2010 SERTP Study Scope Document
--FINAL--
06/23/2010

Purpose of Study

The purpose of this study is to assess potential constraints on the transmission systems of the Participating Transmission Owners for the five Economic Planning Studies as identified by the Stakeholders. This assessment will include the identification of transmission enhancements necessary to accommodate the five 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 2010 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 five Economic Planning Study requests.

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

Assumptions

The specific assumptions selected for these evaluations are:

- The year to be evaluated for the five 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:
    - Birmingham, AL to Georgia ITS – 1000 MW
        - Year: 2016
        - Type of Transfer: Generation to Generation
        - Source: New Generator interconnecting to the South Bessemer 500 kV substation near Birmingham, AL.
        - Sink: Generation within the Georgia ITS.
        - Additionally, this study will provide an estimate of the transfer level, above the requested amount, that could result in an angular instability event.
    - Duke Border to Southern Balancing Authority ("SBA") – 2000 MW
        - Year: 2016
        - Type of Transfer: Load to Generation
        - Source: Uniform load scale of the Duke area.
        - Sink: Generation within the SBA.
    - SCPSA Border to SBA – 200 MW
        - Year: 2016
        - Type of Transfer: Load to Generation
        - Source: Uniform load scale of SCPSA area.
        - Sink: Generation within the SBA.
    - TVA Border to SBA – 1500 MW
        - Year: 2016
        - Type of Transfer: Load to Generation
        - Source: Uniform load scale of the TVA area
        - Sink: Generation within the SBA
    - North Georgia to Mississippi – 600 MW
        - Year: 2016
        - Type of Transfer: Generation to Generation
        - Source: New Generator interconnecting to the 500 kV near Murray County, GA

- Sink: Generation within SMEPA's and Mississippi Power Company's ("MPC") territory
  - Amount of generation to be displaced within SMEPA and MPC will be determined by the load ratio of SMEPA and MPC

- 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
- SERC requirements
- Individual company criteria (voltage, thermal, stability, and short circuit)

Case Development

- For all evaluations, the "2010 Series, Version 2A", 2016 cases will be used as a starting point for the analysis of the five 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.
- 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 five 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 five 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