



**SPP** *Southwest  
Power Pool*

*System Facilities Study  
For Transmission Service*

*Requested By  
Western Resources*

*From Western Resources  
To Ameren*

*For Reserved Amounts Totaling 100MW  
From January 1, 2001  
To January 1, 2002*

*SPP Transmission Planning  
(#SPP-2000-010)*

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**Southwest Power Pool**  
**Transmission Service Requests #168969, 168970**  
**SPP System Facilities Study SPP-2000-010**

**Executive Summary**

At the request of Western Resources, the Southwest Power Pool developed this Facility Study for the purpose of evaluating the financial characteristics of Transmission Service Requests 168969 and 168970. These requests are for a total of 100 MW of firm transmission service from Western Resources' control area to Ameren's control area in the amounts of 50MW each. The requested Point-To-Point Service is from January 1, 2001 to January 1, 2002.

The projected base revenues for the requested transmission service 168969 and 168970 are \$312,570 and \$172,500 respectively throughout the entire reservation period totaling \$485,070. The maximum monthly base rate revenue requirements are \$34,500 for each of the reservations. However, Western Resources as the Transmission Customer is required to pay the higher of either the base revenues or the costs associated with the Network Upgrades.

Given the currently defined limits of Ameren's interface with SPP, Network Upgrades will not be required. The requested transmission service of 100MW is available except during June 1, 2001 to January 1, 2002 in which the effective available transfer capability of the existing transmission system is 29MW. Therefore, Western Resources shall pay only the base rate revenue requirements.

As a Network Upgrade is not required due to the current limit of the Ameren interface, an irrevocable letter of credit is not required for initial engineering and construction costs to be incurred by the transmission owners. Also, this study provides no assurance of the availability of Transmission Capacity or the adequacy of existing or planned transmission facilities for Transmission Service in excess of the requested 100MW excluding June 1, 2001 to January 1, 2002 in which the effective transfer limit is 29MW.

In the event that additional interface capacity with Ameren, from June 1, 2001 to January 1, 2002, becomes available before the start-date of the requested service, Western Resources will be

obligated to pay for additional capacity pursuant to Section 2.2 of SPP's Open Access Transmission Tariff in the amount of the lesser of either 1) the requested amount, 2) the available transfer capability, or 3) the Ameren interface limit. If for example SPP staff determines approximately sixty (60) days prior to January 1, 2001 that Ameren's available interface capacity increases to 100MW for the period of June 1, 2001 to January 1, 2002 and if Western Resources' Exide Junction – Summit 115kV line may be upgraded by December 1, 2001, then the projected total base rate revenues are \$814,200 for 1) 100MW capacity from January 1, 2001 to June 1 and October 1 to January 1, 2002, and 2) 95MW from June 1, 2001 to October 1.

SPP will accept a request of 100MW of Transmission Service from January 1, 2001 to June 1 and 29MW, or greater value up to 100MW if available across the Ameren interface, from June 1 to January 1, 2002, if this effective available capacity is acceptable to Western Resources. Given the specified limitations across Ameren's interface and Western Resources' confirmation of the request, SPP will notify Western Resources of the available capacity across Ameren's interface approximately sixty (60) days prior to the start-date of the reservation or approximately November 1, 2000. At that time, SPP will submit a Service Agreement for execution.

## **Introduction**

Western Resources previously requested an Impact Study for Transmission Service from Western Resources (WR) to Ameren (AMRN). Based on the results of the completed Impact Study, constraints were identified that will limit the transfer capability of the existing transmission system to levels below those requested.

The principal objective of this Facility Study is to 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 a good faith estimate of the Transmission Customer's assigned 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 evaluation of Transmission Service Request 168970 is not based on the confirmation of 168969. Therefore, the results of this analysis are valid if either or both of the Transmission Service requests are confirmed.

The staff of SPP completed the System Impact Study SPP-2000-010 that identified system limitations and required modifications to the SPP system necessary to provide the requested Transmission Service. Network Upgrades will be required on the Central and South West Services (CSWS) and WR transmission systems. These Network Upgrades include reconductoring one 161kV and installing taller poles in one 115kV transmission lines. This 115kV line is a constraint because its capacity is limited by conductor sag.

