



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2019-021  
For Transmission Service  
Requested By:  
NPPM***

***From OPPD.COAL to AMRN***

***For a Reserved Amount Of  
50 MW***

***From 02/03/2019  
To 02/06/2019***

## **1. Executive Summary**

NPPM has requested a system impact study for daily firm transmission service from OPPD.COAL to AMRN. The period of the transaction is from 02/03/2019 00:00 to 02/06/2019 00:00. The request is for reservation 88479450.

The 50 MW transaction from OPPD.COAL has an impact on the following flowgates with no AFC: FTCRAUSHCHOS, PITVALSUNHUG, SUBTEKFTCRAU. 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**

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

There are 3 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- FTCRAUSHCHOS: Ft. Calhoun to Raun 345kV for the loss of Shell Creek to Hoskins 345 kV.
- PITVALSUNHUG: Pittsburg - Valiant 345kv for the loss of Sunnyside to Hugo 345kV.
- SUBTEKFTCRAU: Sub 1226 to Tekam 161kV for the loss of Ft. Calhoun to Ran 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 2019 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)
5531:FTCRAUSHCHOS	2/5/2019 09:00 - 2/5/2019 23:00	12.32%	6.16
5661:PITVALSUNHUG	2/3/2019 00:00 - 2/6/2019 00:00	3.11%	1.55
6126:SUBTEKFTCRAU	2/5/2019 08:00 - 2/5/2019 23:00	3.71%	1.86

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

**Table 2**

5531:FTCRAUSHCHOS			
Increment	Decrement	Sensitivity	MW
Spirit	North Omaha	31.08%	19.82
Gavin	North Omaha	31.08%	19.82
Wisdom	North Omaha	30.52%	20.18
Spirit	Nebraska City1	26.65%	23.11
Spirit	Nebraska City2	26.65%	23.11
Gavin	Nebraska City1	26.65%	23.11
Gavin	Nebraska City2	26.65%	23.11
Wisdom	Nebraska City1	26.10%	23.60
Wisdom	Nebraska City2	26.10%	23.60

5661:PITVALSUNHUG			
Increment	Decrement	Sensitivity	MW
Lonestar	Seminole	40.40%	3.84
Fulton	Seminole	39.88%	3.89
Knoxlee	Seminole	38.65%	4.01
Lonestar	Comanche	38.51%	4.03
Fulton	Comanche	37.99%	4.08
Lonestar	McClain	37.97%	4.08
Fulton	McClain	37.45%	4.14
Knoxlee	Comanche	36.75%	4.22
Knoxlee	McClain	36.21%	4.28

<b>6126:SUBTEKFTCRAU</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Gavin	North Omaha	11.88%	15.66
Spirit	North Omaha	11.68%	15.93
Wisdom	North Omaha	11.21%	16.59
Gavin	Nebraska City1	9.30%	20.00
Gavin	Nebraska City2	9.30%	20.00
Spirit	Nebraska City1	9.10%	20.44
Spirit	Nebraska City2	9.10%	20.44
Wisdom	Nebraska City1	8.63%	21.55
Wisdom	Nebraska City2	8.63%	21.55

## **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.