Southeastern Regional
TRANSMISSION PLANNING

2020 SERTP

SERTP – 3rd Quarter Meeting

2nd RPSG Meeting

September 10th, 2020

Web Conference

Process Information

- The SERTP process is a transmission planning process.
- Please contact the respective transmission provider for questions related to real-time operations or OATT transmission service.
- SERTP Website Address:
  - www.southeasternrtp.com

Purposes & Goals of Meeting

- **Economic Planning Studies**
  - Preliminary Results
  - Stakeholder Input/Discussion
- **Miscellaneous Updates**
- **Next Meeting Activities**

SERTP Preliminary

Economic Planning Studies

Economic Planning Studies

Economic Planning Studies Process

- Economic Planning Studies were chosen by the Regional Planning Stakeholder Group "RPSG" in March at the 2020 SERTP 1st Quarter Meeting.

- Key study criteria, methodologies, and input assumptions were finalized in May.

- These studies represent analyses of hypothetical scenarios requested by the stakeholders and **do not** represent an actual transmission need or commitment to build.

Economic Planning Studies

Economic Planning Studies Process

- **SERTP Sponsors identify the transmission requirements needed to move large amounts of power above and beyond existing long-term, firm transmission service commitments**
  - Analysis are consistent with NERC standards and company-specific planning criteria

- **Models used to perform the analysis incorporate the load forecasts and resource decisions as provided by LSEs**
  - Power flow models are made available to stakeholders to perform additional screens or analysis

Economic Planning Studies

Economic Planning Studies

- **MISO North Region to LGEE**
  - 200 MW (2022 Summer Peak)
- **PJM to LGEE**
  - 200 MW (2022 Summer Peak)

Economic Planning Studies

Power Flow Cases Utilized

- **Study Years:**
  - 2022

- **Load Flow Cases:**
  - 2020 Series Version 1 SERTP Regional Models
  - Summer Peak

Economic Planning Studies

Preliminary Report Components

- **The SERTP reported, at a minimum, results on elements of 115 kV and greater:**
  - Thermal loadings greater than 90% for facilities that are negatively (+5%) impacted by the proposed transfers
  - Voltages appropriate to each participating transmission owner's planning criteria
  - Overloaded facilities that had a low response to the requested transfer were excluded and issues identified that are local in nature were also excluded
- **For each economic planning study request, the results of that study include:**
  1. Limit(s) to the transfer
  2. Potential transmission enhancement(s) to address the limit(s)
  3. Planning-level cost estimates and in-service dates for the potential transmission enhancement(s)

Economic Planning Studies

Process Information

- The following information depicts potential enhancements for the proposed transfer levels above and beyond existing, firm commitments. Therefore, this information does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study dates (2021 or 2025).

- These potential solutions only address constraints identified within the SERTP Sponsors' areas that are associated with the proposed transfers. Other Balancing Areas were not monitored which could result in additional limitations and required system enhancements.

Economic Planning Studies

Economic Planning Studies – Preliminary Results

MISO North Region to LGEE – 200 MW

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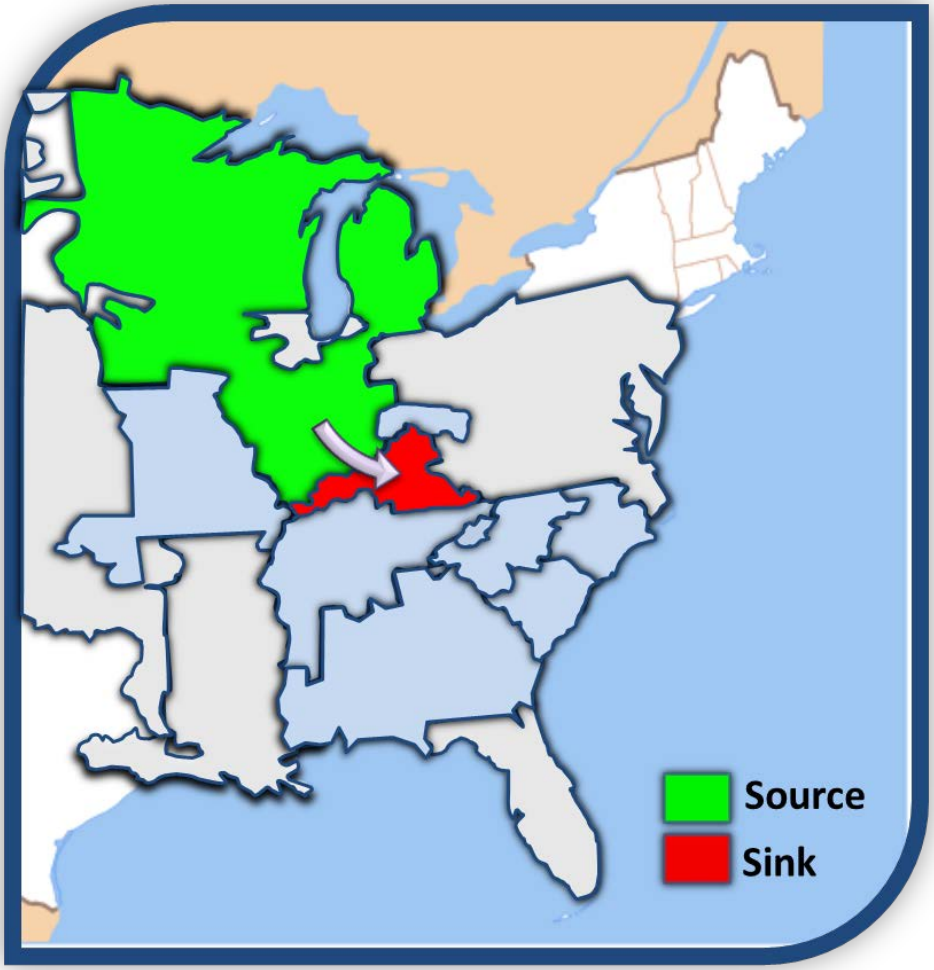
MISO North – LGEE 200 MW

