



**SPP** *Southwest  
Power Pool*

*System Facilities Study  
For Transmission Service*

*Requested By  
Duke Energy Trading and Marketing  
From Oklahoma Gas and Electric Co.  
To Entergy*

*For The Reserved Amount Of 500MW  
From June 1, 2001  
To June 2, 2002*

*SPP Transmission Planning  
(#SPP-2000-098)*

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**Southwest Power Pool**  
**Transmission Service Requests #208650**  
**SPP System Facilities Study SPP-2000-098**

**Executive Summary**

At the request of Duke Energy Trading and Marketing (DETM), the Southwest Power Pool developed this Facility Study for the purpose of documenting the Available Transfer Capability (ATC) of the existing transmission system and evaluating the financial characteristics of Transmission Service Request 208650. This request is for 500MW of firm transmission service from OKGE control area to Entergy. The requested Point-To-Point Service is from June 1, 2001 to June 2, 2002.

The SPP's System Impact Study, SPP-2000-098, of the requested transmission service, determined that the Available Transfer Capability (ATC) was zero for all months of the reservation period due to the available capacity of the transmission system being reserved for higher priority customers. The Network Facility Upgrades required to increase the Transfer Capability of the existing Transmission System cannot be completed within the reservation period. Therefore, the requested transmission service will be refused.

**Introduction**

Duke Energy Trading and Marketing requested an Impact Study for Transmission Service from Oklahoma Gas and Electric Company (OKGE) to Entergy (EES). Based on the results of the completed Impact Study, constraints were identified that limit the transfer capability of the existing transmission system to zero.

The principal objective of this Facility Study is to document the Available Transfer Capability and identify the costs of Network Upgrades that must be added or modified to provide the requested Transmission Service while maintaining a reliable transmission system. This study includes good faith estimates of the Transmission Customer's cost for the required Network Upgrades and the time required to complete such construction and to initiate the requested

service. No Direct Assignment facilities are included in this study as none were identified to provide the requested Transmission Service.

The staff of SPP completed the System Impact Study SPP-2000-098 that identified system limitations and required modifications to the SPP system necessary to provide the requested Transmission Service. The Network Facility Upgrades assigned to previous transmission customers that have zero ATC for the requested 500MW transmission service are listed in Table 1. The majority of these previously assigned Network Facility Upgrades that are required to be in service to provide the requested transmission service cannot be completed in time to increase the Transfer Capability of the existing Transmission System.

The Network Facility Upgrades, in addition to the facilities listed in Table 1, required to provide the requested transmission service are listed in Table 2. The Network Facility Upgrades listed in Table 2 would be the responsibility of DETM if the preexisting deficiencies were mitigated. The estimated total cost to engineer and construct these upgrades in year 2000 dollars is \$14,572,000.

The Network Upgrades assigned to previous transmission requests were monitored to determine whether the previously assigned upgrades are adequate to support additional transmission requests. No previously assigned facilities were identified as needing additional upgrades due to the additional impact of the requested transmission service.

Some facilities identified in the Impact Study are not included in this Facility Study as the Transmission Owners defined them as not required due to various reasons. The AEPW Wilkes to Jefferson Switching 138kV line was already scheduled to have jumpers and a wavetrapp replaced by 10/2000. The AEPW Jefferson Switching to IPC Jefferson 138kV line is scheduled to be rebuilt before the 2001 Summer. The AEPW South Shreveport to Wallace Lake 138kV line overload and the Wallace Lake to International Paper 138kV line overload for the Dolet Hills 345/230kV autotransformer outage are relieved by implementing the existing Dolet Hills Operating Guide. The AEPW Sabine Mining Co. to Pirkey 138kV line was excluded due incorrect ratings. The AEPW and Western Resources' South Coffeerville Tap to Dearing 138kV

line was excluded due to a revised rating. The AEPW Big Sandy to Hawkins 69kV line will have a necessary bus replacement completed by 12/2000. The AEPW Patterson to South Nashville 138kV line was excluded due to incorrect rating of the line. The Grand River Dam Authority's Maid to Tahlequah 161kV line and Zena Tap to Jay 69kV line were excused due an Operating Guide and Mitigation Plan. The Empire District Electric Co.'s Monett to Aurora 161kV line was excused due to a Mitigation Plan. The EES and Empire District Electric Co.'s Omaha to Powersite 161kV line is considered as an Entergy Limit, and the Southwestern Power Administration and EES Bull Shoals to Midway 161kV line is also considered as an Entergy Limit. The Associated Electric Coop's Carthage to Jasper and Carthage to Reeds 69kV lines are considered Third Party Limits.