Upgrading CSWS' Dyess – East Rogers 161kV line cannot be completed until after the reservation period. Therefore, the available transfer capability (ATC) of the existing network is 95MW throughout the summer period, June 1 to October 1, 2001, and is listed in Table 2. The one remaining constraint is WR's Exide Junction – Summit 115kV line. This facility, which is required to be upgraded by December 1, 2001 as the ATC is 41MW during the winter season without the upgrade, is listed in Table 1. The estimated total cost to engineer and construct this upgrade in year 2000 dollars is \$285,000. The estimated time required to complete the engineering and construction of this transfer-limiting facility is six (6) months after WR's receipt of authorization to proceed from SPP. Given the estimated date in which the Network Upgrade is required for the requested Transmission Service to be provided, there are no facility limits that will delay the start date of the service.

The total capacity across Ameren's interface with SPP is 1,287MW. The total monthly confirmed reservations across this interface during 2001 ranges from 758MW to 958MW. Other reservations with the first right of refusal have allocations across this interface during 2001 and range in monthly amounts from 100MW to 200MW. The requested transmission service by WR is not totally available if reservations 158863 and 158864 are approved by the Federal Energy Regulatory Commission (FERC). 100MW is available across the interface from January through May, and 29MW is available from June through December, 2001. However, if these two

reservations are not approved by the FERC, then the requested transmission service by WR is available across the interface excluding the limits within SPP.

Firm Point-To-Point Transmission Service may be provided to Western Resources in amounts less than requested. The total ATC from January through May, 2001 is at least 100MW. If reservations 158863 and 158864 are not approved by the FERC, the ATC from June 1 to October 1, 2001 is 95MW. The ATC is at least 100MW from October 1, 2001 to January 1, 2002 given WR's Network Upgrade. However, if reservations 158863 and 158864 are approved by the FERC, the ATC from June 1, 2001 to January 1, 2002 is 29MW.

As it would not be prudent for SPP to allocate transmission capacity at this time to WR that may be required to accommodate reservations 158863 and 158864, SPP will allocate the ATC from June 1, 2001 to January 1, 2002 in the amount of 29MW. The requested amount of 100MW is available from January 1 to June 1, 2001 and is listed in Table 3. Given these circumstances, no Network Upgrades are required on the SPP system as the ATC is 41MW from December 1, 2001 to January 1, 2002 without the upgrade of WR's Exide Junction – Summit 115kV line. If this limit is agreeable to WR, then SPP will accept and approve the requested service with this limit. In the event that additional capacity is determined to be available, from June 1, 2001 to January 1, 2002, across Ameren's interface approximately sixty (60) days prior to the start-date of the reservation or about November 1, 2000, then SPP will allocate additional capacity across the interface to WR pursuant to Section 2.2 if SPP receives confirmation of the request given the current interface limit.

### **Future Available Service Pursuant To Section 2.2**

Included in SPP's Open Access Transmission Tariff is Section 2.2, Reservation Priority For Existing Firm Service Customers. Pursuant to this requirement, existing firm service customers with a contract term of one-year or more have the right to continue to take transmission service from SPP when the contract expires. Should a transmission customer with a higher-priority reservation not renew its transmission service contract with SPP, excess capacity of the

transmission system will be available on first-come, first-served principles. Should additional interface capacity with Ameren become available in the future, an amount will be made available to Western Resources up to the lesser of either 1) the requested amount, 2) the available transfer capability, or 3) Ameren's interface limit.

Upgrading CSWS' Dyess – East Rogers 161kV line cannot be completed until after the reservation period. Therefore, the available transfer capability of the existing network is 95MW throughout the summer period, June 1 to October 1, 2001. The values of ATC are listed in Table 4. The one remaining constraint is WR's Exide Junction – Summit 115kV line and this facility is required to be upgraded by December 1, 2001 during the winter season. The estimated total cost to engineer and construct this upgrade in year 2000 dollars is \$285,000. The estimated time required to complete the engineering and construction of this transfer-limiting facility is six (6) months after WR's receipt of authorization to proceed from SPP. Given the estimated date in which the Network Upgrade is required for the requested Transmission Service to be provided, there are no facility limits that will delay the start date of the service.

