SPP Southwest Power Pool

System Impact Study SPP-2001-337 For Transmission Service Requested By The Empire District Electric Company

From AEPW to EDE

For a Reserved Amount Of 100MW From 2/1/02 To 9/1/02

SPP Transmission Planning

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1. Executive Summary

The Empire District Electric Company has requested a system impact study for Monthly Firm transmission service from AEPW to EDE. The period of the transaction is from 2/1/02 to 9/1/02. The request is for reservation 306508 for the amount of 100MW.

The 100MW transaction from AEPW to EDE has a positive response on the Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate. The impact of this transfer will cause the Bartlesville to North Bartlesville, 138kV line to overload for the loss of the N.E.S to Delaware, 345kV line during the summer months of June, July, and August. 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 Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate caused by the 100MW transfer.

Those companies owning units, which through increasing or decreasing generation will relieve the impact on the Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate, were given the opportunity to participate in the redispatch of those units. Those companies declined to participate in redispatch. Therefore, there are no options available to relieve the impact on this flowgate caused by the 100MW AEPW to EDE transfer.

2. Introduction

The Empire District Electric Company has requested an impact study for transmission service from AEPW to EDE.

The Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate has been identified as a limiting constraint for the AEPW to EDE transfer. For this flowgate, the Bartlesville SE to N. Bartlesville, 138kV line is monitored during the loss of the N.E.S. to Delaware, 345kV line. It has been determined that the 100MW transfer from AEPW to EDE will cause the Bartlesville SE to N. Bartlesville line to overload should the loss of the N.E.S to Delaware line occur.

The facility limiting the flowgate to 210MVA is a wavetrap. Replacing the wavetrap increases the flowgate rating to 235MVA in the summer. Another 100MVA is required to allow this request. After upgrading the wavetrap, the flowgate would then become conductor limited. The conductor cannot be upgraded to relieve this flowgate in the time period available. This impact study reviews redispatch as an option to relieving the transmission restraints.

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 Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate is included in the flowgate list.

B. Model Updates

The 2001 Southwest Power Pool Winter Peak and Summer 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.

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 Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate for the redispatch assessment. SPP generators with both negative and positive impacts were available. Those with negative impacts would reduce flows when unit output is 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 Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate for the AEPW to EDE transfer is 7.5% for June, July, and August 2002. A redispatch would be required to relieve the 7.5MW impact on the constraint under emergency conditions.

Table 1 documents the SPP generators top 40 relief pairs for the Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate.

Table 1: Top 40 Relief Pairs of SPP Generators for Bartlesville SE to N. Bartlesville, N.E.S. to Delaware Flowgate

Source	Sink	Factor		Source	Sink	Factor		Source	Sink	Factor
CSWS_NES1-1 13.8_1	WR_SUB A 269.0_1	-42.8		CSWS_NES2-1 22.0_1	WR_SUB A 269.0_1	-42.8		CSWS_NES1-1A 18.0_1	WR_SUB A 269.0_1	-42.8
CSWS_NES1-1B 18.0_1	WR_SUB A 269.0_1	-42.8		SPA_KEY1&2 113.8_1	WR_SUB A 269.0_1	-37.5		SPA_KEY1&2 113.8_2	WR_SUB A 269.0_1	-37.5
GRDA_BOOMER 269.0_1	WR_SUB A 269.0_1	-37.5		CSWS_NES3-1 22.0_1	WR_SUB A 269.0_1	-37.2		CSWS_NES4-1 22.0_1	WR_SUB A 269.0_1	-37.2
CSWS_TPS4-1 13.8_1	WR_SUB A 269.0_1	-36.9		CSWS_NES1-1 13.8_1	WR_ERIE 269.0_3	-25.7		CSWS_NES2-1 22.0_1	WR_ERIE 269.0_3	-25.7
CSWS_NES1-1A 18.0_1	WR_ERIE 269.0_3	-25.7		CSWS_NES1-1B 18.0_1	WR_ERIE 269.0_3	-25.7		CSWS_NES1-1 13.8_1	WR_ERIE 269.0_2	-25.7
CSWS_NES2-1 22.0_1	WR_ERIE 269.0_2	-25.7		CSWS_NES1-1A 18.0_1	WR_ERIE 269.0_2	-25.7		CSWS_NES1-1B 18.0_1	WR_ERIE 269.0_2	-25.7
CSWS_NES1-1 13.8_1	WR_ERIE 269.0_1	-25.7		CSWS_NES2-1 22.0_1	WR_ERIE 269.0_1	-25.7		CSWS_NES1-1A 18.0_1	WR_ERIE 269.0_1	-25.7
CSWS_NES1-1B 18.0_1	WR_ERIE 269.0_1	-25.7		CSWS_NES1-1 13.8_1	WR_CHANUTE269.0_1	-25.7		CSWS_NES2-1 22.0_1	WR_CHANUTE269.0_1	-25.7
CSWS_NES1-1A 18.0_1	WR_CHANUTE269.0_1	-25.7		CSWS_NES1-1B 18.0_1	WR_CHANUTE269.0_1	-25.7		CSWS_NES1-1 13.8_1	WR_NEC U3 12.0_1	-24.6
CSWS_NES2-1 22.0_1	WR_NEC U3 12.0_1	-24.6		CSWS_NES1-1A 18.0_1	WR_NEC U3 12.0_1	-24.6		CSWS_NES1-1B 18.0_1	WR_NEC U3 12.0_1	-24.6
CSWS_NES1-1 13.8_1	WR_IOLA 269.0_1	-22.3		CSWS_NES2-1 22.0_1	WR_IOLA 269.0_1	-22.3		CSWS_NES1-1A 18.0_1	WR_IOLA 269.0_1	-22.3
CSWS_NES1-1B 18.0_1	WR_IOLA 269.0_1	-22.3		SPA_KEY1&2 113.8_1	WR_ERIE 269.0_3	-20.4		SPA_KEY1&2 113.8_2	WR_ERIE 269.0_3	-20.4
GRDA_BOOMER 269.0_1	WR_ERIE 269.0_3	-20.4		SPA_KEY1&2 113.8_1	WR_ERIE 269.0_2	-20.4		SPA_KEY1&2 113.8_2	WR_ERIE 269.0_2	-20.4
GRDA_BOOMER 269.0_1	WR_ERIE 269.0_2	-20.4								

5. Conclusion

The SPP Regional Tariff participants 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 100MW AEPW to EDE transfer declined to participate in the redispatch of those units. No other options are available to provide the capacity needed for the 100MW transfer during June, July, and August 2002. Therefore the request for monthly service from AEPW to EDE will be accepted for 2/1/02 through 5/31/02 and refused for 6/1/02 to 9/1/02 due to the impact on the Bartlesville SE to N. Bartlesville, N.E.S. to Delaware flowgate.