Two facilities not included in the impact study are included in the Facility Study for the following reasons. The AEPW Dyess to East Rogers 161kV line, assigned to reservation 163951 for the 2001 Summer, is required to be in service to accommodate Transmission Request 208650. The constraint is due to the outage of the East Centerton to Gentry 161kV line. The post-contingency no transfer and transfer loading is 104.5% and 109% of 245MVA respectively. The WFEC Canadian 138/69kV autotransformer found in Table 2 replaces the WFEC and OKGE Canadian SW to Canadian Tap 138kV line. WFEC informed SPP of the incorrect rating of the autotransformer. The Canadian SW to Canadian Tap 138kV line was rated at 70MVA to flag the loading on the 70MVA autotransformer and has a correct rating of 287MVA.

Given the estimated dates in which the Network Upgrades are required for the requested Transmission Services to be provided, there are facility constraints that limit the ATC to zero. The estimated time required to complete the engineering and construction of the first transfer-limiting facility of the Summer is Thirty (30) Months after AEPW's receipt of authorization to proceed from SPP. AEPW's IPC Jefferson to Lieberman 138kV transmission line has a Thirty (30) Month construction lead time. The constraint is due to the outage of the Longwood to Wilkes 345kV line during the 2001 summer peak period. The Available Transfer Capability (ATC) during the 2001 Summer peak, from June 1 to October 1, is 0MW due to the available transfer capability being reserved for transmission reservations 221099 and 171555.

Several other constraints identified in the completed Impact Study cannot be upgraded within the reservation period of the requested Transmission Service due to lead times for engineering & construction. The ATC constraints of Network Facility Upgrades assigned to previous transmission customers that limit 500MW request to zero and will not be completed until after the reservation period of the 500MW request are as follows. The ATC from June 1 to October 1, 2001 is 0MW for the delay in construction of nine facilities including the IPC Jefferson to Lieberman 138kV line mentioned above. The ATC for the 2001 Fall and 2001/02 Winter, October 1, 2000 to April 1, 2001, is zero for the engineering and construction delay of the Rock Hill to Tatum 138kV line upgrade. The ATC for 2001/2002 Winter and 2002 Spring is also zero for the engineering and construction delay of the IPC Jefferson to Lieberman 138kV line.

### **Conclusion**

Based on the results of the Impact Study SPP-2000-098, Network Upgrades that were identified as required to provide the requested transmission service are listed in Tables 1 and 2, including the addition of two required Facilities not documented in the Impact Study. Table 1 includes the Network Upgrades and Costs assigned to previous transmission customers that are required to accommodate Transmission Service Request 208650 from Oklahoma Gas & Electric Co. to Entergy. Table 2 includes the Network Upgrades and Costs for Facility Overloads caused by Transmission Service Request 208650 from Oklahoma Gas & Electric Co. to Entergy that are also required to provide the requested service.

Estimated engineering and construction costs in addition to lead times for construction of Network Upgrades are provided. These estimated costs are for facilities required to provide the requested service. The lead times do not include any allowances for possible delays due to outage conflicts during construction, conflicts with construction during the summer peak, engineering and construction manpower constraints, etc.

Given the estimated in service dates of the required Network Upgrades, the ATC of the existing transmission system cannot be increased in time to accommodate Transmission Service Request 208650. Therefore, reservation 208650 will be refused.

