



SPP *Southwest Power Pool*

*Preliminary
System Impact Study
SPP-2004-083-2P
For The Designation of a New
Network Resource
Requested By
Westar Energy*

From WR to AEPW

*For a Reserved Amount Of 300MW
From 1/1/2006
To 1/1/2009*

SPP Engineering, Tariff Studies

System Impact Study

Westar Energy has requested a system impact study to designate a new Network Resource in the WR (WERE) control area for 300 MW to serve Network Load in the AEPW control area. The period of the service requested is from 1/1/2006 to 1/1/2009. The OASIS reservation numbers are 678263, 678264, and 678265. The principal objective of this study is to identify system constraints on the SPP Regional Tariff System and potential system facility upgrades that may be necessary to provide the requested service.

This study was performed for the WR to AEPW request in order to provide preliminary results identifying facility upgrades that may be required for the requested service. The requested service was modeled as a transfer from the new Network Resource in the WERE control area to the Network Load in the AEPW control area. Positive impacts removed by the existing Network Resource were given as credits to the new Network Resource based upon the existing Network Resource being replaced by the new Network Resource. The preliminary study is performed with only confirmed reservations included in the models. The models do not include any reservations, even those with a higher priority, that are still in study mode. The results of the transfer analyses are documented in Tables 1, 2 and 3 of the report. Table 1 summarizes the results of the Scenario 1 system impact analysis. Table 2 summarizes the results of the Scenario 2 system impact analysis. Table 3 summarizes the results of the Scenario 3 system impact analysis. The results given in Tables 1, 2 and 3 include upgrades that may be assigned to higher priority requests. If a facility identified for the WR to AEPW study is also identified for a study with higher priority, the facility will be assigned to the request with the highest priority. If the higher priority customer does not take service, the facility would then be assigned to the WR to AEPW request. The primary purpose of this preliminary study is to provide the customer with an estimated cost of the facility upgrades that may be required in order to accommodate the requested service. The preliminary study is performed by monitoring each facility at 90% of its rating. This is done to provide an estimate of possible overloads that may be assigned to the customer if requests with higher priority are accepted.

Ten seasonal models were used to study the AEPW to AEPW request for the requested service period. The SPP 2004 Series Cases Update 2, 2005 April Minimum (05AP), 2005 Spring Peak (05G), 2005 Summer Peak (05SP), 2005 Summer Shoulder (05SH), 2005 Fall Peak (05FA), 2005/06 Winter Peak (05WP), 2007 Summer Peak (07SP), 2007/08 Winter Peak (07WP), 2010 Summer Peak (10SP) and 2010/11 Winter Peak (10WP) were used to study the impact of the request on the SPP system during the requested service period of 1/1/2006 to 1/1/2009. The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect firm transfers during the requested service period that were not already included in the January 2004 base case series models. From the ten seasonal models, three system scenarios were developed Scenario 1 includes confirmed West to East transfers not already included in the January 2004 base case series models, SPS Exporting (including the Lamar HVDC Tie flowing from SPS to Lamar), and ERCOT exporting. Scenario 2 includes confirmed East to West transfers not already included in the January 2004 base case series models, SPS Importing (including the Lamar HVDC Tie flowing from Lamar to SPS), and ERCOT importing. Scenario 3 includes confirmed West to East transfers not already included in the January 2004 base case series models, SPS Importing (including the Lamar HVDC Tie flowing from Lamar to SPS), and ERCOT importing.

PTI's MUST First Contingency Incremental Transfer Capability (FCITC) DC analysis was used to study the request. The MUST options chosen to conduct the System Impact Study analysis can be found in Appendix A. The MUST option to convert MVA branch ratings to estimated MW ratings was used to partially compensate for reactive loading.

These study results are preliminary estimates only and are not intended for use in final determination of the granting of service. These results do not include an evaluation of potential constraints in the planning horizon beyond the reservation period that may limit the right to renew service. Also, these results do not include third party constraints. Any solutions, upgrades, and costs provided in the preliminary System Impact Study are planning estimates only. The final ATC and upgrades required may vary from these results due to the status of higher priority requests, unknown facility upgrades and proposed transmission plans that will be identified during the facility study process, and the final results of the full AC analysis.

SPP will also review the possibility of curtailment of previously confirmed service and/or the redispatch of units as an option for relieving the additional impacts on the SPP facilities caused by the WR to AEPW request. It is the responsibility of the customer to reach an agreement with the applicable party concerning the curtailment of confirmed service and the redispatch of units. The curtailment and redispatch requirements would be called upon prior to implementing NERC TLR Level 5a. These options will be evaluated as part of the Facility Study. Execution of a Facility Study Agreement is now required to maintain queue position. The final upgrade solutions, cost assignments and available redispatch and curtailment options will be determined upon the completion of the facility study. At the request of the customer, estimated engineering and construction lead times have been added to the Tables for known solutions that involve reconductors or rebuilds of existing lines or transformer additions.

