

# 2013 SERTP Study Scope Document

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### 04/19/2013

## **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 Regional Planning Stakeholder Group (“RPSG”). This assessment will include the identification of transmission enhancements within the footprint of the participating transmission owners 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 SERTP 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**

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

### **3. Case Development**

- Develop the models needed to perform the evaluations

### **4. Methodology**

- Outline the 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 as necessary) and modify the solutions as necessary such that all reliability criteria are met
- Provide cost estimate of the necessary transmission enhancements (in 2013 NPV).
- Provide associated timelines for completion of the proposed solutions

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#### 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 load levels to be evaluated will be Summer Peak and Shoulder (93% of Summer Peak load) unless otherwise requested by the RPSG and indicated below.
- Each request will only be evaluated for the particular year identified below, as selected by the RPSG.
- The following scenarios will be evaluated:
  - Southern to SCPSA Border – 500 MW
    - Year: 2015
    - Load Level: Winter Peak
    - Type of Transfer: Generation to Load
    - Source: Southern Generation
    - Sink: Uniform load scale of SCPSA area
  - Southern to SCE&G Border – 500 MW
    - Year: 2015
    - Load Level: Winter Peak
    - Type of Transfer: Generation to Load
    - Source: Southern Generation
    - Sink: Uniform load scale of SCE&G area
  - TVA Border to Southern – 1500 MW
    - Year: 2017
    - Load Level: Spring Valley (≈40% of Summer Peak load)
    - Type of Transfer: Load to Generation
    - Source: Uniform load scale of TVA area
    - Sink: Southern Generation
  - TVA Border to Southern – 1500 MW
    - Year: 2017
    - Load Level: Summer Peak
    - Type of Transfer: Load to Generation
    - Source: Uniform load scale of TVA area
    - Sink: Southern Generation

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- Southern to PJM Border – 1000 MW
  - Year: 2023
  - Load Level: Summer Peak
  - Type of Transfer: Generation to Load
  - Source: Southern Generation
  - Sink: Uniform load scale of the PJM area. The resulting allocation is shown in Table 1 below:

Table 1: Southern to PJM Border – Sink Allocation

PJM Area #	Area #	Participation Factor (%)	MW Allocation
Allegheny Power	201	5.32%	53
American Transmission Systems	202	8.15%	82
American Electric Power	205	13.89%	139
Dayton Power & Light	209	2.16%	22
Duke Energy Ohio & Kentucky	212	3.21%	32
Duquesne Light Company	215	1.86%	19
Commonwealth Edison	222	14.28%	143
Pennsylvania Electric Company	226	1.89%	19
Metropolitan Edison Company	227	1.77%	18
Jersey Central Power & Light	228	3.71%	37
PPL Electric Utilities	229	4.57%	46
PECO Energy Company	230	5.52%	55
PSE&G	231	6.35%	63
Baltimore Gas & Electric	232	4.36%	44
Potomac Electric Power	233	4.12%	41
Atlantic Electric	234	1.65%	17
Delmarva Power & Light	235	2.56%	26
UGI Utilities	236	0.12%	1
Rockland Electric	237	0.27%	3
East Kentucky Power Cooperative	320	1.30%	13
Dominion Virginia Power	345	12.94%	129
<b>Total</b>		<b>100.00%</b>	<b>1000</b>

- 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.

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## Study Criteria

The study criteria with which results will be evaluated will be based on the following:

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

## Case Development

- For all evaluations, the latest 2013 series base cases available 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 most limiting constraint. 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 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 report will include results on transmission elements of 115 kV and greater within the participating transmission owners' footprint based on:

- 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' footprint as a result of the five economic planning study requests. Any

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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 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 rough, planning-level cost estimates and in-service dates 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 in-service dates for the selected solution alternatives