**Table 1**  
**Estimated Network Upgrade Costs, Lead Times And Required Dates**  
**Assigned To Previous Transmission Service Requests That Have An ATC Of Zero**  
**For Transmission Request 208650 OKGE To EES 500MW**

Previous Reservation Assignment / Network System Improvement	Engineering & Construction Costs (\$ 2000 )	Engineering & Construction Lead Time	Required Date (M/D/Y)	Date In Service (M/D/Y) (1)
121839 / Patterson - Ashdown REC 115kV: Replace Switch by AEPW	\$20,000	Six (6) Months	4/1/01	2/1/02
221099 / Dierks - South Dierks 69kV: Replace Jumpers & Breaker By AEPW	\$70,000	Twelve (12) Months	4/1/01	2/1/02
221099 / Jacksonville - Pine Grove 138kV: Reset CTs By AEPW	1,000	Four (4) Months	4/1/01	5/1/01
163951 / Dyess - E. Rogers 161kV Line Upgrade To 1590MCM By AEPW	4,000,000	Eighteen (18) Months	6/1/01	2/1/03
221099 / IPC Jefferson - Lieberman 138kV: Reconductor 26.35 miles To 795MCM & Replace Jumpers & Wavetrap By AEPW	6,241,585	Thirty (30) Months	6/1/01	2/1/04
221099 / Cherokee REC - Knox Lee 138kV: Reconductor To 1272MCM By AEPW	720,000	Twelve (12) Months	6/1/01	2/1/02
221099 / Cherokee REC - Tatum 138kV: Reconductor To 1272MCM by AEPW	1,300,000	Eighteen (18) Months	6/1/01	2/1/03



**Table 1 (Continued)**

**Estimated Network Upgrade Costs, Lead Times And Required Dates**

**Assigned To Previous Transmission Service Requests That Have An ATC Of Zero**

**For Transmission Request 208650 OKGE To EES 500MW.**

Previous Reservation Assignment / Network System Improvement	Engineering & Construction Costs (\$ 2000 )	Engineering & Construction Lead Time	Required Date (M/D/Y)	Date In Service (M/D/Y) (1)
221099 / Rock Hill - Tatum 138kV: Reconductor 0.81 miles To 1272MCM & Replace Wavetrapp by AEPW	190,000	Twelve (12) Months	6/1/01	2/1/02
221099 / Waterworks - Arsenal Hill 69kV: Replace Three Sets of Switches by AEPW	60,000	Six (6) Months	6/1/01	2/1/02
221099 / Tipton Ford - Monett 161kV: Reconductor To 795MCM by EDE	5,700,000	Eighteen (18) Months	6/1/01	2/1/03
171555 / IPC Jefferson - Lieberman 138kV: Reconductor 0.65 miles To 795MCM & Replace Lieberman Switches by AEPW	\$153,967	Thirty (30) Months	6/1/01	2/1/04
171555 / Rock Hill - Tatum 138kV: Reconductor 5.76 miles To 1272MCM & Reset Rock Hill CTs by AEPW	1,090,000	Eighteen (18) Months	6/1/01	2/1/03
171555 / NW Henderson – Poynter 69kV: Replace Jumpers & Bus By AEPW	45,700	Six (6) Months	6/1/01	2/1/02

**Table 1 (Continued)**

**Estimated Network Upgrade Costs, Lead Times And Required Dates  
Assigned To Previous Transmission Service Requests That Have An ATC Of Zero  
For Transmission Request 208650 OKGE To EES 500MW.**

Previous Reservation Assignment / Network System Improvement	Engineering & Construction Costs (\$ 2000 )	Engineering & Construction Lead Time	Required Date (M/D/Y)	Date In Service (M/D/Y) (1)
171555 / North Marshall - Woodlawn 69kV: Replace Jumpers by AEPW	10,000	Six (6) Months	6/1/01	2/1/02
171555 / Elm Springs REC - Flint Creek 161kV: Replace Switches by CSWS	40,000	Nine (9) Months	6/1/01	2/1/02
SUBTOTAL	\$19,642,252			

Note: Date In Service is based on items received from previous Transmission Customers by January 1, 2001 including 1) a signed service agreement and letter of credit received by SPP, and 2) authorization to proceed with engineering and construction received by Transmission Owners from SPP.