Table 1 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 1

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	94	57.9	92.7	10.8910	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05AP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	89	56.7	93.6	10.8910	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05AP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	92	76.6	91.2	4.4780	N/A*	N/A*	56853 LAWHILL6 230 56856 SWISVAL6 230 1	300	Rebuild 8.73 miles with 1192.5 kcmil ACSR conductor on wood H-frame. E&C lead time is 3.9 months.	\$ 2,544,828
05AP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	54.8	91.8	10.8910	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05AP	WERE-WERE	57253 MOCKBRD3 115 57270 STULL T3 115 1	92	78.3	93.0	4.4780	N/A*	N/A*	56853 LAWHILL6 230 56856 SWISVAL6 230 1	300	Rebuild 5.67 miles with 1192.5 kcmil ACSR conductor on wood H-frame. E&C lead time is 3.9 months.	\$ 1,655,172
05G	AEPW-AEPW	53571 MARSHL-4 138 *B042 1 1	107	91.0	101.2	3.6400	100.9	3.5320	3Wnd: OPEN *B0 17 2	264	Replace 755 ACAR Strain Bus & Replace 1033 AAC Jumpers	\$ 40,000
05G	AEPW-AEPW	53623 MARAUTO2 69 *B042 1 1	107	90.9	101.1	3.6400	100.8	3.5320	3Wnd: OPEN *B0 17 2	266	See Previous Upgrade Specified For Facility	
05G	AEPW-AEPW	53571 MARSHL-4 138 *B017 1 2	107	90.9	101.1	3.6360	100.8	3.5280	3Wnd: OPEN *B0 42 1	267	See Previous Upgrade Specified For Facility	
05G	AEPW-AEPW	53623 MARAUTO2 69 *B017 1 2	107	90.8	101.0	3.6360	100.7	3.5280	3Wnd: OPEN *B0 42 1	270	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1076	91.1	92.3	4.3990	91.1	0.2900	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
05SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	113.2	129.2	3.1310	128.6	3.0110	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	0	Replace Quitman bus, switches & jumpers. Change relay settings @ Quitman	\$ 150,000
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B041 1 1	107	105.2	115.4	3.6120	114.6	3.3390	3Wnd: OPEN *B1 42 2	0	See Previous Upgrade Specified For Facility	
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B142 1 2	107	105.0	115.2	3.6070	114.4	3.3350	3Wnd: OPEN *B0 41 1	0	See Previous Upgrade Specified For Facility	

Table 1 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 1

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B041 1 1	107	105.1	115.3	3.6120	114.5	3.3390	3Wnd: OPEN *B1 42 2	0	See Previous Upgrade Specified For Facility	
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B142 1 2	107	105.0	115.1	3.6070	114.3	3.3350	3Wnd: OPEN *B0 41 1	0	See Previous Upgrade Specified For Facility	
05SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	109.2	112.8	6.7590	109.3	0.1140	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	97.4	114.1	4.0060	113.6	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	47	Replace Breaker, switches & jumpers @ Winnsboro. Replace switch # 9114 @ Magnolia Tap	\$ 125,000
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	97.0	113.7	4.0060	113.2	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	54	Replace switch # 9116 @ Magnolia Tap	\$ 40,000
05SP	AEPW-AEPW	53245 ALUMXT 4 138 53300 NWTXARK4 138 1	260	92.8	101.0	7.0990	99.5	5.8380	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	264	Rebuild 1.68 miles of 1024 ACAR with 2156 ACSR. Replace wavetrap jumpers with 2156 ACSR. E&C lead time is 12 months.	\$ 840,000
05SP	AEPW-AEPW	53245 ALUMXT 4 138 53250 BANN 4 138 1	260	87.2	95.4	7.0990	94.0	5.8380	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap. Rebuild 0.67 miles of 1024 ACAR with 2156 ACSR. Replace wavetrap jumpers @ Bann. Replace breaker 3300 @ Bann. E&C lead time is 12 months.	\$ 630,000
05SP	AEPW-AEPW	53527 DIANA 4 138 53590 PERDUE 4 138 1	268	79.0	91.7	11.3450	90.8	10.6210	53561 LIBCYTP4 138 53576 NEWGLAD4 138 1	300	Replace Breaker 10070 @ Perdue	\$ 150,000
05SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	85.1	95.4	3.6520	94.8	3.4400	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	Rebuild 2.66 miles of 755 ACAR with 1590 ACSR. E&C lead time is 15 months.	\$ 1,100,000
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	70.1	91.0	3.1890	90.5	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	Requires addition of 3rd Rock Hill 138/69kV 46MVA Unit to eliminate overload of unit #1 and #2. E&C lead time is 24 months.	\$ 1,400,000
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B068 1 1	46	70.6	91.6	3.2110	91.0	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	70.1	91.0	3.1890	90.5	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B068 1 1	46	70.6	91.6	3.2110	91.0	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
05SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	89.1	93.4	15.3380	89.3	0.5290	56851 AUBURN 6 230 56852 JEC 6 230 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
05SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	91.2	96.6	4.1740	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	93.0	98.8	3.0640	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05SH	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	104.1	106.8	5.0600	104.2	0.1470	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05SH	OKGE-OKGE	55009 MCELROY4 138 55011 STILWTR4 138 1	221	86.8	91.2	3.2310	N/A*	N/A*	54880 NORTWST7 345 54881 SPRNGCK7 345 1	300	Solution Undetermined	TBD
05FA		NONE IDENTIFIED								300		
05WP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1076	90.3	91.1	3.1270	90.4	0.4030	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
07SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB 4 138 1	196	106.6	124.4	11.6230	124.0	11.3480	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	Reset CT @ Pittsburg.	\$ 10,000
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B069 1 1	107	108.8	118.8	3.5890	118.1	3.3370	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B099 1 2	107	108.7	118.7	3.5840	118.0	3.3340	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B069 1 1	107	108.8	118.8	3.5890	118.1	3.3370	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B099 1 2	107	108.6	118.6	3.5840	117.9	3.3340	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility	

