



*System Impact Study for  
Transmission Service Request from  
Southwestern Public Service to  
Northern States Power*

*SPP Transmission Planning*

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## **Executive Summary**

Southwestern Public Service (SPS) has requested a system impact study for long-term firm point to point transmission service from SPS to Ameren for the years 2002 through 2004. These requests wheel through Ameren and are sunk in the Northern States Power (NSP) control area. The request is for 100 MW for the entire period. SPP has previously studied a 200 MW transfer with the same source and sink under study number SPP-1999-010.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 100 MW transfer while maintaining system reliability.

The analysis in this document shows that to accommodate an additional 100 MW transfer, upgrades will be required on the SPP transmission systems. These upgrades include replacing a wave trap, changing out a transformer, changing out disconnect switches and jumpers listed in previous Impact Studies. In addition to these is a transformer which was not identified in the previous study. CSW is the owner of all facilities requiring improvements. SPP has existing long-term firm service customers with a reservation priority for this requested transmission service as described in section 2.2 of the SPP Open Access Transmission Service Tariff. SPP will extend full priority rights to existing customers prior to contracting with new eligible customers.

The SPP and CSW shall use due diligence to coordinate the addition of necessary facilities or transmission system upgrades to provide the requested transmission service. SPS is to compensate SPP for such costs pursuant to the terms of section 27 of the SPP Open Access Transmission Tariff. Expedited procedures for new facilities are available to SPS per section 19.8 of the SPP Open Access Transmission Service Tariff.

The new 345 kV transmission facilities proposed by SPS from Potter to Holcomb and Potter to Northwest are a significant factor in evaluating this request. This service is contingent upon completion of those proposed facilities in the currently proposed schedule. Delays in completion of one of both of those facilities will alter the results of this study.

Engineering and construction of any new facilities or modifications will not start until after a transmission service agreement and/or construction agreement is in place and CSW receives the appropriate authorization to proceed from the SPP after they receive authorization from the transmission customer.

## **Introduction**

SPS has requested an impact study for transmission service from SPS control area with a sink of NSP. No specific generation was identified as being built to accommodate this transfer so it will be studied as a system dispatch from SPS to NSP.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 100 MW. This study includes steady-state contingency analysis (PSS/E function ACCC) and Available Transfer Capability (ATC Linear) analysis.

The steady-state analysis considers the impact of a 100 MW transfer on transmission line loading and transmission bus voltages for outages of single, double, and triple circuit transmission lines, autotransformers, and generators on the SPP system.

ATC analyses shows the amount of First Contingency Incremental Transfer Capabilities (FCITC) between the given study systems and what the limitations are, if any, for transferring up to 100 MW.

## Study Methodology

SPP has used methodologies consistent with SPP and NERC requirements.

This study was done in two different parts. The first part was to study the steady-state analysis impacts caused on the SPP system from the 100 MW transfer identified and the second part was to study Available Transfer Capability (ATC). The SPP base case models were modified to reflect the most current modeling information.

The steady-state analysis part was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled.

The Southwest Power Pool (SPP) Criteria states that the following conditions be met in order to maintain a reliable and stable system.

- 1) More probable contingency testing .... shall conclude that
  - a) All facility loadings are within their emergency ratings and all voltages are within their emergency limits (0.90-1.05 per unit) and
  - b) Facility loadings can be returned to their normal limits within four hours
  
- 2) Less probable contingency testing .... shall conclude that
  - a) Neither uncontrolled islanding, nor uncontrolled loss of large amounts of load will result.

More probable contingency testing is defined as losing any single piece of equipment or multi-circuit transmission lines. Less probable contingency testing involves the loss of any two critical pieces of equipment such as 345kV autotransformers and generating units or the loss of critical transmission lines in the same right-of-way.

The NERC Planning Standards, Table 1, provides the strictest requirements related to thermal overloads with a contingency. It requires that all facilities are within emergency ratings after a contingency.

The ATC study portion was done using the requirements specified in the current SPP Criteria related to determination of ATC. The linear analysis was first performed using the PSSE TLTG activity. The results were AC verified and validated.

When facilities were identified as being overloaded the facility owners were asked to review and confirm the validity of the limit. During this review the transmission providers would use available mitigation plans.

SPP built two models for each season representative of the system with and without the requested transfer. Base Southwest Power Pool Cases for 2002 April minimum and winter peaks were not available at the time of this study. Cases for year 2000 were used and they included the April minimum and winter peak cases. These cases were modified to reflect expected changes due to be in service by 2002 that were not included in the base cases. Additional summer and winter peak cases were used for the 2003 and 2005 time frames. Cases include anticipated additions and system improvements submitted by SPP members.