Note: (1) For upgrades of transmission lines and substations, if the Calculated Date Available is 1) between June 1 and September 15, or 2) between September 15 and 4.5 months thereafter, then 4.5 months are added to September 15 as these facilities will not be taken out of service during the summer peaking period for upgrading. Therefore, the projected End Of Construction is February 1 of the next year.

**Table 2**

**Estimated Network Upgrade Costs, Lead Times And Required Dates**

**For Facility Overloads Caused By Transmission Request 208650 OKGE To EES 500MW.**

Network System Improvement	Engineering & Construction Costs (\$ 2000 )	Engineering & Construction Lead Time	Required Date (M/D/Y)	Date In Service (M/D/Y) (1)
Chamber Springs – Dyess 161kV: Reconductor 18.73 Miles to 1590MCM by AEPW	\$4,700,000	Twenty-Four (24) Months * 01SP ATC = 47	6/1/01	2/1/03
Beaver – Eureka Springs 161kV: Reconductor 7.23 Miles To 1590MCM By SWPA	2,900,000	Eighteen (18) Months * 01SP ATC = 198	6/1/01	2/1/03
Beaver – Eureka Springs 161kV: Reconductor 1.25 Miles To 1590MCM By AEPW	515,000	Twelve (12) Months * 01SP ATC = 198	6/1/01	2/1/02
Oronogo Jct. – Oakland North 161kV: Reconductor 1.8 Miles To 795MCM by EDE	300,000	Twelve (12) Months * 01SP ATC = 159	6/1/01	2/1/02
Sallisaw – Gore 161kV: Increase Clearance Of 10 Spans By SWPA	500,000	Twelve (12) Months * 01SP ATC = 416	6/1/01	2/1/02
Pleasant Valley – McClain 138kV: Replace 15 2000 Amp Switches and 5 Breakers By OKGE	1,075,000	Twelve (12) Months * ATC = 478(2)	6/1/01	2/1/02
Sara Road – McClain 138kV: Replace 7 2000 Amp Switches and 2 Breakers By OKGE	460,000	Twelve (12) Months * ATC = 478(2)	6/1/01	2/1/02
Robert S. Kerr – Van Buren 161kV: Replace Switches By SWPA	105,000	Twelve (12) Months * 01FA ATC = 183 02SR ATC = 281	10/1/01	2/1/02

**Table 2 (Continued)**

**Estimated Network Upgrade Costs, Lead Times And Required Dates**

**For Facility Overloads Caused By Transmission Request 208650 OKGE To EES 500MW.**

Network System Improvement	Engineering & Construction Costs (\$ 2000 )	Engineering & Construction Lead Time	Required Date (M/D/Y)	Date In Service (M/D/Y) (1)
Lone Star South – Diana 138kV: Replace Switch By AEPW	21,000	Nine (9) Months * 01FA ATC = 358	10/1/01	2/1/02
Franklin SW 138/69kV Autotransformer: Replace 70MVA Transformer with 112MVA Transformer By WFEC	1,005,000	Twelve (12) Months * 01WP ATC = 280	12/1/01	2/1/02
Canadian SW 138/69kV Autotransformer: Replace 70MVA Transformer with 112MVA Transformer By WFEC	1,011,000	Twelve (12) Months * 01WP ATC = 295	12/1/01	2/1/02
Sara Road – Cimarron 138kV: Replace 16 2000 Amp Switches and 12 Breakers By OKGE	1,980,000	Twelve (12) Months * 02AP ATC = 478(2)	4/1/02	2/1/02
<b>SUBTOTAL</b>	<b>\$14,572,000</b>			

Note: Date In Service is based on the assumption that items received by February 1, 2001 including 1) a signed service agreement and letter of credit received by SPP, and 2) authorization to proceed with engineering and construction received by Transmission Owners from SPP.

Note: (1) For upgrades of transmission lines and substations, if the Calculated Date Available is 1) between June 1 and September 15, or 2) between September 15 and 4.5 months thereafter, then 4.5 months are added to September 15 as these facilities will not be taken out of service during the summer peaking period for upgrading. Therefore, the projected End Of Construction is February 1 of the next year.

Note: (2) ATC In Accordance with the Allowable Plant Output Under Contingency