Firm Point-To-Point Transmission Service may be provided to Western Resources in the amounts requested except from June 1 to October 1, 2001 in which the available transfer capability is 95MW excluding a lower limit of Ameren's interface. If this limit is agreeable to WR, then SPP will accept and approve the requested service with this limit beginning after 1) a signed service agreement and letter of credit are received by SPP, and 2) WR's receipt of authorization from SPP to proceed with the upgrade of the Exide Junction – Summit 115kV line.

### **Financial Analysis Of Future Available Service Pursuant To Section 2.2**

In the event that additional interface capacity with Ameren becomes available before the start-date of the requested service, additional capacity will be allocated to Western Resources. The zone interfaced to the sink with the lowest rate for firm point-to-point transmission service is Southwestern Power Administration (SWPA). The current base rate of SWPA is \$690/MW-Month. The estimate of total Revenue Requirements for the required Network Upgrades

throughout the requested transaction period is \$298,752. The estimate of monthly Revenue Requirements is \$24,896 throughout the requested transaction period and is listed in Table 6. The projected base revenues from the requested service are estimated to be \$814,200. These projected revenues are based on available capacity values of 100MW from January 1, 2001 to June 1, 95MW from June 1 to October 1, and 100MW from October 1, 2001 to January 1, 2002. This information is included in Table 4.

The projected base revenues from either reservation are estimated to be more than the estimated Revenue Requirements for the required Network Upgrades over the requested transaction period. Therefore, there will be no costs assigned to the Transmission Customer for the Network Upgrade. The total estimated cost for the requested Transmission Service throughout the transaction period is \$814,200 for both reservations. The total estimated cost for reservations 168969 and 168970 are \$414,000 and \$400,200 respectively.

The Southwest Power Pool and the affected transmission owners including only WR shall use due diligence to add necessary facilities or upgrade the Transmission System to provide the requested Transmission Service, provided WR agrees to compensate SPP for such costs pursuant to the terms of Section 27 of the SPP Open Access Transmission Tariff. Partial Interim Service is available to WR per Section 19.7 of the SPP Open Access Transmission Service Tariff.

Engineering and construction of any new facilities or modifications will not start until after a Service Agreement is in place and the affected transmission owners receive the appropriate authorization to proceed from the SPP. In accordance with section 19.4 of the SPP Open Access Transmission Service Tariff, the Transmission Customer shall provide and maintain in effect, during the term of the transmission service agreement, an unconditional and irrevocable letter of credit to the SPP in the amount of no less than \$285,000 for the initial engineering and construction costs to be incurred by the transmission owners. This amount does not include or offset other letters of credit or deposits as may be required under the tariff.

## **Financial Analysis**

A present worth analysis is conducted based on each transmission owner's annual fixed charge rates including weighted cost of capital. Each request for Transmission Service is evaluated independently as the cost associated with each Network Upgrade is assigned to a request. For new facilities, the Transmission Customer shall pay the total cost through the reservation period including engineering and construction costs and other annual operating costs. When upgrading facilities, the Transmission Customer shall, throughout the reservation period, 1) pay the total engineering and construction costs and other annual operating costs associated with the new facilities, and 2) receive credits associated with the depreciated book value of removed usable facilities, salvage value of removed non-usable facilities, and the carrying charges, excluding depreciation, associated with all removed facilities based on their respective book values.

The amortization period of Network Upgrades and Direct Assignment facilities shall be the lesser of either 1) the reservation period, or 2) the period between the completion of construction within the reservation period and the end of the reservation period. The annual carrying charge rate (fixed charge rates in per-unit) for each transmission owner shall be based on the sum of expenses for the previous calendar year, including weighted cost of capital, composite income tax, other tax, administrative & general, operation & maintenance, allocation of general plant, and deferred income tax adjustment, divided by the plant investment for the same year.

Categories of costs and credits associated with Network Upgrades and Direct Assignment facilities shall include those specified below. The costs allocated to the Transmission Customer over the reservation period shall be the sum of the levelized present worth of each of the identified cost and credit components based on each transmission owner's weighted cost of capital.

