



SPP *Southwest Power Pool*

*Preliminary
System Impact Study
SPP-2004-062-1P
For The Designation of a New
Network Resource
Requested By
Midwest Energy*

From WR to WR

*For a Reserved Amount Of 25MW
From 7/1/2004
To 7/1/2005*

SPP Engineering, Tariff Studies

System Impact Study

Midwest Energy has requested a system impact study to designate a New Network Resource in the WR Control Area for 25 MW to serve Network Load in the WR Control Area. The period of the service requested is from 7/1/2004 to 7/1/2005. The OASIS reservation number is 667692. 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 WR request in order to provide preliminary results identifying facility upgrades that may be required for the requested service. 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 and 2 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. The results given in Tables 1 and 2 include upgrades that may be assigned to higher priority requests. If a facility identified for the WR to WR 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 WR 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.

Eight seasonal models were used to study the WR to WR request for the requested service period. The SPP 2004 Series Cases Update 2, 2004 Summer Peak (04SP), 2004 Summer Shoulder (04SH), 2004 Fall Peak (04FA), 2004/05 Winter Peak (04WP), 2005 April Minimum (05AP), 2005 Spring Peak (05G), 2005 Summer Peak (05SP), and 2005 Summer Shoulder (05SH) were used to study the impact of the request on the SPP system during the requested service period of 7/1/2004 to 7/1/2005. 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 eight seasonal models, two system scenarios were developed. Scenario 1 includes confirmed East to West transfers not already included in the January 2004 base case series models, SPS Importing, and the Lamar HVDC Tie flowing from Lamar to SPS, and ERCOT importing. Scenario 2 includes confirmed West to East transfers not already included in the January 2004 base case series models, SPS Importing, and 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. 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 WR 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.

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

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04SP	WERE-WERE	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	299	305	39.8110	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04SP	WERE-WERE	56853 LAWHILL6 230 *B325 LAWHL29X 1 1	296	306	39.8110	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04SP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	96	95	3.6230	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04SP	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	438	404	4.0190	56765 HOYT 7 345 56766 JEC N 7 345 1	25	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345 kV line	TBD
04SP	WERE-WERE	57252 MIDLAND3 115 *B354 MIDJ126X 1 1	304	281	36.6800	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	25	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
04SP	WERE-WERE	56855 MIDLAND6 230 *B354 MIDJ126X 1 1	305	281	36.6800	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	25	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
04SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	98	4.3410	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	0	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
04SH	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	72	3.5770	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04SH	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	156	7.6970	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04SH	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	85	3.2990	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
04SH	WERE-WERE	57301 EAST ST3 115 57309 WEMPORI3 115 1	91	86	3.1560	57305 MORRIS 3 115 57309 WEMPORI3 115 1	25	May be relieved due to Westar Operating Procedure 1209 - Outage of the Morris to West Emporia 115kV Line	TBD
04SH	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	175	5.9790	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	Rebuild and reconductor 0.34 miles with 1192 ACSR.	\$ 95,200
04SH	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	187	5.9790	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	Rebuild and reconductor 4.94 miles with 1192 ACSR.	\$ 1,100,000
04SH	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 2	91	84	4.1190	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04SH	WERE-WERE	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	299	267	39.6350	56855 MIDLAND6 230 *B354 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
04SH	WERE-WERE	56853 LAWHILL6 230 *B325 LAWHL29X 1 1	297	267	39.6350	57252 MIDLAND3 115 *B354 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
04SH	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	67	61	5.7800	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	Tear down double circuit, build single circuit with 1192.5 ACSR.	\$ 7,800,000

