



SPP *Southwest
Power Pool*

***System Impact Study
SPP-2009-001
For Transmission Service
Requested By:
American Electric Power***

From ONETA to AEPW

***For a Reserved Amount Of
100 MW
From 04/01/09
To 10/01/09***

1. Executive Summary

American Electric Power has requested a system impact study for monthly firm transmission service from ONETA to AEPW. The period of the transaction is from 4/1/2009 to 10/1/2009. The request is for reservation 1584556 and 1584557.

The 100 MW transaction from ONETA to AEPW has an impact on the following flowgates with no AFC: CRAASHVALLYD, ELDLONVALLYD, HPPVALPITVAL, PITVALELDLON, REDARCREDARC, VALHUGVALLYD, VALIANTLYDIA, VALLYDELDLON. 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

American Electric Power has requested a system impact study for transmission service from ONETA to AEPW.

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

- CRAASHVALLYD: Craig Junction to Ashdown West 138 kV line for the loss of Valliant to Lydia 345 kV line
- ELDLONVALLYD: El Dorado to Longwood 345 kV line for the loss of Valiant to Lydia 345 kV line
- HPPVALPITVAL: Hugo to Valiant 138kV line for the loss of Pittsburg to Valiant 345kV line
- PITVALELDLON: Pittsburg to Valiant 345 kV line for the loss of El Dorado to Longwood 345 kV line
- REDARCREDARC: Redbud to Arcadia 345 kV line for the loss of Redbud to Arcadia 345 kV line

VALHUGVALLYD: Valliant to Hugo-Tap 138 kV line for the loss of Valliant to Lydia 345 kV line

VALIANTLYDIA: Valliant to Lydia 345 kV line

VALLYDELDLON: Valliant to Lydia 345 kV line for the loss of El Dorado to Longwood 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 2009 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, eight flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgates	Sensitivity (%)	Duration	Required Relief (MW)
CRAASHVALLYD	5.7	April – Oct 2009	5.7
ELDLONVALYD	19.5	April – Oct 2009	19.5
HPPVALPITVAL	5.0	April – Oct 2009	5.0
PITVALELDLON	19.4	April – Oct 2009	19.4
*REDARCREDDARC	8.5	April – Oct 2009	8.5
VALHUGVALLYD	3.7	April – Oct 2009	3.7
VALIANTLYDIA	17.0	April – Oct 2009	17.0
VALLYDELDLON	22.0	April – Oct 2009	22.0

* REDARCREDDARC is not a constraint for the period 4/1/2009 to 5/1/2009.

Tables 2 and 3 in conjunction display a list of generator pairs that are possible relief options for the flowgates in question.

Table 2

Source	Sink	CRAASHVALLYD Sensitivity (%)	VALHUGVALLYD Sensitivity (%)	HPPVALPITVAL Sensitivity (%)	REDARCREARC Sensitivity (%)
Welsh (AEPW)	Kiowa (AEPW)	18	14	14	-
Lonestar (AEPW)	Kiowa (AEPW)	18	14	14	-
Wilkes (AEPW)	Kiowa (AEPW)	17	14	14	-
Fulton (AEPW)	Kiowa (AEPW)	17	15	15	-
Pirkey (AEPW)	Kiowa (AEPW)	17	13	13	-
Welsh (AEPW)	Weleetka (AEPW)	17	8	8	2
Lonestar (AEPW)	Weleetka (AEPW)	16	8	8	2
Wiilkes (AEPW)	Weleetka (AEPW)	16	8	8	2
SWPS (AEPW)	RSS (AEPW)	-	-	-	24
Commanche (AEPW)	RSS (AEPW)	-	-	-	24
SWPS (AEPW)	TPS (AEPW)	-	-	-	23
Narrows (AEPW)	RSS (AEPW)	9	17	8	14
Narrows (AEPW)	TPS (AEPW)	9	17	8	13
Welsh (AEPW)	Elk River (EMDE)	13	8	12	2
Lonestar (AEPW)	Elk River (EMDE)	13	8	11	2
Wilkes (AEPW)	Elk River (EMDE)	13	8	11	2
Welsh (AEPW)	Riverton (EMDE)	13	8	12	7
Welsh (AEPW)	Stateline (EMDE)	13	8	12	7
Lonestar (AEPW)	Riverton (EMDE)	13	8	11	7
Welsh (AEPW)	Asbury (EMDE)	13	8	12	6
Lonestar (AEPW)	Stateline (EMDE)	13	8	11	7
Wilkes (AEPW)	Riverton (EMDE)	13	8	11	7