1. Amortized engineering and construction costs associated with the new facilities.

2. Annual carrying charges, excluding depreciation, based on the product of 1) total engineering and construction costs associated with the new facilities, and 2) annual carrying charge rate (per-unit).
3. Amortized existing facility credit associated with the replaced facilities including the sum of the depreciated book values of only the reusable facilities within the lesser of either 1) the respective remaining depreciation periods, or 2) the reservation period.
4. The salvage value credit of non-usable facilities.
5. Annual carrying charge credits, excluding depreciation, based on the product of 1) book values associated with all replaced facilities, and 2) annual carrying charge rate (per-unit).

As there are no Network Upgrades required due to the current limit of the Ameren interface, the revenue requirements from the Transmission Customer are the projected base revenues from either or both reservation. Also, no letter of credit is required in accordance with section 19.4 of the SPP Open Access Transmission Service Tariff given that there are no Network Upgrades. This does not offset other letters of credit or deposits as may be required under the tariff.

The zone interfaced to the sink with the lowest rate for firm point-to-point transmission service is Southwestern Power Administration (SWPA). The current base rate of SWPA is \$690/MW-Month. The total estimated cost for the requested Transmission Service throughout the transaction period is \$485,070 for both reservations. The total estimated cost for reservations 168969 and 168970 are \$312,570 and \$172,500 respectively. These base revenues associated with reservation 168969 are for 1) 50MW of capacity from January 1 to June 1, 2001, and 2) 29MW of capacity from June 1, 2001 to January 1, 2002. These base revenues associated with reservation 168970 are for only 50MW of capacity from January 1 to June 1, 2001. This information is included in Table 5.

## **Conclusion**

Given the constraints identified in the System Impact Study SPP-2000-010, estimated engineering and construction costs in addition to lead times for construction of Network Upgrades are provided. These estimated costs are for only those 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. The lead times are based on engineering starting when SPP provides the transmission owners approval to start on the projects. No Direct Assignment facilities are included in this study that may be required to complete the requested service.

Based on the results of the Impact Study SPP-2000-010, the applicable Network Upgrade that was identified as required to provide the requested transmission service is listed in Table 1 below. However, given the currently defined limits of Ameren's interface with SPP, Network Upgrades will not be required. The requested transmission service of 100MW is available except during June 1, 2001 to January 1, 2002 in which the effective available transfer capability of the existing transmission system is 29MW.

Throughout the transaction period of the requested Transmission Service, the estimate of base revenues for reservations 168969 and 168970 are \$312,570 and \$172,500 respectively totaling \$485,070. As there are no Revenue Requirements for Network Upgrades, the revenue requirements from the Transmission Customer are the base rate revenues. In the event that additional interface capacity with Ameren becomes available before the start-date of the requested service, Western Resources will be obligated to pay for additional capacity in the amount of the lesser of 1) the requested amount, 2) the available transfer capability, or 3) the Ameren interface limit.

**Table 1**  
**Estimated Network Upgrade Costs, Lead Times And Required Dates**  
**For Transmission Service Requests 168969 & 168970**  
**From Western Resources To Ameren**  
**During The Period From December 1, 2001 To January 1, 2002**  
**If Ameren's Interface With SPP Could Accommodate More Than**  
**An Incremental Amount Of 41MW**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	DATE IN SERVICE (M/D/Y)
Exide Junction – Summit 115kV Line Upgrade By WR	\$285,000	Six (6) Months	12/1/01
TOTAL	\$285,000	Six (6) Months	12/1/01

**Table 2**

**Summary Of Available Transfer Capability Including Example Of Additional Interface  
Capacity To Ameren And The Network Upgrade  
For Transmission Service Requests 168969 & 168970  
From Western Resources To Ameren  
During The Period From January 1, 2001 To January 1, 2002  
If Ameren's Interface With SPP Can Accommodate Both Requests**

Operating Period (Year)	Operating Period (M/D - M/D)	168969 ATC (MW)	168970 ATC (MW)	Total ATC (MW)
2001	1/1 – 6/1	50	50	100
2001	6/1 – 10/1	50	45	95
2001	10/1 - 12/31	50	50	100

Note: Values of ATC are based on items received 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 Owner from SPP.

