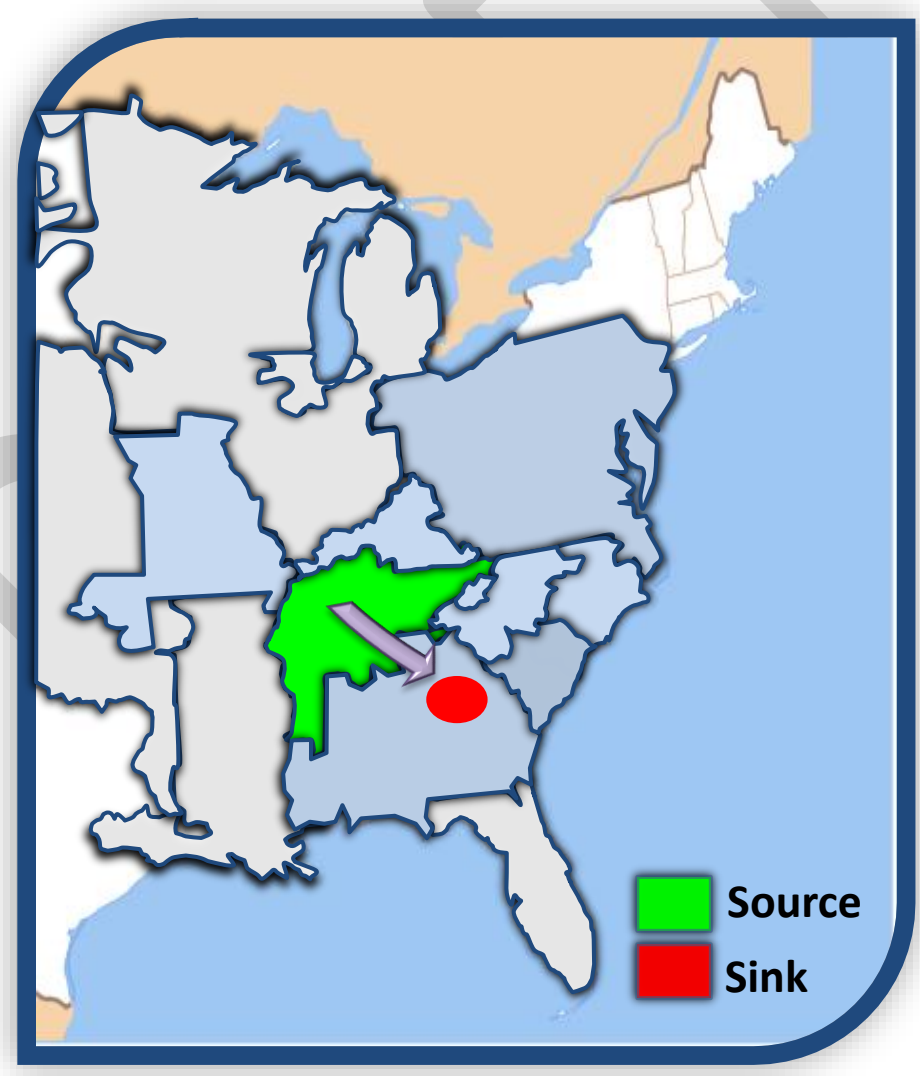
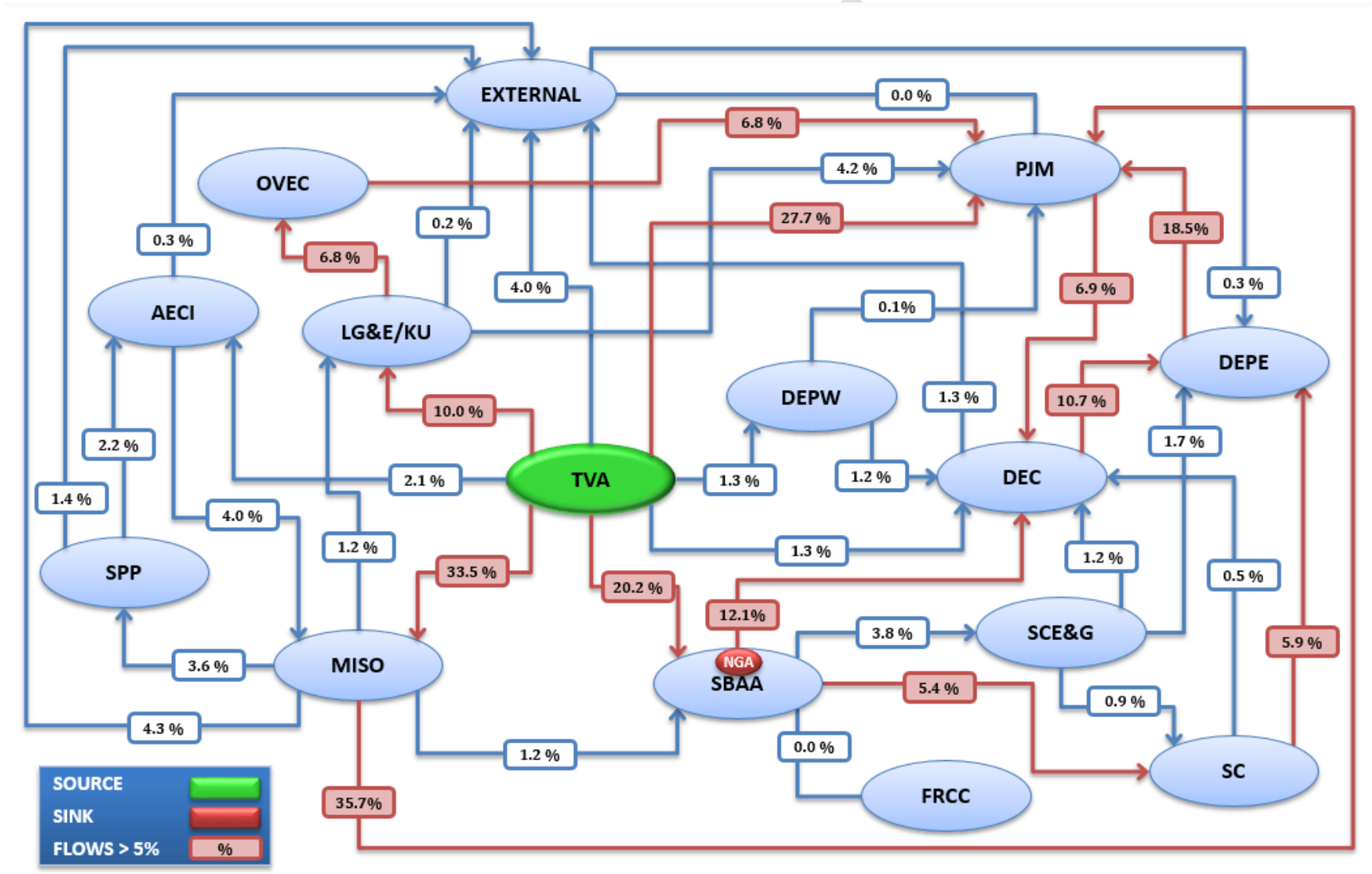