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	110.4	116.2	11.0540	110.5	0.2080	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	100.6	116.5	8.4440	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	0	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	99.6	115.3	4.7970	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	7	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	96.5	109.3	9.9250	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	81	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07SP	WERE-WERE	57153 COLINE 3 115 57182 TECHILE3 115 1	106	95.1	105.7	3.7190	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	139	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	56920 TECHILL5 161 *B057 1 1	69	88.4	105.5	3.9160	88.6	0.0440	56765 HOYT 7 345 56772 STRANGR7 345 1	203	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07SP	WERE-WERE	57182 TECHILE3 115 *B057 1 1	69	88.3	105.3	3.9160	88.4	0.0440	56765 HOYT 7 345 56772 STRANGR7 345 1	206	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07SP	AEPW-AEPW	53276 LSSOUTH4 138 53619 WILKES 4 138 1	314	85.9	95.3	9.8330	94.6	9.1550	53521 CHAPELH4 138 53622 WELSHRE4 138 1	300	Reset CTs	\$ 2,000
07SP	AEPW-AEPW	53423 LONGWD 4 138 53457 OAKPH 4 138 1	209	90.6	95.7	3.4950	94.6	2.7360	Multiple Outage Contingency 53454 SW SHV 7 345 53424 LONGWD 7 345 1 53454 SW SHV 7 345 53528 DIANA 7 345 1	300	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR. E&C lead time is 12 months.	\$ 800,000

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07SP	AEPW-AEPW	53527 DIANA 4 138 53590 PERDUE 4 138 1	268	77.6	90.0	11.0370	89.7	10.7800	53542 HARRISN4 138 53561 LIBCYTP4 138 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	73.9	94.8	4.1080	94.5	4.0500	3Wnd: OPEN *B0 73 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	83.5	93.2	3.4640	93.1	3.4260	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	74.5	95.3	3.1800	95.1	3.1380	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 1	46	74.9	95.9	3.2030	95.6	3.1600	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	74.7	95.6	3.1800	95.3	3.1380	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 1	46	75.3	96.4	3.2030	96.1	3.1600	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
07SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	90.3	97.1	24.2500	90.5	0.5680	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	80.7	90.7	7.7540	N/A*	N/A*	3Wnd: OPEN *B2 11 C OLINE5X 1	300	Solution Undetermined	TBD
07WP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	78.6	91.9	4.7340	83.6	1.7770	55823 BBDAMTP4 138 56004 MTRIVER4 138 1	300	May be relieved by alternative switching scheme, otherwise rebuild 7.66 miles of 3/0 CW CU with 795 ACSR. E&C lead time is 15 months.	\$ 2,700,000
07WP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	42.4	97.9	16.9730	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07WP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	236	55.6	90.1	27.0730	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07WP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	160	42.7	98.8	29.8760	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07WP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	92	77.6	97.8	6.1810	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07WP	WERE-WERE	57253 MOCKBRD3 115 57270 STULL T3 115 1	92	73.2	93.3	6.1810	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	196	116.4	134.3	11.6610	133.9	11.4020	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53557 KNOXLEE4 138 53586 OAK2HIL4 138 1	206	106.9	113.8	4.7600	113.6	4.6510	53557 KNOXLEE4 138 53574 MONROER4 138 1	0	Reset relays & replace wavetrap @ Knoxlee	\$ 50,000
10SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	109.7	114.8	9.6100	109.9	0.2750	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	90.8	115.1	12.9130	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	114	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10SP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	90.0	114.0	7.3360	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	125	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	232	89.1	107.0	13.8260	89.1	0.0170	56765 HOYT 7 345 56772 STRANGR7 345 1	183	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B039 1 1	46	82.1	103.1	3.1980	102.6	3.1160	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	256	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B039 1 1	46	81.9	102.9	3.1980	102.3	3.1160	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	259	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B130 1 2	46	81.5	102.3	3.1760	101.8	3.0940	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	267	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B130 1 2	46	81.5	102.3	3.1760	101.8	3.0940	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	267	See Previous Upgrade Specified For Facility	
10SP	WERE-WERE	57153 COLINE 3 115 57182 TECHILE3 115 1	106	85.6	101.7	5.6990	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	268	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53619 WILKES 4 138 1	313	87.1	96.6	9.8640	95.1	8.4020	53521 CHAPELH4 138 53622 WELSHRE4 138 1	300	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	71.3	92.1	4.9740	91.9	4.9170	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	71.0	91.8	4.9740	91.6	4.9170	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B003 1 1	657	88.8	94.3	12.1880	93.6	10.6280	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B009 1 2	657	87.1	92.6	11.9680	91.9	10.4360	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53453 SW SHV 4 138 53455 SW SHVT4 138 1	302	84.2	92.9	8.7010	91.8	7.5860	53464 Western Electric Tap 53453 SW Shreveport 138 1 53464 Western Electric Tap 53450 Stonewall 138 1 53464 Western Electric Tap 53463 Western Electric 138 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B003 1 1	654	89.3	94.8	12.1880	94.1	10.6280	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B009 1 2	654	87.6	93.0	11.9680	92.3	10.4360	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53527 DIANA 4 138 53590 PERDUE 4 138 1	268	79.3	91.7	11.1000	91.6	11.0650	53576 NEWGLAD4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility	
10SP	AEPW-AEPW	53584 NWHENDR4 138 53585 OAK1HIL4 138 1	237	89.7	94.1	3.4370	93.9	3.3280	53557 KNOXLEE4 138 53574 MONROER4 138 1	300	Replace wavetrap @ NW Henderson.	\$ 30,000
10SP	AEPW-AEPW	53619 WILKES 4 138 53622 WELSHRE4 138 1	260	82.0	94.3	10.6100	93.9	10.2530	53276 LSSOUTH4 138 53311 PITTSB 4 138 1	300	Solution Undetermined	TBD
10SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	89.1	95.3	22.2510	89.3	0.6400	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD

Table 1 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 1

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10SP	WERE-WERE	57244 JARBALO3 115 57249 LEC U4 3 115 1	118	84.2	100.3	6.3330	N/A*	N/A*	57249 LEC U4 3 115 57250 LWRNCHL3 115 1	294	Solution Undetermined	TBD
10SP	WERE-WERE	56920 TECHILL5 161 *B119 1 1	69	74.1	92.0	4.1020	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	232	79.1	94.3	11.6840	N/A*	N/A*	3Wnd: OPEN *B4 67 T EC 24X 1	300	Solution Undetermined	TBD
10SP	WERE-WERE	57182 TECHILE3 115 *B119 1 1	69	74.2	92.0	4.1020	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B042 1 1	46	71.4	93.2	3.3160	92.8	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 2	46	70.9	92.6	3.2930	92.2	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B042 1 1	46	71.4	93.2	3.3160	92.8	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 2	46	70.9	92.6	3.2930	92.2	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility	
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	\$*
											Total Cost with Facilities Monitored @ 90% Loading	\$ 12,267,000
											Total Cost with Facilities Monitored @ 100% Loading	\$ 2,655,000

*Existing Network Resource has a minimal positive impact or a negative impact on facility. No credit for positive impact removed can be given to the New Network Resource for this facility.

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP		NONE IDENTIFIED								300		
05G	AEPW-AEPW	53571 MARSHL-4 138 *B017 1 2	107	83.0	93.2	3.6330	92.9	3.5280	3Wnd: OPEN *B0 42 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53571 MARSHL-4 138 *B042 1 1	107	83.1	93.3	3.6370	93.0	3.5320	3Wnd: OPEN *B0 17 2	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53623 MARAUTO2 69 *B017 1 2	107	82.9	93.1	3.6330	92.8	3.5280	3Wnd: OPEN *B0 42 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53623 MARAUTO2 69 *B042 1 1	107	83.0	93.2	3.6370	92.9	3.5320	3Wnd: OPEN *B0 17 2	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	64.0	97.3	10.1950	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05G	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	160	64.6	98.3	17.9460	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	106.4	122.4	3.1340	116.6	3.0110	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	103.9	106.5	4.9450	103.9	0.1140	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B041 1 1	107	96.9	107.1	3.6170	103.2	3.3390	3Wnd: OPEN *B1 42 2	137	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B041 1 1	107	96.8	107.0	3.6170	103.1	3.3390	3Wnd: OPEN *B1 42 2	141	See Previous Upgrade Specified For Facility in Scenario 1	

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B142 1 2	107	96.8	107.0	3.6130	103.1	3.3350	3Wnd: OPEN *B0 41 1	141	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B142 1 2	107	96.7	106.9	3.6130	103.0	3.3350	3Wnd: OPEN *B0 41 1	145	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	91.8	108.6	4.0080	102.6	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	220	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	91.4	108.1	4.0080	102.2	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	231	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	WERE-WERE	57795 GILL E 2 69 57825 OATVILL2 69 1	72	71.6	107.4	8.5670	N/A*	N/A*	57795 GILL E 2 69 57813 MACARTH2 69 1	300	Replace disconnect switches at Gill 69 kV (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.).	\$ 45,000
05SP	AEPW-AEPW	53245 ALUMXT 4 138 53300 NWTXARK4 138 1	260	82.3	90.6	7.1420	N/A*	N/A*	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	82.3	92.6	3.6530	92.0	3.4400	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	72.7	93.6	3.1880	93.1	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B068 1 1	46	73.2	94.2	3.2100	93.7	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	72.7	93.6	3.1880	93.1	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B068 1 1	46	73.2	94.2	3.2100	93.7	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	WERE-WERE	57795 GILL E 2 69 57813 MACARTH2 69 1	68	66.8	99.4	7.3610	N/A*	N/A*	57795 GILL E 2 69 57825 OATVILL2 69 1	300	Replace substation bus and jumpers at MacArthur 69 kV.	\$ 98,000

