



SPP

*Southwest
Power Pool*

System Impact Study

SPP-2003-056

For Transmission Service

Requested By:

***Southwestern Public Service
Company***

From MEC to SPS

For a Reserved Amount Of

50 MW

From 04/1/03

To 01/1/04

SPP Transmission Planning

Table of Contents

| | |
|-----------------------------------|----------|
| 1. EXECUTIVE SUMMARY | 3 |
| 2. INTRODUCTION | 4 |
| 3. STUDY METHODOLOGY | 5 |
| A. DESCRIPTION..... | 5 |
| B. MODEL UPDATES | 5 |
| C. TRANSFER ANALYSIS | 5 |
| 4. STUDY RESULTS | 6 |
| 5. CONCLUSION | 7 |

1. Executive Summary

Southwestern Public Service Company has requested a system impact study for Monthly Firm transmission service from MEC to SPS. The period of the transaction is from 04/1/03 to 01/1/04. The request is for reservation 486849 for the amount of 50MW and is a redirect of original confirmed service 381169 from AMRN to SPS.

The 50MW transaction from MEC to SPS has created greater impacts on the TEMPORARY_2, LACNEOLANWIC, and the WNE_WKS flowgates. To provide the ATC 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 upgrades to the system that would relieve these flowgates.

After studying many scenarios using curtailment of reservations, there is a scenario that will relieve the flowgates in question.

2. Introduction

Southwestern Public Service Company has requested an impact study for transmission service from MEC to SPS.

There are two constrained flowgates that need relief in order for this reservation to be accepted. The flowgates and their explanations are as follows:

- LACNEOLANWIC flowgate: The Lacygne to Neosho, 345 KV, line is monitored for the loss of the Lang to Wichita, 345 KV line.
- TEMPORARY 2 flowgate: Lacygne to Neosho, 345 KV, line is monitored for the loss of the Lacygne to West Gardner, 345 KV, line.
- WNE_WKS flowgate: The Gentleman to Red Willow, 345 KV line

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

3. Study Methodology

A. Description

Southwest Power Pool used the NERC Generator Sensitivity Factor (GSF) Viewer to obtain possible unit pairings that would relieve the constraint. The GSF viewer calculates impacts on monitored facilities for all units above 20MW in the Eastern Interconnection. The SPP ATC Calculator is used to determine response factors for the time period of the reservation.

B. Model Updates

The 2003 Southwest Power Pool 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 constraints for the transfer are identified. The response factor of the transfer on each constraint is also determined.

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

Using the NERC Generator Sensitivity Factor (GSF) Viewer, specific generator pairs are chosen to reflect the units available for redispatch. The quotient of the amount of impact that must be relieved and the generation sensitivity factor calculated by the Viewer is the amount of redispatch necessary to relieve the impact on the affected flowgate.

4. Study Results

After comparing impacts of original request 381169 and the redirect request 486849, three flowgates remain unrelieved. These flowgates with the amount that is needed to be relieved are as follows:

- LACNEOLANWIC (5 MW)
- TEMPORARY_2 (3 MW)
- WNE_WKS (2 MW)

The LACNEOLANWIC flowgate, a new constraint, is impacted by any reservation from MEC to SPS, during the month of April, by 0.095 or 9.5 %. This equates to 5 MW ($50 \text{ MW reservation} * 0.095$) that needs to be relieved off this flowgate in order for the request to be approved. A KCPL to SPS reservation (0.15 sensitivity factor) would need to be curtailed by 32 MW ($5 / .15$) in order to relieve the impact of the MEC to SPS reservation on this flowgate. This constraint is for the month of April only.

The TEMPORARY_2 flowgate, a new constraint, is impacted by any reservation from MEC to SPS, during the month of April, by 0.065 or 6.5 %. This equates to 3 MW ($50 * 0.065$) that needs to be relieved off this flowgate in order for the request to be approved. A KCPL to SPS reservation (0.112 sensitivity factor) would need to be curtailed by 29 MW ($3 / 0.112$) in order to relieve the impact of the MEC to SPS reservation on this flowgate. This constraint is for the month of April only.

The WNE_WKS flowgate had an impact from the original request of .159 (8 MW) and the redirect has an impact of .201 (10 MW). Once the original impact is taken away from the redirect impact, a 2 MW constraint is left to be relieved off the WNE_WKS flowgate. To relieve this constraint, a KCPL to SPS schedule needs to be curtailed by 14 MW (0.151 impact factor). This constraint is a factor for the duration of the reservation.

Another scenario that was explored was to redirect 42 MW of the AMRN to SPS reservation for 42 MW of the KCPL to SPS path. This will leave a constraint of 2 MW ($(42 * .201) - (42 * .159)$) on the WNE_WKS flowgate. In order to relieve the rest of this constraint, 11 MW ($2 / .159$) from AMRN to SPS would need to be curtailed.

5. Conclusion

Curtailment options given by Southwestern Public Service Company were exhausted in this study to relieve the constraints necessary. The results of the study showed that the constraints on the flowgates in question could be relieved by the curtailment of KCPL to SPS reservations or by curtailing an AMRN to SPS reservation. The AMRN to SPS scenario will work for every month except for April.