Table III.1.1. Total Cost Identified by the SERTP Sponsors

Balancing Authority Area	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$38,125,000
Tennessee Valley Authority (TVA)	$27,200,000
TOTAL ($2023)	$63,325,000

Diagram III.1.1. Transfer Flow Diagram (% of Total Transfer)



Associated Electric Cooperative Balancing Authority Area (AECI) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.2.1. Pass 0 – Transmission System Impacts with No Enhancements – *AECI*

The following table identifies significant ***AECI*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.2.2. Pass 1 – Potential Future Transmission System Impacts – *AECI*

The following table depicts thermal loadings of ***AECI*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.2.3. Potential Solutions for Identified Problems – *AECI*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
AECI TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Carolinas Balancing Authority Area (DEC) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.3.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEC*

The following table identifies significant ***DEC*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.3.2. Pass 1 – Potential Future Transmission System Impacts – *DEC*

The following table depicts thermal loadings of ***DEC*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.3.3. Potential Solutions for Identified Problems – *DEC*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Identified**	--	$0
DEC TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress East Balancing Authority Area (DEPE) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.4.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPE*

The following table identifies significant ***DEPE*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.4.2. Pass 1 – Potential Future Transmission System Impacts – *DEPE*

The following table depicts thermal loadings of ***DEPE*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.4.3. Potential Solutions for Identified Problems – *DEPE*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPE TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress West (DEPW) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.5.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPW*

The following table identifies significant ***DEPW*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

<u>Table III.5.2.</u> Pass 1 – Potential Future Transmission System Impacts – *DEPW*

The following table depicts thermal loadings of ***DEPW*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.5.3. Potential Solutions for Identified Problems – *DEPW*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	$0
DEPW TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Louisville Gas & Electric and Kentucky Utilities Balancing Authority Area (LG&E/KU) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.6.1. Pass 0 – Transmission System Impacts with No Enhancements – *LG&E/KU*

The following table identifies significant ***LG&E/KU*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.6.2. Pass 1 – Potential Future Transmission System Impacts – *LG&E/KU*

The following table depicts thermal loadings of ***LG&E/KU*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.6.3. Potential Solutions for Identified Problems – *LG&E/KU*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	None Required	--	--
LG&E/KU TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

PowerSouth Planning Authority Area (PS) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.7.1. Pass 0 – Transmission System Impacts with No Enhancements – *PS*

The following table identifies significant ***PS*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.7.2. Pass 1 – Potential Future Transmission System Impacts – *PS*

The following table depicts thermal loadings of ***PS*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table III.7.3. Potential Solutions for Identified Problems – *PS*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
PS TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southern Balancing Authority Area (SBAA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.8.1. Pass 0 – Transmission System Impacts with No Enhancements – *SBAA*

The following table identifies significant ***SBAA*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBAA	380084 6FAIRBURN 1 230.00 382709 6UNIONCTY B2 230.00 1	602	89.0	101.8	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	P1
SBAA	380084 6FAIRBURN 1 230.00 381932 6LINE CREEK 230.00 1	596	90.6	103.5	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	P2
SBAA	381932 6LINE CREEK 230.00 382708 6UNIONCTY B1 230.00 1	602	89.9	102.8	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	NA*
SBAA	380892 3E DALTON B2 115.00 382428 3DALTON FRA 115.00 1	180	95.0	110.2	381122 6DALTON 6 230.00 382498 6LOOPERS DU 230.00 1	2	P3
SBAA	384403 3CROOK CK 115.00 385200 3SWAGG 115.00 1	140	73.5	104.3	380021 8MOSTELLER 500.00 382499 8CONASAUGA 500.00 1	1	P4
SBAA	384404 3MORR XRD 115.00 385200 3SWAGG 115.00 1	140	71.0	101.7	380021 8MOSTELLER 500.00 382499 8CONASAUGA 500.00 1	1	P4
SBAA	384924 3MTVMILTP 115.00 385116 3TUSK TAP 115.00 1	138	75.5	105.6	382500 8RACCOON CK 500.00 384600 8FARLEY 8 500.00 1	1	P5
SBAA	384924 3MTVMILTP 115.00 385947 3THURLOW B2 115.00 1	138	80.0	110.0	382500 8RACCOON CK 500.00 384600 8FARLEY 8 500.00 1	1	P5