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SH	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	99.3	101.6	4.3780	99.4	0.1470	56765 HOYT 7 345 56766 JEC N 7 345 1	136	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05FA	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	58.3	97.1	11.8870	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05FA	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	160	58.7	98.0	20.9230	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	95.4	110.5	4.7900	95.7	0.0930	56765 HOYT 7 345 56772 STRANGR7 345 1	136	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	90.1	106.0	4.7900	90.4	0.0930	56765 HOYT 7 345 56772 STRANGR7 345 1	280	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05WP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	160	12.1	124.2	59.7160	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	235	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05WP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	11.6	122.4	33.9250	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	239	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	90	87.0	103.0	4.7900	87.3	0.0930	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05WP	WERE-WERE	56774 SWISVAL7 345 *B488 SWISV10X 1 1	430	66.6	90.2	33.7380	N/A*	N/A*	56769 LANG 7 345 56770 MORRIS 7 345 1	300	Solution Undetermined	TBD
05WP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	236	23.5	90.8	52.8590	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05WP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	97	80.2	91.4	3.6050	80.3	0.0280	57252 MIDLAND3 115 57261 PENTAGN3 115 1	300	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
07SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	196	104.8	122.6	11.6240	116.5	11.4970	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B069 1 1	107	101.3	111.4	3.5940	107.5	3.3230	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B099 1 2	107	101.1	111.2	3.5900	107.3	3.3200	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B069 1 1	107	101.2	111.3	3.5940	107.4	3.3230	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B099 1 2	107	101.1	111.2	3.5900	107.3	3.3200	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	104.0	107.7	6.9420	104.1	0.1130	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	91.7	100.3	4.5590	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07SP	AEPW-AEPW	53245 ALUMXT 4 138 53300 NWTXARK4 138 1	260	84.7	92.9	7.1140	89.2	5.8420	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53453 SW SHV 4 138 53455 SW SHVT4 138 1	302	81.8	90.5	8.7520	87.6	5.8420	53464 Western Electric Tap 53453 SW Shreveport 138 1 53464 Western Electric Tap 53450 Stonewall 138 1 53464 Western Electric Tap 53463 Western Electric 138 1	300	Solution Undetermined	TBD
07SP	AEPW-AEPW	53454 SW SHV 7 345 *B050 1 1	654	84.5	90.1	12.2520	87.7	6.9830	3Wnd: OPEN *B0 45 2	300	Solution Undetermined	TBD
07SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	73.7	94.6	4.1090	94.4	4.0550	3Wnd: OPEN *B0 73 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	81.2	90.9	3.4650	90.5	3.3030	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	77.3	98.2	3.1790	90.9	3.0950	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 1	46	77.8	98.7	3.2010	91.4	3.1160	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	77.3	98.2	3.1790	90.9	3.0950	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 1	46	77.8	98.7	3.2010	91.4	3.1160	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	89.1	96.5	5.6890	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	96	92.4	104.9	3.9710	92.7	0.1010	56765 HOYT 7 345 56772 STRANGR7 345 1	274	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	85.5	98.6	3.9710	85.8	0.1010	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	90	82.0	95.2	3.9710	82.3	0.1010	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07WP	WERE-WERE	57233 166TH 3 115 57244 JARBAL03 115 1	97	78.5	92.7	4.5930	N/A*	N/A*	57252 MIDLAND3 115 57261 PENTAGN3 115 1	300	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	196	114.5	132.4	11.6620	126.2	11.3840	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53374 FULTON 3 115 53383 HOPE 3 115 1	174	106.8	114.6	4.5390	110.2	1.9820	99294 7ELDEHV 345 99295 8ELDEHV 500 1	0	Solution Undetermined	TBD
10SP	AEPW-AEPW	53557 KNOXLEE4 138 53586 OAK2HIL4 138 1	206	101.3	108.2	4.7640	105.8	4.6360	53557 KNOXLEE4 138 53574 MONROER4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	101.1	107.0	11.1600	101.2	0.2660	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53619 WILKES 4 138 1	314	93.8	103.2	9.8610	99.1	8.3150	53619 WILKES 4 138 53622 WELSHRE4 138 1	296	Reset CTs	\$ 2,000
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B039 1 1	46	84.5	105.5	3.1970	98.1	3.1120	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B039 1 1	46	84.3	105.2	3.1970	97.9	3.1120	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B130 1 2	46	84.1	104.9	3.1750	97.6	3.0900	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B130 1 2	46	83.7	104.4	3.1750	97.1	3.0900	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	58	80.1	101.2	4.1110	93.9	4.0480	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	71.0	91.8	4.9750	91.6	4.9120	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	70.7	91.6	4.9750	91.3	4.9120	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B003 1 1	657	91.1	96.6	12.1780	94.3	10.5450	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B009 1 2	657	89.4	94.8	11.9590	92.5	10.3550	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53453 SW SHV 4 138 53455 SW SHVT4 138 1	302	88.1	96.7	8.6940	93.1	7.5270	53464 Western Electric Tap 53453 SW Shreveport 138 1 53464 Western Electric Tap 53450 Stonewall 138 1 53464 Western Electric Tap 53463 Western Electric 138 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B003 1 1	653	91.6	97.2	12.1780	94.8	10.5450	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B009 1 2	654	89.8	95.3	11.9590	93.0	10.3550	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53527 DIANA 4 138 53590 PERDUE 4 138 1	268	78.1	90.5	11.1040	90.4	11.0540	53561 LIBCYTP4 138 53576 NEWGLAD4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53619 WILKES 4 138 53622 WELSHRE4 138 1	260	81.9	94.1	10.6100	89.8	10.2310	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	300	Solution Undetermined	TBD
10WP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	61.3	100.7	20.9170	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	295	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B042 1 1	46	73.6	95.4	3.3180	95.0	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 2	46	73.0	94.6	3.2950	94.2	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B042 1 1	46	73.6	95.4	3.3180	95.0	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 2	46	73.2	94.8	3.2950	94.4	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	WERE-WERE	57153 COLINE 3 115 57182 TECHILE3 115 1	106	70.4	92.4	7.7590	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD

Table 2 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10WP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	61.0	99.9	11.8830	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10WP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	236	67.3	90.5	18.2840	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	\$*
											Total Cost with Facilities Monitored @ 90% Loading	\$ 143,000
											Total Cost with Facilities Monitored @ 100% Loading	\$ 47,000

*Existing Network Resource has a minimal positive impact or a negative impact on facility. No credit for positive impact removed can be given to the New Network Resource for this facility.

