System Impact Study
SPP-2016-007
For Transmission Service
Requested By:
KMEA

From MARSHALL_WIND to KMEA

For a Reserved Amount Of
7 MW
For 6/1/2016 – 12/1/2016

1. Executive Summary

KMEA has requested a system impact study for monthly firm transmission service from MARSHAL_WIND to KMEA. The period of the transaction is from 6/1/2016 00:00 CDT to 12/1/2016 00:00 CDT. The request is for reservation 82675327.

The 7 MW transaction from MARSHALL_WIND has an impact on the following flowgates with no AFC: COPSTJCPFRSJ, NASXFRNASHAW, HAWXFRHAWXFR and 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

SPSM has requested a system impact study for transmission service from MARSHALL_WIND to KMEA.

There are 4 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- COPSTJCPFRSJ: Cooper – St. Joe 345kV FTLO Fairport – Cooper 345kV.
- NASXFRNASHAW: Nashua /161kV Xfmr FTLO Hawthorn – Nashua 345kV
- HAWXFRHAWXFR: Hawthorn 345/161kV Xfmr FTLO Hawthorn 345/161kV Xfmr
- COOPER_S: PTDF flowgate, Cooper – Fairport 345kV & Cooper – St Joe 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 2016 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, two flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgate	Duration	Sensitivity	Impact
5497:HAWXFRHAWXFR	6/1/2016-12/1/2016	8.88%	1
5566:COPSTJCPFRSJ	6/1/2016-12/1/2016	20.25%	1
5577:NASXFRNASHAW	6/1/2016-10/1/2016	7.12%	1
6009:COOPER_S	6/1/2016-12/1/2016	24.25%	2

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**	**Redispatch**
Lake Road	Nebraska City	52.50%	2
Iatan	Nebraska City	47.06%	2
Hawthorn	Nebraska City	43.09%	2
Lake Road	Cass County	49.64%	2
Iatan	Cass County	44.20%	2
Hawthorn	Cass County	40.23%	2
Lake Road	Rokeby	48.00%	2
Iatan	Rokeby	42.56%	2
Hawthorn	Rokeby	38.59%	3
5577:NASXFRNASHAW			
Increment	**Decrement**	**Sensitivity**	**Redispatch**
Northeast	Lake Road	28.21%	4
Sibley	Lake Road	27.67%	4
Hawthorn	Lake Road	27.30%	4
Northeast	Iatan	25.00%	4
Sibley	Iatan	24.44%	4
Hawthorn	Iatan	24.08%	4
Northeast	Nebraska City	21.63%	5

Sibley	Nebraska City	21.08%	5
Hawthorn	Nebraska City	20.71%	5
5497:HAWXFRHAWXFR			
Increment	**Decrement**	**Sensitivity**	**Redispatch**
Hawthorn	Lake Road	35.33%	3
Northeast	Lake Road	27.42%	4
Blue Valley	Lake Road	26.16%	4
Hawthorn	Iatan	33.84%	3
Northeast	Iatan	25.93%	4
Blue Valley	Iatan	24.68%	4
Hawthorn	Nebraska City	33.11%	3
Northeast	Nebraska City	25.20%	4
Blue Valley	Nebraska City	23.95%	4
6009:COOPER_S			
Increment	**Decrement**	**Sensitivity**	**Redispatch**
Lake Road	Nebraska City	62.64%	3
Iatan	Nebraska City	56.27%	4
Hawthorn	Nebraska City	51.87%	4
Lake Road	Cass County	59.15%	3
Iatan	Cass County	52.78%	4
Hawthorn	Cass County	48.37%	4
Lake Road	Rokeby	57.20%	3
Iatan	Rokeby	50.82%	4
Hawthorn	Rokeby	46.42%	4

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, agreement to the redispatch costs must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.