Study Assumptions

- **Source:** Uniform Generation Scale within MISO North
- **Sink:** Generation within LG&E/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2022
- **Load Level:** Summer Peak



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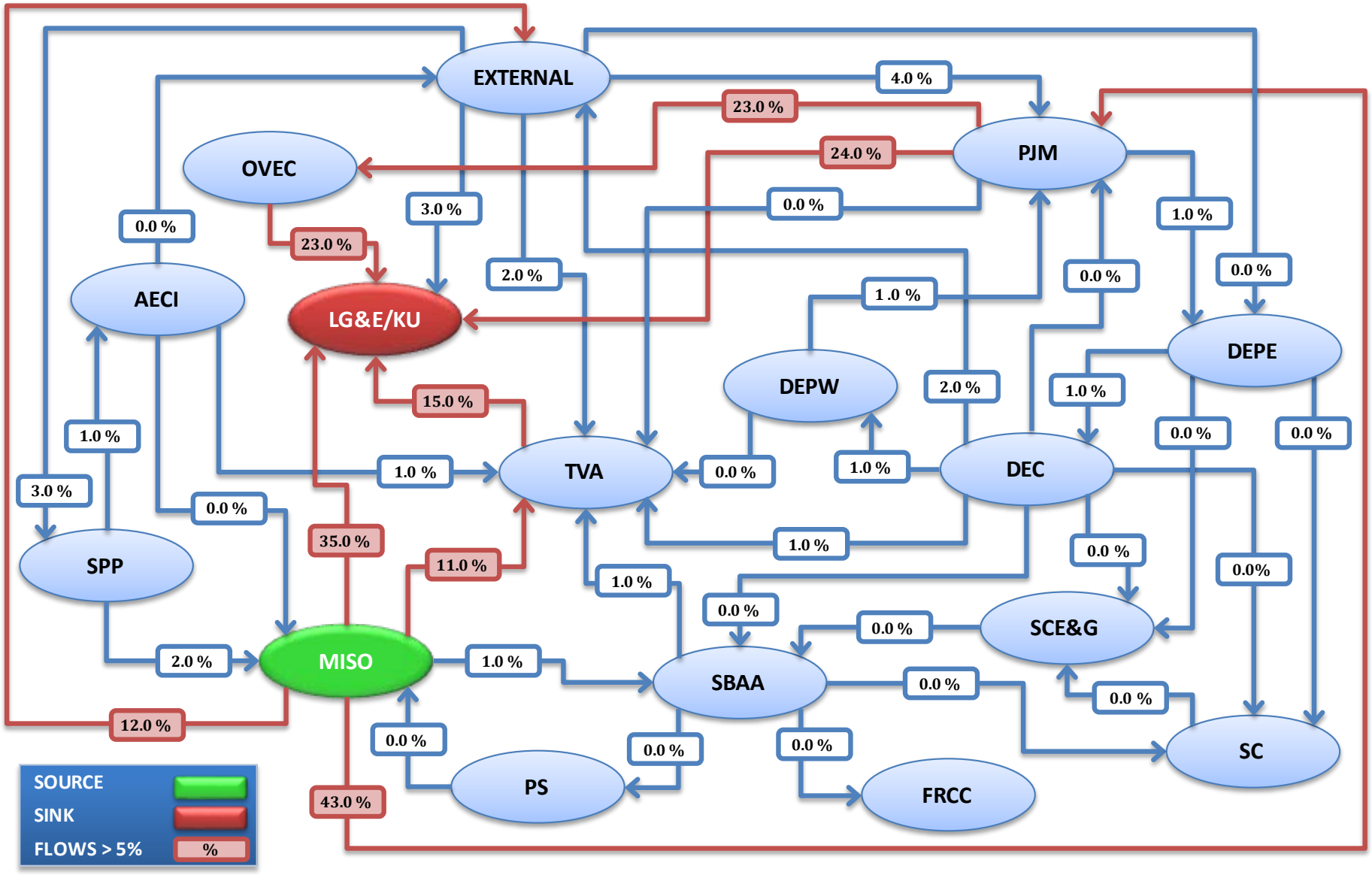
MISO North – LGEE 200 MW