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP	WERE-WERE	57429 MOUNDRG3 115 *B363 MOUND10X 1 1	109	35.9	102.3	24.1340	N/A*	N/A*	56769 LANG 7 345 56796 WICHITA7 345 1	290	May be relieved due to Westar Operating Procedure 801 - Outage of the Wichita to Lang 345kV Line	TBD
05AP	WERE-WERE	57013 MOUND 4 138 *B363 MOUND10X 1 1	109	35.8	102.2	24.1340	N/A*	N/A*	56769 LANG 7 345 56796 WICHITA7 345 1	290	May be relieved due to Westar Operating Procedure 801 - Outage of the Wichita to Lang 345kV Line	TBD
05AP	WFEC-AEPW	55948 HUGO PP4 138 54044 VALIANT4 138 1	288	80.4	91.1	10.2450	90.9	10.1040	54033 PITTSB-7 345 54037 VALIANT7 345 1	300	Upgrade to be completed by 6/1/2005 for SPP OATT Attachment AA, Replace switches, jumpers, & wavetrap, & reset CTs @ Valliant	
05AP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	92	82.4	97.0	4.4780	N/A*	N/A*	56853 LAWHILL6 230 56856 SWISVAL6 230 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05AP	WERE-WERE	57253 MOCKBRD3 115 57270 STULL T3 115 1	92	84.1	98.8	4.4780	N/A*	N/A*	56853 LAWHILL6 230 56856 SWISVAL6 230 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	80.9	94.4	4.8140	90.1	3.2770	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53571 MARSHL-4 138 *B017 1 2	107	84.5	94.7	3.6360	94.4	3.5280	3Wnd: OPEN *B0 42 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53571 MARSHL-4 138 *B042 1 1	107	84.6	94.8	3.6400	94.5	3.5320	3Wnd: OPEN *B0 17 2	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53623 MARAUTO2 69 *B017 1 2	107	84.4	94.6	3.6360	94.3	3.5280	3Wnd: OPEN *B0 42 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	AEPW-AEPW	53623 MARAUTO2 69 *B042 1 1	107	84.6	94.8	3.6400	94.5	3.5320	3Wnd: OPEN *B0 17 2	300	See Previous Upgrade Specified For Facility in Scenario 1	
05G	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1076	89.2	90.4	4.3990	89.3	0.2900	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	108.4	124.4	3.1310	123.8	3.0110	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	107.9	111.5	6.7590	108.0	0.1140	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B041 1 1	107	98.8	108.9	3.6120	108.1	3.3390	3Wnd: OPEN *B1 42 2	36	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B041 1 1	107	98.7	108.8	3.6120	108.1	3.3390	3Wnd: OPEN *B1 42 2	39	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53571 MARSHL-4 138 *B142 1 2	107	98.6	108.7	3.6070	107.9	3.3350	3Wnd: OPEN *B0 41 1	42	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53623 MARAUTO2 69 *B142 1 2	107	98.6	108.7	3.6070	107.9	3.3350	3Wnd: OPEN *B0 41 1	42	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	93.5	110.2	4.0060	109.7	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	117	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	93.1	109.8	4.0060	109.3	3.8860	53590 PERDUE 4 138 53666 LHAWKIN4 138 1	124	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	82.0	95.1	4.6810	92.1	3.6310	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53245 ALUMXT 4 138 53300 NWTXARK4 138 1	260	86.6	94.8	7.0990	93.3	5.8380	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	82.9	93.1	3.6520	92.5	3.4400	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	72.3	93.2	3.1890	92.6	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53597 ROKHILL2 69 *B068 1 1	46	72.7	93.8	3.2110	93.2	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	72.3	93.2	3.1890	92.6	3.1030	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	AEPW-AEPW	53598 ROKHILL4 138 *B068 1 1	46	72.7	93.8	3.2110	93.2	3.1250	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	86.7	91.0	15.3380	86.8	0.5290	56851 AUBURN 6 230 56852 JEC 6 230 1	300	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	91.2	96.5	4.1740	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	92.9	98.7	3.0640	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
05SP	WERE-WERE	57244 JARBALO3 115 57249 LEC U4 3 115 1	118	84.2	92.6	3.3330	N/A*	N/A*	57249 LEC U4 3 115 57250 LWRNCHL3 115 1	300	Solution Undetermined	TBD
05SH	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	103.0	105.7	5.0600	103.1	0.1470	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
05FA	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	89.2	102.7	4.8300	99.8	3.7810	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	240	May be relieved by alternative switching scheme, otherwise rebuild 7.66 miles of 3/0 CW CU with 795 ACSR. E&C lead time is 15 months.	\$ 2,700,000
05WP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	89.6	103.2	4.8370	N/A*	N/A*	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	229	See Previous Upgrade Specified For Facility	
07SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB 4 138 1	196	104.6	122.3	11.6230	122.0	11.4000	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B069 1 1	107	102.7	112.8	3.5890	112.1	3.3440	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility in Scenario 1	