*Project not in current version of models, but is in the 2023 Expansion Plan

Scenario Explanations:

1. McDonough Unit 6 Offline
2. Wansley Unit 7 Offline

Table III.8.2. Pass 1 – Potential Future Transmission System Impacts – *SBAA*

The following table depicts thermal loadings of ***SBAA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	380734 3BERNHARD RD 115.00 381296 3HARP RD 115.00 1	174	76.0	90.9	380023 8WANSLEY 500.00 383034 8HEARD CO 500.00 1	1	--
SBAA	380604 3W PT DAM 115.00 380605 3PITTMAN RD 115.00 1	124	71.8	92.8	380603 3W POINT 2 115.00 384459 3W PT DS 115.00 1	2	--
SBAA	384404 3MORR XRD 115.00 384405 3RANBURNE 115.00 1	135	67.5	99.4	380021 8MOSTELLER 500.00 382499 8CONASAUGA 500.00 1	2	--
SBAA	384442 3NOTASULG 115.00 385116 3TUSK TAP 115.00 1	138	67.5	97.5	382500 8RACCOON CK 500.00 384600 8FARLEY 8 500.00 1	2	--

Scenario Explanations:

1. Scherer Unit 1 Offline
2. McDonough Unit 6 Offline

Table III.8.3. Potential Solutions for Identified Problems – *SBAA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
P1	Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace the 2000A line trap at Union City with 4000A line trap. Replace switches at Union City with 4000A switches. Replace switch at Fairburn #1 with 4000A switch.	Summer 2028	$8,750,000
P2	Rebuild the line with bundled 200C 1351 ACSS Martin conductor. Replace switch at Fairburn #1 with 4000A switch. Replace the 1590 AAC jumper at Fairburn #1 with 3-1590 AAC jumper.	Summer 2028	$10,650,000
P3	Rebuild Dalton – East Dalton 115kV line and the portion from Dalton substation frame to East Dalton of the East Dalton – Oostanaula 115kV line on common structures with 100°C 1351ACSR.	Summer 2028	$13,125,000
P4	Advance the project to reconductor the line from 397 30/7 ACSR 100°C to 795 26/7 ACSR 100°C from Crooked Creek TS to Indian Creek Metering Station	Summer 2028	$4,400,000
P5	Advance the project to upgrade the line from 397 ACSR at 100°C from Thurlow Dam to Notasulga to 397 ACSR at 125°C.	Summer 2028	$1,200,000
SBAA TOTAL ($2023)			**$38,125,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Tennessee Valley Authority Balancing Authority Area (TVA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
TVA to North Georgia	1600 MW	TVA	North Georgia	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Winter Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table III.9.1. Pass 0 – Transmission System Impacts with No Enhancements – *TVA*

The following table identifies significant ***TVA*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
TVA	Charleston-Hiwassee River 161 kV	289.5	108.7	136.6	Sequoyah-Bradley 500 kV	1	1
TVA	Hiwassee River-East Cleveland 161 kV	289.5	99.6	127.6	Sequoyah-Bradley 500 kV	1	1
TVA	Sequoyah-Concord 161 kV	350.0	89.7	111.7	Sequoyah-Bradley 500 kV	1	2
TVA	Bowling Green-East Bowling Green 161 kV	279.4	104.2	110.6	Paradise-Aberdeen Tap 161 kV	1	6
TVA	Oglethorpe 161/230 kV	289.5	88.2	110.0	Concord 161/230 kV	1	3
TVA	Oglethorpe 161/230 kV	289.5	88.0	109.8	West Ringgold-Concord 230 kV	1	3
TVA	East Cleveland-Sugar Grove Tap 161 kV	289.5	62.5	109.6	Sequoyah-Bradley 500 kV	1	4
TVA	Chickamauga-Hamilton 161 kV	391.2	82.0	103.7	Sequoyah-Bradley 500 kV	1	5
TVA	Bowling Green-East Bowling Green 161 kV	279.4	94.8	101.3	Aberdeen Tap-East Bowling Green 161 kV	1	6

Scenario Explanations:

1. No Unit Out of Service.

Table III.9.2. Pass 1 – Potential Future Transmission System Impacts – *TVA*

The following table depicts thermal loadings of ***TVA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Charleston-Hiwassee River 161 kV	289.5	90.5	96.2	Sequoyah-North Ooltewah 161 kV	1	
TVA	Oglethorpe-Battlefield Parkway 230 kV	339.0	75.6	94.6	Concord 161/230 kV	1	
TVA	Oglethorpe-Battlefield Parkway 230 kV	339.0	75.5	94.5	West Ringgold-Concord 230 kV	1	
TVA	Charleston-Hiwassee River 161 kV	289.5	88.4	94.1	North Ooltewah-South Cleveland 161 kV	1	
TVA	Chickamauga-Hawthorne 161 kV	226.7	87.0	93.9	None	1	
TVA	Oglethorpe 161/230 kV	289.5	71.0	92.9	Conasauga-Mosteller 500 kV	1	
TVA	Oglethorpe 161/230 kV	289.5	71.0	92.9	Bradley-Conasauga 500 kV	1	
TVA	Sequoyah-Bradley 500 kV	2598.1	67.9	92.6	Oconee-South Hall 500 kV	1	
TVA	Oglethorpe 161/230 kV	289.5	71.2	91.7	Sequoyah-Bradley 500 kV	1	
TVA	Concord-Hamilton 161 kV	391.2	69.2	90.9	Sequoyah-Bradley 500 kV	1	

