Southwest Power Pool

System Impact Study
SPP-2010-001
For Transmission Service
Requested By:
Kansas City Power and Light

From EES to MPS

For a Reserved Amount Of
300 MW
From 06/01/2010
To 10/01/2010

1. Executive Summary

Kansas City Power and Light has requested a system impact study for monthly firm transmission service from EES to MPS. The period of the transaction is from 6/1/2010 to 10/1/2010. The request is for reservation 73840534.

The 300 MW transaction from EES to MPS has an impact on the following flowgates with no AFC: FTSXFR500345, MUSCLAMUSRSS, BVSNBVNESDEL, SCODEADELNEO, STIREDSTIPEC, RUSDARANOFTS, WELLYDWELNWT. 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

Kansas City Power and Light has requested a system impact study for transmission service from EES to MPS.

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

- FTSXFR500345: Fort Smith 500/161 kV transformer for the loss of Fort Smith 500/345 kV Transformer

  MUSCLAMUSRSS: Muskogee to Clarksville 345 kV line for the loss of Muskogee to Riverside 345 kV line

- BVSNBVNESDEL: Bartlesville South to North Bartlesville 138 kV line for the loss of Northeast Station to Delaware 345 kV line

- SCODEADELNEO: South Coffeyville to Dearing 138 kV line for the loss of Delaware to Neosho 345 kV line

- STIREDSTIPEC: Stillwell to Redel 161 kV line for the loss of Stillwell to Peculiar 345 kV line

- RUSDARANOFTS: Russellville to Dardanelle 161 kV for the loss of ANO to Fort Smith 500 kV line

- WELLYDWELNWT: Welch to Lydia 345 kV line for the loss of Welch to N.W. Texarkana 345 kV line.

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3. Study Methodology

A. Description

Southwest Power Pool used Managing and Utilizing System Transmission (MUST) to obtain possible unit pairings that would relieve the constraint. MUST 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 2010 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 Managing and Utilizing System Transmission (MUST), 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 MUST is the amount of redispatch necessary to relieve the impact on the affected flowgate.

4. Study Results

After studying the impacts of the request, seven flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgates	Sensitivity	Duration	Required Relief (MW)
FTSXFR500345	.07	June – Oct 2010	21
MUSCLAMUSRSS	.11	June – Oct 2010	33
BVSNBVNESDEL	.03	June – Oct 2010	9
SCODEADELNEO	.04	June – Oct 2010	12
STIREDSTIPEC	.10	June – Oct 2010	30
RUSDARANOFTS	.08	June – Oct 2010	24
WELLYDWELNWT	.08	June – Oct 2010	24

Table 2 displays a list of generator pairs that are possible relief options for the flowgates in question.

Table 2
Unit Ownership is listed in Table 4.

Increment Unit	Decrement Unit	FTSXFR500345	MUSCLAMUSRSS	BVSNBVNESDEL	SCODEADELNEO	STIREDSTIPEC	RUSDARANOFTS	WELLYDWELNWT
		(Sensitivity)	(Sensitivity)	(Sensitivity)	(Sensitivity)	(Sensitivity)	(Sensitivity)	(Sensitivity)
KIOWA	WELSH	0.11					0.06	0.57
NARROWS	WELSH	0.01					0.01	0.56
SEMINOLE	WELSH	0.12					0.07	0.53
COMANCHE	WELSH	0.12					0.07	0.52
SW STATION	WELSH	0.12					0.07	0.52
TINKER	WELSH	0.13					0.07	0.51
MCCLAIN	WELSH	0.12					0.07	0.51
SMITH	WELSH	0.12					0.07	0.51
FITZHUGH	FULTON	0.28					0.32	0.05
FITZHUGH	ARSENAL	0.27					0.31	0.28
FITZHUGH	LIEBERMAN	0.27					0.31	0.28
FITZHUGH	TENASKA	0.26					0.31	0.32
FITZHUGH	N MARSHALL	0.26					0.31	0.30
FITZHUGH	KNOXLEE	0.26					0.30	0.32
FITZHUGH	PIRKEY	0.26					0.30	0.33
FITZHUGH	LEBROCK	0.26					0.30	0.33
AES	FULTON	0.42					0.20	0.04
AES	ARSENAL	0.41					0.19	0.29
AES	LIEBERMAN	0.40					0.19	0.29
AES	TENASKA	0.40					0.19	0.33
AES	N MARSHALL	0.40					0.19	0.31
AES	KNOXLEE	0.40					0.19	0.33
AES	PIRKEY	0.40					0.19	0.34
AES	LEBROCK	0.40					0.19	0.35
AES	EASTMAN	0.40					0.19	0.34
AES	WILKES	0.39					0.19	0.34
AES	LONESTAR	0.39					0.19	0.26
ELLIS	FULTON	0.39					0.20	0.03
MATISON	MUSKOGEE		0.51					
OEC	MUSKOGEE		0.51					
ELKIN	MUSKOGEE		0.50					
FLINTCREEK	MUSKOGEE		0.47					
NE STATION	MUSKOGEE		0.44					
FULTON	NE STATION			0.10	0.08	0.02		
ARSENAL	NE STATION			0.10	0.07	0.02		
LIEBERMAN	NE STATION			0.10	0.07	0.02		
TENASKA	NE STATION			0.10	0.07	0.02		
FULTON	SOONER			0.02	0.01	0.02		
ARSENAL	SOONER			0.02	0.01	0.02		
LIEBERMAN	SOONER			0.02	0.01	0.02		
HAWTHORN	LACYGNE					0.13		
Northeast	LACYGNE					0.12		

Table 3
Table 3 displays the amount of redispatch capacity necessary for each generator pair.