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07SP	AEPW-AEPW	53571 MARSHL-4 138 *B099 1 2	107	102.5	112.6	3.5840	111.9	3.3410	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B069 1 1	107	102.6	112.7	3.5890	112.0	3.3440	3Wnd: OPEN *B0 99 2	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53623 MARAUTO2 69 *B099 1 2	107	102.5	112.6	3.5840	111.9	3.3410	3Wnd: OPEN *B0 69 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	109.1	115.0	11.0540	109.2	0.1730	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	100.4	116.3	8.4440	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	0	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	99.6	115.3	4.7970	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	7	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	57153 COLINE 3 115 57182 TECHILE3 115 1	106	98.3	108.9	3.7190	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	48	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	96.5	109.3	9.9250	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	82	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07SP	WERE-WERE	56920 TECHILL5 161 *B057 1 1	69	86.6	103.8	3.9160	86.8	0.0460	56765 HOYT 7 345 56772 STRANGR7 345 1	234	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07SP	WERE-WERE	57182 TECHILE3 115 *B057 1 1	69	86.7	103.8	3.9160	86.9	0.0460	56765 HOYT 7 345 56772 STRANGR7 345 1	234	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07SP	WERE-WERE	57244 JARBALO3 115 57249 LEC U4 3 115 1	118	84.2	100.3	6.3330	N/A*	N/A*	57249 LEC U4 3 115 57250 LWRNCHL3 115 1	295	Solution Undetermined	TBD
07SP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	82.3	95.2	4.5850	94.8	4.4380	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53245 ALUMXT 4 138 53250 BANN 4 138 1	260	83.3	91.5	7.0690	91.2	6.8310	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53245 ALUMXT 4 138 53300 NWTXARK4 138 1	260	88.9	97.0	7.0690	96.8	6.8310	53299 NW Texarkana Bann Tap 53300 N New Boston 138 1 53299 NW Texarkana Bann Tap 53298 NW Texarkana 138 1 53299 NW Texarkana Bann Tap 53250 Bann 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53276 LSSOUTH4 138 53619 WILKES 4 138 1	314	89.4	98.7	9.8330	98.4	9.5070	53521 CHAPELH4 138 53622 WELSHRE4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	59	73.7	94.6	4.1080	94.4	4.0570	3Wnd: OPEN *B0 73 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53540 GREGGTN2 69 53562 LLAMOND2 69 1	107	81.5	91.2	3.4640	91.1	3.4120	53527 DIANA 4 138 53590 PERDUE 4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B003 1 2	46	76.5	97.3	3.1800	97.0	3.1380	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 1	46	77.1	98.1	3.2030	97.8	3.1600	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B003 1 2	46	76.7	97.5	3.1800	97.2	3.1380	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 1	46	77.3	98.3	3.2030	98.1	3.1600	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
07SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	88.7	95.5	24.2500	88.8	0.5060	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
07SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	233	81.8	91.8	7.7540	N/A*	N/A*	3Wnd: OPEN *B2 11 C OLINE5X 1	300	Solution Undetermined	TBD
07WP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	98.0	111.3	4.7340	N/A*	N/A*	55823 BBDAMTP4 138 56004 MTRIVER4 138 1	44	See Previous Upgrade Specified For Facility	
07WP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	92	42.3	97.7	16.9730	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07WP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	236	55.9	90.3	27.0730	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
07WP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	160	42.6	98.7	29.8760	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	300	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
07WP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	92	72.3	92.4	6.1810	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	196	114.4	132.2	11.6610	131.8	11.3840	53619 WILKES 4 138 53622 WELSHRE4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53557 KNOXLEE4 138 53586 OAK2HIL4 138 1	206	102.9	109.8	4.7600	109.7	4.6360	53557 KNOXLEE4 138 53574 MONROER4 138 1	0	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	108.6	113.7	9.6100	108.7	0.2660	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57192 HOOKJCT3 115 1	159	90.6	115.0	12.9130	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	115	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10SP	WERE-WERE	57153 COLINE 3 115 57192 HOOKJCT3 115 1	91	90.0	114.1	7.3360	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	125	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	232	89.1	107.0	13.8260	89.1	0.0170	56765 HOYT 7 345 56772 STRANGR7 345 1	183	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10SP	WERE-WERE	57153 COLINE 3 115 57182 TECHILE3 115 1	106	88.9	105.0	5.6990	N/A*	N/A*	57180 TEC E 3 115 57182 TECHILE3 115 1	206	May be relieved due to Westar Operating Procedure 1203 - Outage of the Tecumseh Energy Center (TEC) to Tecumseh Hill 115 kV Line	TBD
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B039 1 1	46	84.1	105.1	3.1980	104.5	3.1120	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	228	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B039 1 1	46	83.9	104.8	3.1980	104.2	3.1120	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	231	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53598 ROKHILL4 138 *B130 1 2	46	83.7	104.5	3.1760	103.9	3.0900	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	235	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53597 ROKHILL2 69 *B130 1 2	46	83.2	104.0	3.1760	103.4	3.0900	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	242	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53619 WILKES 4 138 1	314	92.1	101.5	9.8640	100.0	8.3150	53619 WILKES 4 138 53622 WELSHRE4 138 1	252	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53374 FULTON 3 115 53383 HOPE 3 115 1	174	92.9	100.8	4.6050	96.3	1.9820	99294 7ELDEHV 345 99295 8ELDEHV 500 1	0	Solution Undetermined	TBD
10SP	AEPW-AEPW	53532 FORSTHL2 69 53596 QUITMAN2 69 1	58	80.2	101.3	4.1100	101.0	4.0480	3Wnd: OPEN *B0 19 1	281	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	WERE-WERE	57244 JARBALO3 115 57249 LEC U4 3 115 1	118	84.2	100.3	6.3330	N/A*	N/A*	57249 LEC U4 3 115 57250 LWRNCHL3 115 1	294	Solution Undetermined	TBD
10SP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	80.0	92.9	4.5840	88.8	3.1260	55823 BBDAMTP4 138 56004 MTRIVER4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10SP	AEPW-AEPW	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	178	78.5	91.3	7.5800	91.1	7.4980	Base Case	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53336 WINNSBO2 69 1	72	71.2	92.0	4.9740	91.7	4.9120	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53278 MAGNOLA2 69 53532 FORSTHL2 69 1	72	70.9	91.7	4.9740	91.4	4.9120	3Wnd: OPEN *B0 19 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B003 1 1	657	90.5	96.0	12.1880	95.3	10.5450	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53453 SW SHV 4 138 *B009 1 2	657	88.8	94.3	11.9680	93.5	10.3550	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53453 SW SHV 4 138 53455 SW SHVT4 138 1	302	87.3	95.9	8.7010	94.8	7.5270	53464 Western Electric Tap 53453 SW Shreveport 138 1 53464 Western Electric Tap 53450 Stonewall 138 1 53464 Western Electric Tap 53463 Western Electric 138 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B003 1 1	653	91.0	96.6	12.1880	95.9	10.5450	3Wnd: OPEN *B0 9 2	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53454 SW SHV 7 345 *B009 1 2	654	89.3	94.8	11.9680	94.0	10.3550	3Wnd: OPEN *B0 3 1	300	Solution Undetermined	TBD
10SP	AEPW-AEPW	53584 NWHENDR4 138 53585 OAK1HIL4 138 1	237	86.4	90.7	3.4370	90.6	3.3130	53557 KNOXLEE4 138 53574 MONROER4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10SP	AEPW-AEPW	53619 WILKES 4 138 53622 WELSHRE4 138 1	260	81.5	93.7	10.6100	93.3	10.2310	53276 LSSOUTH4 138 53311 PITTSB_4 138 1	300	Solution Undetermined	TBD
10SP	WERE-WERE	56765 HOYT 7 345 56766 JEC N 7 345 1	1075	87.6	93.9	22.2510	87.8	0.6190	56766 JEC N 7 345 56770 MORRIS 7 345 1	300	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
10SP	WERE-WERE	56920 TECHILL5 161 *B119 1 1	69	72.4	90.3	4.1020	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10SP	WERE-WERE	57180 TEC E 3 115 57182 TECHILE3 115 1	232	80.3	95.5	11.6840	N/A*	N/A*	3Wnd: OPEN *B4 67 T EC 24X 1	300	Solution Undetermined	TBD
10SP	WERE-WERE	57182 TECHILE3 115 *B119 1 1	69	72.4	90.3	4.1020	N/A*	N/A*	56765 HOYT 7 345 56772 STRANGR7 345 1	300	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
10WP	SWPA-AEPW	52814 BRKN BW4 138 54015 CRAIGJT4 138 1	107	80.7	94.3	4.8410	85.7	1.7750	56004 MTRIVER4 138 54015 CRAIGJT4 138 1	300	See Previous Upgrade Specified For Facility in Scenario 1	