Scenario Explanations:

1. No Unit Out of Service

Table III.9.3. Potential Solutions for Identified Problems – *TVA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
1	Upgrade terminal equipment at Charleston and East Cleveland 161 kV substations.	2028	$775,000
2	Uprate the Sequoyah-Concord 161 kV TL (approximately 18.5 miles) to operate at 100C.	2028	$8,500,000
3	Replace Oglethorpe GA 230/161 kV transformer.	2028	$9,500,000
4	Upgrade terminal equipment at East Cleveland 161 kV substation.	2028	$250,000
5	Uprate the Chickamauga-Hamilton 161 kV TL (approximately 7.68 miles) to operate at 180C.	2028	$3,750,000
6	Upgrade terminal equipment at Bowling Green and East Bowling Green 161 kV switching stations.	2028	$4,425,000
TVA TOTAL ($2023)			**$27,200,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

4. Study Request 4 Results

MISO to LG/KU - Summer 2028

1242 MW

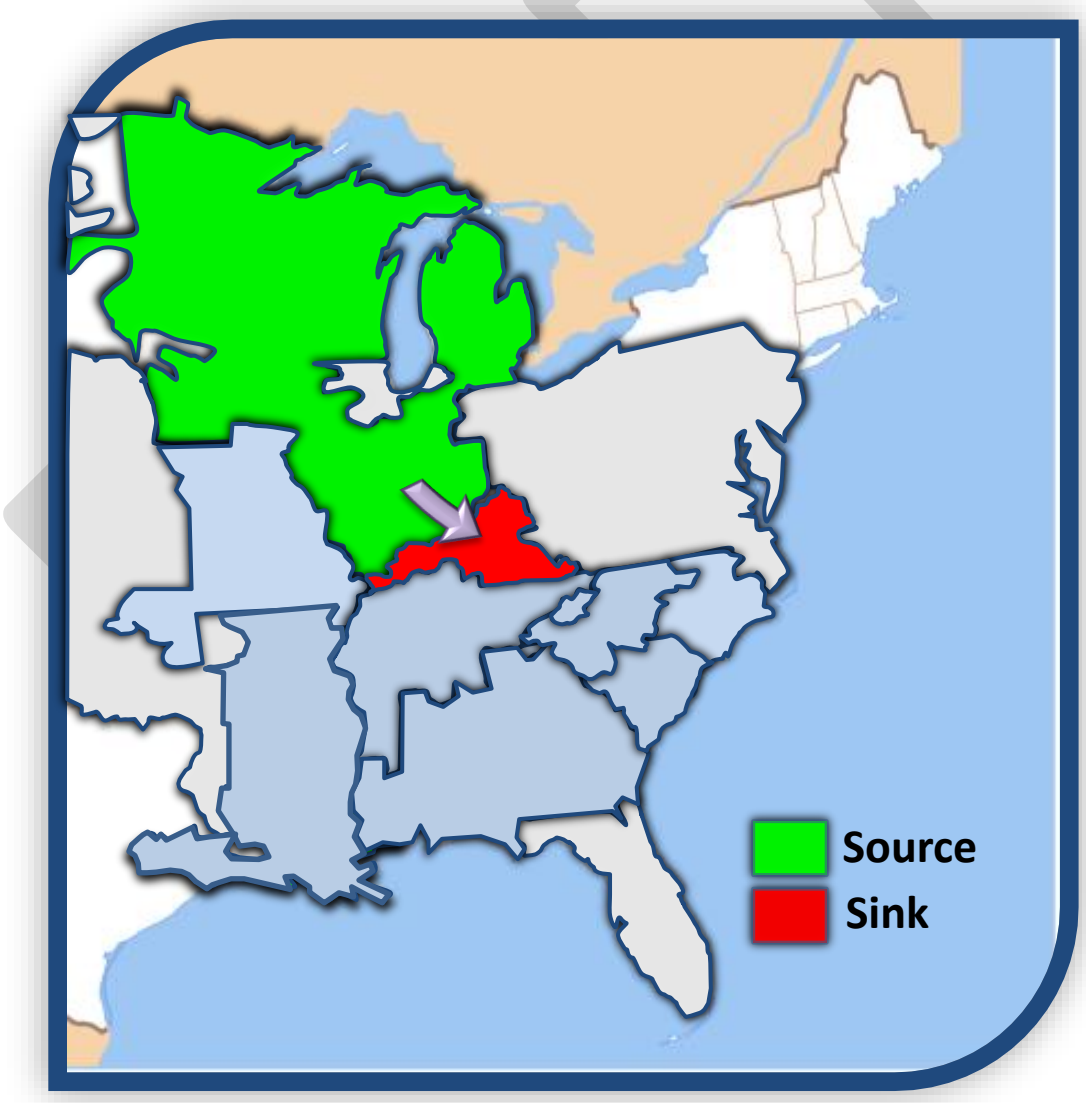
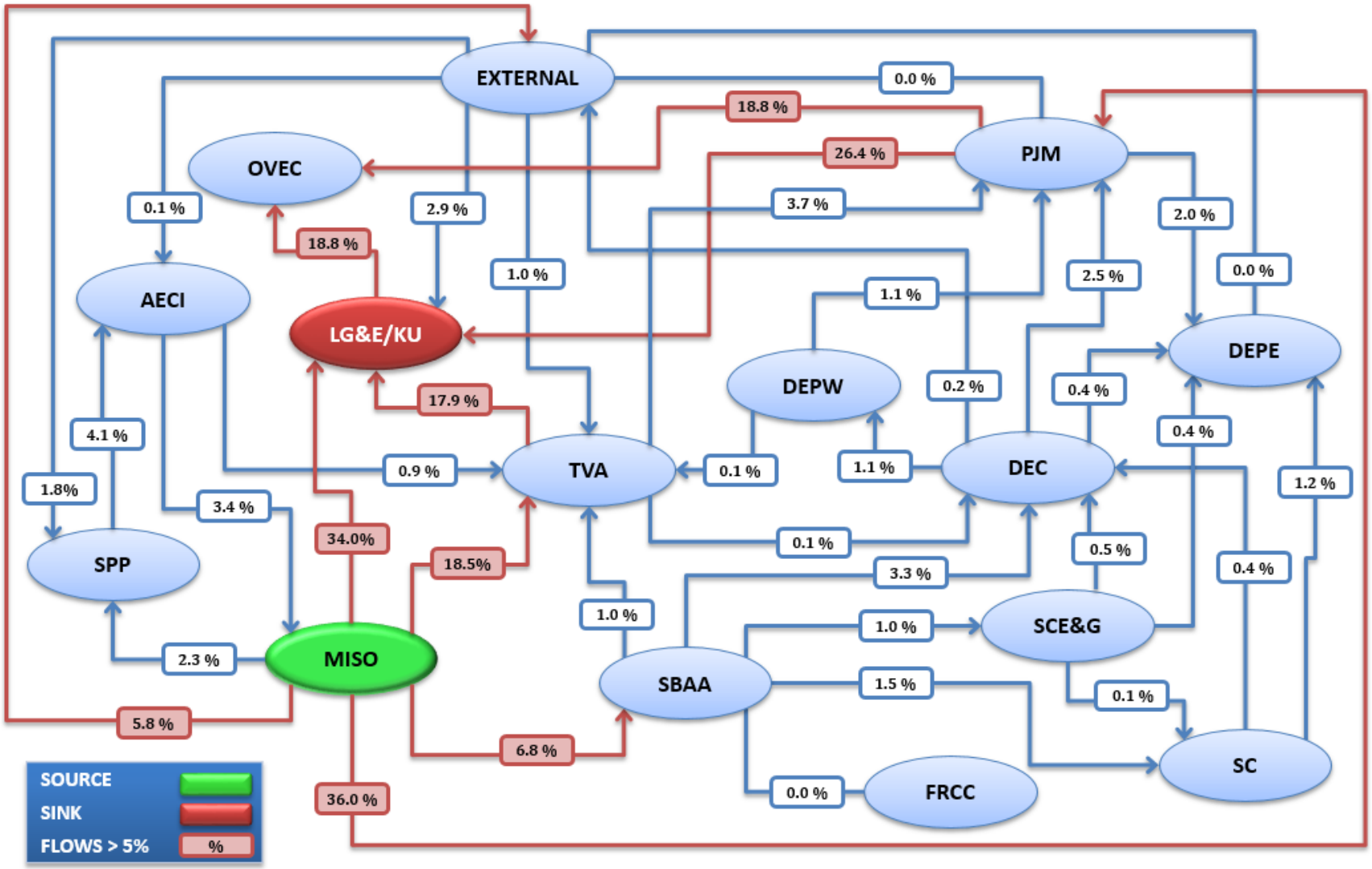


