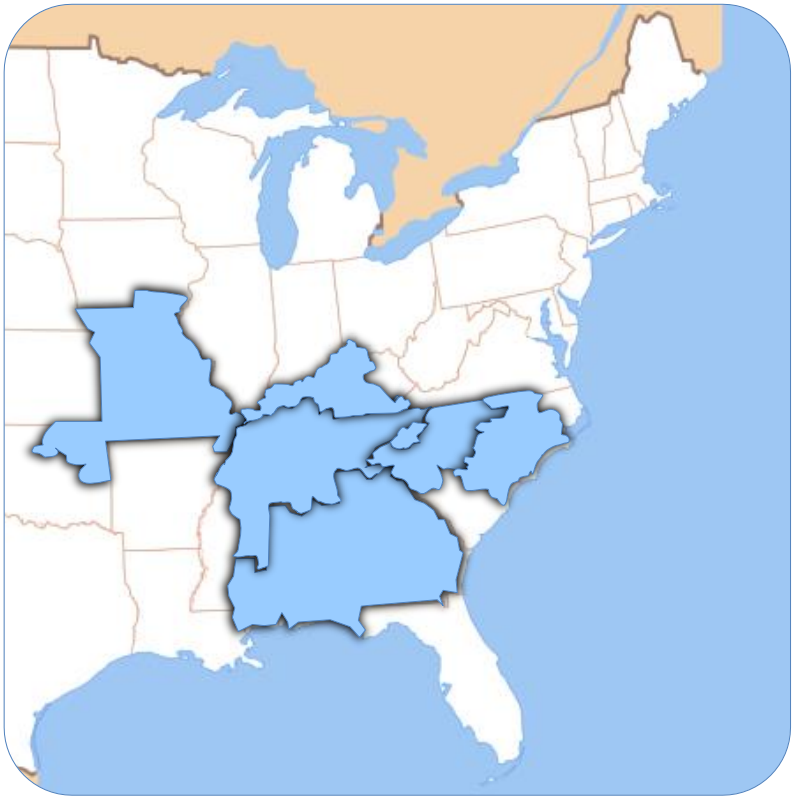
Southeastern Regional TRANSMISSION PLANNING

2023 Regional Transmission Planning Analyses

SERTP Southeastern Regional Transmission Planning

Regional Transmission Planning Analyses



November 27, 2023

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I. Overview of Regional Analyses

SERTP sponsors plan and expand the transmission system to reliably and economically satisfy the load projections, resource assumptions, public policy requirements, and transmission service commitments within the region. Transmission planning is a very iterative process, with delivery needs and associated transmission projects constantly evolving. Transmission planning in the SERTP region reflects a high degree of coordination and joint modeling between neighboring systems. If reliability constraints are identified, the SERTP sponsors work to identify reliable, cost-effective transmission projects, not only on their respective transmission systems, but also considering potential transmission projects across two or more transmission systems. Transmission plans are discussed with SERTP stakeholders at regular intervals during the year and the frequent engagement with stakeholders allows for additional inputs into potential project alternatives. Each cycle, such planning culminates in the development of a regional transmission plan that contains transmission projects to address the transmission needs within the SERTP region. This regional transmission plan is a "snapshot" which is constantly changing and solely intended to reflect the then-current transmission plan based upon then-current forecasted assumptions and transmission delivery service needs.

As part of the regional planning process, SERTP sponsors annually conduct regional transmission planning analyses and assess if the then-current regional transmission plan addresses the transmission needs within the SERTP region. These regional analyses include an assessment of whether there may be more efficient or cost-effective transmission projects to address transmission needs than those projects included in the then-current regional transmission plan.

More information on the 2023 regional transmission plan and associated input assumptions into its development can be found within the 2023 Regional Transmission Plan & Input Assumption Overview document on the SERTP website.

Regional Transmission Planning Models

The SERTP annually develops regional power flow models, which include the coordinated inputs and assumptions needed to support on-going regional transmission planning analyses. These power flow models, which are available to SERTP stakeholders via the secure area of the SERTP website, are listed in Table I.1 below. The SERTP regional power flow models provide modeling representations of the existing transmission topology plus forecasted topology changes throughout the ten-year planning horizon. In addition, these models incorporate the input assumptions, including load forecasts, generating resources, and interface commitments, as provided by Load Serving Entities ("LSEs") and other transmission customers for use in planning the transmission system.

Table I.1: 2023 Series SERTP Regional Power flow Models

No.	Season	Year	MMWG Starting Point Case
1	Summer	2025	2024SUM
2	Summer	2028	2027SUM
3	Summer	2033	2032SUM
4	Shoulder	2028	2027SSH
5	Winter	2028	2027WIN
6	Winter	2033	2032WIN

II. Assessment of the 2023 Regional Plan

Regional transmission analyses were performed throughout the 2023 transmission planning cycle to assess the current regional transmission plan. This coordinated analysis was performed using the SERTP regional power flow models listed above in Table I.1.