Table 3 – SPP facility overloads identified for the WR to AEPW transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Existing TC % Loading	Existing %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B042 1 1	46	73.2	94.9	3.3160	94.6	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53597 ROKHILL2 69 *B140 1 2	46	72.7	94.3	3.2930	94.0	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B042 1 1	46	73.4	95.1	3.3160	94.8	3.2650	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
10WP	AEPW-AEPW	53598 ROKHILL4 138 *B140 1 2	46	72.9	94.6	3.2930	94.2	3.2420	53516 BLOCKRT2 69 53570 MARSHAL2 69 1	300	See Previous Upgrade Specified For Facility in Scenario 1	
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	\$*
											Total Cost with Facilities Monitored @ 90% Loading	\$ -
											Total Cost with Facilities Monitored @ 100% Loading	\$ 2,700,000

*Existing Network Resource has a minimal positive impact or a negative impact on facility. No credit for positive impact removed can be given to the New Network Resource for this facility.

Appendix A

MUST CHOICES IN RUNNING FCITC DC ANALYSIS

CONSTRAINTS/CONTINGENCY INPUT OPTIONS

1. AC Mismatch Tolerance – 2 MW
2. Base Case Rating – Rate A
3. Base Case % of Rating – 90%
4. Contingency Case Rating – Rate B
5. Contingency Case % of Rating – 90%
6. Base Case Load Flow – Do not solve AC
7. Convert branch ratings to estimated MW ratings – Yes
8. Contingency ID Reporting – Labels
9. Maximum number of contingencies to process - 50000

MUST CALCULATION OPTIONS

1. Phase Shifters Model for DC Linear Analysis – Constant flow for Base Case and Contingencies
2. Report Base Case Violations with FCITC – Yes
3. Maximum number of violations to report in FCITC table - 50000
4. Distribution Factor (OTDF and PTDF) Cutoff – 0.03
5. Maximum times to report the same elements - 10
6. Apply Distribution Factor to Contingency Analysis – Yes
7. Apply Distribution Factor to FCITC Reports – Yes
8. Minimum Contingency Case flow change – 1 MW
9. Minimum Contingency Case Distribution Factor change – 0.0
10. Minimum Distribution Factor for Transfer Sensitivity Analysis – 0.0