Table IV.1.1. Total Cost Identified by the SERTP Sponsors

Balancing Authority Area	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$83,537,500
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$4,425,000
TOTAL ($2023)	$87,962,500

Diagram IV.1.1. Transfer Flow Diagram (% of Total Transfer)



Associated Electric Cooperative Balancing Authority Area (AECI) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.2.1. Pass 0 – Transmission System Impacts with No Enhancements – *AECI*

The following table identifies significant ***AECI*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.2.2. Pass 1 – Potential Future Transmission System Impacts – *AECI*

The following table depicts thermal loadings of ***AECI*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.2.3. Potential Solutions for Identified Problems – *AECI*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
AECI TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Carolinas Balancing Authority Area (DEC) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.3.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEC*

The following table identifies significant ***DEC*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.3.2. Pass 1 – Potential Future Transmission System Impacts – *DEC*

The following table depicts thermal loadings of ***DEC*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.3.3. Potential Solutions for Identified Problems – *DEC*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Identified**	--	$0
DEC TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress East Balancing Authority Area (DEPE) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.4.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPE*

The following table identifies significant ***DEPE*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.4.2. Pass 1 – Potential Future Transmission System Impacts – *DEPE*

The following table depicts thermal loadings of ***DEPE*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.4.3. Potential Solutions for Identified Problems – *DEPE*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPE TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress West (DEPW) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.5.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPW*

The following table identifies significant ***DEPW*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.5.2. Pass 1 – Potential Future Transmission System Impacts – *DEPW*

