



SPP *Southwest
Power Pool*

*Preliminary
System Impact Study
SPP-2004-065-1P
For The Designation of a New
Network Resource
Requested By
Midwest Energy*

From OPPD 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 OPPD 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 667696. 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 OPPD 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 OPPD 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 OPPD 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 OPPD 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 OPPD 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 OPPD 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	MIDW-WEPL	56565 SEWARD 2 69 58792 SEWARD 3 115 1	43	38	4.2970	56601 HEIZER 3 115 58779 MULGREN6 230 1	25	Solution Undetermined	TBD
04SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	98	3.3710	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	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	156	6.4000	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	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	187	4.8360	56872 EMCPHER6 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	3.4260	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	57374 SPHILPJ3 115 57438 WMCPHER3 115 1	67	61	4.6220	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	25	Tear down double circuit, build single circuit with 1192.5 ACSR.	\$ 7,800,000
04SH	WERE-WERE	57342 WJCCTY 3 115 57344 WJCCTYW3 115 1	139	129	6.9810	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	3.0850	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	3.8190	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	154	164	8.1370	56872 EMCPHER6 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 WMCPHER3 115 1	65	75	3.7840	56872 EMCPHER6 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	5.7480	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 WMCPHER3 115 2	89	88	4.3530	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	18	See Previous Upgrade Specified For Facility	
04FA	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	182	3.8190	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	25	Rebuild and reconductor 0.34 miles with 1192 ACSR.	\$ 95,200
04FA	WERE-WERE	57342 WJCCTY 3 115 57344 WJCCTYW3 115 1	139	128	6.2700	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 WMCPHER3 115 1	67	67	3.7430	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	2	See Previous Upgrade Specified For Facility	
04WP	WERE-WERE	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	157	144	8.0490	56872 EMCPHER6 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	5.7310	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	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	155	159	7.1170	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	0	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCPHER3 115 1	65	73	3.3090	56872 EMCPHER6 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	5.2700	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	57368 EXIDE J3 115 57381 SUMMIT 3 115 1	194	194	3.2770	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	13	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	182	3.2770	56872 EMCPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
05G	WERE-WERE	57217 KELLY 3 115 57337 SENECA 3 115 1	91	82	3.4280	56861 EMANHAT6 230 58758 CONCORD6 230 1	25	Solution Undetermined	TBD

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	57374 SPHILPJ3 115 57438 WMCIPHER3 115 2	89	86	3.8070	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
05SP	WERE-WERE	56852 JEC 6 230 56861 EMANHAT6 230 1	437	396	3.4470	56851 AUBURN 6 230 56852 JEC 6 230 1	25	May be relieved due to Westar Operating Procedure 401 - JEC Transmission Line Outage Matrix	TBD
05SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	92	3.1920	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	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	147	6.0790	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	56852 JEC 6 230 56861 EMANHAT6 230 1	439	397	6.5980	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	4.6650	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	4.6650	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility	
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 OPPD 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	MIDW-WEPL	56565 SEWARD 2 69 58792 SEWARD 3 115 1	44	43	4.4540	56601 HEIZER 3 115 58779 MULGRENE6 230 1	10	Solution Undetermined	TBD
04SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	88	3.4430	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	3.0350	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	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	137	6.5300	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	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	140	126	5.8940	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	57374 SPHILPJ3 115 57438 WMCIPHER3 115 1	67	65	3.8220	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	5.8110	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	3.4240	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	5.3840	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	57372 PHILIPS3 115 57374 SPHILPJ3 115 1	155	153	7.3640	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	20	See Previous Upgrade Specified For Facility in Scenario 1	
05G	WERE-WERE	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	178	3.4090	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	3.4090	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility in Scenario 1	
05G	WERE-WERE	57374 SPHILPJ3 115 57438 WMCIPHER3 115 2	89	83	3.9390	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility in Scenario 1	
05SP	MIDW-WEPL	56565 SEWARD 2 69 58792 SEWARD 3 115 1	44	40	3.9130	56601 HEIZER 3 115 58779 MULGRENE6 230 1	25	Solution Undetermined	TBD
05SH	WERE-WERE	57321 ANZIO 3 115 57328 FT JCT 3 115 1	91	91	3.2320	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	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	139	145	6.1520	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	57368 EXIDE J3 115 57372 PHILIPS3 115 1	194	176	4.7530	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	4.7530	56872 EMCIPHER6 230 56873 SUMMIT 6 230 1	25	See Previous Upgrade Specified For Facility in Scenario 1	
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									\$ -

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