



SPP

*Southwest
Power Pool*

***System Impact Study
SPP-2013-005
For Transmission Service
Requested By:
UCU***

From KCPL to MPS

***For a Reserved Amount Of
80 MW
From 6/1/2013
To 10/1/2013***

1. Executive Summary

UCU has requested a system impact study for monthly firm transmission service from KCPL to MPS. The period of the transaction is from 6/1/2013 00:00 CDT to 10/1/2013 00:00 CDT. The request is for reservation 77855204.

The 80 MW transaction from KCPL has an impact on the following flowgates with no AFC: STIREDSTIPEC, IATXFRIATSTR, IATSTRIATSTJ, GRIS_LNC, COOPER_S, and IATAN_STJOE. 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

UCU has requested a system impact study for transmission service from KCPL to MPS.

There are 6 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- STIREDSTIPEC: Stillwell – Redel 161 kV line for the loss of the Stillwell Peculiar 345 kV line.
- IATXFRIATSTR: Iatan 345/161 kV Transformer for the loss of the Iatan – Stranger Creek 345 kV line.
- IATSTRIATSTJ: Iatan – Stranger Creek 345 kV line for the loss of the Iatan – St. Joe 345 kV line.
- GRIS_LNC: Pauline – Moore 345 kV, Grand Island – McCool 345 kV, and Grand Island – Columbus West 230 kV interface.
- COOPER_S: Cooper – St. Joe 345 kV and Cooper – Fairport 345 kV interface.
- IATAN_STJOE: Iatan – St. Joe 345 kV line.

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 2013 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)
5219 : STIREDSTIPEC	7/1/2013 – 9/1/2013	3.4%	3
5393 : IATXFRIATSTR	7/1/2013 – 9/1/2013	3.8%	3
5462 : IATSTRIATSTJ	7/1/2013 – 9/1/2013	11.7%	9
6008 : GRIS_LNC	6/1/2013 – 10/1/2013	3.1%	2
6009 : COOPER_S	6/1/2013 – 10/1/2013	4.7%	4
6104 : IATAN_STJOE	6/1/2013 – 10/1/2013	10.1%	8

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

5219 : STIREDSTIPEC			
Increment	Decrement	Sensitivity	MW
R Green MPS	Paola	22.0%	14
Greenwood MPS	Paola	21.8%	14
R Green MPS	Lacygne	18.6%	16
Greenwood MPS	Lacygne	18.4%	16
Sibley MPS	Paola	16.3%	18
Higginsville	Paola	16.1%	19
South Harper MPS	Paola	15.9%	19
Hawthorn	Paola	15.0%	20
Northeast	Paola	14.4%	21
Montrose	Paola	14.3%	21
Nevada MPS	Paola	14.3%	21
TWA MPS	Paola	13.0%	23
Sibley MPS	Lacygne	12.8%	23
Higginsville	Lacygne	12.6%	24
R Green MPS	Iatan	12.5%	24
South Harper MPS	Lacygne	12.4%	24
Greenwood MPS	Iatan	12.3%	24
Lake Road MPS	Paola	12.1%	25
Hawthorn	Lacygne	11.6%	26
Northeast	Lacygne	10.9%	27
Montrose	Lacygne	10.9%	27

5393 : IATXFRIATSTR			
Increment	Decrement	Sensitivity	MW
TWA MPS	latan	42.2%	7
Lacygne	latan	36.3%	8
Paola	latan	36.1%	8
South Harper MPS	latan	35.5%	8
Northeast	latan	35.4%	8
R Green MPS	latan	34.9%	9
Greenwood MPS	latan	34.7%	9
Montrose	latan	34.6%	9
Nevada MPS	latan	34.1%	9
Sibley MPS	latan	34.0%	9
Hawthorn	latan	33.9%	9
Higginsville	latan	33.4%	9
Lake Road MPS	latan	23.0%	13
TWA MPS	Lake Road MPS	19.2%	16
Lacygne	Lake Road MPS	13.2%	23
Paola	Lake Road MPS	13.0%	23

5462 : IATSTRIATSTJ			
Increment	Decrement	Sensitivity	MW
Lacygne	latan	81.6%	11
Paola	latan	81.0%	11
South Harper MPS	latan	80.3%	11
Nevada MPS	latan	79.9%	11
R Green MPS	latan	79.8%	11
Montrose	latan	79.7%	11
Greenwood MPS	latan	79.4%	11
Higginsville	latan	78.7%	11
Hawthorn	latan	77.7%	12
Northeast	latan	77.5%	12
Sibley MPS	latan	77.5%	12
Lake Road MPS	latan	76.1%	12
TWA MPS	latan	69.0%	13

6008 : GRIS_LNC			
Increment	Decrement	Sensitivity	MW
Lake Road MPS	Lacygne	4.5%	45
Lake Road MPS	Paola	3.9%	51
Lake Road MPS	Nevada MPS	3.6%	55
Lake Road MPS	South Harper MPS	3.4%	59
Lake Road MPS	Montrose	3.2%	62
Lake Road MPS	R Green MPS	3.2%	63
Lake Road MPS	Greenwood MPS	3.0%	66

6009 : COOPER_S			
Increment	Decrement	Sensitivity	MW
Lake Road MPS	Nevada MPS	14.1%	28
Lake Road MPS	Higginsville	12.5%	32
Lake Road MPS	Lacygne	12.3%	33
Lake Road MPS	Montrose	12.0%	33
Lake Road MPS	Paola	11.7%	34
Lake Road MPS	R Green MPS	10.7%	37
Lake Road MPS	South Harper MPS	10.6%	38
Iatan	Nevada MPS	10.4%	39
Lake Road MPS	Greenwood MPS	10.1%	40
Iatan	Higginsville	8.8%	45
Lake Road MPS	Sibley MPS	8.8%	46
Iatan	Lacygne	8.6%	46
Iatan	Montrose	8.3%	48
Iatan	Paola	8.0%	50
Lake Road MPS	Northeast	8.0%	50

6104 : IATAN_STJOE			
Increment	Decrement	Sensitivity	MW
Lake Road MPS	latan	60.6%	13
Sibley MPS	latan	39.5%	20
Hawthorn	latan	39.5%	20
Higginsville	latan	39.4%	20
Northeast	latan	37.0%	22
Nevada MPS	latan	36.9%	22
Greenwood MPS	latan	36.2%	22
Montrose	latan	36.2%	22
R Green MPS	latan	35.6%	22
South Harper MPS	latan	34.0%	24
TWA MPS	latan	33.5%	24
Paola	latan	32.2%	25
Lacygne	latan	31.2%	26
Lake Road MPS	Lacygne	29.3%	27
Lake Road MPS	Paola	28.4%	28
Lake Road MPS	TWA MPS	27.1%	30
Lake Road MPS	South Harper MPS	26.6%	30
Lake Road MPS	R Green MPS	24.9%	32
Lake Road MPS	Montrose	24.3%	33

5. Conclusion

Generation redispatch (and reservation curtailment) options were studied in order to relieve the necessary constraints. The results of this study show 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.