Transfer Flow Diagram (% of Total Transfer)



Southeastern Regional TRANSMISSION PLANNING

MISO North – LGEE 200 MW

Transmission System Impacts

- **Transmission System Impacts Identified:**
  - Significant constraints were identified in the following SERTP Balancing Authority Areas:
    - LGEE

- **Potential Transmission Enhancements Identified:**
  - (LGEE) One (1) 69kV Transmission Line Upgrades

SERTP TOTAL ($2020) = $121,129

Southeastern Regional TRANSMISSION PLANNING

MISO North – LGEE 200 MW

Significant Constraints Identified – *LGEE*

Table 1: Significant Constraints - LGEE

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
P1	Caron – Fariston 69kV T.L.	57	94.5%	101.5%

Southeastern Regional TRANSMISSION PLANNING

MISO North – LGEE 200 MW

Potential Enhancements Identified – *LGEE*

Table 2: Potential Enhancements - LGEE

Item	Potential Enhancement	Planning Level Cost Estimate
P1	**Caron – Fariston 69kV double T.L.** • Increase the maximum operating temperature of 2.37 miles of 397.5 MCM 26X7 ACSR in the Caron to Fariston 69kV line section from 160˚F to a minimum of 176˚F.	**$121,129**
LGEE TOTAL ($2020)		**$ 121,129**(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.

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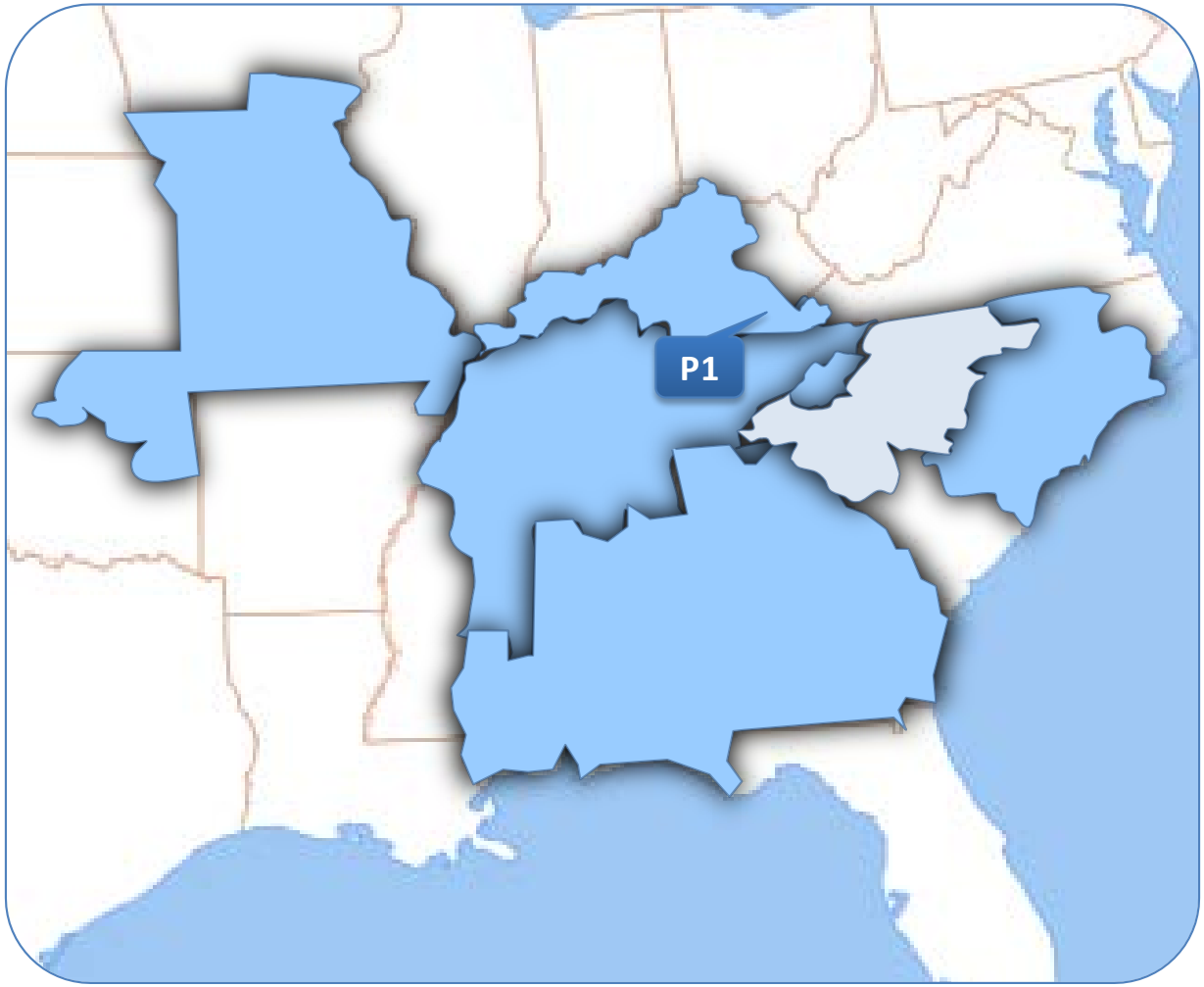
MISO North – LGEE 200 MW

Potential Enhancement Locations – *LGEE*



MISO North – LGEE 200 MW

Transmission System Impacts – *SERTP*

Table 3: Transmission System Impacts - SERTP

Balancing Authority	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)	$121,129
PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2020)	**$121,129**

Economic Planning Studies

Economic Planning Studies – Preliminary Results

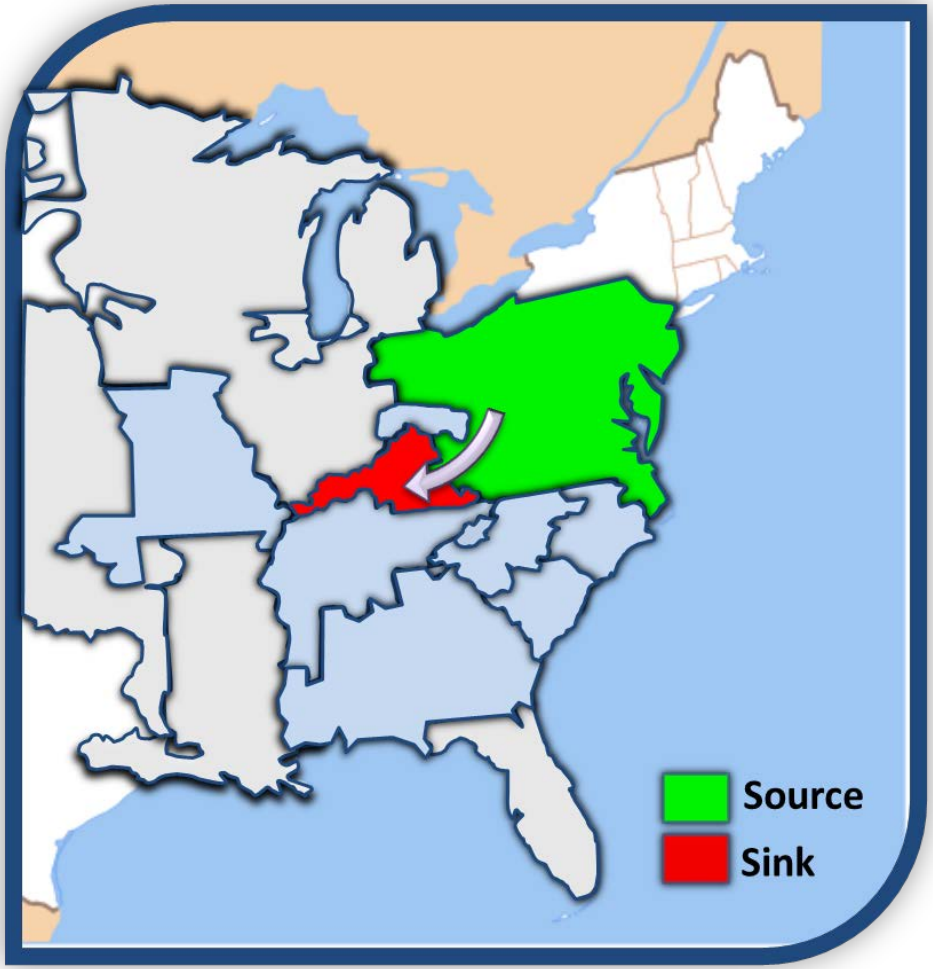
PJM to LGEE – 200 MW

Southeastern Regional TRANSMISSION PLANNING

PJM – LGEE 200 MW

Study Assumptions

- **Source:** Uniform Generation Scale within PJM
- **Sink:** Generation with LG&E/KU
- **Transfer Type:** Generation to Generation
- **Year:** 2022
- **Load Level:** Summer Peak



