

# 2011 SERTP Study Scope Document

## --Final--

### 06/20/2011

## **Purpose of Study**

The purpose of this study is to assess potential constraints on the transmission systems of the Participating Transmission Owners for the three Economic Planning Studies as identified by the Stakeholders. This assessment will include the identification of transmission enhancements necessary to accommodate the three Economic Planning Study requests. Planning staff of the Participating Transmission Owners will perform the studies. The study results will be reviewed with the Stakeholders for their input prior to the finalization of the study.

## **Overview of the Study Process**

The scope of the proposed study process will include the following steps:

### **1. Assumptions**

- Study assumptions selected

### **2. Study Criteria**

- Establish the criteria by which the evaluation results will be measured

### **3. Case Development**

- Develop the models needed to perform the evaluations

### **4. Methodology**

- Determine methodologies that will be used to carry out the evaluation

### **5. Technical Analysis and Study Results**

- Perform the analyses (thermal, voltage, stability, and short circuit, as necessary for the study) and produce the results

### **6. Assessment and Problem Identification**

- Evaluate the results to identify constraints / issues

### **7. Solution Development**

- Identify potential solutions to the constraints / issues
- Test the effectiveness of the potential solutions through additional evaluations (thermal, voltage, stability, and short circuit) and modify the solutions as necessary such that all reliability criteria are met
- Provide cost estimate of the necessary transmission enhancements (in 2011 NPV).
- Provide associated timelines for completion of the proposed solutions

### **8. Report on the Study Results**

- Prepare a report on the identified system upgrades to accommodate the three Economic Planning Study requests.

Each of these study steps is described in more specific detail below.

# 2011 SERTP Study Scope Document

## --Final--

### 06/20/2011

## Assumptions

The specific assumptions selected for these evaluations are:

- The year to be evaluated for the three economic studies, as selected by the stakeholders, is 2016. Each request will only be evaluated for that particular year.
- The load levels to be evaluated will be Summer Peak and Shoulder (93% of Summer Peak load).
- The following scenarios will be evaluated:
  - TVA Border to Southern Balancing Authority (“SBA”) – 3500 MW
    - Year: 2016
    - Type of Transfer: Generation to Generation
    - Source: New generator interconnecting to the Shelby 500 kV substation in TVA near Memphis, TN (Bus #: 360021).
    - Sink: Generation within the SBA.
    - Table 1 below describes system improvements to be added to the TVA model in association with the Shelby 500 kV interconnection (per stakeholder request).
    - Additionally, this study will evaluate the above scenario at an 80% of Summer Peak load level.

**Table 1: System improvements to be added to the TVA model**

|   |  |
|---|--|
| 1 | Construct a new, parallel 500 kV T.L. from Shelby to Cordova |
| 2 | Construct a new 500 kV T.L. from Johnsonville to Maury       |
| 3 | Construct a new 500 kV T.L. from Jackson to Lagoon Creek.    |
| 4 | Uprate the Pleasant Hill – Benton 500 kV T.L.                |
| 5 | Uprate the Pleasant Hill – Union 500 kV T.L.                 |
| 6 | Uprate the Shelby – Cordova 500 kV T.L. #1                   |
| 7 | Uprate the Jackson – Haywood 500 kV T.L.                     |

- EES Border to SBA – 1500 MW
  - Year: 2016
  - Type of Transfer: Generation to Generation
  - Source: New generator interconnecting to the El Dorado 500 kV substation in EES near El Dorado, AR (Bus #: 337561).
  - Sink: Generation within the SBA.
  - Additionally, this study will evaluate the above scenario at an 80% of Summer Peak load level.
- SCPSA Border to SBA – 1000 MW
  - Year: 2016
  - Type of Transfer: Load to Generation
  - Source: Uniform load scale of SCPSA area.

# 2011 SERTP Study Scope Document

## --Final--

### 06/20/2011

- Sink: Generation within the SBA.
- PSS/E and/or MUST will be used for the study.
- Generation, interchange, and other assumptions will be coordinated between Participating Transmission Owners and Stakeholders.

## Study Criteria

The study criteria with which results will be evaluated will include the following reliability elements:

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

## Case Development

- For all evaluations, the latest 2011 series base cases available will be used as a starting point for the analysis of the three economic study requests.

## Methodology

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

## Technical Analysis and Study Results

The technical analysis will be performed in accordance with the study methodology. Results from the technical analysis will be reported throughout the study area to identify transmission elements approaching their limits such that all Participating Transmission Owners and Stakeholders are aware of potential issues and appropriate steps can be identified to address these issues.

The SERTP will report results on elements of 115 kV and greater within their respective service area based on:

- Thermal loadings greater than 100%.
- Thermal loadings greater than 90% that change by + 5% of applicable rating with the addition of the transfer.
- Identification of potential improvements to address overloads of 100% or greater.

# 2011 SERTP Study Scope Document

## --Final--

### 06/20/2011

- Voltages appropriate to each Participating Transmission Owner's planning criteria.

### **Assessment and Problem Identification**

- The Participating Transmission Owners will run assessments in order to identify any constraints within the Participating Transmission Owners' service territory as a result of the three economic planning study requests. Any reliability constraints identified will be documented and reviewed by each Participating Transmission Owner.

### **Solution Development**

- The Participating Transmission Owners, with input from the Stakeholders, will develop potential solution alternatives due to the economic studies requested by the stakeholders.
- The Participating Transmission Owners will test the effectiveness of the potential solution alternatives using the same cases, methodologies, assumptions and criteria described above.
- The Participating Transmission Owners will develop rough, planning-level cost estimates and construction schedules for the selected solution alternatives.

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

The Participating Transmission Owners will compile all the study results and prepare a report for review by the Stakeholders. The report shall contain the following:

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