SPP Southwest Power Pool

System Impact Study SPP-2001-325
For Transmission Service
Requested By
Tenaska

From KCPL to EES

For a Reserved Amount Of 50MW
From 11/1/01
To 5/1/02

SPP Transmission Planning

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1. Executive Summary

Tenaska has requested a system impact study for Monthly Firm transmission service from KCPL to EES. The period of the transaction is from 11/1/01 to 5/1/02. The request is for reservation 302680 for the amount of 50MW.

The 50MW transaction from KCPL to EES has a positive response on the Elk City Transformer flowgate. To provide the ATC that is necessary for this transfer, the impact on this flowgate must be relieved.

It has been determined that there is not sufficient time available to complete any upgrades to the system that would relieve this flowgate.

Redispatch was unavailable as an option to relieving the impact on the Elk City Transformer flowgate caused by the 50MW transfer because of the limitation of undervoltage due to the 12.5% response on the Fort Smith to Arkansas Nuclear One flowgate.

There are no additional options available to relieve the impact on this flowgate caused by the 50MW KCPL to EES transfer.

2. Study Methodology

A. Description

Southwest Power Pool used the short-term calculator to generate a flowgate analysis of this 50MW transaction.

B. Model Updates

The 2001 Southwest Power Pool Fall Peak, 2001/2002 Winter Peak, and the 2002 Spring Peak models were used for the study. These models were updated to reflect the most current information available.

C. Transfer Analysis

Using the short-term calculator, the limiting constraint for the transfer is identified. The response factor of the transfer on that constraint is also determined.

3. Study Results

The Elk City Transformer flowgate has been identified as a limiting constraint for the KCPL to EES transfer. The distribution factor on the flowgate for this transfer is 5.1%. Though this transformer has been recently upgraded, the flowgate is limited to 263MVA due to metering CT's on the high side and a bus bar limitation on the low side. The next level of limitation is 287MVA, which can be achieved by upgrading four switches and one circuit breaker. Even these upgrades are insufficient to provide the 308MVA necessary for this transaction.

On August 13, 1999, parts of northwestern Arkansas experienced unusually low voltage on the 115 kV and 161 kV systems. A collaborative inter-regional study team was formed with representation from EES and the Southwest Power Pool (SPP) to review the low voltage condition. One recommendation of the study was to add the ANO – Ft. Smith 500 kV/Dell – New Madrid 500 kV circuits as a Flowgate for voltage stability. The flow on these 500 kV lines is a good indicator of the amount of north to south transactions. The distribution factor on the Fort Smith to Arkansas Nuclear One flowgate for the KCPL to EES transfer is 12.5%. The ATC necessary to accommodate the transfer on this 600MW flowgate is between 643 and 700MW depending on the month in question. Because the limitation is one of undervoltage rather than thermal, redispatch was not considered a viable option.

4. Conclusion

There are no facility upgrades available to relieve these flowgates that can be completed in the time period available. No other options are available to provide the capacity needed for the 50MW transfer. Therefore the request for monthly service from KCPL to EES must be refused due to the impact on the Elk City Transformer flowgate and the Fort Smith to ANO flowgate.