Southeastern Regional
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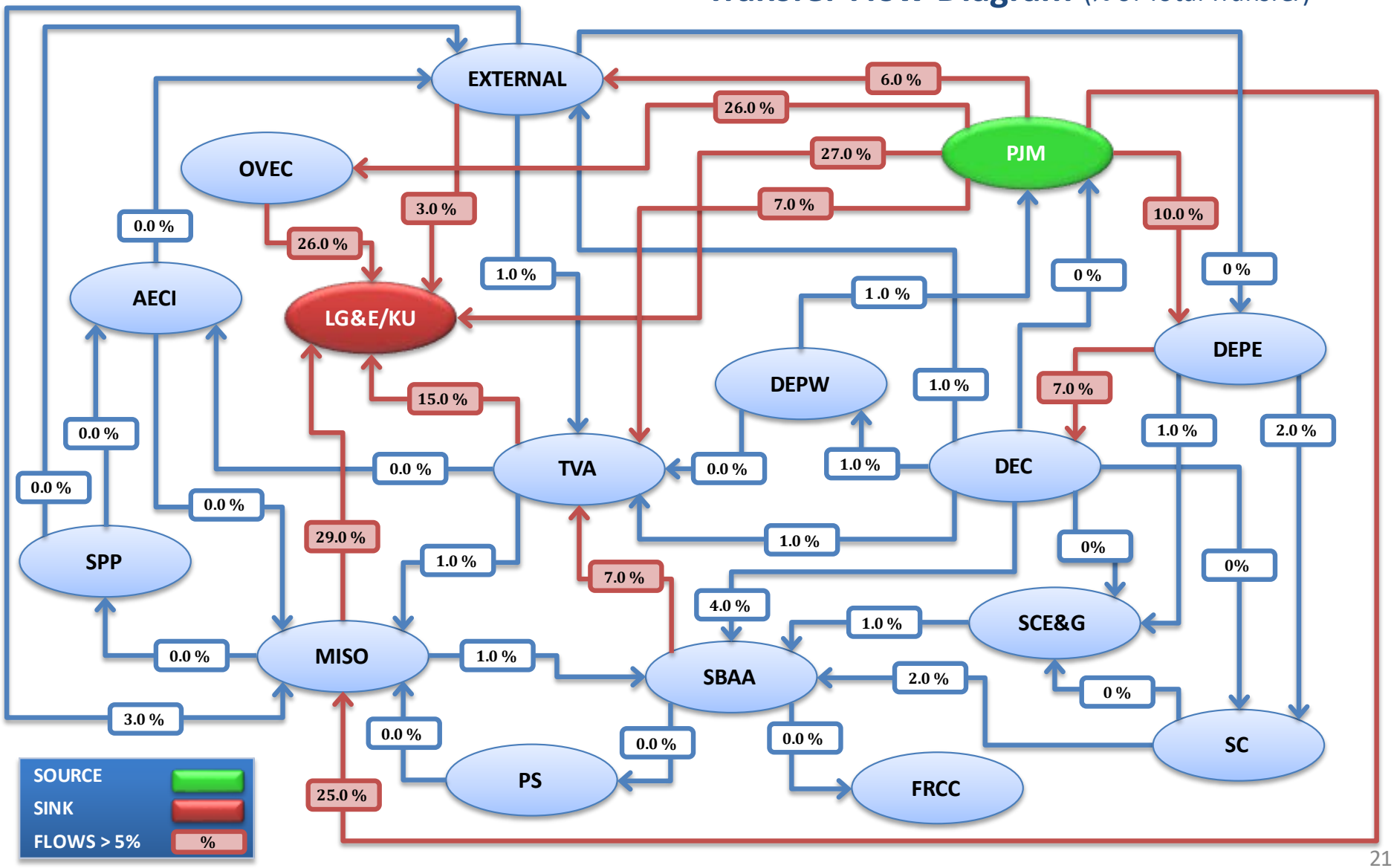
PJM – LGEE 200 MW

Transfer Flow Diagram (% of Total Transfer)



PJM – LGEE 200 MW

Transmission System Impacts – *SERTP*

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SERTP Total ($2020) = $121,129

