



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2020-019  
For Transmission Service  
Requested By:  
REMC***

***From OPPD to AMRN***

***For a Reserved Amount Of  
100 MW  
From 4/10/2020  
To 4/13/2020***

## **1. Executive Summary**

REMC has requested a system impact study for daily firm transmission service from OPPD to AMRN. The period of the transaction is from 4/10/2020 00:00 to 4/13/2020 00:00. The request is for reservation 91169665.

The 100 MW transaction from OPPD has an impact on the following flowgates with no AFC: REDWILLMINGO, COPSTJCPFRSJ, COOPER\_S. 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**

REMC has requested a system impact study for transmission service from OPPD to AMRN.

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

- REDWILLMINGO: Redwill - Mingo 345kV.
- COPSTJCPFRSJ: Cooper – St. Joe 345 kV for the loss of St. Joe to Fairport to Cooper 345 kV.
- COOPER\_S: Fairport to Cooper to St. Joe 345 kV.

### **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 2020 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 Transmission Adequacy & Reliability Assessment (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)
5221:REDWILLMINGO	4/12/2020 00:00 - 4/13/2020 00:00	4.45%	4.45
5566:COPSTJCPFRSJ	4/10/2020 00:00 - 4/13/2020 00:00	18.03%	18.03
6009:COOPER_S	4/10/2020 00:00 - 4/13/2020 00:00	22.86%	22.86

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**

5221:REDWILLMINGO			
Increment	Decrement	Sensitivity	MW
KIOWA S2	Laramie 1	25.14%	17.70
EMPEC 7	Laramie 1	23.67%	18.80
TenGas 1	Laramie 1	23.58%	18.88
KIOWA S2	N Omaha 5	8.12%	54.78
KIOWA S2	Nebraska City 2	7.77%	57.30
EMPEC 7	N Omaha 5	6.66%	66.85
TenGas 1	N Omaha 5	6.56%	67.84
EMPEC 7	Nebraska City 2	6.30%	70.63
TenGas 1	Nebraska City 2	6.20%	71.74

5566:COPSTJCPFRSJ			
Increment	Decrement	Sensitivity	MW
EMPEC 7	Nebraska City 2	29.40%	61.32
EMPEC 7	N Omaha 5	26.34%	68.45
KIOWA S2	Nebraska City 2	23.69%	76.12
TenGas 1	Nebraska City 2	22.12%	81.51
KIOWA S2	N Omaha 5	20.63%	87.42
EMPEC 7	Laramie 1	19.67%	91.66
TenGas 1	N Omaha 5	19.06%	94.60
KIOWA S2	Laramie 1	13.96%	129.19
TenGas 1	Laramie 1	12.39%	145.52

<b>6009:COOPER_S</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
EMPEC 7	Nebraska City 2	35.97%	63.56
EMPEC 7	N Omaha 5	31.64%	72.25
KIOWA S2	Nebraska City 2	29.65%	77.11
TenGas 1	Nebraska City 2	27.97%	81.74
KIOWA S2	N Omaha 5	25.32%	90.29
EMPEC 7	Laramie 1	23.69%	96.48
TenGas 1	N Omaha 5	23.64%	96.71
KIOWA S2	Laramie 1	17.37%	131.59
TenGas 1	Laramie 1	15.69%	145.69

## **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.