



SPP

*Southwest
Power Pool*

*System Impact Study SPP-2002-177
For Transmission Service
Requested By
Xcel Energy*

From OKGE to SPS

*For a Reserved Amount Of 50MW
From 8/5/02
To 9/5/02*

SPP Transmission Planning

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1. Executive Summary

Xcel Energy has requested a system impact study for Monthly Firm transmission service from OKGE to SPS. The period of the transaction is from 8/5/02 to 9/5/02. The request is for reservation 404414 for the amount of 50MW. The additional time period of 8/1-8/4/02 was also studied.

The 50MW transaction from OKGE to SPS has a positive response on the La Cygne to Stillwell, La Cygne to West Gardner flowgate (LacStiLacWgr), the Fort Smith to Arkansas Nuclear One PTDF undervoltage flowgate (FtsmthAnoVlt), and the Gentleman to Red Willow PTDF flowgate (WNE_WKS). The impact of this transfer on the La Cygne to Stillwell, 345kV line will cause an overload for the loss of the La Cygne to West Gardner, 345kV line during the time period of this request. The impact of this transfer will cause undervoltage limits to be exceeded for the Fort Smith to Arkansas Nuclear One, 500kV line. The impact of this transfer on the Gentleman to Red Willow, 345kV line will cause an overload during the time period of this request. To provide the ATC that is necessary for this transfer, the impact on these flowgates must be relieved.

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

The Owner of existing firm transmission reservations 381154 (SPS to AMRN) and 381171 (AMRN to SPS) agrees to curtail these reservations, if needed, up to 41MW and 38MW respectively to relieve loading on the La Cygne to Stillwell, La Cygne to West Gardner flowgate (LacStiLacWgr), the Fort Smith to Arkansas Nuclear One PTDF undervoltage flowgate (FtsmthAnoVlt), and the Gentleman to Red Willow PTDF flowgate (WNE_WKS). Therefore the request for monthly service from OKGE to SPS will be accepted with this limitation. In place of this monthly service, any firm service during the time period of 8/1-9/5/02 can flow in the capacity of 50MW if the above curtailment advice is followed.

2. Introduction

Xcel Energy has requested an impact study for transmission service from OKGE to SPS.

An option available to relieve the impact on these flowgates caused by the 50MW OKGE to SPS transfer is curtailment of existing service. In this method, the impact of curtailed service on a particular flowgate can be allotted to the new service requested. Both requests can be scheduled until firm service must be curtailed to relieve the particular flowgate. At this point, prior to curtailing other service that has no curtailment constraint, the original reservation's flowgate impact must be reached; therefore, service must be curtailed on the original reservation.

The La Cygne to Stillwell, La Cygne to West Gardner flowgate has been identified as a limiting constraint for the OKGE to SPS transfer. For this flowgate, the La Cygne to Stillwell, 345kV line is monitored during the loss of the La Cygne to West Gardner, 345kV line. It has been determined that the 50MW transfer from OKGE to SPS will cause the La Cygne to Stillwell line to overload should the loss of the La Cygne to West Gardner line occur.

The 50MW transfer is also limited by the Fort Smith to Arkansas Nuclear One PTDF undervoltage flowgate (FtsmthAnoVlt). For this flowgate, the Fort Smith to Arkansas Nuclear One, 500kV line is monitored for undervoltage. The OKGE to SPS transfer will cause undervoltage limits to be exceeded for the Fort Smith to Arkansas Nuclear One, 500kV line.

The Gentleman to Red Willow PTDF flowgate has been identified as a limiting constraint for the OKGE to SPS transfer. For this flowgate, the Gentleman to Red Willow, 345kV line is monitored. It has been determined that the 50MW transfer from OKGE to SPS will cause the Gentleman to Red Willow line to overload.

There are no facility upgrades available to relieve these flowgates that can be completed in the time period available. This impact study reviews curtailment as an option to relieving the transmission constraints.

3. Study Methodology

A. Description

Southwest Power Pool determined the firm transmission reservations that if curtailed would affect or relieve the transmission constraint and the amount of transmission capacity available through such curtailment.

B. Model Updates

The 2001 Southwest Power Pool Summer Peak model was used for the study. This model was 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.

The product of the transfer amount and the response factor is the impact of the transfer on a limiting flowgate that must be relieved. With multiple flowgates affected by a transfer, relief of the largest impact will also provide relief of smaller impacts.

4. Study Results

Curtailement of existing firm transmission reservations can provide for affect or relief on the concerning flowgates.

The distribution factor of the La Cygne to Stillwell, La Cygne to West Gardner flowgate for the OKGE to SPS transfer is 6.6% for August. The 3.3MW impact for August can be relieved by curtailement of existing firm transmission reservation 381154 (SPS to AMRN), which offers an 8.1% response factor for August. The impact of the 50MW OKGE to SPS transfer is relieved by curtailement of 41MW of 381154.

The response factor of the Fort Smith to Arkansas Nuclear One undervoltage flowgate (FtsthAnoVlt) for the OKGE to SPS transfer is 5.3% for August. The 2.7MW impact for August can be relieved by curtailement of existing firm transmission reservation 381154 (SPS to AMRN), which offers a 12.1% response factor for August. The impact of the 50MW OKGE to SPS transfer is relieved by curtailement of 22MW of 381154.

The response factor of the Gentleman to Red Willow PTDF flowgate (FtsthAnoVlt) for the OKGE to SPS transfer is 12.7% for August. The 6.4MW impact for August can be relieved by curtailement of existing firm transmission reservation 381171 (AMRN to SPS), which offers a 16.9% response factor for August. The impact of the 50MW OKGE to SPS transfer is relieved by curtailement of 38MW of 381171.

5. Conclusion

Southwest Power Pool has determined the firm transmission reservations that, if curtailed, would affect or relieve the transmission constraint and the amount of transmission capacity available through such curtailment. The Owner of existing firm transmission reservations 381154 (SPS to AMRN) and 381171 (AMRN to SPS) agrees to curtail these reservations, if needed, up to 41MW and 38MW respectively to relieve loading on the La Cygne to Stillwell, La Cygne to West Gardner flowgate (LacStiLacWgr), the Fort Smith to Arkansas Nuclear One PTDF undervoltage flowgate (FtsthAnoVlt), and the Gentleman to Red Willow PTDF flowgate (WNE_WKS). Therefore the request for monthly service from OKGE to SPS will be accepted for the requested transaction period with this limitation. In place of this monthly service, any firm service during the time period of 8/1-9/5/02 can flow in the capacity of 50MW OKGE to SPS if the above curtailment advice is followed.