The following table depicts thermal loadings of ***DEPW*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.5.3. Potential Solutions for Identified Problems – *DEPW*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	$0
DEPW TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Louisville Gas & Electric and Kentucky Utilities Balancing Authority Area (LG&E/KU) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.6.1. Pass 0 – Transmission System Impacts with No Enhancements – *LG&E/KU*

The following table identifies significant ***LG&E/KU*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	Cemetery Rd 69 kV Bus	NA	91	87.35	Outage of Elihu 161 kV bus	1	P1
LG&E/KU	Clifty-Carrollton 138 kV Line	210	149.2	230.09	Outage Trimble County toGhent 345 kV	1	P2
LG&E/KU	Brown CT – Brown T1 138 kV line	580	565	580.33	Breaker-to-Breaker Outage of Brown CT to Brown North 2	3	P3

Scenario Explanations:

1. Outage of EKP's Laurel
2. Outage Ghent 1
3. Maximize unites at Brown

Table IV.6.2. Pass 1 – Potential Future Transmission System Impacts – *LG&E/KU*

The following table depicts thermal loadings of ***LG&E/KU*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.6.3. Potential Solutions for Identified Problems – *LG&E/KU*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
P1	Add capacitor bank at Elihu 69 kV	2028	$3.1M
P2	Replace 17.14 miles 556.5 MCM 26X7 ACSR with 954 MCM 26X7 ACSR in the Carrolloton to Clifty Creek 138kV line	2028	$80M
P3	Replace 0.25 miles of 2x954 MCM 45x7 ACSR with 2x1272 MCM 45X7 ACSR in the Brown CT to Brown T1 138kV line	2028	$437.5k
LG&E/KU TOTAL ($2023)			**$83,537,500** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

PowerSouth Planning Authority Area (PS) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.7.1. Pass 0 – Transmission System Impacts with No Enhancements – *PS*

The following table identifies significant ***PS*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.7.2. Pass 1 – Potential Future Transmission System Impacts – *PS*

The following table depicts thermal loadings of ***PS*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.7.3. Potential Solutions for Identified Problems – *PS*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
PS TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southern Balancing Authority Area (SBAA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.8.1. Pass 0 – Transmission System Impacts with No Enhancements – *SBAA*

The following table identifies significant ***SBAA*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
SBAA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.8.2. Pass 1 – Potential Future Transmission System Impacts – *SBAA*

The following table depicts thermal loadings of ***SBAA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.8.3. Potential Solutions for Identified Problems – *SBAA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
SBAA TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Tennessee Valley Authority Balancing Authority Area (TVA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
MISO to LGE/KU	1242 MW	MISO	LGE/KU	2028
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table IV.9.1. Pass 0 – Transmission System Impacts with No Enhancements – *TVA*

The following table identifies significant ***TVA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	Bowling Green-East Bowling Green 161 kV	279.4	104.2	109.4	Paradise-Aberdeen Tap 161 kV	1	1
TVA	Bowling Green-East Bowling Green 161 kV	279.4	94.8	100.0	Aberdeen Tap-East Bowling Green 161 kV	1	1

Scenario Explanations:

1. No Unit Out of Service

Table IV.9.2. Pass 1 – Potential Future Transmission System Impacts – *TVA*

The following table depicts thermal loadings of ***TVA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table IV.9.3. Potential Solutions for Identified Problems – *TVA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
1	Upgrade terminal equipment at Bowling Green and East Bowling Green 161 kV switching stations.	2028	$4,425,000
TVA TOTAL ($2023)			**$4,425,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

