SPP Southwest Power Pool

# System Impact Study
# SPP-2003-002
# For Transmission Service
# Requested By
# Aquila Energy Marketing Corporation

## From KCPL to ERCOTE

## For a Reserved Amount Of
## 50 MW
## From 03/1/03
## To 01/1/04

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## 1. Executive Summary

AEMC has requested a system impact study for Monthly Firm transmission service from KCPL to ERCOTE. The period of the transaction is from 3/1/03 to 1/1/04. The requested reservation, 473325, is for the amount of 50MW and is a redirect of original confirmed service 369809 from CLEC to ERCOTE.

The 50MW transaction from KCPL to ERCOTE causes greater impacts on existing flowgates as well as impacting new flowgates when compared to the original confirmed request. Greater impacts were shown on the following constrained flowgates: MUSKOGPITTSB and CRAASHVALLYD. The following flowgates were also shown as new constraints along the KCPL to ERCOTE path: CREKILWICWOO, NESONENESTUL, and WEBRERICHARD. In order to accept this redirected request, the impacts and new constraints 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.

Redispatch and curtailments were looked at as an option to relieve the impacts on the before mentioned flowgates caused by the 50MW transfer.

Curtailments of reservations along the paths, CLEC-ERCOTE and CSWS – ERCOTE, were able to relieve impacts along the CRAASHVALLYD, MUSKOGPITTSB, and WEBRERICHARD flowgates. However, curtailments as well as redispatching generation did not prove feasible to relieve impacts on CREKILWICWOO and NESONENESTUL.

## 2. Introduction

AEMC has requested an impact study for transmission service from KCPL to ERCOTE.

When compared to original request 369809, the redirected reservation in question, 473325, shows greater impacts along with new constraints. It has been determined that impacts on flowgates CRAASHVALLYD, CREKILWICWOO, MUSKOGPITTSB, NESONENESTUL, and WEBRERICHARD must be relieved in order for request 473325 (KCPL – ERCOTE) to be accepted.

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

- The Craig Junction to Ashdown, 138 KV line, is monitored during the loss of the Valliant Lydia, 345 KV line. This makes up the CRAASHVALLYD flowgate.

- The Creswell to Newkirk/Kildare, 138kV line, is monitored during the loss of the Wichita to Woodring, 345kV line. This makes up the CREKILWICWOO flowgate.

- The Muskogee to Pittsburg, 345 KV line, makes up the MUCKOGPITTSB flowgate.

- The Northeastern Station to Oneta, 345 KV line, is the monitored during the loss of the Northeastern Station to Tulsa North, 345 KV line. This makes up the NESONEENESTUL flowgate.

- The Webre to Richard 500 KV line makes up the WEBRERICHARD flowgate.

There are no facilities upgrades available to relieve these flowgates that can be completed in the time period available. This impact study reviews redispatch and curtailments as options 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 2002 Southwest Power Pool Summer Peak and Fall 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 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 OASIS request 369809 and redirect request 473326, five flowgates remain unrelieved. These flowgates, with the amount that is needed to be relieved, are as follows:

- CREKILWICWOO (2.8 MW)
- NESONENESTUL (6.3 MW)
- CRAASHVALLYD (3.3 MW)
- WEBRERICHARD (6.4 MW)
- MUSKOGPITTSB (1.7 MW)

The flowgates that were able to be relieved using curtailment of reservations were WEBRERICHARD, CRAASHVALLYD, and MUSKOGPITTSB.

Total MW to be relieved = (Redirect Sensitivity Factor) * (Reservation Amount)

WEBRERICHARD - (.127) * (50) = 6.4 MW to be relieved
CRAASHVALLYD - (.128) * (50) = 6.4 MW to be relieved
MUSKOGPITTSB - (0.11) * (50) = 5.5 MW to be relieved

Impacts of Original Reservation on

CRAASHVALLYD - (.062) * (50) = 3.1 MW
MUSKOGPITTSB - (0.076) * (50) = 3.8 MW

Since the original reservation will cease if the redirect is accepted, these impacts can be taken off of the relief need. Actually MW needed for relief:

WEBRERICHARD - 6.4 MW
CRAASHVALLYD - 6.4 – 3.1 = 3.3 MW
MUSKOGPITTSB – 5.5 – 3.8 = 1.7 MW

A reservation from CSWS to ERCOTE has an sensitivity factor of 0.055, 0.071, and 0.055 on WEBRERICHARD, CRAASHVALLYD, and MUSKOGPITTSB, respectively.

Using the above calculations, the amount of reservations needed to be curtailed are as follows:

(MW needed to relieve constraint) / (Sensitivity Factor) = (MW of Reservation to be curtailed)

WEBRERICHARD - (6.35) / (0.055) = 116 MW
CRAASHVALLYD - (3.3) / (0.071) = 47 MW
MUSKOGPITTSB – (1.7) / (0.055) = 31 MW

Total MW of reservation needing to be curtailed from CSWS to ERCOTE in order to relieve these three flowgates is 116 MW. The two other flowgates will need to be relieved by redispatch of generation.

After running all generation scenarios, it was determined that it would take more generation than what was available in order to relieve the constraints on the NESONENESTUL and CREKILWICWOO flowgates. The generation, available for redispatch, is too far removed from these flowgates.

## 5. Conclusion

Redispatch and curtailment options given by Aquila Energy Marketing Corporation were exhausted in this study to relieve the constraints necessary. The results of the study showed that the constraints on the flowgates in question would not be able to be relieved. Therefore, the request for monthly service from KCPL to ERCOTE will be refused.