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04SH	WERE-WERE	57182 TECHILE3 115 *B036 1 1	68	65	4.7400	57163 HOYT 3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SH	WERE-WERE	56920 TECHILL5 161 *B036 1 1	68	65	4.7400	57163 HOYT 3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SH	WERE-WERE	57342 WJCCTY 3 115 57344 WJCCTYW3 115 1	139	129	8.3950	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04FA	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	92	4.2150	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	0	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
04FA	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	194	5.1220	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	69	3.3790	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04FA	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	154	164	10.9740	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	Rebuild 0.88 miles and reconductor with 1192.5 ACSR.	\$ 417,200
04FA	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	65	75	5.1030	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	149	7.2710	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04FA	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 2	89	88	5.8710	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	14	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	82	3.3570	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
04FA	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	182	5.1220	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57342 WJCCTY 3 115 57344 WJCCTYW3 115 1	139	128	7.9310	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04WP	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	67	67	5.0510	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	1	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	62	3.3650	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04WP	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	157	144	10.8620	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	134	7.2400	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05AP		NONE IDENTIFIED					25		
05G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	95	3.0120	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05G	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	155	159	9.9410	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	65	73	4.6230	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	146	6.7850	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05G	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	67	3.1530	56766 JEC N 7 345 56773 SUMMIT 7 345 1	1	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05G	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	91	3.9410	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	2	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
05G	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	194	4.5730	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	10	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	82	3.2120	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05G	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	84	3.0120	56765 HOYT 7 345 56772 STRANGR7 345 1	25	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05G	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	182	4.5730	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	80	3.0120	56765 HOYT 7 345 56772 STRANGR7 345 1	25	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCPHER3 115 2	89	86	5.3180	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
05SP	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 1	67	94	3.0160	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	110	3.4750	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57151 AUBURN 3 115 *B162 AUBRN77X 1 1	304	320	3.1110	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	56851 AUBURN 6 230 *B162 AUBRN77X 1 1	302	321	3.1110	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 1	67	89	3.0150	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 2	91	103	3.4760	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 1	67	80	3.0170	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 2	91	93	3.4740	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 1	67	81	3.0180	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 2	91	94	3.4730	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57233 166TH 3 115 57244 JARBAL03 115 1	96	90	3.6530	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
05SP	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	437	413	4.1750	56765 HOYT 7 345 56766 JEC N 7 345 1	25	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345 kV line	TBD

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SP	WERE-WERE	57250 LWRNCHL3 115 *B332 LAWHL29X 1 1	298	267	39.9120	57252 MIDLAND3 115 *B362 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
05SP	WERE-WERE	56853 LAWHILL6 230 *B332 LAWHL29X 1 1	295	267	39.9120	56855 MIDLAND6 230 *B362 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
05SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	92	4.1260	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	0	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 1	67	97	3.2380	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	113	3.7290	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57301 EAST ST3 115 57309 WEMPOR13 115 1	91	96	3.0710	56863 MORRIS 6 230 *B370 MORRIS2X 1 1	0	May be relieved due to Westar Operating Procedure 0625 - Outage of the Morris 230/115KV transformer	TBD
05SH	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	68	3.4030	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05SH	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 1	67	92	3.2360	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 2	91	107	3.7310	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 1	67	85	3.2380	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 2	91	98	3.7290	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 1	67	86	3.2390	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 2	91	100	3.7280	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	147	7.3210	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 *B162 AUBRN77X 1 1	304	294	3.2330	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	56851 AUBURN 6 230 *B162 AUBRN77X 1 1	303	294	3.2330	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	439	397	7.7060	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05SH	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	176	5.8180	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
05SH	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	188	5.8180	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	

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Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05SH	WERE-WERE	57182 TECHILE3 115 *B129 1 1	68	62	4.7830	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
05SH	WERE-WERE	56920 TECHILL5 161 *B129 1 1	68	62	4.7830	57163 HOYT 3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
This cost may be significantly higher due to additional facilities whose solutions will be determined during the Facility Study process									\$*
Total Estimated Cost of Known Solutions									\$ 9,412,400

