System Impact Study
SPP-2019-018
For Transmission Service
Requested By:
NPPM

From OPPD.COAL to AMRN

For a Reserved Amount Of
50 MW
From 01/30/2019
To 02/01/2019

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 01/30/2019 00:00 to 02/01/2019 00:00. The request is for reservation 88446813.

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

- NASXFRNASHAW: Nashua 345/161 kV XFMR for the loss of Nashua to Hawthorn 345kV.

- PSOSWEPCOTIE: PSO - SWEPCO Tie.

- PITVALSUNHUG: Pittsburg - Valiant 345kv for the loss of Sunnyside to Hugo 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)
5577 : NASXFRNASHAW	01/31/2019 – 01/31/2019	7.19%	0.21
5578 : PSOSWEPCOTIE	01/30/2019 – 02/01/2019	3.10%	1.55
5661 : PITVALSUNHUG	01/30/2019 – 02/01/2019	3.35%	1.67

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

5577:NASXFRNASHAW			
Increment	**Decrement**	**Sensitivity**	**MW**
Dolet Hills	Iatan	11.48%	1.83
Fulton	Iatan	11.48%	1.83
Lieberman	Iatan	11.47%	1.83
Dolet Hills	Nebraska City 1	5.64%	3.72
Dolet Hills	Nebraska City 2	5.64%	3.72
Fulton	Nebraska City 1	5.64%	3.72
Fulton	Nebraska City 2	5.64%	3.72
Lieberman	Nebraska City 1	5.64%	3.72
Lieberman	Nebraska City 2	5.64%	3.72

5578:PSOSWEPCOTIE			
Increment	**Decrement**	**Sensitivity**	**MW**
Lieberman	Antelope	57.40%	2.70
Lieberman	Jones	57.38%	2.70
Lieberman	Mustang	57.34%	2.70
Dolet Hills	Antelope	45.40%	3.41
Dolet Hills	Jones	45.38%	3.42
Dolet Hills	Mustang	45.33%	3.42
Fulton	Antelope	35.63%	4.35
Fulton	Jones	35.61%	4.35
Fulton	Mustang	35.56%	4.36

5661:PITVALSUNHUG			
Increment	**Decrement**	**Sensitivity**	**MW**
Fulton	Antelope	36.35%	4.59
Fulton	Jones	36.31%	4.60
Fulton	Mustang	36.23%	4.61
Lieberman	Antelope	33.32%	5.01
Lieberman	Jones	33.28%	5.02
Lieberman	Mustang	33.19%	5.03
Dolet Hills	Antelope	29.74%	5.62
Dolet Hills	Jones	29.70%	5.62
Dolet Hills	Mustang	29.61%	5.64

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.