



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2023-066  
For Transmission Service  
Requested By:  
OPPM***

***From OPPD to NPPD.OPPD.LDX***

***For a Reserved Amount Of  
7 MW***

***From 11/18/2023  
To 10/17/2024***

## **1. Executive Summary**

OPPM has requested a system impact study for monthly firm transmission service from OPPD to NPPD.OPPD.LDX. The period of the transaction is from 11/18/2023 00:00 to 10/17/2024 23:00. The request is for reservation 101083402.

The 7 MW transaction from OPPD has an impact on the following flowgates with no AFC: COPSTJCPFRSJ, BEAHARCRESHE, SHEBENSHEFOL. To provide the AFC necessary for this transfer, the impact on these flowgates must be relieved.

After studying many scenarios using generation redispatch, there are several feasible scenarios that will relieve the flowgate(s) in question.

## **2. Introduction**

OPPM has requested a system impact study for transmission service from OPPD to NPPD.OPPD.LDX.

There are three constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- COPSTJCFRSJ: Cooper – St. Joe 345 kV for the loss of St. Joe to Fairport to Cooper 345 kV.
- BEAHARCRESHE: Beatrice - Harbine 115kV for the loss of Crete - Sheldon 115kV.
- SHEBENSHEFOL: SW 7<sup>th</sup> & Bennet - Sheldon 115kV for the loss of Sheldon - Folsom & Pleasant Hill.

### **3. Study Methodology**

#### **A. Description**

Southwest Power Pool used Transmission Adequacy & Reliability Assessment (TARA) to obtain possible unit pairings that would relieve the constraint. TARA calculates impacts on monitored facilities for all units within the Southwest Power Pool Footprint. The SPP ATC Calculator is used to determine response factors for the time period of the reservation.

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

The 2023 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 TARA, 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 TARA is the amount of redispatch necessary to relieve the impact on the affected flowgate.

## 4. Study Results

After studying the impacts of the request, three flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity (%)	Required Relief (MW)
5566:COPSTJCPFRSJ	9/1/2024 00:00 - 10/1/2024 00:00	0.06%	0.42
5646:BEAHARCRESHE	4/1/2024 00:00 - 9/1/2024 00:00	0.04%	0.29
5688:SHEBENSHEFOL	11/18/2023 00:00 - 6/1/2024 00:00	0.09%	0.62

Table 2 displays a list of generator pairs that are possible relief options for each flowgate in question and the amount of redispatch capacity needed.

**Table 2**

5566:COPSTJCPFRSJ			
Increment	Decrement	Sensitivity	MW
WG CT 1	NEBCTY1G	31.61%	1.33
WG CT 1	SARPY 2G	28.77%	1.46
WG CT 1	JONES 1G	28.68%	1.46
KIOWA G1	NEBCTY1G	23.59%	1.78
FITZ_CT1 1	NEBCTY1G	22.67%	1.85
KIOWA G1	SARPY 2G	20.75%	2.02
KIOWA G1	JONES 1G	20.66%	2.03
FITZ_CT1 1	SARPY 2G	19.84%	2.12
FITZ_CT1 1	JONES 1G	19.74%	2.13

5646:BEAHARCRESHE			
Increment	Decrement	Sensitivity	MW
KIOWA G1	SARPY 2G	1.57%	18.53
KIOWA G1	JONES 1G	1.53%	19.00
WG CT 1	SARPY 2G	1.51%	19.17
WG CT 1	JONES 1G	1.47%	19.67
KIOWA G1	NEBCTY1G	1.43%	20.31
FITZ_CT1 1	SARPY 2G	1.41%	20.57
WG CT 1	NEBCTY1G	1.38%	21.08
FITZ_CT1 1	JONES 1G	1.37%	21.15
FITZ_CT1 1	NEBCTY1G	1.27%	22.78

<b>5688:SHEBENSHEFOL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
WG CT 1	NEBCTY1G	1.17%	52.95
KIOWA G1	NEBCTY1G	1.10%	56.57
FITZ_CT1 1	NEBCTY1G	0.96%	64.85

## **5. Conclusion**

Generation redispatch options were studied in order to relieve the necessary constraints. The results of this study shows that the constraints on the flowgates in question could be relieved by executing one or more of the options described in the Study Results section of this document. Before the Transmission Provider accepts the reservations, proof of the necessary relief options must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.