Using the created models and the ACCC function of PSS\|E, single and select double contingency outages were analyzed. Then full AC solution was to obtain the most accurate results possible. Any facility which overloaded using MVA ratings in the transfer case and was not overloaded in the base case was flagged. This extensive list contained facilities owned by different SPP companies under the Regional Tariff. The overloaded facilities list was sent to the companies for review of mitigation plans and validity. The facilities identified in the Impact Study are only those which were considered valid and had no mitigation plan.

Shown in table 1 are the outages that caused overloads and the upgrades needed to solve the overloading problems in the appropriate year cases.

#### PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

##### BASE CASES:

Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply automatically
4. Solution options -  Phase shift adjustment
  - \_ Flat start
  - \_ Lock DC taps
  - \_ Lock switched shunts

##### ACCC CASES:

Solutions – AC contingency checking (ACCC)

1. MW mismatch tolerance – 0.50
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 6000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

##### Newton Solution:

- 1 Tap adjustment – Stepping
- 2 Area interchange control – Tie lines only
- 3 Var limits – Apply automatically
- 4 Solution options -  Phase shift adjustment
  - \_ Flat start
  - \_ Lock DC taps
  - \_ Lock switched shunts

Table No. 1: SPS to NSP Transmission Service Study – 100 MW

(THIS TABLE CONTAINS OVERLOADS IDENTIFIED FOR THE FIRST TIME IN THIS IMPACT STUDY)

Study Year	Load flow case description	Overloaded lines/ Buses with low voltage	Solutions
2002 April Minimum	Oklaunion to Tuco 345 kV line (54119 O.K.U. 7 to 55825 TUCO 7) Tuco 345/230 kV transformer (55825 TUCO 7 to 55824 TUCO 6)	OUT Elk City 230/138 kV transformer 122.3% (54121 ELKCITY4 to 54153 ELKCITY6)	Change out transformer
2002 April Minimum	Oklaunion to Tuco 345 kV line (54119 O.K.U. 7 to 55825 TUCO 7) Tuco 345/230 kV transformer (55825 TUCO 7 to 55824 TUCO 6) Oklaunion to Lawton 345 kV line (54119 O.K.U. 7 to 54131 L.E.S.-7) Oklaunion 345 kV bus to D.C.Tie (54119 O.K.U. 7 to 59991 OKLAUN 7)	OUT Elk City 230/138 kV transformer 122.0% (54121 ELKCITY4 to 54153 ELKCITY6)	Change out transformer
2002 Winter Peak	Oklaunion to Tuco 345 kV line (54119 O.K.U. 7 to 55825 TUCO 7) Tuco 345/230 kV transformer (55825 TUCO 7 to 55824 TUCO 6) Oklaunion to Lawton 345 kV line (54119 O.K.U. 7 to 54131 L.E.S.-7) Oklaunion 345 kV bus to D.C.Tie (54119 O.K.U. 7 to 59991 OKLAUN 7)	OUT Elk City 230/138 kV transformer 117.2% (54121 ELKCITY4 to 54153 ELKCITY6)	Change out transformer
2003 Summer Peak	(Potter to Holcomb 345 kV line) (55655 POTTER 7 to 56449 HOLCOMB7)	OUT Elk City 230/138 kV transformer 107.3% (54121 ELKCITY4 to 54153 ELKCITY6)	Change out transformer

Table No. 1: SPS to NSP Transmission Service Study – 100 MW

(continued)

(THIS TABLE CONTAINS OVERLOADS FIRST IDENTIFIED IN PREVIOUS IMPACT STUDIES)

Study Year	Load flow case description	Overloaded lines/ Buses with low voltage	Solutions
2003 Summer Peak	<b>Elk City 230/138kV transformer</b> OUT (54121 (ELKCITY4 to 54153 ELKCITY6)	<b>Walters to Comanche 69kV line</b> 100.8% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap
2003 Summer Peak	<b>Elk City to Grapevine 230kV line</b> OUT (54153 ELKCITY6 to 55652 GRAPEVN6)	<b>Walters to Comanche 69kV line</b> 100.8% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap
2003 Summer Peak	<b>Morewood to Morwood 69kV line</b> OUT (55450 MORWODS2 to 55452 MORWOOD2)	<b>Elk City 138/69kV transformer</b> 100.2% (54121 ELKCITY4 to 54122 ELKCITY2)	Change out transformer
2003 Summer Peak	<b>Elk City 230/138kV transformer</b> OUT (54121 ELKCITY4 to 54153 ELKCITY6) <b>Elk City to Grapevine 230kV</b> (54153 ELKCITY6 to 55652 GRAPEVN6)	<b>Walters to Comanche 69kV line</b> 100.8% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap
2003 Summer Peak	<b>Coffeyville Tap to Neosho 345kV line</b> OUT (53929 COFTAP 7 to 56606 NEOSHO 7)	<b>S. Coffeyville to Dearing 138kV line</b> 101.9% (53972 SCOFVLE4 to 56682 DEARING4)	Change out switch
2003 Summer Peak	<b>Grapevine to Nichols 230kV line</b> OUT (55652 GRAPEVN6 to 55675 NICHOLS6)	<b>Walters to Comanche 69kV line</b> 100.7% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap
2005 Summer Peak	<b>Riverside to Jenks 138kV line</b> OUT (53771 JENKS--4 to 53795 R.S.S.-4)	<b>Riverside to Tulsa Power Station 138kV line</b> 100.4% (53795 R.S.S.-4 to 53800 T.P.S.-4)	Change out switch
2005 Summer Peak	<b>Fletcher to Marlow Jct.69kV line</b> OUT (55361 FLETCHR2 to 55440 MARLOWJ2)	<b>Walters to Comanche 69kV line</b> 100.2% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap
2005 Summer Peak	<b>Grapevine to Nichols 230kV line</b> OUT (55652 GRAPEVN6 to 55675 NICHOLS6)	<b>Walters to Comanche 69kV line</b> 100.0% (54097 WALTERS2 to 54099 COMANCH2)	Change out wave trap