Table 3

Source	Sink	VALLYDELDLON Sensitivity (%)	ELDLONVALLYD Sensitivity (%)	VALIANTLYDIA Sensitivity (%)	PITVALELDLON Sensitivity (%)
Welsh (AEPW)	Kiowa (AEPW)	61	37	56	59
Lonestar (AEPW)	Kiowa (AEPW)	58	37	52	57
Wilkes (AEPW)	Kiowa (AEPW)	58	37	52	57
Fulton (AEPW)	Kiowa (AEPW)	35	10	36	43
Pirkey (AEPW)	Kiowa (AEPW)	57	36	51	56
Welsh (AEPW)	Weleetka (AEPW)	52	37	45	41
Lonestar (AEPW)	Weleetka (AEPW)	48	38	41	39
Wiiikes (AEPW)	Weleetka (AEPW)	48	38	41	39
SWPS (AEPW)	RSS (AEPW)	-	1	-	-
Commanche (AEPW)	RSS (AEPW)	-	1	-	-
SWPS (AEPW)	TPS (AEPW)	-	1	-	-
Narrows (AEPW)	RSS (AEPW)	26	20	22	38
Narrows (AEPW)	TPS (AEPW)	26	20	22	38
Welsh (AEPW)	Elk River (EMDE)	48	39	40	42
Lonestar (AEPW)	Elk River (EMDE)	45	39	37	40
Wilkes (AEPW)	Elk River (EMDE)	45	40	37	40
Welsh (AEPW)	Riverton (EMDE)	47	39	40	41
Welsh (AEPW)	Stateline (EMDE)	47	39	40	41
Lonestar (AEPW)	Riverton (EMDE)	45	39	36	40
Welsh (AEPW)	Asbury (EMDE)	48	39	39	41
Lonestar (AEPW)	Stateline (EMDE)	45	39	36	40
Wilkes (AEPW)	Riverton (EMDE)	45	40	36	40

Tables 4 and 5 in conjunction display the amount of redispatch capacity necessary for each generator pair.

Table 4

Source	Sink	CRAASHVALLYD Relief (MW)	VALHUGVALLYD Relief (MW)	HPPVALPITVAL Relief (MW)	REDARCREDESC Relief (MW)
Welsh (AEPW)	Kiowa (AEPW)	31	26	35	-
Lonestar (AEPW)	Kiowa (AEPW)	31	26	35	-
Wilkes (AEPW)	Kiowa (AEPW)	33	26	35	-
Fulton (AEPW)	Kiowa (AEPW)	33	24	33	-
Pirkey (AEPW)	Kiowa (AEPW)	33	28	38	-
Welsh (AEPW)	Weleetka (AEPW)	33	46	62	-
Lonestar (AEPW)	Weleetka (AEPW)	35	46	62	-
Wilkes (AEPW)	Weleetka (AEPW)	35	46	62	-
SWPS (AEPW)	RSS (AEPW)	-	-	-	35
Commanche (AEPW)	RSS (AEPW)	-	-	-	35
SWPS (AEPW)	TPS (AEPW)	-	-	-	36
Narrows (AEPW)	RSS (AEPW)	63	22	62	60
Narrows (AEPW)	TPS (AEPW)	63	22	62	65
Welsh (AEPW)	Elk River (EMDE)	43	46	41	-
Lonestar (AEPW)	Elk River (EMDE)	43	46	45	-
Wilkes (AEPW)	Elk River (EMDE)	43	46	45	-
Welsh (AEPW)	Riverton (EMDE)	43	46	41	121
Welsh (AEPW)	Stateline (EMDE)	43	46	41	121
Lonestar (AEPW)	Riverton (EMDE)	43	46	45	121
Welsh (AEPW)	Asbury (EMDE)	43	46	41	141
Lonestar (AEPW)	Stateline (EMDE)	43	46	45	121
Wilkes (AEPW)	Riverton (EMDE)	43	46	45	121

Table 5

Source	Sink	VALLYDELDLON Relief (MW)	ELDLONVALLYD Relief (MW)	VALIANTLYDIA Relief (MW)	PITVALELDLON Relief (MW)
Welsh (AEPW)	Kiowa (AEPW)	36	52	30	32
Lonestar (AEPW)	Kiowa (AEPW)	37	52	32	34
Wilkes (AEPW)	Kiowa (AEPW)	37	52	32	34
Fulton (AEPW)	Kiowa (AEPW)	62	-	47	45
Pirkey (AEPW)	Kiowa (AEPW)	38	54	33	34
Welsh (AEPW)	Weleetka (AEPW)	42	52	37	47
Lonestar (AEPW)	Weleetka (AEPW)	45	51	41	49
Wiiikes (AEPW)	Weleetka (AEPW)	45	51	41	49
SWPS (AEPW)	RSS (AEPW)	-	-	-	-
Commanche (AEPW)	RSS (AEPW)	-	-	-	-
SWPS (AEPW)	TPS (AEPW)	-	-	-	-
Narrows (AEPW)	RSS (AEPW)	84	97	77	51
Narrows (AEPW)	TPS (AEPW)	84	97	77	51
Welsh (AEPW)	Elk River (EMDE)	45	50	42	46
Lonestar (AEPW)	Elk River (EMDE)	48	50	45	48
Wilkes (AEPW)	Elk River (EMDE)	48	49	45	48
Welsh (AEPW)	Riverton (EMDE)	46	50	42	47
Welsh (AEPW)	Stateline (EMDE)	46	50	42	47
Lonestar (AEPW)	Riverton (EMDE)	48	50	47	48
Welsh (AEPW)	Asbury (EMDE)	45	50	43	47
Lonestar (AEPW)	Stateline (EMDE)	48	50	47	48
Wilkes (AEPW)	Riverton (EMDE)	45	49	47	48

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.