



*System Impact Study SPP-2001-387  
For Transmission Service  
Requested By  
OGE Energy Resources, Inc.*

*From CSWS to WFEC*

*For a Reserved Amount Of 50MW  
From 2/1/02  
To 1/1/03*

*SPP Transmission Planning*

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## **1. Executive Summary**

OGE Energy Resources, Inc. has requested a system impact study for Monthly Firm transmission service from CSWS to WFEC. The period of the transaction is from 2/1/02 to 1/1/03. The request is for reservation 333286 for the amount of 50MW.

The 50MW transaction from CSWS to WFEC has a positive response on the NW Texarkana to Patterson, Lydia to Valliant flowgate. The impact of this transfer on the NW Texarkana to Patterson, 138kV line will cause an overload for the loss of the Lydia to Valliant, 345kV line during the months of June, July, August, September, and December 2002. To provide the ATC that is necessary for this transfer during these months, the impact on this flowgate must be relieved.

The facility limitation for this flowgate is both breaker and conductor size. Therefore, 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 NW Texarkana to Patterson, Lydia to Valliant caused by the 50MW transfer.

Those companies owning units, which through increasing or decreasing generation will relieve the impact on the NW Texarkana to Patterson, Lydia to Valliant 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 50MW CSWS to WFEC transfer during the months of June, July, August, September, and December 2002. There is ATC to accommodate this service during the months of February, March, April, May, October, and November 2002.

## **2. Introduction**

OGE Energy Resources, Inc. has requested an impact study for transmission service from CSWS to WFEC.

The NW Texarkana to Patterson, Lydia to Valliant flowgate has been identified as the limiting constraint for the CSWS to WFEC transfer. For this flowgate, the NW Texarkana to Patterson, 138kV line is monitored during the loss of the Lydia to Valliant, 345kV line. It has been determined that the 50MW transfer from CSWS to WFEC will cause the NW Texarkana to Patterson line to overload should the loss of the Lydia to Valliant line occur.

Because the facility is both breaker and conductor limited, 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 restraints during the months that have no ATC.

### **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 NW Texarkana to Patterson, Lydia to Valliant flowgate is included in the flowgate list.

#### **B. Model Updates**

The 2001 Southwest Power Pool Winter Peak, 2002 Southwest Power Pool Summer Peak, and 2002 Southwest Power Pool Winter Peak models were used for the study. The 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 NW Texarkana to Patterson, Lydia to Valliant 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 NW Texarkana to Patterson, Lydia to Valliant flowgate for the CSWS to WFEC transfer is 8.4% for the months of June, July, August, and September 2002. A redispatch would be required to relieve the 4.2MW impact on the constraint under emergency conditions.

The distribution factor on the NW Texarkana to Patterson, Lydia to Valliant flowgate for the CSWS to WFEC transfer is 9.8% for the month of December 2002. A redispatch would be required to relieve the 4.9MW impact on the constraint under emergency conditions.

Table 1 documents the SPP generators top 40 relief pairs for the NW Texarkana to Patterson, Lydia to Valliant flowgate.