Southeastern Regional TRANSMISSION PLANNING

PJM – LGEE 200 MW

Significant Constraints Identified – *LGEE*

Table 1: Significant Constraints - LGEE

Potential Enhancement	Limiting Element	Rating (MVA)	Thermal Loadings (%)	
			Without Request	With Request
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Potential Enhancements Identified – *LGEE*

Table 2: Potential Enhancements - LGEE

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LGEE TOTAL ($2020)		**$ 121,129**(1)

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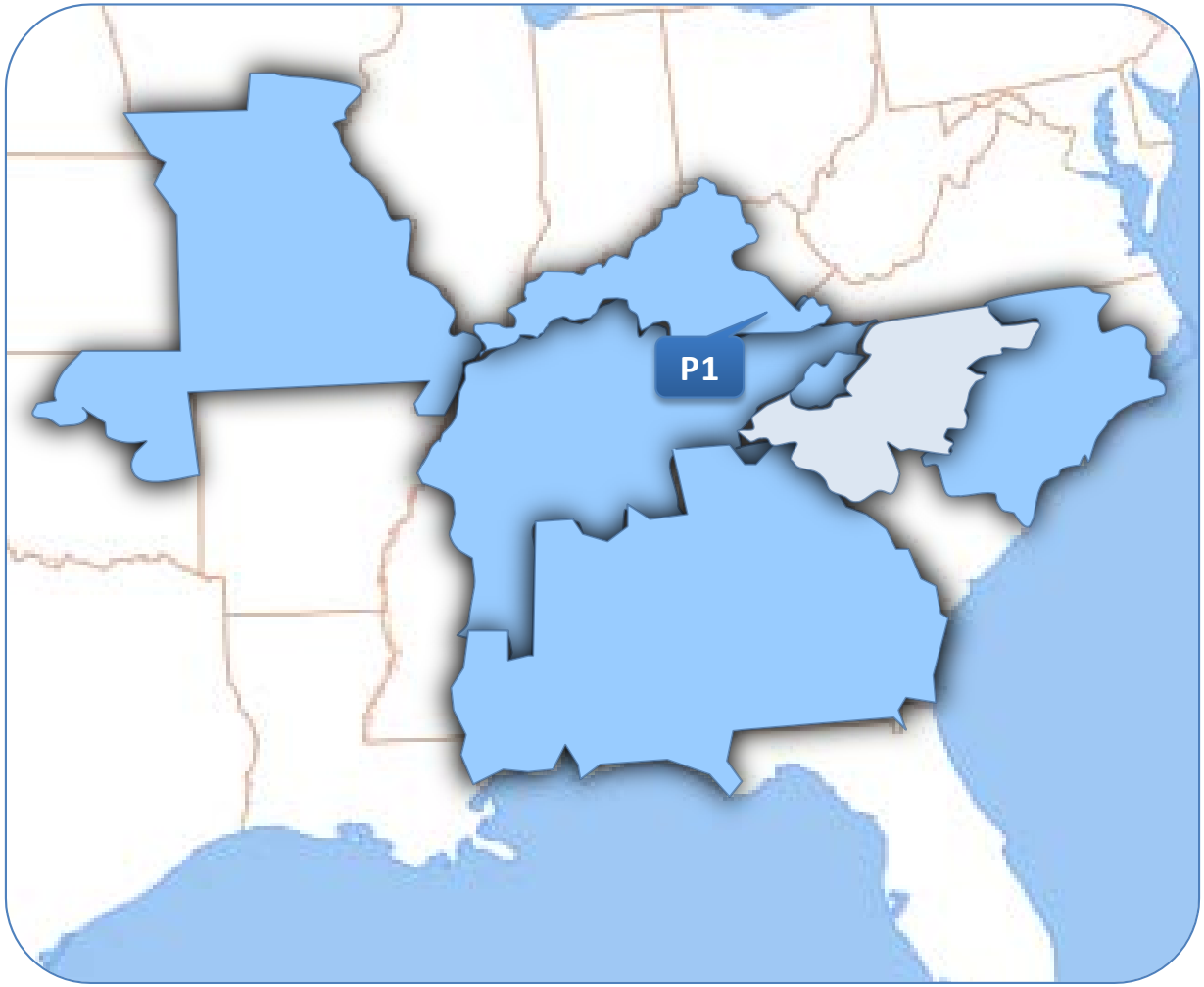
Southeastern Regional TRANSMISSION PLANNING