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

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04SP	WERE-WERE	57233 166TH 3 115 57244 JARBAL03 115 1	96	99	3.6150	57252 MIDLAND3 115 57261 PENTAGN3 115 1	0	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04SP	WERE-WERE	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	299	321	39.7850	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04SP	WERE-WERE	56853 LAWHILL6 230 *B325 LAWHL29X 1 1	295	322	39.7850	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04SP	MIDW-WEPL	56565 SEWARD 2 69 58792 SEWARD 3 115 1	44	43	4.7960	56601 HEIZER 3 115 58779 MULGREN6 230 1	10	Solution Undetermined	TBD
04SP	WERE-WERE	57252 MIDLAND3 115 *B354 MIDJ126X 1 1	304	296	36.6560	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	24	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
04SP	WERE-WERE	56855 MIDLAND6 230 *B354 MIDJ126X 1 1	305	296	36.6560	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	24	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
04SP	WERE-WERE	57233 166TH 3 115 57243 JAGGARD3 115 1	96	87	3.6150	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04SP	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	438	406	4.0490	56765 HOYT 7 345 56766 JEC N 7 345 1	25	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345 kV line	TBD
04SP	WERE-WERE	57236 COOP 3 115 57277 WAKARUS3 115 1	91	84	6.2130	57271 SWLWRNC3 115 57277 WAKARUS3 115 1	25	Rebuild 1.53-mile line	\$ 390,000
04SP	WERE-WERE	57271 SWLWRNC3 115 57277 WAKARUS3 115 1	91	83	5.6390	57236 COOP 3 115 57277 WAKARUS3 115 1	25	Rebuild 4.09-mile line	\$ 1,000,000
04SP	WERE-WERE	57182 TECHILE3 115 *B036 1 1	68	61	4.8910	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SP	WERE-WERE	56920 TECHILL5 161 *B036 1 1	68	61	4.8910	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SH	WERE-WERE	57182 TECHILE3 115 *B036 1 1	68	68	4.7030	57163 HOYT 3 115 57165 HTI JCT3 115 1	0	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SH	WERE-WERE	56920 TECHILL5 161 *B036 1 1	68	68	4.7030	57163 HOYT 3 115 57165 HTI JCT3 115 1	0	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
04SH	WERE-WERE	57233 166TH 3 115 57244 JARBAL03 115 1	96	90	3.5560	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	88	4.4120	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	25	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
04SH	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	63	3.6380	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04SH	WERE-WERE	57250 LWRNCHL3 115 *B325 LAWHL29X 1 1	299	281	39.5980	56853 LAWHILL6 230 56855 MIDLAND6 230 1	25	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04SH	WERE-WERE	56853 LAWHILL6 230 *B325 LAWHL29X 1 1	296	281	39.5980	56853 LAWHILL6 230 56855 MIDLAND6 230 1	25	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04SH	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	137	7.8270	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
04FA	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	96	87	3.6800	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	94	93	3.7100	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	Rebuild 15.50-mile line (1192.5 kcmil 45/7 ACSR, 223 MVA, 245 MVA), Replace CTs and Wave Trap (2000 A.)	\$ 5,800,000
04FA	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	89	82	3.7100	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	Rebuild 15.15 mile line with 1192.5 kcmil ACSR.	\$ 3,200,000
04FA	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	80	3.3920	57982 IATAN 7 345 59199 ST JOE 3 345 1	25	Rebuild 9.61 mile line with 1192.5 kcmil ACSR.	\$ 2,400,000
04FA	WERE-WERE	57250 LWRNCHL3 115 *B324 LAWHL29X 1 1	299	262	39.6460	56853 LAWHILL6 230 56855 MIDLAND6 230 1	25	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
04FA	WERE-WERE	56853 LAWHILL6 230 *B324 LAWHL29X 1 1	296	262	39.6460	57252 MIDLAND3 115 *B353 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
04FA	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	126	7.4160	56773 SUMMIT 7 345 *B471 SUMMIT1X 1 1	25	May be relieved due to Westar Operating Procedure 0617 - Outage of the Summit 345-230kV Transformer	TBD
04WP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	96	90	3.6860	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	94	93	3.7190	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	89	83	3.7190	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	61	3.4030	56773 SUMMIT 7 345 *B472 SUMMIT1X 1 1	25	May be relieved due to Westar Operating Procedure 0617 - Outage of the Summit 345-230kV Transformer	TBD
04WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	79	3.7190	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	157	140	11.0320	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
04WP	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	67	65	5.1300	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
04WP	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	132	7.3210	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05AP		NONE IDENTIFIED					25		
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	65	71	4.7380	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility In Scenario 1	
05G	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	144	6.8980	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05G	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	90	4.0050	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	14	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
05G	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	155	153	10.1880	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	15	See Previous Upgrade Specified For Facility In Scenario 1	
05G	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	83	3.2450	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD

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05G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	94	89	3.7970	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	178	4.7050	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
05G	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	190	4.7050	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
05G	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	66	3.2060	56766 JEC N 7 345 56773 SUMMIT 7 345 1	25	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05G	WERE-WERE	57250 LWRNCHL3 115 *B325 LAHWHL29X 1 1	299	265	39.8050	56855 MIDLAND6 230 *B354 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
05G	WERE-WERE	56853 LAWHILL6 230 *B325 LAHWHL29X 1 1	296	265	39.8050	56855 MIDLAND6 230 *B354 MIDJ126X 1 1	25	May be relieved due to Westar Operating Procedure 0615 - Loss of the Midland Junction 230/115 kV transformer	TBD
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 2	89	83	5.4510	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
05SP	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 1	67	95	3.0390	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	110	3.5010	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57151 AUBURN 3 115 *B162 AUBRN77X 1 1	304	325	3.1240	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	56851 AUBURN 6 230 *B162 AUBRN77X 1 1	302	325	3.1240	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 1	67	89	3.0380	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 2	91	103	3.5020	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57250 LWRNCHL3 115 *B332 LAHWHL29X 1 1	299	314	39.8920	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
05SP	WERE-WERE	56853 LAWHILL6 230 *B332 LAHWHL29X 1 1	295	314	39.8920	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
05SP	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 1	67	80	3.0400	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 2	91	93	3.5000	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 1	67	82	3.0410	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SP	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 2	91	95	3.5000	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD

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05SP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	96	96	3.6460	57252 MIDLAND3 115 57261 PENTAGN3 115 1	12	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
05SP	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	437	417	4.2010	56765 HOYT 7 345 56766 JEC N 7 345 1	25	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345 kV line	TBD
05SP	WERE-WERE	57252 MIDLAND3 115 *B362 MIDJ126X 1 1	304	288	36.7580	56853 LAWHILL6 230 *B332 LAWHL29X 1 1	25	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
05SP	WERE-WERE	56855 MIDLAND6 230 *B362 MIDJ126X 1 1	305	288	36.7580	56853 LAWHILL6 230 *B332 LAWHL29X 1 1	25	May be relieved due to Westar Operating Procedure 0631 - Loss of the Lawrence Hill 230/115kV Transformer	TBD
05SP	MIDW-WEPL	56565 SEWARD 2 69 58792 SEWARD 3 115 1	44	40	4.2530	56601 HEIZER 3 115 58779 MULGREN6 230 1	25	Solution Undetermined	TBD
05SP	WERE-WERE	57182 TECHILE3 115 *B129 1 1	68	61	4.9650	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
05SP	WERE-WERE	56920 TECHILL5 161 *B129 1 1	68	61	4.9650	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
05SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	91	4.1660	57342 WJCTY 3 115 57343 WJCTYE3 115 1	0	May be relieved due to Westar Operating Procedure 1217 - Outage of the Fort Junction to West Junction City 115kV Line	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 1	67	98	3.2610	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 57167 KEENE 3 115 2	91	114	3.7560	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57301 EAST ST3 115 57309 WEMPORI3 115 1	91	98	3.1060	56863 MORRIS 6 230 *B370 MORRIS2X 1 1	0	May be relieved due to Westar Operating Procedure 0625 - Outage of the Morris 230/115KV transformer	TBD
05SH	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 1	67	93	3.2600	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57167 KEENE 3 115 57339 S ALMA 3 115 2	91	108	3.7570	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 1	67	85	3.2620	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57335 MCDOWEL3 115 57340 SMANHAT3 115 2	91	99	3.7550	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 1	67	86	3.2620	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57339 S ALMA 3 115 57340 SMANHAT3 115 2	91	100	3.7550	56852 JEC 6 230 56861 EMANHAT6 230 1	0	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	57342 WJCTY 3 115 57343 WJCTYE3 115 1	139	145	7.3940	56766 JEC N 7 345 56773 SUMMIT 7 345 1	0	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD

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05SH	WERE-WERE	57328 FT JCT 3 115 57343 WJCCTYE3 115 1	67	67	3.4370	56766 JEC N 7 345 56773 SUMMIT 7 345 1	15	May be relieved due to Westar Operating Procedure 402 - Outage of the Jeffrey Energy Center to Summit 345 kV Line	TBD
05SH	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	96	89	3.5820	57252 MIDLAND3 115 57261 PENTAGN3 115 1	25	May be relieved due to Westar Operating Procedure 1218 - Outage of the Midland Jct - Pentagon 115kV Line Section	TBD
05SH	WERE-WERE	57151 AUBURN 3 115 *B162 AUBRN77X 1 1	304	298	3.2460	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	56851 AUBURN 6 230 *B162 AUBRN77X 1 1	303	298	3.2460	56852 JEC 6 230 56861 EMANHAT6 230 1	25	May be relieved due to Westar Operating Procedure 900 - Outage of the JEC to East Manhattan 230kV Line	TBD
05SH	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	439	406	4.4480	56765 HOYT 7 345 56766 JEC N 7 345 1	25	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345 kV line	TBD
05SH	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	176	5.9070	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
05SH	WERE-WERE	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	188	5.9070	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility In Scenario 1	
05SH	WERE-WERE	57250 LWRNCHL3 115 *B332 LAWHL29X 1 1	299	282	39.6920	56853 LAWHILL6 230 56855 MIDLAND6 230 1	25	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
05SH	WERE-WERE	56853 LAWHILL6 230 *B332 LAWHL29X 1 1	296	282	39.6920	56853 LAWHILL6 230 56855 MIDLAND6 230 1	25	May be relieved due to Westar Operating Procedure 0901 - Outage of the Lawrence Hill-Midland Junction 230kV Line	TBD
05SH	WERE-WERE	57182 TECHILE3 115 *B129 1 1	68	62	4.7620	57217 KELLY 3 115 57331 KING HL3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
05SH	WERE-WERE	56920 TECHILL5 161 *B129 1 1	68	61	4.7620	57217 KELLY 3 115 57331 KING HL3 115 1	25	May be relieved due to Westar Operating Procedure 0632 - Overload of the Tecumseh Hill 161/115kV Transformer	TBD
This cost may be significantly higher due to additional facilities whose solutions will be determined during the Facility Study process									\$*
Total Estimated Cost of Known Solutions									\$ 12,790,000

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