5. Study Request 5 Results

SOCO to Duke Energy Carolinas – Summer 2033

500 MW

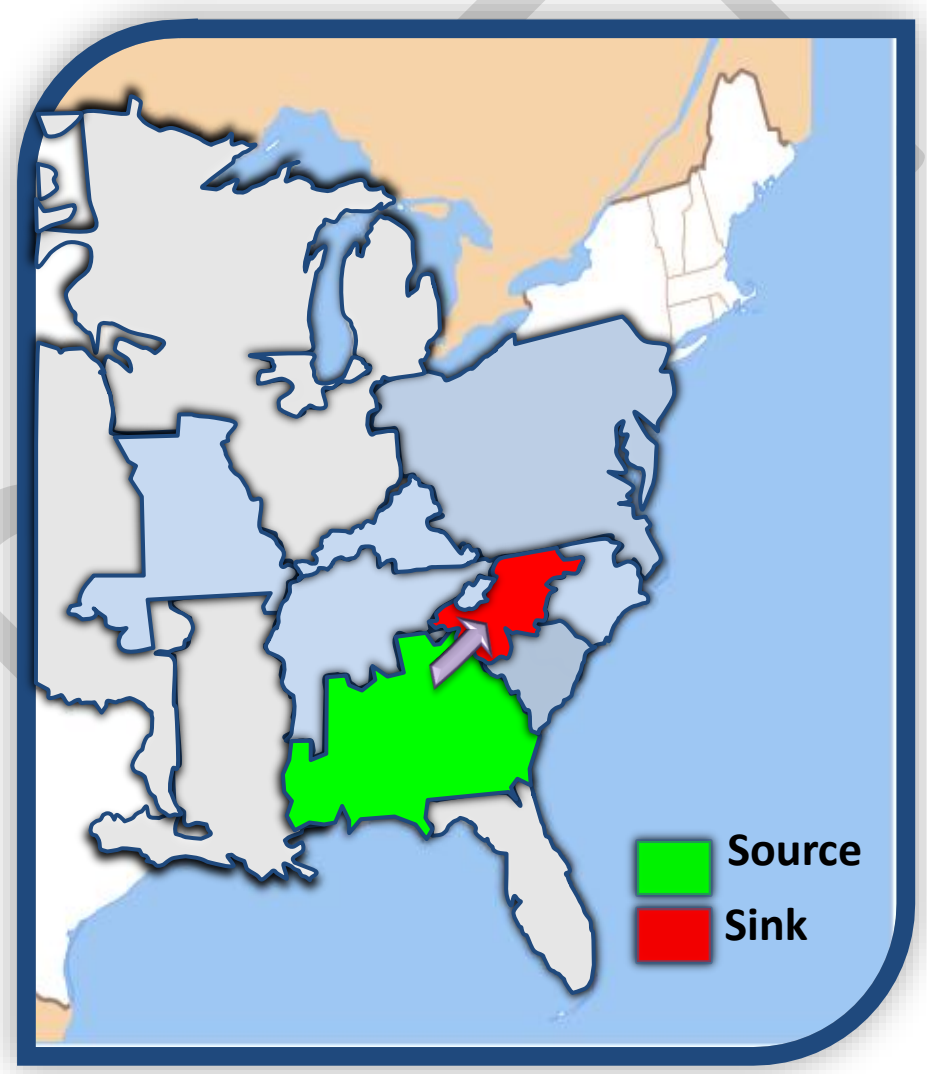
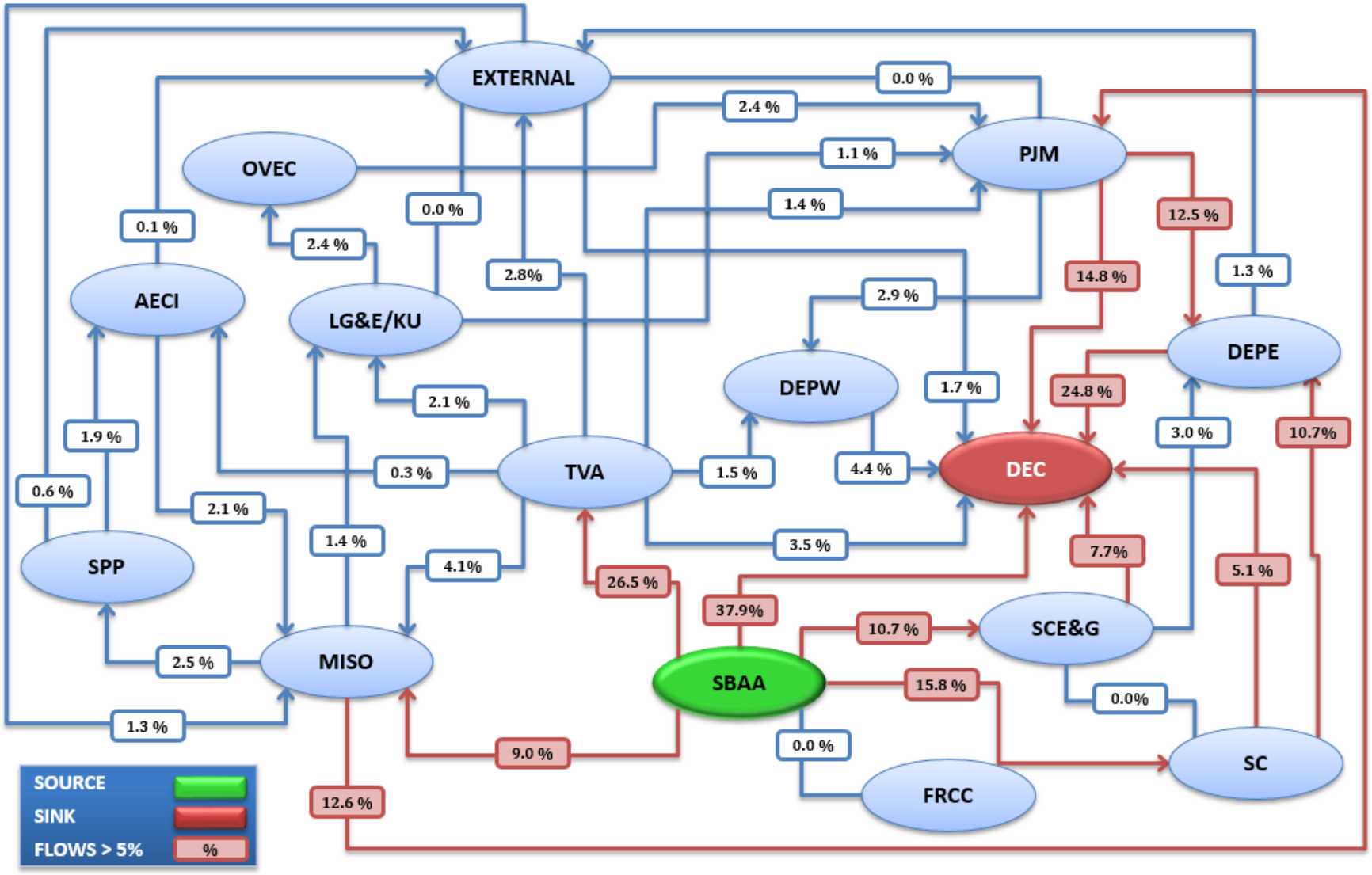