**Table 1:** Top 40 Relief Pairs of SPP Generators for NW Texarkana to Patterson, Lydia to Valliant Flowgate

Source	Sink	Factor	Source	Sink	Factor	Source	Sink	Factor
CSWS_NARROWS269.0_1	ERCE_EASTDC 7 345_1	-37.3	CSWS_NARROWS269.0_1	CSWS_WELSH3-118.0_1	-37.3	CSWS_NARROWS269.0_1	CSWS_WELSH2-118.0_1	-37.3
CSWS_NARROWS269.0_1	CSWS_WELSH1-118.0_1	-37.3	CSWS_NARROWS269.0_1	CSWS_CONSTM1 13.8_1	-36.6	CSWS_NARROWS269.0_1	CSWS_CONGAS2 18.0_1	-36.6
CSWS_NARROWS269.0_1	CSWS_CONGAS1 18.0_1	-36.6	CSWS_NARROWS269.0_1	CSWS_LONSTAR269.0_1	-35.9	CSWS_NARROWS269.0_1	CSWS_WILKE3-122.0_1	-35.6
CSWS_NARROWS269.0_1	CSWS_ESTGNA1 13.8_1	-35.4	SPA_BBOW#1 113.8_1	ERCE_EASTDC 7 345_1	-28.8	SPA_BBOW#2 113.8_2	ERCE_EASTDC 7 345_1	-28.8
SPA_BBOW#1 113.8_1	CSWS_WELSH3-118.0_1	-28.8	SPA_BBOW#2 113.8_2	CSWS_WELSH3-118.0_1	-28.8	SPA_BBOW#1 113.8_1	CSWS_WELSH2-118.0_1	-28.8
SPA_BBOW#2 113.8_2	CSWS_WELSH2-118.0_1	-28.8	SPA_BBOW#1 113.8_1	CSWS_WELSH1-118.0_1	-28.8	SPA_BBOW#2 113.8_2	CSWS_WELSH1-118.0_1	-28.8
CSWS_FULTGEN3 115_1	ERCE_EASTDC 7 345_1	-28.5	CSWS_FULTGEN3 115_1	CSWS_WELSH3-118.0_1	-28.5	CSWS_FULTGEN3 115_1	CSWS_WELSH2-118.0_1	-28.5
CSWS_FULTGEN3 115_1	CSWS_WELSH1-118.0_1	-28.5	SPA_BBOW#1 113.8_1	CSWS_CONSTM1 13.8_1	-28.1	SPA_BBOW#2 113.8_2	CSWS_CONSTM1 13.8_1	-28.1
SPA_BBOW#1 113.8_1	CSWS_CONGAS2 18.0_1	-28.1	SPA_BBOW#2 113.8_2	CSWS_CONGAS2 18.0_1	-28.1	SPA_BBOW#1 113.8_1	CSWS_CONGAS1 18.0_1	-28.1
SPA_BBOW#2 113.8_2	CSWS_CONGAS1 18.0_1	-28.1	CSWS_FULTGEN3 115_1	CSWS_CONSTM1 13.8_1	-27.8	CSWS_FULTGEN3 115_1	CSWS_CONGAS2 18.0_1	-27.8
CSWS_FULTGEN3 115_1	CSWS_CONGAS1 18.0_1	-27.8	SPA_BBOW#1 113.8_1	CSWS_LONSTAR269.0_1	-27.4	SPA_BBOW#2 113.8_2	CSWS_LONSTAR269.0_1	-27.4
SPA_BBOW#1 113.8_1	CSWS_WILKE3-122.0_1	-27.1	SPA_BBOW#2 113.8_2	CSWS_WILKE3-122.0_1	-27.1	CSWS_FULTGEN3 115_1	CSWS_LONSTAR269.0_1	-27.1
SPA_BBOW#1 113.8_1	CSWS_ESTGNA1 13.8_1	-26.9	SPA_BBOW#2 113.8_2	CSWS_ESTGNA1 13.8_1	-26.9	CSWS_FULTGEN3 115_1	CSWS_WILKE3-122.0_1	-26.8
CSWS_FULTGEN3 115_1	CSWS_ESTGNA1 13.8_1	-26.6						

Eg.

**(4.4MW) / 0.373 = 11.8MW** of redispatch required of first two generating units in Table 1 (increasing source and decreasing sink decreases load on the NW Texarkana to Patterson, Lydia to Valliant flowgate by 4.2MW)

## **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 50MW CSWS to WFEC transfer declined to participate in the redispatch of those units. No other options are available to provide the capacity needed for the 50MW transfer during the months of June, July, August, September, and December. Therefore the request for monthly service from CSWS to WFEC will only be accepted for the months of February, March, April, May, October, and December.