Unit Ownership is listed in Table 4.

Increment Unit	Decrement Unit	FTSXFR500345	MUSCLAMUSRSS	BVSNBVNESDEL	SCODEADELNEO	STIREDSTIPEC	RUSDARANOFTS	WELLYDWELNWT
		(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
KIOWA	WELSH	190					400	42
NARROWS	WELSH							43
SEMINOLE	WELSH	175					342	45
COMANCHE	WELSH	175					342	46
SW STATION	WELSH	175					342	46
TINKER	WELSH	161					342	47
MCCLAIN	WELSH	175					342	47
SMITH	WELSH	175					342	47
FITZHUGH	FULTON	75					75	
FITZHUGH	ARSENAL	78					77	86
FITZHUGH	LIEBERMAN	78					77	86
FITZHUGH	TENASKA	81					77	75
FITZHUGH	N MARSHALL	81					77	80
FITZHUGH	KNOXLEE	81					80	75
FITZHUGH	PIRKEY	81					80	73
FITZHUGH	LEBROCK	81					80	73
AES	FULTON	50					120	
AES	ARSENAL	51					126	83
AES	LIEBERMAN	52					126	83
AES	TENASKA	52					126	73
AES	N MARSHALL	52					126	77
AES	KNOXLEE	52					126	73
AES	PIRKEY	52					126	70
AES	LEBROCK	52					126	68
AES	EASTMAN	52					126	70
AES	WILKES	54					126	70
AES	LONESTAR	54					126	92
ELLIS	FULTON	54					120	
MATISON	MUSKOGEE		65					
OEC	MUSKOGEE		65					
ELKIN	MUSKOGEE		66					
FLINTCREEK	MUSKOGEE		70					
NE STATION	MUSKOGEE		75					
FULTON	NE STATION			90	150	1500		
ARSENAL	NE STATION			90	171	1500		
LIEBERMAN	NE STATION			90	171	1500		
TENASKA	NE STATION			90	171	1500		
FULTON	SOONER			450		1500		
ARSENAL	SOONER			450		1500		
LIEBERMAN	SOONER			450		1500		
HAWTHORN	LACYGNE					230		
Northeast	LACYGNE					250		

Table 4

Increment Unit	Decrement Unit
KIOWA (AEPW)	WELSH (AEPW)
NARROWS (AEPW)	WELSH (AEPW)
SEMINOLE	WELSH (AEPW)
COMANCHE (AEPW)	WELSH (AEPW)
SW STATION (AEPW)	WELSH (AEPW)
TINKER (OKGE)	WELSH (AEPW)
MCCLAIN (OKGE)	WELSH (AEPW)
SMITH (OKGE)	WELSH (AEPW)
FITZHUGH (AEPW)	FULTON (AEPW)
FITZHUGH (AEPW)	ARSENAL (AEPW)
FITZHUGH (AEPW)	LIEBERMAN (AEPW)
FITZHUGH (AEPW)	TENASKA (AEPW)
FITZHUGH (AEPW)	N MARSHALL(AEPW)
FITZHUGH (AEPW)	KNOXLEE (AEPW)
FITZHUGH (AEPW)	PIRKEY (AEPW)
FITZHUGH (AEPW)	LEBROCK (AEPW)
AES (OKGE)	FULTON (AEPW)
AES (OKGE)	ARSENAL (AEPW)
AES (OKGE)	LIEBERMAN (AEPW)
AES (OKGE)	TENASKA (AEPW)
AES (OKGE)	N MARSHALL (AEPW)
AES (OKGE)	KNOXLEE (AEPW)
AES (OKGE)	PIRKEY (AEPW)
AES (OKGE)	LEBROCK (AEPW)
AES(OKGE)	EASTMAN (AEPW)
AES (OKGE)	WILKES (AEPW)
AES (OKGE)	LONESTAR (AEPW)
ELLIS (AEPW)	FULTON (AEPW)
MATISON (AEPW)	MUSKOGEE (OKGE)
OEC (AEPW)	MUSKOGEE (OKGE)
ELKIN (AEPW)	MUSKOGEE (OKGE)
FLINTCREEK (AEPW)	MUSKOGEE (OKGE)
NE STATION (AEPW)	MUSKOGEE (OKGE)
FULTON (AEPW)	NE STATION (AEPW)
ARSENAL (AEPW)	NE STATION (AEPW)
LIEBERMAN (AEPW)	NE STATION (AEPW)
TENASKA (AEPW)	NE STATION (AEPW)
FULTON (AEPW)	SOONER (OKGE)
ARSENAL (AEPW)	SOONER (OKGE)
LIEBERMAN (AEPW)	SOONER (OKGE)
HAWTHORN (KCPL)	LACYGNE (KCPL)
Northeast (KCPL)	LACYGNE (KCPL)

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.