Table V.1.1. Total Cost Identified by the SERTP Sponsors

Balancing Authority Area	Planning Level Cost Estimate
Associated Electric Cooperative (AECI)	$0
Duke Carolinas (DEC)	$0
Duke Progress East (DEPE)	$0
Duke Progress West (DEPW)	$0
Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)	$0
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
TOTAL ($2023)	**$0**

Diagram V.1.1. Transfer Flow Diagram (% of Total Transfer)



Associated Electric Cooperative Balancing Authority Area (AECI) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.2.1. Pass 0 – Transmission System Impacts with No Enhancements – *AECI*

The following table identifies significant ***AECI*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.2.2. Pass 1 – Potential Future Transmission System Impacts – *AECI*

The following table depicts thermal loadings of ***AECI*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
AECI	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.2.3. Potential Solutions for Identified Problems – *AECI*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
AECI TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Carolinas Balancing Authority Area (DEC) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.3.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEC*

The following table identifies significant ***DEC*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.3.2. Pass 1 – Potential Future Transmission System Impacts – *DEC*

The following table depicts thermal loadings of ***DEC*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEC	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.3.3. Potential Solutions for Identified Problems – *DEC*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Identified**	--	$0
DEC TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress East Balancing Authority Area (DEPE) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.4.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPE*

The following table identifies significant ***DEPE*** thermal constraints without any enhancements to the transmission system.

Area	Limiting Element	Rating (MVA)	Thermal Loadings (%)		Contingency	Scenario	Project
			Without Request	With Request			
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.4.2. Pass 1 – Potential Future Transmission System Impacts – *DEPE*

The following table depicts thermal loadings of ***DEPE*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPE	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.4.3. Potential Solutions for Identified Problems – *DEPE*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
DEPE TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Duke Progress West (DEPW) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.5.1. Pass 0 – Transmission System Impacts with No Enhancements – *DEPW*

The following table identifies significant ***DEPW*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.5.2. Pass 1 – Potential Future Transmission System Impacts – *DEPW*

The following table depicts thermal loadings of ***DEPW*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
DEPW	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.5.3. Potential Solutions for Identified Problems – *DEPW*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	$0
DEPW TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Louisville Gas & Electric and Kentucky Utilities Balancing Authority Area (LG&E/KU) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.6.1. Pass 0 – Transmission System Impacts with No Enhancements – *LG&E/KU*

The following table identifies significant ***LG&E/KU*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.6.2. Pass 1 – Potential Future Transmission System Impacts – *LG&E/KU*

The following table depicts thermal loadings of ***LG&E/KU*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
LG&E/KU	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.6.3. Potential Solutions for Identified Problems – *LG&E/KU*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	None Required	--	--
LG&E/KU TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

PowerSouth Planning Authority Area (PS) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.7.1. Pass 0 – Transmission System Impacts with No Enhancements – *PS*

The following table identifies significant ***PS*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.7.2. Pass 1 – Potential Future Transmission System Impacts – *PS*

The following table depicts thermal loadings of ***PS*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
PS	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.7.3. Potential Solutions for Identified Problems – *PS*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
PS TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southern Balancing Authority Area (SBAA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.8.1. Pass 0 – Transmission System Impacts with No Enhancements – *SBAA*

The following table identifies significant ***SBAA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.8.2. Pass 1 – Potential Future Transmission System Impacts – *SBAA*

The following table depicts thermal loadings of ***SBAA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
SBAA	385930 3ANISTON3 B2 115.00 385931 6ANISTON6 B2 230.00 1	366	86.0	92.0	384305 6ANISTON6 B1 230.00 385931 6ANISTON6 B2 230.00 1	1	--

Scenario Explanations:

1. McIntosh Unit 10 Offline

Table V.8.3. Potential Solutions for Identified Problems – *SBAA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
SBAA TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Tennessee Valley Authority Balancing Authority Area (TVA) Results

Study Structure and Assumptions

Transfer Sensitivity	Amount	Source	Sink	Year
SOCO to DEC	500 MW	SOCO	DEC	2033
Load Flow Cases				
2023 Series Version 1 SERTP Models: Summer Peak				

Transmission System Impacts

The following tables below identify any constraints attributable to the requested transfer for the contingency and scenario that resulted in the most significant loadings for the conditions studied. Other unit out scenarios or contingencies may also result in constraints to these or other facilities.

Table V.9.1. Pass 0 – Transmission System Impacts with No Enhancements – *TVA*

The following table identifies significant ***TVA*** thermal constraints without any enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	None Identified	–	–	–	–	–	–

Scenario Explanations:

1. N/A

Table V.9.2. Pass 1 – Potential Future Transmission System Impacts – *TVA*

The following table depicts thermal loadings of ***TVA*** transmission facilities that could become potential constraints in future years or with different queuing assumptions but are not overloaded in the study year with all proposed enhancements to the transmission system.

			Thermal Loadings (%)				
Area	**Limiting Element**	**Rating (MVA)**	**Without Request**	**With Request**	**Contingency**	**Scenario**	**Project**
TVA	None Identified	--	--	--	--	--	--

Scenario Explanations:

1. N/A

Table V.9.3. Potential Solutions for Identified Problems – *TVA*

The following table lists any potential solutions that were identified to address the attributable constraints 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 currently projected improvements to the transmission system were modeled in the cases. Changes to system conditions and/or the transmission expansion plans could also impact the results of this study.

Item	Potential Solution	Estimated Need Date	Planning Level Cost Estimate
--	**None Required**	--	--
TVA TOTAL ($2023)			**$0** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.