

Southwest Power Pool (SPP) Expansion Plan 2006 Proposed Scope

Introduction

The main objective of the SPP RTO Expansion Plan is to create an effective long-range plan for the SPP footprint which identifies NERC, SPP and local planning criteria violations and develops appropriate mitigation plans to meet the reliability needs of the SPP region. In addition, projects which may produce an economic benefit to the stakeholders in the SPP footprint are also evaluated. This process consists of the following steps:

1. Identification of the reliability based problems (NERC, SPP and local criteria violations)
2. Comprehensive assessment of known mitigation plans, and
3. Development of additional mitigation plans to meet the needs of the region and maintain NERC, SPP and Local reliability/planning standards, and
4. Identification of other projects that may provide economic benefit to the system.

The process is an open process and allows for stakeholder input. All study results through the planning process are being coordinated with other entities/regions responsible for transmission needs assessment/planning.

Expansion Plan Objectives

Reliability Planning

- SPP shall plan the SPP Transmission System to meet:
 - NERC Reliability Standards
 - SPP Criteria
 - Local Planning Criteria as requested by Transmission Owner(TO)
- Address additional needs of the region
- Assess mitigation plans proposed by TO (Operating guides and/or new facilities)
- SPP shall track planned system upgrades to ensure reliability projects are built in time to meet the needs of the system. This will be accomplished through the SPP Project Tracking process.
- SPP shall coordinate regional transmission plans with neighboring entities, regions and RTO's.

Market Need & Economic Benefit Screening

- SPP shall identify projects for potential system reinforcements that may provide an economic benefit to the system.

Assumptions for Reliability Assessment

Load Flow Models

- SPP shall use the SPP MDWG 2005 Series 2007 Summer Peak, 2007/8 Winter Peak, 2011 Summer Peak, 2011/12 Winter Peak and 2016 Summer Peak cases with updates from nearby regions and entities. The cases shall be modified as follows to create the Base Cases for the Expansion Plan:
 - Treatment of transmission owner -Initiated Projects
 - SPP shall remove transmission owner initiated projects within SPP that have a start of construction date beyond January 1, 2008. In the event that there is a question from the initiating transmission owner regarding the January 1, 2008 cutoff date for removal of projects, SPP staff will approve exceptions.
 - All Proposed and Exploratory projects shall be removed from the models
 - Treatment of previous SPP RTO Expansion Plan Projects
 - SPP staff shall remove previous SPP RTO Expansion Plan projects that have a start of construction date beyond January 1, 2008. In the event that there is a question regarding the January 1, 2008 cutoff date for removal of projects, SPP staff will approve exceptions.
 - Treatment of SPP Aggregate Study (Attachment Z) Projects
 - SPP staff shall remove SPP Aggregate Study Projects that have a required start of construction date beyond January 1, 2008. In the event that there is a question regarding the January 1, 2008 cutoff date for removal of projects, SPP staff will approve exceptions.
 - SPP staff shall include all SPP Aggregate Study Projects that have signed contracts and have an in-service date prior to January 1, 2008.

Stability Models

- SPP Staff shall use the SPP 2005 Series MDWG 2007 Winter Peak stability model.
 - Remove Proposed and Exploratory projects
 - Include all SPP Aggregate Study Projects that have signed contracts and have a completion date prior to January 1, 2008.

Methodology for Reliability Assessment

Steady State Analysis

- Monitoring of Facilities
 - SPP staff shall monitor all facilities in the SPP footprint 69 kV and above.
 - With the exception of Entergy (EES) and Associated Electric (AECE), SPP staff shall monitor all facilities in first tier control areas 230 kV and above. Within EES and AECE, facilities shall be monitored at 100 kV and above.
- The 2007 Summer Peak case and 2007/8 Winter Peak case shall be used to help time projects prior to 2011

- Summer Peak Analysis – Contingency analysis shall be performed on the 2011 Summer Peak case (including all transaction cases) and the 2016 Summer Peak case (including all transaction cases).
 - All NERC Reliability Standard for transmission planning, Table 1 category B contingencies 69 kV and above in SPP will be evaluated. These contingencies do not include manual transfer of load or manual switching.
 - All NERC Reliability Standard for transmission planning, Table 1 category B contingencies 100 kV and above in EES and AECI will be evaluated.
 - For other first tier areas, all NERC Reliability Standard for transmission planning, Table 1 category B 230 kV and above contingencies will be evaluated.
 - SPP will verify that all violations identified have reinforcement plans
 - SPP will verify that all category A and B violations identified have reinforcement plans
- Winter Peak Analysis – Contingency analysis shall be performed on the 2011/12 Winter Peak case (including all transaction cases)
 - All NERC Reliability Standard for transmission planning, Table 1 category B contingencies 69 kV and above in SPP will be evaluated. These contingencies do not include manual transfer of load or manual switching.
 - All NERC Reliability Standard for transmission planning, Table 1 category B contingencies 100 kV and above in EES and AECI will be evaluated.
 - For other first tier areas, all NERC Reliability Standards for transmission planning, Table 1 category B 230 kV and above contingencies will be evaluated.
 - Within SPP, automatic bus outages for 345 kV and above buses (Bus section C-1) will be conducted TO will verify if the contingency is valid.
 - Within SPP, automatic double lines outages from 345 kV buses (Breaker failure C-2) will be conducted. TO will verify if the contingency is valid category C and D contingency list which shall also include tower outages.
 - SPP will verify that all category A, B and C violations identified have reinforcement plans

Stability Analysis

- SPP staff shall provide a list of past studies to stakeholders to determine what contingencies to evaluate.
- Stakeholders shall provide SPP staff a priority list of category B, C and D contingencies to evaluate.
- Based on recommendations from stakeholders, SPP staff and TWG shall determine the appropriate contingencies to evaluate.
- The 2007/08 Winter Peak stability case shall be used to evaluate the stability of the system

Voltage Stability Analysis

- Stakeholders shall provide input to SPP staff regarding potential voltage stability problems.
- SPP staff will screen for stability problems by reviewing load flow results for low voltage, non-converged cases, and voltage deviations of 5%.
- SPP staff and TWG will determine what contingencies to evaluate using either a PV or QV analysis.
- SPP staff will perform a reactive margin/reserve study
 - Use 2011 Summer Peak base case, and list VAR reserves in each control area.
 - Use 2011 Summer Peak base case and produce additional cases by removing the largest unit in significant load areas.
 - SPP staff will screen the above cases for potential voltage stability problem by running 230 kV and above contingencies for all facilities in the SPP footprint.
 - SPP staff will identify generators that are at their var limits.
 - SPP staff will perform a P-V analysis on selected contingencies, as identified by the screening analysis.

Use of Operating Guides

- The Steady State analysis will identify all violations without the use of operating guides/directives.
- Operating guides/directives may be used as alternatives to planned projects. Load flow analysis will be performed to determine the effectiveness of the operating guide in alleviating the violation(s).
- SPP staff will determine all reinforcements that are needed to eliminate operating guides/directives used in alleviating violation(s). A list of reinforcements that are no longer required due to operating guides will be included in the report.

Market Need & Economic Benefit Screening

- Solicit stakeholder input
- Conduct preliminary screen of projects
- Post results
- Additional investigation and study will be conducted once interest has been expressed (willingness to build)