For the regional transmission analyses, power flow studies are initially performed based upon the assumption that thermal limits will yield the most limiting constraints. Voltage, stability, and short circuit studies are performed if circumstances warrant. Siemens PSSE and/or PowerGEM TARA software was utilized to perform the power flow analyses on the regional models. A more detailed description on the study criteria utilized is provided below:

Monitored Facilities

At a minimum, facilities in the SERTP region that operate at 100 kV and above were monitored in the regional transmission planning analyses. Screening for potential constraints was based upon the thermal and voltage rating criteria applicable to each transmission facility.

Contingency Selection

Contingency (N-1) analysis was performed, at a minimum, for all transmission facilities in the SERTP region that operate at 100 kV and above. Additional contingencies of transmission facilities external to the SERTP region were evaluated as appropriate.

Regional Transmission Analysis Results

The results of the regional transmission analysis for each Balancing Authority Area ("BAA") or Planning Authority in the SERTP region are provided in Tables II.1 – II.8 below. These results include potentially constrained transmission facilities, if any, that were identified as a result of the assessment of the 2023 regional transmission plan.

Associated Electric Cooperative (AECI)

Table II.1: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

DUKE Energy Carolinas (DEC)

Table II.2: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

DUKE Energy Progress East (DEPE)

Table II.3: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

DUKE Energy Progress West (DEPW)

Table II.4: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

Louisville Gas & Electric and Kentucky Utilities (LG&E/KU)

Table II.5: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

PowerSouth (PS)

Table II.6: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

Southern (SBAA)

Table II.7: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

Tennessee Valley Authority (TVA)

Table II.8: Potential Thermal and Voltage Constraints Identified in SERTP Regional Models

Facility	Constraint Type	Year	Season
None Identified	-	-	-

2023 Regional Transmission Plan Assessment

The regional transmission analysis, performed on the coordinated regional models that reflect the latest load, generation, and transmission assumptions of each of the SERTP sponsors, affirms that the transmission projects contained within the 2023 regional transmission plan as well as other mitigations (such as, operating guides and conditional firm service) are effective in addressing the transmission needs within the SERTP region.

III. Regional Analysis of Potential Transmission Project Alternatives

The regional transmission analyses performed by the SERTP sponsors also includes an assessment to look for potentially more efficient or cost effective alternative transmission projects as compared to those transmission projects included in the 2023 regional transmission plan.

In 2023, the SERTP sponsors did not identify any new potential transmission project alternatives for this regional analysis that could displace projects currently in the 2023 regional transmission plan. Additionally, stakeholders did not submit any alternative projects for the SERTP sponsors to evaluate at the Preliminary Expansion Plan Meeting nor through the regional cost allocation purpose ("RCAP") process. Due to no alternative projects being identified nor submitted, regional analysis of potential transmission project alternatives was not needed this year.

IV. Regional Analysis Conclusions

In the 2023 planning cycle, the SERTP Sponsors performed regional transmission planning analyses to assess the 2023 regional transmission plan, including an assessment of whether there may be more efficient or cost-effective transmission project alternatives to address transmission needs in the SERTP region. The assessment of the regional transmission plan identified no potentially constrained transmission facilities and demonstrated that the regional plan addresses transmission needs in the SERTP region. Furthermore, no new potential transmission project alternatives were identified to be evaluated for a more efficient or cost effective as compared to the transmission projects included in the 2023 regional transmission expansion plan. These results affirm that the current regional transmission plan contains transmission projects that reliably and cost-effectively address the transmission needs within the SERTP region for the 2023 planning cycle.

The SERTP sponsors plan and expand the transmission system to reliably and economically satisfy the load projections, resource assumptions, public policy requirements, and transmission service commitments within the region. This transmission planning process, and the corresponding transmission projects contained within the regional transmission plan, reflect a high degree of coordination and joint modeling between neighboring systems. This planning approach results in reliable and cost-effective transmission projects and, on a cumulative basis, a reliable and cost effective regional transmission plan. While no potential transmission project alternatives were identified as more efficient or cost effective in meeting the transmission needs for the 2023 planning cycle, transmission planning is a very iterative process, with delivery needs and associated transmission projects constantly evolving. The 2023 regional transmission plan represents a "snapshot" – solely intended to reflect the then-current transmission plan based upon then-current forecasted assumptions and transmission delivery service needs. Therefore, in the 2024 planning cycle, the SERTP sponsors will continue to assess current as well as newly-identified potential project alternatives.