SPP Southwest Power Pool

System Impact Study SPP-2001-159 For Transmission Service Requested By AEPW Marketing

From OKGE to AEPW

For a Reserved Amount Of 150MW From 6/1/01 To 8/1/01

SPP Transmission Planning

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1. Executive Summary

AEPW Marketing has requested a system impact study for Monthly Firm transmission service from OKGE to AEPW. The period of the transaction is from 6/1/01 to 8/1/01. The request is for reservations 247312, 247313, and 247318 for the amount of 150MW.

The 150MW transaction from OKGE to AEPW has a positive response on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate. The impact of this transfer on the Muskogee to Clarksville, 345kV line will cause an overload for the loss of the Muskogee to Riverside Station, 345kV line during the time period of this request. 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 looked at as an option to relieving the impact on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate caused by the 150MW transfer.

The Transmission Owners were given the opportunity to participate in the redispatch of their generation resources in order to relieve a system constraint caused by a transfer. Those companies owning units, which through increasing or decreasing generation will relieve the impact on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate, declined to participate in redispatching. There are no additional options available to relieve the impact on this flowgate caused by the 150MW OKGE to AEPW transfer.

2. Introduction

AEPW Marketing has requested an impact study for transmission service from OKGE control area with a sink of AEPW.

The Muskogee to Clarksville, Muskogee to Riverside Station flowgate has been identified as a limiting constraint for the OKGE to AEPW transfer. For this flowgate, the Muskogee to Clarksville, 345kV line is monitored during the loss of the Muskogee to Riverside Station, 345kV line. It has been determined that the 150MW transfer from OKGE to AEPW will cause Muskogee to Clarksville to overload should the loss of Muskogee to Riverside Station occur.

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

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 Muskogee to Clarksville, Muskogee to Riverside Station flowgate is included in the flowgate list.

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.

4. Study Results

A. Study Analysis Results

NERC calculates shift factors on specified facilities for all generation units over 20MW in the Eastern Interconnection. NERC also provides a list of the Top 100 Relief pairs for a specified constraint. These generation shift factors were reviewed for impacts on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate for the redispatch assessment. SPP generators with both negative and positive impacts were available. Those with negative impacts would reduce transformer flows when unit output in increased. The generators with positive impacts would increase flows when unit output is increased and reduce flows when unit output is decreased. There are several redispatch options within SPP for pairing units with positive impacts to units with negative impacts.

The distribution factor on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate for the WFEC to OKGE transfer is 5.1%. A redispatch would be required to relieve the 7.7MW impact on the constraint under emergency conditions.

Table 1 documents the SPP generators top 40 relief pairs for the Muskogee to Clarksville, Muskogee to Riverside Station flowgate.

Table 1: Top 40 Relief Pairs of SPP Generators

Source	Sink	Factor	Source	Sink	Factor	Source	Sink	Factor
CSWS_CALSTM 118.0_1	OKGE_MUSKOG6G24.0_1	-68.1	CSWS_CALGT1-118.0_1	OKGE_MUSKOG6G24.0_1	-68.1	CSWS_CALGT1-218.0_1	OKGE_MUSKOG6G24.0_1	-68.1
CSWS_CALSTM 218.0_1	OKGE_MUSKOG6G24.0_1	-68.1	CSWS_CALGT2-118.0_1	OKGE_MUSKOG6G24.0_1	-68.1	CSWS_CALGT2-218.0_1	OKGE_MUSKOG6G24.0_1	-68.1
CSWS_CALSTM 118.0_1	OKGE_MUSKOG5G18.0_1	-68.1	CSWS_CALGT1-118.0_1	OKGE_MUSKOG5G18.0_1	-68.1	CSWS_CALGT1-218.0_1	OKGE_MUSKOG5G18.0_1	-68.1
CSWS_CALSTM 218.0_1	OKGE_MUSKOG5G18.0_1	-68.1	CSWS_CALGT2-118.0_1	OKGE_MUSKOG5G18.0_1	-68.1	CSWS_CALGT2-218.0_1	OKGE_MUSKOG5G18.0_1	-68.1
CSWS_CALSTM 118.0_1	OKGE_MUSKOG4G18.0_1	-68.1	CSWS_CALGT1-118.0_1	OKGE_MUSKOG4G18.0_1	-68.1	CSWS_CALGT1-218.0_1	OKGE_MUSKOG4G18.0_1	-68.1
CSWS_CALSTM 218.0_1	OKGE_MUSKOG4G18.0_1	-68.1	CSWS_CALGT2-118.0_1	OKGE_MUSKOG4G18.0_1	-68.1	CSWS_CALGT2-218.0_1	OKGE_MUSKOG4G18.0_1	-68.1
CSWS_COGEN 2 18.0_G	OKGE_MUSKOG6G24.0_1	-63.1	CSWS_COGEN 2 18.0_S	OKGE_MUSKOG6G24.0_1	-63.1	CSWS_COGEN 3 18.0_G	OKGE_MUSKOG6G24.0_1	-63.1
CSWS_COGEN 3 18.0_S	OKGE_MUSKOG6G24.0_1	-63.1	CSWS_COGEN 2 18.0_G	OKGE_MUSKOG5G18.0_1	-63.1	CSWS_COGEN 2 18.0_S	OKGE_MUSKOG5G18.0_1	-63.1
CSWS_COGEN 3 18.0_G	OKGE_MUSKOG5G18.0_1	-63.1	CSWS_COGEN 3 18.0_S	OKGE_MUSKOG5G18.0_1	-63.1	CSWS_COGEN 2 18.0_G	OKGE_MUSKOG4G18.0_1	-63.1
CSWS_COGEN 2 18.0_S	OKGE_MUSKOG4G18.0_1	-63.1	CSWS_COGEN 3 18.0_G	OKGE_MUSKOG4G18.0_1	-63.1	CSWS_COGEN 3 18.0_S	OKGE_MUSKOG4G18.0_1	-63.1
CSWS_CALST M 118.0_1	OKGE_MUSKOG3G17.1_1	-40.4	CSWS_CALGT1-118.0_1	OKGE_MUSKOG3G17.1_1	-40.4	CSWS_CALGT1-218.0_1	OKGE_MUSKOG3G17.1_1	-40.4
CSWS_CALSTM 218.0_1	OKGE_MUSKOG3G17.1_1	-40.4	CSWS_CALGT2-118.0_1	OKGE_MUSKOG3G17.1_1	-40.4	CSWS_CALGT2-218.0_1	OKGE_MUSKOG3G17.1_1	-40.4
CSWS_CALSTM 118.0_1	OKGE_AES 2G13.8_1	-40.1	CSWS_CALGT1-118.0_1	OKGE_AES 2G13.8_1	-40.1	CSWS_CALGT1-218.0_1	OKGE_AES 2G13.8_1	-40.1
CSWS_CALSTM 218.0_1	OKGE_AES 2G13.8_1	-40.1						

5. Conclusion

The Transmission Owners were given the opportunity to include their units for redispatch in order to provide relief on the flowgates impacted by a certain transaction. The participants owning units that would relieve the flowgate impacted by the 150MW OKGE to AEPW transfer declined to participate in the redispatch of those units. No other options are available to provide the capacity needed for the 150MW transfer. Therefore the request for monthly service from OKGE to AEPW must be refused due to the impact on the Muskogee to Clarksville, Muskogee to Riverside Station flowgate.