System Impact Study
SPP-2017-051
For Transmission Service
Requested By:
DCT

From KCPL to MEC

For a Reserved Amount Of
50 MW
From 12/10/2017
To 12/17/2017

1. Executive Summary

DCT has requested a system impact study for weekly firm transmission service from KCPL to MEC. The period of the transaction is from 12/10/2017 00:00 to 12/17/2017 00:00. The request is for reservation 85961782.

The 50 MW transaction from KCPL has an impact on the following flowgates with no AFC: NEORIVNEOBLC, NEBS56S40S55, GRIS_LNC. 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

DCT has requested a system impact study for transmission service from KCPL to MEC.

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

- NEORIVNEOBLC: Neosho – Riverton 161 kV for the loss of Neosho to Blackberry 345 kV

- NEBS56S40S55: Nebraska City – Sub 3456 345 kV for the loss of Sub 3740 – Sub 3455 345 kV

- GRIS_LNC: Grand Island – Lincoln interface

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 2017 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 (%)	Required Relief (MW)
5375:NEORIVNEOBLC	12/14/2017 00:00 - 12/17/2017 00:00	3.11%	2
5508:NEBS56S40S55	12/10/2017 00:00 - 12/17/2017 00:00	18.97%	9
6008:GRIS_LNC	12/10/2017 00:00 - 12/17/2017 00:00	6.04%	3

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

5375:NEORIVNEOBLC			
Increment	**Decrement**	**Sensitivity**	**MW**
Riverton	Lacygne	26.71%	7
Riverton	Gordon Evans	25.88%	8
Riverton	Bull Creek	25.57%	8
Stateline	Lacygne	23.04%	9
Stateline	Gordon Evans	22.20%	9
Stateline	Bull Creek	21.89%	9
Asbury	Lacygne	10.44%	19
Asbury	Gordon Evans	9.61%	21
Asbury	Bull Creek	9.30%	22

5508:NEBS56S40S55			
Increment	**Decrement**	**Sensitivity**	**MW**
Sarpy	Nebraska City	46.38%	19
North Omaha	Nebraska City	46.06%	20
Jones	Nebraska City	45.89%	20
Sarpy	Iatan	28.12%	32
Sarpy	Sibley	27.84%	32
North Omaha	Iatan	27.80%	32
Jones	Iatan	27.64%	33
North Omaha	Sibley	27.53%	33
Jones	Sibley	27.36%	33

6008:GRIS_LNC			
Increment	**Decrement**	**Sensitivity**	**MW**
Rokeby	Burdick	59.54%	5
Sheldon	Burdick	59.50%	5
Rokeby	North Platte	59.36%	5
Sheldon	North Platte	59.31%	5
Rokeby	Canaday	57.22%	5
Sheldon	Canaday	57.17%	5
Sarpy	Burdick	55.50%	5
Sarpy	North Platte	55.32%	5
Sarpy	Canaday	53.18%	6

5. Conclusion

Generation redispatch (and reservation curtailment) 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.