



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2022-144  
For Transmission Service  
Requested By:  
OPPM***

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

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

***From 12/04/2022  
To 11/04/2023***

## **1. Executive Summary**

OPPM has requested a system impact study for daily firm transmission service from OPPD to NPPD.OPPD.LDX. The period of the transaction is from 12/04/2022 00:00 to 11/04/2023 00:00. The request is for reservation 97941951.

The 7 MW transaction from OPPD has an impact on the following flowgates with no AFC: NEBS56S40S55, SIOTWIRAUHOS. 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 two constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- NEBS56S40S55: Nebraska City – Sub 3456 345 kV for the loss of Sub 3740 – Sub 3455 345 kV.
- SIOTWIRAUHOS: Sioux City - Twin Church 230 kV for the loss of the Raun - Hoskins 345kV.

### **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 2022 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, two flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity (%)	Required Relief (MW)
5508:NEBS56S40S55	12/1/2022 00:00 - 12/1/2023 00:00	5.46%	0.38
5509:SIOTWIRAUHOS	12/1/2022 00:00 - 12/1/2023 00:00	9.39%	0.66

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**

5508:NEBS56S40S55			
Increment	Decrement	Sensitivity	MW
ROKEBY 1G	IAT G1 1	7.77%	4.89
ROKEBY 1G	HAW G5 1	7.66%	4.96
ROKEBY 1G	DOGWDCT1	7.28%	5.22
SUB-H 3G	IAT G1 1	7.09%	5.36
SUB-H 3G	HAW G5 1	6.97%	5.45
SUB-H 3G	DOGWDCT1	6.59%	5.77
CANADAY7	IAT G1 1	6.42%	5.92
CANADAY7	HAW G5 1	6.31%	6.03
CANADAY7	DOGWDCT1	5.92%	6.42

5509:SIOTWIRAUHOS			
Increment	Decrement	Sensitivity	MW
SUB-H 3G	DOGWDCT1	3.41%	19.34
SUB-H 3G	HAW G5 1	3.37%	19.60
SUB-H 3G	IAT G1 1	3.25%	20.31
ROKEBY 1G	DOGWDCT1	2.80%	23.59
ROKEBY 1G	HAW G5 1	2.75%	23.98
CANADAY7	DOGWDCT1	2.65%	24.90
ROKEBY 1G	IAT G1 1	2.64%	25.05
CANADAY7	HAW G5 1	2.61%	25.34
CANADAY7	IAT G1 1	2.49%	26.53

## **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.