PJM – LGEE 200 MW

Potential Enhancement Locations – *LGEE*



PJM – LGEE 200 MW

Transmission System Impacts – *SERTP*

Table 6: Transmission System Impacts - SERTP

Balancing Authority	Planning Level Cost Estimate
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PowerSouth (PS)	$0
Southern (SBAA)	$0
Tennessee Valley Authority (TVA)	$0
SERTP TOTAL ($2020)	**$121,129**

SERTP

Miscellaneous Updates

Regional Planning Update

- Version 2 SERTP Regional Models available on SERTP Website

- Plan in place to facilitate the exchange of the latest transmission models for the ten-year planning horizon with FRCC
  - FRCC models will be incorporated into subsequent regional power flow models

- SERTP Sponsors beginning analyses on regional models including assessment to identify and evaluate potential regional transmission projects

Southeastern Regional TRANSMISSION PLANNING

2020 Regional Transmission Analyses

Preliminary List of Alternative Regional Transmission Projects

Alternative Regional Transmission Projects	Miles	From	To
		BAA (State)	BAA (State)
Essex – Wickliffe 345kV	50	AECI (MO)	LG&E/KU (KY)
Marshall – Green River 345kV	85	TVA (TN)	LG&E/KU (KY)
Thomson – Oconee Newport T.L. 500kV	130	SBAA (GA)	DEC (SC)

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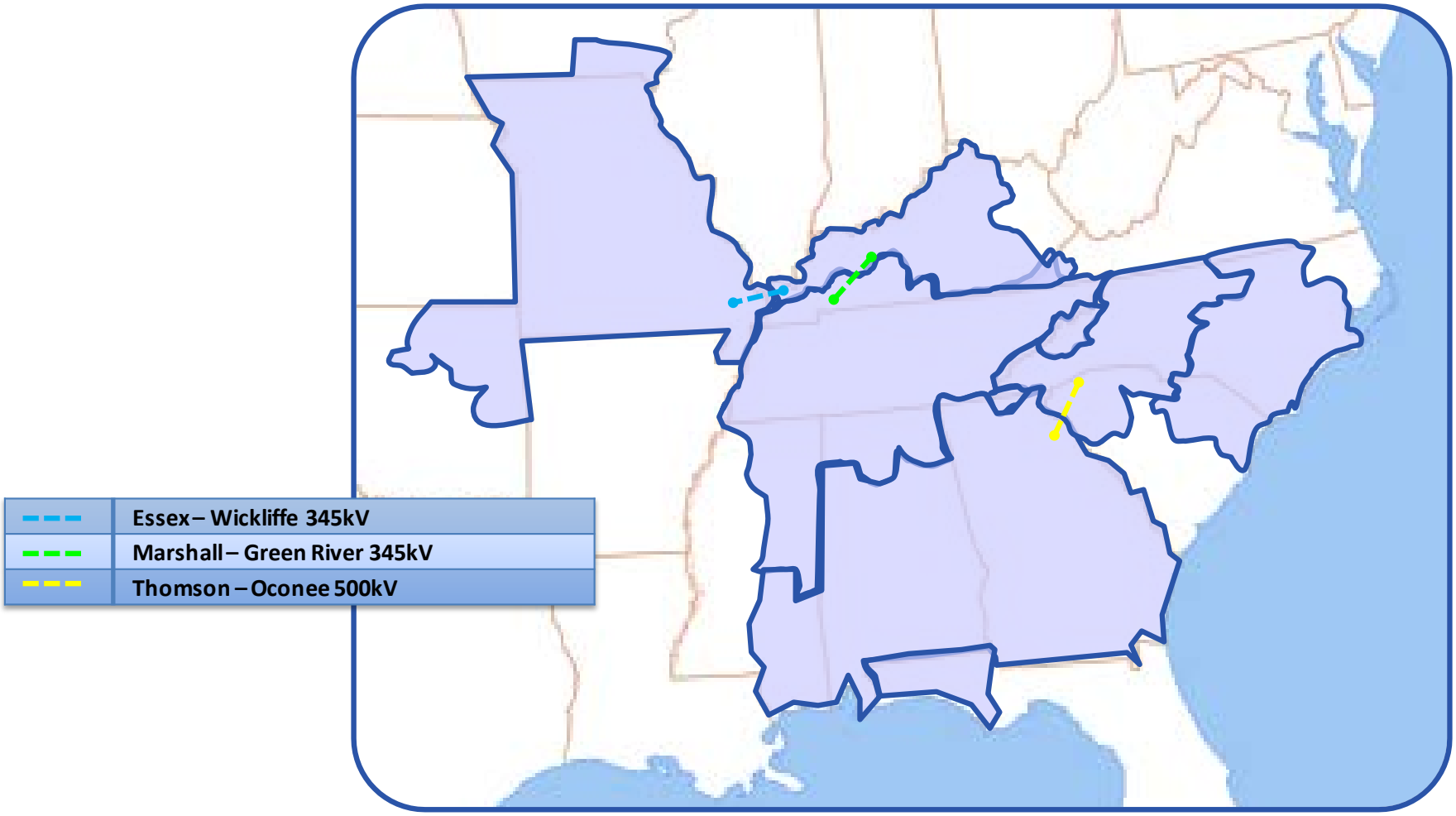
2020 Regional Transmission Analyses

