SPP Southwest Power Pool

System Impact Study For Transmission Service Requested By Tenaska

From CSWS to ERCOTN

For a Reserved Amount Of 13MW From 1/1/02 To 1/1/03

SPP Transmission Planning

SPP IMPACT STUDY (#SPP-2001-085)
April 23, 2001

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1. Executive Summary

Tenaska has requested a system impact study for long-term Firm Point-to-Point transmission service from CSWS to ERCOTN. The period of the transaction is from 1/1/02 to 1/1/03. The request is for one reservation (#242499), totaling 13MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the 13MW transfer while maintaining system reliability. The analysis in this document shows that to accommodate the 13MW transfer there will be no upgrades required on the SPP transmission system.

2. Introduction

Tenaska has requested an impact study for transmission service from CSWS control area with a sink of ERCOTN.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer too less than 13MW. This study includes a steady-state contingency analysis (PSS/E function ACCC) and Available Transfer Capability (ATC) analysis.

The steady-state analysis considers the impact of the 13MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

ATC analysis shows the amount of First Contingency Incremental Transfer Capabilities (FCITC) between the given study systems and what the limitations are, if any, for transferring up to 13MW.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 13MW transfer on the SPP system. The first analysis was conducted to document the 13MW transfer impact on facilities assigned to previous transmission customers. The second analysis was conducted to determine any new facilities overloaded 13MW transfer.

The analyses were done using two steps. The first step was to study the steady-state analysis impact of the 13MW on SPP and Non-SPP facilities. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact.

The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency. The ATC study portion was done using the requirements specified in the current SPP Criteria related to determination of ATC.

B. Model Updates

SPP used two seasonal models to study the 13MW request. The SPP 2001 Series Cases 2002 Summer Peak and 2002/03 Winter Peak were used to study the impact of the 13MW transfer on the SPP system during the transaction period of 1/1/02 to 1/1/03.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the request period that were not already included in the January 2001 base case series models.

C. Transfer Analysis

Using the created models and the ACCC function of PSS\E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

SPP evaluated the request and determined that no facility overloads on the AC transmission system were found to limit the requested service for the study frame.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:
Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply immediately
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

ACCC CASES:
Solutions – AC contingency checking (ACCC)
1. MW mismatch tolerance –1.0
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excld cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts