SPP Southwest Power Pool

System Impact Study SPP-2002-197
For Transmission Service
Requested By
Rainbow Energy Marketing Corp.

From OPPD To ERCOTN

For a Reserved Amount Of 50 MW
From 12/1/2002 To 1/1/2005
With a Deferred Service Period
From 10/1/2005 To 11/1/2007

SPP Tariff Studies

Table of Contents

1. Executive Summary

Rainbow Energy Marketing Corp. (REMC) has requested a system impact study for Point-to-Point Service from OPPD to ERCOTN for 50 MW. The requested period of service is from 12/1/02 to 1/1/05. The SWPP OASIS Reservation number is 427479.

The principal objective of this study is to identify current system limitations using AC analyses and to determine the system upgrades necessary to provide the requested service.

Table 1 lists the SPP Facility Overloads caused or impacted by the requested service and includes solutions with engineering and construction costs to alleviate the limiting facilities. Table 2 includes Non - SPP Facility Overloads caused or impacted by the requested service. Excluding any third party requirements and additional upgrades that may be required after modeling the assigned upgrades, the total engineering and construction cost to provide the requested service is determined in Table 1. For Non-SPP third-party facilities listed in Table 2, the facility limitations will be mitigated in accordance with Section 21 of the SWPP OATT.

Excluding any third party requirements and additional upgrades that may be required after modeling the assigned upgrades, the total engineering and construction cost required to provide the requested service is $28,275,000. The ATC is determined to be zero until the majority of the assigned upgrades are constructed. The estimated in-service date of the upgrades to alleviate the most limiting Summer Peak and Winter Peak facilities is 10/1/2005. Three facilities were identified that limit the renewal rights of the requested service. This study does not include overloads that may occur after modeling the assigned upgrades for the OPPD to ERCOTN 50MW request. Modeling the assigned upgrades may create additional upgrades and an increase in the total engineering and construction cost required.

2. Introduction

Rainbow Energy Marketing Corp. (REMC) has requested a system impact study for Point-to-Point Service from OPPD to ERCOTN for 50 MW. The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the requested service and determine the least cost solutions required to alleviate the limiting facilities.

This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses. The steady-state analyses consider the impact of the 50 MW transfer and the impact of the required upgrades for service on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP systems and first tier Non - SPP systems.

3. Study Methodology

A. Description

The system impact analysis was conducted to determine the steady-state impact of the 50 MW transfer on the SPP and first tier Non - SPP systems. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool conforms to the NERC Planning Standards, which provide the strictest requirements, related to voltage violations and thermal overloads during normal conditions and during a contingency. It requires that all facilities be within normal operating ratings for normal system conditions and within emergency ratings after a contingency.

B. Model Updates

SPP used ten seasonal models to study the OPPD to ERCOTN 50 MW transfer for the requested service period. The SPP 2003 Series Cases 2003 Summer Peak (03SP), 2003 Fall Peak (03FA), 2003/2004 Winter Peak (03WP), 2004 April Minimum (04AP), 2004 Spring Peak (04G), 2004 Summer Peak (04SP), 2004 Fall Peak (04FA), 2004 Winter Peak (04WP), 2009 Summer Peak (09SP), and 2009/10 Winter Peak (09WP) were used to study the impact of the 50 MW transfer on the SPP system during the requested service period of 12/1/02 to 01/01/2005 and deferred service period of 10/1/05 to 11/1/2007.

The chosen base case models were modified to reflect the most current modeling information. The Lamar HVDC Tie and Designated Network Resource were added to the 2004 models coupled with the 2009 models as a proxy for the study years not included in the SPP 2003 Series Cases. The base case models include confirmed East to West transfers not already included in the January 2003 base case series models, SPS Importing, and the Lamar HVDC Tie flowing from Lamar to SPS.

C. Transfer Analysis

Using the selected cases both with and without the requested transfer modeled, the PSS/E Activity ACCC was run on the cases and compared to determine the facility overloads caused or impacted by the transfer. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

D. Upgrade Analysis

This system impact study does not include analysis with the assigned upgrades modeled. To determine the final cost and possible start date of the requested service, additional analysis will be performed to determine the impact of modeling the assigned upgrades for the 50 MW OPPD to ERCOTN transfer.

4. Study Results

A. Study Analysis Results

Tables 1 and 2 contain the steady-state analysis results of the System Impact Study. The Tables are in the attached workbook *SPP-2002-197 Tables*. The tables identify the seasonal case in which the event occurred, the facility control area location, applicable ratings of the overloaded facility, the loading percentage with and without the studied, and the estimated ATC value using interpolation if calculated. Comments are provided in the tables to document any SPP or Non - SPP identification or assignment of the event, existing mitigations plans or criteria to disregard the event as a limiting constraint, upgrades and costs to mitigate a limiting constraint, or any specific study procedures associated with modeling an event.

Table 1 lists the SPP Facility Overloads caused or impacted by the 50 MW transfer. Solutions with engineering and construction costs are provided in the tables.

Table 2 lists overloads on fist tier Non - SPP Regional Tariff participants' transmission systems caused or impacted by the 50 MW transfer. Analysis was not conducted to determine the mitigating effects of the selected upgrades on the Non – SPP facilities listed in Table 2.

Table 1a documents the modeling representation of the events identified in Table 1 to include bus numbers and bus names.

Three facilities were identified as limiting the rollover rights of the transmission service. These facilities can be found in Table 1. The date provided with these identified limitations depicts at which point the facility is a limitation for the renewal of the requested transmission service.

5. Conclusion

Excluding any third party requirements and additional upgrades that may be required after modeling the assigned upgrades, the total engineering and construction cost required to provide the requested service is $28,275,000. The ATC is determined to be zero until the majority of the assigned upgrades are constructed. The estimated in-service date of the upgrades to alleviate the most limiting Summer Peak and Winter Peak facilities is 10/1/2005. Three facilities were identified that limit the renewal rights of the requested service. This study does not include overloads that may occur after modeling the assigned upgrades for the OPPD to ERCOTN 50MW request. Modeling the assigned upgrades may create additional upgrades and an increase in the total engineering and construction cost required.

Appendix A

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 immediately
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

ACCC CASES:
Solutions – AC contingency checking (ACCC)
1. MW mismatch tolerance – 0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excld 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 – 60000
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 - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
03SP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 1	150	100.7	101.3	CATOOSA 161/138KV TRANSFORMER CKT 2	0	None - GRDA Mitigation Plan	$ -
03SP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 2	150	101.0	101.6	CATOOSA 161/138KV TRANSFORMER CKT 1	0	None - GRDA Mitigation Plan	$ -
03SP	OKGE	OKGE	HORSESHOE LAKE - RENO 138KV	287	101.2	101.4	HORSESHOE LAKE - MIDWAY 138KV	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
03SP	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	209	127.4	127.9	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
03SP	WERE	WERE	ROSE HILL JUNCTION - WEAVER 69KV	43	106.3	107.5	EL PASO - FARBER 138KV	0	Move Rose Hill Jct. 69 kV load to Rose Hill 345/138 kV substation. Requires new transformer bay and a new 25 MVA 138-12 kV transformer.	$ 1,400,000
03SP	WERE	WERE	ROSE HILL JUNCTION - WEAVER 69KV	43	100.1	101.4	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV	0	See Previous	$ -
03FA	AEPW	AEPW	21ST STREET TAP - TULSA SOUTHEAST 138KV	179	100.3	101.3	NORTHEAST STATION - ONETA 345KV	0	In house upgrade scheduled for May 2004. New Rate B = 263MVA for Fall	$ -
03FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	108.3	109.0	NORTHEAST STATION - ONETA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	107.5	108.1	TULSA NORTH - WEKIWA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	107.5	108.1	WEKIWA 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	105.8	106.3	RIVERSIDE STA - RIVERSIDE STA AUTO 138KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	105.8	106.3	RIVERSIDE STA AUTO 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	WERE	WERE	GOLDEN PLAINS JUNCTION - HESSTON 69KV	32	99.8	100.9	HALSTEAD NORTH - MOUNDRIDGE 138KV	10	Local area problem within Newton division	$ -
03FA	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	236	106.4	106.8	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
03FA	AEPW	AEPW	SAND SPRINGS - SHEFFIELD 138KV	143	105.7	106.6	WEKIWA - WEST EDISON TAP 138KV	0	Replace Sand Springs switch 1306, 1307, & 1308	$ 75,000
03FA	AEPW	AEPW	SAND SPRINGS - WEST EDISON TAP 138KV	143	104.0	104.7	SHEFFIELD - WEKIWA 138KV	0	Replace Sand Springs switches 1314, 1315, & 1316	$ 75,000
03WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	102.1	102.9	NORTHEAST STATION - ONETA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	100.2	100.8	TULSA NORTH - WEKIWA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	100.2	100.8	WEKIWA 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	99.6	100.2	CATOOSA - LYNN LANE TAP 138KV	33	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	GRRD	CATOOSA 161/138KV TRANSFORMER CKT 1	150	103.9	104.5	CATOOSA 161/138KV TRANSFORMER CKT 2	0	None - GRDA Mitigation Plan	$ -
03WP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 2	150	104.2	104.8	CATOOSA 161/138KV TRANSFORMER CKT 1	0	None - GRDA Mitigation Plan	$ -
03WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	102.4	103.3	WELEETKA 161\138KV TRANSFORMER	0	Replace Eufaula Transformer	$ 2,000,000
03WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	102.1	103.0	GORE - WELEETKA 161KV	0	See Previous	$ -
03WP	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 1	68	106.7	107.4	EAST MCPHERSON - SUMMIT 230KV	0	Tear down double circuit, build single circuit with 1192.5 ACSR.	$ 7,800,000
04G	AEPW	AEPW	EAST CENTRAL HENRYETTA - OKMULGEE 138KV	105	99.8	100.9	KELCO - OKMULGEE 138KV	10	Replace Okmulgee Wavetrap	$ 40,000
04G	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	100.4	101.4	WELEETKA 161\138KV TRANSFORMER	0	See Previous	$ -
04G	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	100.1	101.1	GORE - WELEETKA 161KV	0	See Previous	$ -
04G	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	236	116.4	116.8	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
04G	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 1	68	101.3	102.1	EAST MCPHERSON - SUMMIT 230KV	0	See Previous	$ -
04G	AEPW	AEPW	SOUTH SHREVEPORT - WALLACE LAKE 138KV	210	100.0	100.4	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	1	Dolet Hills Operating Guide - Spp-Cele-01 Operating Guide 1	$ -
04G	WERE	WERE	WEST JCT CITY - WEST JCT CITY JCT (EAST) 115KV	141	104.0	104.4	JEFFERY ENERGY CENTER - SUMMIT 345KV	0	Westar Transmission Operating Directive 402	$ -
04SP	SPS	SPS	CANYON EAST - CANYON WEST 115KV	99	99.5	100.7	BUSHLAND INTRCHNG - DEAF SMITH INTRCHNG 230KV	20	Rebuild 4 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 590,000
04SP	SPS	SPS	CANYON EAST - OSAGE SWITCHING STATION 115KV	99	113.2	114.5	BUSHLAND INTRCHNG - DEAF SMITH INTRCHNG 230KV	0	Rebuild 13 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 1,910,000
04SP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 1	150	105.2	105.8	CATOOSA 161/138KV TRANSFORMER CKT 2	0	None - GRDA Mitigation Plan	$ -
04SP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 2	150	105.5	106.1	CATOOSA 161/138KV TRANSFORMER CKT 1	0	None - GRDA Mitigation Plan	$ -
04SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - OKMULGEE 138KV	105	117.5	118.6	KELCO - OKMULGEE 138KV	0	See Previous	$ -
04SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - OKMULGEE 138KV	105	110.2	111.3	HENRYET4 - KELCO 138KV	0	See Previous	$ -
04SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - WELEETKA 138KV	105	113.3	114.4	KELCO - OKMULGEE 138KV	0	Replace Weleetka Wavetrap	$ 40,000
04SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - WELEETKA 138KV	105	106.0	107.1	HENRYET4 - KELCO 138KV	0	See Previous	$ -
04SP	AEPW	AEPW	FLINT CREEK - TONTITOWN 161KV	312	108.7	108.9	CHAMBER SPRINGS - FLINT CREEK 161KV	0	Replace switch and jumpers	$ 45,000
04SP	OKGE	OKGE	FT SMITH 500/161KV TRANSFORMER	480	104.0	104.2	FT SMITH 345/161KV TRANSFORMER	0	Convert Ft. Smith 161kv to 1-1/2 breaker design and install 2nd 500-161kV transformer bank	$ 10,000,000
04SP	SPS	SPS	HAPPY INTERCHANGE - PALODU 115KV	99	100.8	102.6	AMARILLO S INTRCHNG - SWISHER CNTY INTRCHNG 230KV	0	Rebuild 24 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 3,130,000

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
04SP	OKGE	OKGE	HORSESHOE LAKE - RENO 138KV	287	103.0	103.3	HORSESHOE LAKE - MIDWAY 138KV	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
04SP	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	209	124.7	125.1	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
04SP	SPS	SPS	PALODU - RANDALL COUNTY INTERCHANGE 115KV	99	102.7	104.4	AMARILLO S INTRCHNG - SWISHER CNTY INTRCHNG 230KV	0	Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 1,170,000
04SP	SPS	SPS	RANDALL CO INTRCHNG 230/115KV TRANSFORMER	259	100.9	101.4	AMARILLO S INTERCHANGE - NICHOLS STATION 230KV	0	Open Amarillo South 230/115KV Transformer to Relieve Facility	$ -
04SP	WERE	WERE	ROSE HILL JUNCTION - WEAVER 69KV	43	103.2	104.5	EL PASO - FARBER 138KV	0	See Previous	$ -
04FA	AEPW	AEPW	21ST STREET TAP - TULSA SOUTHEAST 138KV	179	99.6	100.6	NORTHEAST STATION - ONETA 345KV	21	In house upgrade scheduled for May 2004. New Rate B = 263MVA for Fall	$ -
04FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	106.6	107.4	NORTHEAST STATION - ONETA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	104.7	105.3	TULSA NORTH - WEKIWA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	104.7	105.3	WEKIWA 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	102.4	102.9	RIVERSIDE STA AUTO 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	102.4	102.9	RIVERSIDE STA - RIVERSIDE STA AUTO 138KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	OKGE	OKGE	DRAPER LAKE 345/138KV TRANSFORMER CKT 1	493	103.7	103.8	DRAPER LAKE 345/138KV TRANSFORMER CKT 2	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
04FA	OKGE	OKGE	DRAPER LAKE 345/138KV TRANSFORMER CKT 2	493	103.7	103.8	DRAPER LAKE 345/138KV TRANSFORMER CKT 1	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
04FA	WERE	WERE	EXIDE JUNCTION - SUMMIT 115KV	196	105.4	105.8	EAST MCPHERSON - SUMMIT 230KV	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04FA	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	236	112.4	112.8	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
04FA	WERE	WERE	N. A. PHILIPS - N. A. PHILIPS JUNCTION (SOUTH) 115KV	160	110.5	111.2	EAST MCPHERSON - SUMMIT 230KV	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04FA	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 1	68	119.2	120.0	EAST MCPHERSON - SUMMIT 230KV	0	See Previous	$ -
04FA	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 2	92	104.0	104.7	EAST MCPHERSON - SUMMIT 230KV	0	Upgrade Same as North American Phillips Junction (South) - West McPherson 115kV Ckt 1	$ -
04FA	OKGE	OKGE	PANTHER - SILVER LAKE 138KV	287	109.0	109.2	LONEOAK - NORTHWEST 138KV	0	Replaced 1200A switch with a 2000A switch by OKGE. New Rate A = 478MVA, Rate B = 478MVA.	$ -
04FA	AEPW	AEPW	SAND SPRINGS - SHEFFIELD 138KV	143	101.3	102.2	WEKIWA - WEST EDISON TAP 138KV	0	See Previous	$ -
04FA	AEPW	AEPW	SAND SPRINGS - WEST EDISON TAP 138KV	143	99.9	100.6	SHEFFIELD - WEKIWA 138KV	6	See Previous	$ -
04FA	WERE	WERE	WEST JCT CITY - WEST JCT CITY JCT (EAST) 115KV	141	112.0	112.5	JEFFERY ENERGY CENTER - SUMMIT 345KV	0	Westar Transmission Operating Directive 402	$ -
04WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	101.9	102.5	TULSA NORTH - WEKIWA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	101.9	102.5	WEKIWA 345/138KV TRANSFORMER	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	101.2	101.9	NORTHEAST STATION - ONETA 345KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	CATOOSA - LYNN LANE EAST TAP 138KV	235	100.6	101.1	BROKEN ARROW 101ST NORTH - ONETA 138KV	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 1	150	108.0	108.7	CATOOSA 161/138KV TRANSFORMER CKT 2	0	None - GRDA Mitigation Plan	$ -
04WP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 2	150	108.4	109.0	CATOOSA 161/138KV TRANSFORMER CKT 1	0	None - GRDA Mitigation Plan	$ -
04WP	AEPW	AEPW	EAST CENTRAL HENRYETTA - OKMULGEE 138KV	105	101.9	102.9	KELCO - OKMULGEE 138KV	0	See Previous	$ -
04WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	118.2	119.1	WELEETKA 161\138KV TRANSFORMER	0	See Previous	$ -
04WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	117.9	118.7	GORE - WELEETKA 161KV	0	See Previous	$ -
04WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	107.9	109.4	PITTSBURG - MUSKOGEE 345KV	0	See Previous	$ -
04WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	107.6	108.5	WISTER - HOWE INT 69KV	0	See Previous	$ -
04WP	SWPA	SWPA	EUFAULA 161/138/13.8KV TRANSFORMER	105	106.2	107	WISTER - HOWE INT 69KV	0	See Previous	$ -
04WP	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	236	102.1	102.5	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
04WP	WERE	WERE	N. A. PHILIPS - N. A. PHILIPS JUNCTION (SOUTH) 115KV	160	105.2	105.9	EAST MCPHERSON - SUMMIT 230KV	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04WP	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 1	68	113.6	114.4	EAST MCPHERSON - SUMMIT 230KV	0	See Previous	$ -
04WP	OKGE	OKGE	PANTHER - SILVER LAKE 138KV	287	107.5	107.8	LONEOAK - NORTHWEST 138KV	0	Replaced 1200A switch with a 2000A switch by OKGE. New Rate A = 478MVA, Rate B = 478MVA.	$ -
04WP	WERE	WERE	WEST JCT CITY - WEST JCT CITY JCT (EAST) 115KV	141	100.9	101.4	JEFFERY ENERGY CENTER - SUMMIT 345KV	0	Westar Transmission Operating Directive 402	$ -
09SP	KACP	KACP	BLUE VALLEY - WINCHESTER JCT SOUTH 161KV	224	101.2	101.8	LEEDS - MIDTOWN 161KV	0	Limits Rollover Rights beginning 06/01/2009	$ -
09SP	SPS	SPS	CANYON EAST - OSAGE SWITCHING STATION 115KV	99	106.1	107.3	BUSHLAND INTRCHNG - DEAF SMITH INTRCHNG 230KV	0	See Previous	$ -

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
09SP	GRRD	AEPW	CATOOSA 161/138KV TRANSFORMER CKT 2	150	99.5	100.1	CATOOSA 161/138KV TRANSFORMER CKT 1	45	None - GRDA Mitigation Plan	$ -
09SP	KACP	KACP	COLLEGE - CRAIG 161KV	335	106.3	106.6	BROOKRIDGE - OVERLAND PARK 161KV	0	Limits Rollover Rights beginning 06/01/2008	$ -
09SP	KACP	KACP	COLLEGE - CRAIG 161KV	335	100.6	100.8	MOONLIGHT - WEST GARDNER 161KV	0	Limits Rollover Rights beginning 06/01/2009	$ -
09SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - OKMULGEE 138KV	105	104.7	105.9	KELCO - OKMULGEE 138KV	0	See Previous	$ -
09SP	AEPW	AEPW	EAST CENTRAL HENRYETTA - WELEETKA 138KV	105	100.0	101.1	KELCO - OKMULGEE 138KV	0	See Previous	$ -
09SP	AEPW	AEPW	FLINT CREEK - TONTITOWN 161KV	312	125.5	125.6	CHAMBER SPRINGS - FLINT CREEK 161KV	0	See Previous	$ -
09SP	AEPW	AEPW	FLINT CREEK - TONTITOWN 161KV	312	107.9	108.1	AVOCA - BEAVER 161KV	0	See Previous	$ -
09SP	AEPW	AEPW	FLINT CREEK - TONTITOWN 161KV	312	101.3	101.4	AVOCA - EAST ROGERS 161KV	0	See Previous	$ -
09SP	WFEC	OKGE	FRANKLIN SW - MIDWEST TAP 138KV	215	113.6	113.9	HOLLYWOOD - MIDWEST TAP 138KV	0	1200A CT's installed by WFEC New Rate B = 287MVA	$ -
09SP	WFEC	OKGE	FRANKLIN SW - MIDWEST TAP 138KV	215	111.7	112.3	CROMWELL - WETUMKA 138KV	0	See Previous	$ -
09SP	WFEC	OKGE	FRANKLIN SW - MIDWEST TAP 138KV	215	111.5	112.1	PHAROAH - WETUMKA 138KV	0	See Previous	$ -
09SP	WFEC	OKGE	FRANKLIN SW - MIDWEST TAP 138KV	215	108.9	109.5	CROMWELL - WEWOKA 138KV	0	See Previous	$ -
09SP	WFEC	OKGE	FRANKLIN SW - MIDWEST TAP 138KV	215	100.4	100.6	DRAPER LAKE - SOONER TAP 138KV	0	See Previous	$ -
09SP	OKGE	OKGE	FT SMITH 345/161KV TRANSFORMER	493	107.3	107.4	FT SMITH 500/161KV TRANSFORMER	0	Upgrade Same as Ft. Smith 500/161kV Transformer 04SP	$ -
09SP	OKGE	OKGE	FT SMITH 500/161KV TRANSFORMER	480	116.4	116.6	FT SMITH 345/161KV TRANSFORMER	0	See Previous	$ -
09SP	OKGE	OKGE	FT SMITH 500/161KV TRANSFORMER	480	102.2	103.0	FT SMITH 500/345KV TRANSFORMER	0	See Previous	$ -
09SP	WERE	WERE	GILL ENERGY CENTER WEST - PECK 69KV	37	103.2	104.7	EL PASO - FARBER 138KV	0	Limits Rollover Rights beginning 06/01/2008	$ -
09SP	OKGE	OKGE	HORSESHOE LAKE - JONES TAP 138KV	287	103.1	103.4	HORSESHOE LAKE - RENO 138KV	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
09SP	OKGE	OKGE	HORSESHOE LAKE - RENO 138KV	287	107.4	107.7	HORSESHOE LAKE - MIDWAY 138KV	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
09SP	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	209	126.2	126.6	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
09SP	OKGE	OKGE	MORRISON - STILLWATER 138KV	191	104.3	104.7	NORTHWEST - SPRING CREEK 345KV	0	Incorrect rating Rate A = 259MVA Rate B = 287MVA	$ -
09SP	SPS	SPS	RANDALL CO INTRCHNG 230/115KV TRANSFORMER	259	103.8	104.4	AMARILLO S INTERCHANGE - NICHOLS STATION 230KV	0	Open Amarillo South 230/115KV Transformer to Relieve Facility	$ -
09WP	OKGE	OKGE	DRAPER LAKE 345/138KV TRANSFORMER CKT 1	493	105.0	105.1	DRAPER LAKE 345/138KV TRANSFORMER CKT 2	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
09WP	OKGE	OKGE	DRAPER LAKE 345/138KV TRANSFORMER CKT 2	493	105.0	105.1	DRAPER LAKE 345/138KV TRANSFORMER CKT 1	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
09WP	WERE	WERE	EXIDE JUNCTION - SUMMIT 115KV	196	103.2	103.6	EAST MCPHERSON - SUMMIT 230KV	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
09WP	CELE	AEPW	INTERNATIONAL PAPER - WALLACE LAKE 138KV	236	120.7	121.1	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	Dolet Hills Operating Guide	$ -
09WP	WERE	WERE	N. A. PHILIPS - N. A. PHILIPS JUNCTION (SOUTH) 115KV	160	113.2	114.0	EAST MCPHERSON - SUMMIT 230KV	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
09WP	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 1	68	122.1	123.0	EAST MCPHERSON - SUMMIT 230KV	0	See Previous	$ -
09WP	WERE	WERE	N. A. PHILIPS JCT (STH) - W MCPHERSON 115KV CKT 2	92	106.6	107.3	EAST MCPHERSON - SUMMIT 230KV	0	Upgrade Same as North American Phillips Junction (South) - West McPherson 115kV Ckt 1	$ -
09WP	AEPW	AEPW	SOUTH SHREVEPORT - WALLACE LAKE 138KV	210	102.6	103.0	DOLET HILLS - SOUTHWEST SHREVEPORT 345KV	0	See Previous	$ -
09WP	WERE	WERE	WEST JCT CITY - WEST JCT CITY JCT (EAST) 115KV	141	100.2	100.6	JEFFERY ENERGY CENTER - SUMMIT 345KV	0	Westar Transmission Operating Directive 402	$ -
									Engineering & Construction Costs	$ 28,275,000

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload
04FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	112.4	112.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04G	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	116.4	116.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	124.7	125.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	102.1	102.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
09SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	126.2	126.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
09WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	120.7	121.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04FA	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	124.3	124.7	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04G	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	128.4	128.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04SP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	122.0	122.4	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
04WP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	113.8	114.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
09SP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	123.3	123.7	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
09WP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	132.8	133.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	112.1	113.0	59207 ARCHIE 5 161 to 59240 ADRIAN 5 161 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	110.6	111.5	59208 NEVADA 5 161 to 59216 BUTLER_5 161 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	109.9	110.9	56793 NEOSHO 7 345 to 57981 LACYGNE7 345 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	110.0	110.9	59216 BUTLER_5 161 to 59240 ADRIAN 5 161 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	108.7	109.6	52702 TRUMAN 5 161 to 96552 5EDMONS 161 CKT 1
09SP	AECI	AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	107.4	108.3	30154 BLAND 345 to 96041 7FRANKS 345 CKT 1
09SP	AECI	AECI	96109 5PHLIPS 161 to 97071 2PBURG 69 CKT 1	84	99.0	100.3	96102 5MRSHFL 161 to 97163 2MRSHFL 69 CKT 1
04SP	AECI	AECI	96126 5MOBTAP 161 to 96120 5THMHIL 161 CKT 1	372	104.2	104.5	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT 1
09SP	AECI	AECI	96126 5MOBTAP 161 to 96120 5THMHIL 161 CKT 1	372	106.9	107.2	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT 1
04G	LAGN	ENTR	97318 4KSPRGS 138 to 98141 4CHAMPNE 138 CKT 1	289	109.3	109.5	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1
04SP	LAGN	ENTR	97318 4KSPRGS 138 to 98141 4CHAMPNE 138 CKT 1	289	121.5	121.7	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1
09SP	LAGN	ENTR	97318 4KSPRGS 138 to 98141 4CHAMPNE 138 CKT 1	289	100.2	100.4	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1
04SP	ENTR	ENTR	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	1732	102.5	102.6	98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT 1

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
03SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	127.4	127.9	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	-
03SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 1	150	100.7	101.3	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	0	None - GRDA Mitigation Plan	$ -
03SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	101.0	101.6	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	0	None - GRDA Mitigation Plan	$ -
03SP	OKGE	OKGE	54941 HSL 4 138 to 54973 RENO 4 138 CKT 1	287	101.2	101.4	54941 HSL 4 138 to 54966 MIDWAY 4 138 CKT 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
03SP	WERE	WERE	57604 WEAVER 2 69 to 57837 RH JCT 2 69 CKT 1	43	106.3	107.5	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT 1	0	Move Rose Hill Jct. 69 kV load to Rose Hill 345/138 kV substation. Requires new transformer bay and a new 25 MVA 138-12 kV transformer.	$ 1,400,000
03SP	WERE	WERE	57604 WEAVER 2 69 to 57837 RH JCT 2 69 CKT 1	43	100.1	101.4	57042 FARBER 4 138 to 57063 SC10BEL4 138 CKT 1	0	See Previous	$ -
03FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	106.4	106.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
03FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	107.5	108.1	53767 WEKIWA-7 345 to 53769 WEKIWA-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	107.5	108.1	53767 WEKIWA-7 345 to 53866 T.NO.--7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	105.8	106.3	53785 RSSAUTO4 138 to 53794 R.S.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	105.8	106.3	53785 RSSAUTO4 138 to 53795 R.S.S.-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	108.3	109.0	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03FA	AEPW	AEPW	53824 SHEFFD-4 138 to 53827 S.S.---4 138 CKT 1	143	105.7	106.6	53769 WEKIWA-4 138 to 53835 WED-TAP4 138 CKT 1	0	Replace Sand Springs switch 1306, 1307, & 1308	$ 75,000
03FA	AEPW	AEPW	53827 S.S.---4 138 to 53835 WED-TAP4 138 CKT 1	143	104.0	104.7	53769 WEKIWA-4 138 to 53824 SHEFFD-4 138 CKT 1	0	Replace Sand Springs switches 1314, 1315, & 1316	$ 75,000
03FA	AEPW	AEPW	53841 21STTAP4 138 to 53823 T.S.E.-4 138 CKT 1	179	100.3	101.3	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	0	In house upgrade scheduled for May 2004. New Rate B = 263MVA for Fall	$ -
03FA	WERE	WERE	57737 HESSTON2 69 to 57735 GOLDPLJ2 69 CKT 1	32	99.8	100.9	57011 HALSTDN4 138 to 57013 MOUND 4 138 CKT 1	10	Local area problem within Newton division	$ -
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.1	103.0	52752 GORE 5 161 to 52790 WELEETK5 161 CKT 1	0	See Previous	$ -
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.4	103.3	52790 WELEETK5 161 to 52792 WELEETK4 138 CKT 1	0	Replace Eufaula Transformer	$ 2,000,000
03WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	100.2	100.8	53767 WEKIWA-7 345 to 53769 WEKIWA-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	100.2	100.8	53767 WEKIWA-7 345 to 53866 T.NO.--7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	99.6	100.2	53802 CATOOSA4 138 to 53816 LLANETP4 138 CKT 1	33	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	102.1	102.9	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
03WP	AEPW	GRRD	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	150	103.9	104.5	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	0	None - GRDA Mitigation Plan	$ -
03WP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	104.2	104.8	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	0	None - GRDA Mitigation Plan	$ -
03WP	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 1	68	106.7	107.4	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Tear down double circuit, build single circuit with 1192.5 ACSR.	$ 7,800,000
04G	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	116.4	116.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
04G	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.1	101.1	52752 GORE 5 161 to 52790 WELEETK5 161 CKT 1	0	See Previous	$ -
04G	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.4	101.4	52790 WELEETK5 161 to 52792 WELEETK4 138 CKT 1	0	See Previous	$ -
04G	AEPW	AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	100.0	100.4	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	1	Dolet Hills Operating Guide - Spp-Cele-01 Operating Guide 1	$ -
04G	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	99.8	100.9	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	10	Replace Okmulgee Wavetrap	$ 40,000
04G	WERE	WERE	57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	104.0	104.4	56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT 1	0	Westar Transmission Operating Directive 402	$ -
04G	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 1	68	101.3	102.1	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	See Previous	$ -
04SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	124.7	125.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
04SP	SPS	SPS	51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	99	113.2	114.5	50993 BUSHLND6 230 to 51111 DFSMTH6 230 CKT 1	0	Rebuild 13 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 1,910,000
04SP	SPS	SPS	51020 RANDALL3 115 to 51082 PALODU 3 115 CKT 1	99	102.7	104.4	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT 1	0	Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 1,170,000
04SP	SPS	SPS	51021 RANDALL6 230 to 51020 RANDALL3 115 CKT 1	258.75	100.9	101.4	50915 NICHOL6 230 to 51041 AMARLS6 230 CKT 1	0	Open Amarillo South 230/115KV Transformer to Relieve Facility	$ -
04SP	SPS	SPS	51080 CANYNE3 115 to 51078 CANYNW3 115 CKT 1	99	99.5	100.7	50993 BUSHLND6 230 to 51111 DFSMTH6 230 CKT 1	20	Rebuild 4 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 590,000
04SP	SPS	SPS	51082 PALODU 3 115 to 51302 HAPPY3 115 CKT 1	99	100.8	102.6	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT 1	0	Rebuild 24 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	$ 3,130,000
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	108.7	108.9	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	Replace switch and jumpers	$ 45,000
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	110.2	111.3	54017 HENRYET4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	117.5	118.6	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
04SP	AEPW	AEPW	54049 EC.HEN-4 138 to 54028 WELETK4 138 CKT 1	105	106.0	107.1	54017 HENRYET4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
04SP	AEPW	AEPW	54049 EC.HEN-4 138 to 54028 WELETK4 138 CKT 1	105	113.3	114.4	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	Replace Weleetka Wavetrap	$ 40,000
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 1	150	105.2	105.8	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	0	None - GRDA Mitigation Plan	$ -

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	105.5	106.1	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	0	None - GRDA Mitigation Plan	$ -
04SP	OKGE	OKGE	54941 HSL 4 138 to 54973 RENO 4 138 CKT 1	287	103.0	103.3	54941 HSL 4 138 to 54966 MIDWAY 4 138 CKT 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
04SP	OKGE	OKGE	55305 FTSMITH8 500 to 55300 FTSMITH5 161 CKT 1	480	104.0	104.2	55300 FTSMITH5 161 to 55302 FTSMITH7 345 CKT 1	0	Convert Ft. Smith 161kv to 1-1/2 breaker design and install 2nd 500-161kV transformer bank	$ 10,000,000
04SP	WERE	WERE	57604 WEAVER 2 69 to 57837 RH JCT 2 69 CKT 1	43	103.2	104.5	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT 1	0	See Previous	$ -
04FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	112.4	112.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
04FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	104.7	105.3	53767 WEKIWA-7 345 to 53769 WEKIWA-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	104.7	105.3	53767 WEKIWA-7 345 to 53866 T.NO.--7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	102.4	102.9	53785 RSSAUTO4 138 to 53794 R.S.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	102.4	102.9	53785 RSSAUTO4 138 to 53795 R.S.S.-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	106.6	107.4	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04FA	AEPW	AEPW	53824 SHEFFD-4 138 to 53827 S.S.---4 138 CKT 1	143	101.3	102.2	53769 WEKIWA-4 138 to 53835 WED-TAP4 138 CKT 1	0	See Previous	$ -
04FA	AEPW	AEPW	53835 WED-TAP4 138 to 53827 S.S.---4 138 CKT 1	143	99.9	100.6	53769 WEKIWA-4 138 to 53824 SHEFFD-4 138 CKT 1	6	See Previous	$ -
04FA	AEPW	AEPW	53841 21STTAP4 138 to 53823 T.S.E.-4 138 CKT 1	179	99.6	100.6	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	21	In house upgrade scheduled for May 2004. New Rate B = 263MVA for Fall	$ -
04FA	OKGE	OKGE	54852 SLVRLAK4 138 to 54854 PANTHER4 138 CKT 1	287	109.0	109.2	54873 LONEOAK4 138 to 54879 NORTWST4 138 CKT 1	0	Replaced 1200A switch with a 2000A switch by OKGE. New Rate A = 478MVA, Rate B = 478MVA.	$ -
04FA	OKGE	OKGE	54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 1	493	103.7	103.8	54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT 2	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
04FA	OKGE	OKGE	54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 2	493	103.7	103.8	54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT 1	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
04FA	WERE	WERE	57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	112.0	112.5	56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT 1	0	Westar Transmission Operating Directive 402	$ -
04FA	WERE	WERE	57368 EXIDE J3 115 to 57381 SUMMIT 3 115 CKT 1	196	105.4	105.8	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04FA	WERE	WERE	57372 PHILIPS3 115 to 57374 SPHILPJ3 115 CKT 1	160	110.5	111.2	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04FA	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 1	68	119.2	120.0	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	See Previous	$ -
04FA	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 2	92	104.0	104.7	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Upgrade Same as North American Phillips Junction (South) - West McPherson 115kV Ckt 1	$ -
04WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	102.1	102.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	117.9	118.7	52752 GORE 5 161 to 52790 WELEETK5 161 CKT 1	0	See Previous	$ -
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	118.2	119.1	52790 WELEETK5 161 to 52792 WELEETK4 138 CKT 1	0	See Previous	$ -
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	106.2	107	54003 WISTER-2 69 to 54026 REDOAK-2 69 CKT 1	0	See Previous	$ -
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	107.6	108.5	54003 WISTER-2 69 to 55259 HOWEIN 2 69 CKT 1	0	See Previous	$ -
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	107.9	109.4	54033 PITTSB-7 345 to 55224 MUSKOGE7 345 CKT 1	0	See Previous	$ -
04WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	101.9	102.5	53767 WEKIWA-7 345 to 53769 WEKIWA-4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	101.9	102.5	53767 WEKIWA-7 345 to 53866 T.NO.--7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	100.6	101.1	53781 BA101-N4 138 to 53818 ONETA--4 138 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	53802 CATOOSA4 138 to 53783 LLAN ET4 138 CKT 1	235	101.2	101.9	53819 ONETA--7 345 to 53955 N.E.S.-7 345 CKT 1	0	Incorrect rating in the non-summer cases. New Rate B = 265MVA for off peak	$ -
04WP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	101.9	102.9	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
04WP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 1	150	108.0	108.7	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	0	None - GRDA Mitigation Plan	$ -
04WP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	108.4	109.0	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	0	None - GRDA Mitigation Plan	$ -
04WP	OKGE	OKGE	54852 SLVRLAK4 138 to 54854 PANTHER4 138 CKT 1	287	107.5	107.8	54873 LONEOAK4 138 to 54879 NORTWST4 138 CKT 1	0	Replaced 1200A switch with a 2000A switch by OKGE. New Rate A = 478MVA, Rate B = 478MVA.	$ -
04WP	WERE	WERE	57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	100.9	101.4	56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT 1	0	Westar Transmission Operating Directive 402	$ -
04WP	WERE	WERE	57372 PHILIPS3 115 to 57374 SPHILPJ3 115 CKT 1	160	105.2	105.9	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
04WP	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 1	68	113.6	114.4	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	See Previous	$ -
09SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	126.2	126.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
09SP	SPS	SPS	51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	99	106.1	107.3	50993 BUSHLND6 230 to 51111 DFSMTH6 230 CKT 1	0	See Previous	$ -
09SP	SPS	SPS	51021 RANDALL6 230 to 51020 RANDALL3 115 CKT 1	258.75	103.8	104.4	50915 NICHOL6 230 to 51041 AMARLS6 230 CKT 1	0	Open Amarillo South 230/115KV Transformer to Relieve Facility	$ -
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	107.9	108.1	52680 BEAVER 5 161 to 53191 AVOCA--5 161 CKT 1	0	See Previous	$ -

Study Year	From Area	To Area	Monitored Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Cost
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	101.3	101.4	53135 EROGERS5 161 to 53191 AVOCA--5 161 CKT 1	0	See Previous	$ -
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	125.5	125.6	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	See Previous	$ -
09SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	104.7	105.9	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
09SP	AEPW	AEPW	54049 EC.HEN-4 138 to 54028 WELETK4 138 CKT 1	105	100.0	101.1	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous	$ -
09SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	99.5	100.1	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	45	None - GRDA Mitigation Plan	$ -
09SP	OKGE	OKGE	54840 JONESTP4 138 to 54941 HSL 4 138 CKT 1	287	103.1	103.4	54941 HSL 4 138 to 54973 RENO 4 138 CKT 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
09SP	OKGE	OKGE	54973 RENO 4 138 to 54941 HSL 4 138 CKT 1	287	107.4	107.7	54941 HSL 4 138 to 54966 MIDWAY 4 138 CKT 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense	$ -
09SP	OKGE	OKGE	55006 MORRISN4 138 to 55011 STILWTR4 138 CKT 1	191	104.3	104.7	54880 NORTWST7 345 to 54881 SPRNGCK7 345 CKT 1	0	Incorrect rating Rate A = 259MVA Rate B = 287MVA	$ -
09SP	OKGE	OKGE	55302 FTSMITH7 345 to 55300 FTSMITH5 161 CKT 1	493	107.3	107.4	55300 FTSMITH5 161 to 55305 FTSMITH8 500 CKT 1	0	Upgrade Same as Ft. Smith 500/161kV Transformer 04SP	$ -
09SP	OKGE	OKGE	55305 FTSMITH8 500 to 55300 FTSMITH5 161 CKT 1	480	116.4	116.6	55300 FTSMITH5 161 to 55302 FTSMITH7 345 CKT 1	0	See Previous	$ -
09SP	OKGE	OKGE	55305 FTSMITH8 500 to 55300 FTSMITH5 161 CKT 1	480	102.2	103.0	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT 1	0	See Previous	$ -
09SP	WFEC	OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	100.4	100.6	54933 DRAPER 4 138 to 54949 SOONRTP4 138 CKT 1	0	See Previous	$ -
09SP	WFEC	OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	113.6	113.9	54946 MIDWEST4 138 to 54953 HOLLYWD4 138 CKT 1	0	1200A CT's installed by WFEC New Rate B = 287MVA	$ -
09SP	WFEC	OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	111.7	112.3	55869 CROMWEL4 138 to 56084 WETUMKA4 138 CKT 1	0	See Previous	$ -
09SP	WFEC	OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	108.9	109.5	55869 CROMWEL4 138 to 56094 WEWOKA 4 138 CKT 1	0	See Previous	$ -
09SP	WFEC	OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	111.5	112.1	56026 PHAROAH4 138 to 56084 WETUMKA4 138 CKT 1	0	See Previous	$ -
09SP	WERE	WERE	57796 GILL W 2 69 to 57830 PECK 2 69 CKT 1	37	103.2	104.7	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT 1	0	Limits Rollover Rights beginning 06/01/2008	$ -
09SP	KACP	KACP	58010 WINJT S5 161 to 58000 BLUEVLY5 161 CKT 1	224	101.2	101.8	57996 MIDTOWN5 161 to 57997 LEEDS 5 161 CKT 1	0	Limits Rollover Rights beginning 06/01/2009	$ -
09SP	KACP	KACP	58048 COLLEGE5 161 to 57978 CRAIG 5 161 CKT 1	335	100.6	100.8	57966 WGARDNR5 161 to 58044 MOONLT 5 161 CKT 1	0	Limits Rollover Rights beginning 06/01/2009	$ -
09SP	KACP	KACP	58048 COLLEGE5 161 to 57978 CRAIG 5 161 CKT 1	335	106.3	106.6	58033 BRKRIDG5 161 to 58047 OVERLPK5 161 CKT 1	0	Limits Rollover Rights beginning 06/01/2008	$ -
09WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	120.7	121.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	Dolet Hills Operating Guide	$ -
09WP	AEPW	AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	102.6	103.0	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	0	See Previous	$ -
09WP	OKGE	OKGE	54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 1	493	105.0	105.1	54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT 2	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
09WP	OKGE	OKGE	54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 2	493	105.0	105.1	54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT 1	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008	$ -
09WP	WERE	WERE	57342 WJCCTY 3 115 to 57344 WJCCTYW3 115 CKT 1	141	100.2	100.6	56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT 1	0	Westar Transmission Operating Directive 402	$ -
09WP	WERE	WERE	57372 PHILIPS3 115 to 57374 SPHILPJ3 115 CKT 1	160	113.2	114.0	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
09WP	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 1	68	122.1	123.0	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	See Previous	$ -
09WP	WERE	WERE	57374 SPHILPJ3 115 to 57438 WMCPHER3 115 CKT 2	92	106.6	107.3	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Upgrade Same as North American Phillips Junction (South) - West McPherson 115kV Ckt 1	$ -
09WP	WERE	WERE	57381 SUMMIT 3 115 to 57368 EXIDE J3 115 CKT 1	196	103.2	103.6	56872 EMCPHER6 230 to 56873 SUMMIT 6 230 CKT 1	0	Relieved or Impact Removed by Selected Upgrades to be Assigned, Modeled in 03WP	$ -
										$ 28,275,000