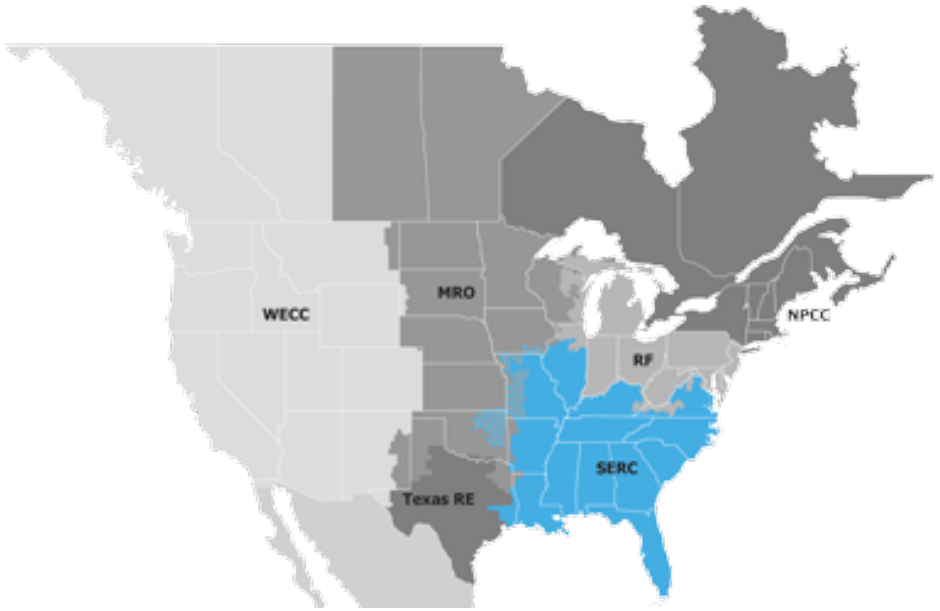
Preliminary List of Alternative Regional Transmission Projects



SERC Regional Model Development Update

- SERC is one of the six regional electric reliability councils under the North American Electric Reliability Corporation authority (NERC).

- SERC oversees the implementation and enforcement of Reliability Standards among the bulk power system (BPS) users, owners, and operators.



SERC Regional Model Development Update

- **SERC Regional Model Development**
  - SERC Long-Term Working Group (LTWG)
    - Analyze the performance of the members' transmission systems and identify limits to power transfers occurring non-simultaneously among the SERC members.
    - Evaluate the performance of bulk power supply facilities under both normal and contingency conditions for future years.
  - Data Bank Update (DBU)
    - The DBU is held to conduct an annual update of power flow models for the SERC Region to be used for operating and future year studies.

SERC Regional Model Development Update

- **SERC Regional Model Development**
  - Eastern Interconnection Reliability Assessment Group (ERAG)
    - The SERC Models are incorporated into the power flow models of the interconnected regions and updated annually by ERAG
    - Responsible for developing a library of solved power flow models of the Eastern Interconnection (Multi-regional Modeling Work Group – MMWG).
    - The updated Regional MMWG Models serve as the starting point model for the SERTP Regional Power Flow Models
    - MOD-32 Compliance (Data for Power System Modeling and Analysis)

SERC Regional Model Development Update

- **SERC Regional Model Development**
  - LTWG Schedule of Events for 2020
    - Data Bank Update (DBU) was performed in June
    - Power flow cases were finalized in June
    - Future Study Year Case: 2025 Summer Peak Load
      - Nonpublic Study and Report to be completed in October
      - Steering Committee Report review
    - Final Report Scheduled for completion on December 6th
  - ERAG Schedule of Events for 2020
    - MMWG Model Update performed from August – September
    - Power flow cases finalized in October

Next Meeting Activities

- **2020 SERTP 4th Quarter Meeting** – *Annual Transmission Planning Summit & Input Assumptions Meeting*
  - **Location: WebEx Only**
  - **Date: December 3rd, 2020**
  - **Purpose:**
    - Final Economic Planning Study Results
    - Final Regional Transmission Plan
    - Regional Analyses Results
    - 2020 Assumptions Input Session

2020 SERTP

Questions?

www.southeasternrtp.com