Using ACCC function of PSS\E



## **Available Transfer Capability Existing System**

ATC studies were run using default participation points for both Southwestern Public Service and Northern States Power. To accomplish this, the generation was scaled among all available on-line generators at both companies. The purpose of these studies was to ensure that the desired power transfer (100 MW) could be accomplished while maintaining system reliability.

The results for the studies have not shown additional problems.



PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 8:45  
 300-00AP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2000 APRIL MINIMUM - FINAL REV. 5 (B00AP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121 ELKCITY4 138 20 54153\* ELKCITY6 230 20 1 262.3 215.0 122.0

00WP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-SWPS OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 55825 [TUCO 7345.00] CKT 1 ----- CONTINGENCY  
 SWPS-SWPS OPEN LINE FROM BUS 55825 [TUCO 7345.00] TO BUS 55824 [TUCO 6230.00] CKT 1 ----- CONTINGENCY  
 CESW-CESW OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 54131 [L.E.S.-7345.00] CKT 1 ----- CONTINGENCY  
 CESW-ERCOT OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 59991 [OKLAUN 7345.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54121 ELKCITY4 138 54153 ELKCITY6 230 1 146.2 234.6 215.0 109.1**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 9:23  
 200-00WP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2000/01 WINTER PEAK - FINAL REV. 5 (B00WP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121 ELKCITY4 138 20 54153\* ELKCITY6 230 20 1 150.5 215.0 70.0

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 9:31  
 300-00WP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2000/01 WINTER PEAK - FINAL REV. 5 (B00WP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121 ELKCITY4 138 20 54153\* ELKCITY6 230 20 1 252.0 215.0 117.2

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 SWPS-SUNC OPEN LINE FROM BUS 55655 [POTTER 7345.00] TO BUS 56449 [HOLCOMB7345.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54121 ELKCITY4 138 54153 ELKCITY6 230 1 163.2 216.8 215.0 100.8**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:28  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121 ELKCITY4 138 20 54153\* ELKCITY6 230 20 1 197.4 215.0 91.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:30  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54121	ELKCITY4	138	20	54153*	ELKCITY6	230	20	1	230.6	215.0	107.3

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-CESW OPEN LINE FROM BUS 54121 [ELKCITY4138.00] TO BUS 54153 [ELKCITY6230.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.2 54.6 53.0 100.7**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:37  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	52.9	53.0	99.7

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:39  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	53.4	53.0	100.8

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-SWPS OPEN LINE FROM BUS 54153 [ELKCITY6230.00] TO BUS 55652 [GRAPEVN6230.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.2 54.6 53.0 100.8**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:45  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	52.9	53.0	99.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:47  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	53.4	53.0	100.8

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 WFEC-WFEC OPEN LINE FROM BUS 55450 [MORWODS269.000] TO BUS 55452 [MORWOOD269.000] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54121 ELKCITY4 138 54122 ELKCITY269.0 1 46.7 55.2**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:50  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121\* ELKCITY4 138 20 54122 ELKCITY269.0 20 1 54.4 55.0 98.9

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:52  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54121\* ELKCITY4 138 20 54122 ELKCITY269.0 20 1 55.1 55.0 100.2

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-CESW OPEN LINE FROM BUS 54121 [ELKCITY4138.00] TO BUS 54153 [ELKCITY6230.00] CKT 1 ----- CONTINGENCY  
 CESW-SWPS OPEN LINE FROM BUS 54153 [ELKCITY6230.00] TO BUS 55652 [GRAPEVN6230.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.2 54.6 53.0 100.8**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:56  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