**Table 3**

**Summary Of Available Transfer Capability Without Additional Interface Capacity To  
Ameren And Excluding The Network Upgrade  
For Transmission Service Requests 168969 & 168970  
From Western Resources To Ameren  
During The Period From January 1, 2001 To January 1, 2002  
If Additional Capacity Across Ameren's Interface With SPP Does Not Become Available**

Operating Period (Year)	Operating Period (M/D - M/D)	168969 ATC (MW)	168970 ATC (MW)	Total ATC (MW)
2001	1/1 – 6/1	50	50	100
2001	6/1 – 12/31	29	0	29

**Table 4**

**Summary Of Available Transfer Capability & Base Rate Revenues Including Example Of Additional Interface Capacity To Ameren And The Network Upgrade, The Total Revenue Requirements, For Transmission Service Requests 168969 & 168970 From Western Resources To Ameren During The Period From January 1, 2001 To January 1, 2002**

Operating Period (Month)	168969 ATC (MW)	168969 Base Revenues (\$)	168970 ATC (MW)	168970 Base Revenues (\$)	Total ATC (MW)	Total Base Revenues (\$)
January	50	\$34,500	50	\$34,500	100	\$69,000
February	50	\$34,500	50	\$34,500	100	\$69,000
March	50	\$34,500	50	\$34,500	100	\$69,000
April	50	\$34,500	50	\$34,500	100	\$69,000
May	50	\$34,500	50	\$34,500	100	\$69,000
June	50	\$34,500	45	\$31,050	95	\$65,550
July	50	\$34,500	45	\$31,050	95	\$65,550
August	50	\$34,500	45	\$31,050	95	\$65,550
September	50	\$34,500	45	\$31,050	95	\$65,550
October	50	\$34,500	50	\$34,500	100	\$69,000
November	50	\$34,500	50	\$34,500	100	\$69,000
December	50	\$34,500	50	\$34,500	100	\$69,000
Total		\$414,000		\$400,200		\$814,200

Note: Values of ATC are based on items received 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 Owner from SPP.

**Table 5**

**Summary Of Available Transfer Capability & Base Rate Revenues Without Additional Interface Capacity To Ameren And Without The Network Upgrade, The Total Revenue Requirements, For Transmission Service Requests 168969 & 168970 From Western Resources To Ameren During The Period From January 1, 2001 To January 1, 2002**

Operating Period (Month)	168969 ATC (MW)	168969 Base Revenues (\$)	168970 ATC (MW)	168970 Base Revenues (\$)	Total ATC (MW)	Total Base Revenues (\$)
January	50	\$34,500	50	\$34,500	100	\$69,000
February	50	\$34,500	50	\$34,500	100	\$69,000
March	50	\$34,500	50	\$34,500	100	\$69,000
April	50	\$34,500	50	\$34,500	100	\$69,000
May	50	\$34,500	50	\$34,500	100	\$69,000
June	29	\$20,010	0	\$0	29	\$20,010
July	29	\$20,010	0	\$0	29	\$20,010
August	29	\$20,010	0	\$0	29	\$20,010
September	29	\$20,010	0	\$0	29	\$20,010
October	29	\$20,010	0	\$0	29	\$20,010
November	29	\$20,010	0	\$0	29	\$20,010
December	29	\$20,010	0	\$0	29	\$20,010
Total		\$312,570		\$172,500		\$485,070

**Table 6**

**Summary Of Available Transfer Capability & Network Upgrade Revenues Including  
Example Of Additional Interface Capacity To Ameren And The Network Upgrade  
For Transmission Service Requests 168969 & 168970  
From Western Resources To Ameren  
During The Period From January 1, 2001 To January 1, 2002**

Operating Period (Month)	Total ATC (MW)	Total Network Upgrade Revenues (\$)
January	100	\$24,896
February	100	\$24,896
March	100	\$24,896
April	100	\$24,896
May	100	\$24,896
June	95	\$24,896
July	95	\$24,896
August	95	\$24,896
September	95	\$24,896
October	100	\$24,896
November	100	\$24,896
December	100	\$24,896
Total		\$298,752

Note: Values of ATC are based on items received 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 Owner from SPP.