BRANCH LOADINGS ABOVE 0.0 % OF RATING SET B:

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54097 WALTERS269.0 20 54099\* COMANCH269.0 20 1 52.9 53.0 99.8

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 10:57  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X X-----TO BUS-----X CURRENT(MVA)  
 BUS NAME BSKV AREA BUS NAME BSKV AREA CKT LOADING RATING PERCENT  
 54097 WALTERS269.0 20 54099\* COMANCH269.0 20 1 53.4 53.0 100.8

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-WERE OPEN LINE FROM BUS 53929 [COFTAP 7345.00] TO BUS 56606 [NEOSHO 7345.00] CKT 1 ----- CONTINGENCY  
**CESW-WERE 53972 SCOFVLE4 138 56682 DEARING4 138 1 102.8 143.2 143**

SPP IMPACT STUDY (#SPP-1999-016)

November 1, 1999

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 11:00  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)	
BUS	NAME BSKV AREA	BUS	NAME BSKV AREA	CKT	LOADING RATING PERCENT
53972*	SCOFVLE4 138 20	56682	DEARING4 138 36	1	142.9 143.0 99.9

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 11:02  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)	
BUS	NAME BSKV AREA	BUS	NAME BSKV AREA	CKT	LOADING RATING PERCENT
53972*	SCOFVLE4 138 20	56682	DEARING4 138 36	1	145.7 143.0 101.9

03SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 SWPS-SWPS OPEN LINE FROM BUS 55652 [GRAPEVN6230.00] TO BUS 55675 [NICHOLS6230.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.2 54.5 53.0 100.6**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 11:18  
 200-03SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)	
BUS	NAME BSKV AREA	BUS	NAME BSKV AREA	CKT	LOADING RATING PERCENT
54097	WALTERS269.0 20	54099*	COMANCH269.0 20	1	52.8 53.0 99.7

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 11:20  
 300-03SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2003 SUMMER PEAK - FINAL REV. 5 (B03SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)	
BUS	NAME BSKV AREA	BUS	NAME BSKV AREA	CKT	LOADING RATING PERCENT
54097	WALTERS269.0 20	54099*	COMANCH269.0 20	1	53.3 53.0 100.7

05SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 CESW-CESW OPEN LINE FROM BUS 53771 [JENKS--4138.00] TO BUS 53795 [R.S.S.-4138.00] CKT 1 ----- CONTINGENCY  
**CESW-CESW 53795 R.S.S.-4 138 53800 T.P.S.-4 138 1 109.9 146.6 143.0 100**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 14:49  
 200-05SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)	
BUS	NAME BSKV AREA	BUS	NAME BSKV AREA	CKT	LOADING RATING PERCENT
53795*	R.S.S.-4 138 20	53800	T.P.S.-4 138 20	1	142.8 143.0 99.9

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 14:52  
 300-05SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
53795*	R.S.S.-4	138	20	53800	T.P.S.-4	138	20	1	143.6	143.0	100.4

05SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 WFEC-WFEC OPEN LINE FROM BUS 55361 [FLETCHR269.000] TO BUS 55440 [MARLOWJ269.000] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.3 54.3 53.0 100.3**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 15:01  
 200-05SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	52.8	53.0	99.7

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E WED, OCT 27 1999 15:03  
 300-05SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	53.1	53.0	100.2

05SP X----- C O N T I N G E N C Y E V E N T S -----X X-- O V E R L O A D E D L I N E S --X X--MVA(MW)FLOW--X  
 X---- MULTI-SECTION LINE GROUPINGS ----X FROM NAME TO NAME CKT PRE-CNT POST-CNT RATING PERCENT  
 SWPS-SWPS OPEN LINE FROM BUS 55652 [GRAPEVN6230.000] TO BUS 55675 [NICHOLS6230.000] CKT 1 ----- CONTINGENCY  
**CESW-CESW 54097 WALTERS269.0 54099 COMANCH269.0 1 52.3 54.2 53.0 100.0**

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 28 1999 8:24  
 200-05SP SWPS TO NSP 0 MW (200 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	52.6	53.0	99.3

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E THU, OCT 28 1999 8:25  
 300-05SP SWPS TO NSP 100 MW (300 MW TOTAL)  
 2005 SUMMER PEAK - FINAL REV. 5 (B05SP5)

X-----FROM BUS-----X		X-----TO BUS-----X		CURRENT(MVA)							
BUS	NAME	BSKV	AREA	BUS	NAME	BSKV	AREA	CKT	LOADING	RATING	PERCENT
54097	WALTERS269.0	20		54099*	COMANCH269.0	20		1	53.0	53.0	100.0

SPP IMPACT STUDY (#SPP-1999-016)

November 1, 1999