



**SPP** *Southwest  
Power Pool*

*System Facilities Study  
For Transmission Service*

*Requested By  
Constellation Power Source, Inc.*

*From Central And South West Services  
To MidAmerican Energy Company*

*For The Reserved Amount Of 50MW  
From December 1, 2002  
To December 1, 2004*

*SPP Transmission Planning  
(#SPP-2000-045)*

**Created December 8, 2000**

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**Southwest Power Pool  
Transmission Service Request #194672  
SPP System Facilities Study SPP-2000-045**

**Executive Summary**

At the request of the Constellation Power Source, Inc. (CPS), the Southwest Power Pool developed this Facility Study for the purpose of evaluating the financial characteristics of Transmission Service Request 194672. The request is for 50MW of firm transmission service from CSWS control area to MidAmerican Energy Company. The requested Point-To-Point Service is from December 1, 2002 to December 1, 2004.

The projected base revenues for the requested transmission service are \$880,000 throughout the entire reservation period based on the available transfer capability of the existing transmission system with Network Upgrades. The maximum monthly base rate revenue requirements are \$44,000. However, CPS as the Transmission Customer is required to pay the higher of either the base revenues or the costs associated with the Network Upgrades.

The estimated revenue requirements for providing the necessary Network Upgrades to accommodate the transmission service request are \$4,955,479. The monthly upgrade revenue requirements are \$206,478. As the estimated revenue requirements for Network Upgrades are higher than the estimated base rate revenues, CPS shall pay the revenue requirements for the Network Upgrades.

An irrevocable letter of credit is required in the amount of \$4,199,322 for the 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 50MW.

The customer is responsible for upgrading the Rayburn Country Electric Cooperative (RCEC), Jacksonville to Overton 138 kV, facility that is a third-party line.

## **Introduction**

Constellation Power Source, Inc. previously requested an Impact Study for Transmission Service from Central & South West Services (CSWS) to MidAmerican Energy Company (MEC). Based on the results of the completed CPS Impact Studies 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 staff of SPP completed System Impact Studies SPP-2000-045 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 limit the requested 50MW transmission service are listed in Tables 1, 1A, 1B, 1C, and 1D. These Network Facility Upgrades are required to be in service to provide the requested transmission service. The in service dates of these previously assigned Network Facility Upgrades will limit and delay the requested transmission service. Any ATC values specified in Tables 1 thru 1D apply to the 50MW transmission request. The Network Facility Upgrades that have been assigned to the previous CPS CSWS to EES 250MW and CSWS to AMRN 150MW transmission requests are listed in Table 1C and 1D respectively.

In addition to the facilities listed in Table 1 thru 1D, the CSWS Patterson to South Nashville 138kV line reconductor is required to provide the requested transmission service and is listed in Table 2. The

Patterson to South Nashville line was originally identified as a constraint for the CPS CSWS to EES 250MW transfer. The transmission owner notified SPP of the incorrect 105MVA emergency rating. The revised rating was then used in monitoring the additional loading on the line due to the additional CPS transmission requests. The additional impact of the CPS CSWS to MEC 50MW transmission request overloads the Patterson to South Nashville 138kV line for the Longwood to El Dorado 345kV line outage to 101.8% of the revised 2004 Summer 118MVA Emergency Rating. CPS is responsible for the costs associated with the Network Upgrade found in Table 2. The estimated total cost to engineer and construct the Patterson to South Nashville upgrade in year 2000 dollars is \$4,126,061 which includes reconductoring 17.72 miles of 4/0 cu conductor of the total 25.06 mile line with 795MCM ACSR conductor.

All Network Upgrades assigned to previous transmission requests were monitored to determine whether the previously assigned upgrades are adequate to support additional transmission requests. One previously assigned facility was identified as needing additional upgrades due to the impact of the requested transmission service. The network facility that requires additional upgrades due to the 50MW transfer is listed in Table 2A. The Hope to Patmos 115kV line requires the replacement of a 1200Amp Circuit Switcher to a 2000Amp Circuit Switcher at Hope for the 2004 Summer. The initial Hope to Patmos 115kV line upgrade included reconductoring 7.1 miles of the 11.34 mile line with 1272MCM ACSR conductor and was assigned to reservation 171555. The loading on the circuit exceeded the new emergency rating with addition of the 50MW transfer. The cost associated with the facility needing additional upgrades is \$73,261, bringing the total estimated Engineering and Construction costs to \$4,199,322.

In addition, all facilities identified as limiting the requested transmission service for the 2004 Summer Peak were studied further to determine the required in service date of the Network Upgrade. The year that each facility is required was determined by interpolating between the 2004 Summer Peak loading and 2001 Summer Peak loading. Both the previously assigned facilities and the facilities assigned to the requested transmission service were evaluated. Two facilities assigned to the previous CPS CSWS to AMRN 150MW transmission request need an accelerated in service date and are listed in Table 3.

The additional upgrades of the Cherokee to Knox Lee 138kV line and the Rock Hill to Tatum 138kV line, found in Table 1D and required to be in service by 6/1/04, are required to be in service by 6/1/03 due to the 50MW Impact. The Patterson to South Nashville line mentioned above is required to be in service by 6/1/03 by interpolation. The estimated engineering and construction cost responsibility of the 50MW request remains unchanged due to the earlier in service date of the Network Facility Upgrades.

The Rayburn Country Electric Cooperative (RCEC), Jacksonville to Overton 138 kV, facility has been identified as needing to be reconducted at an estimated engineering and construction cost of \$2,220,000 with an 18-month lead time. The facility was identified as a 2003 Summer Peak constraint for the previous CPS 250MW transmission service by interpolation. This facility is a third-party facility and the transmission customer is responsible for obtaining arrangements for construction upgrades on the facility per Section 21.1 of the SPP OATT. If requested, SPP is willing to undertake reasonable efforts to assist the transmission customer in making arrangements for necessary engineering, permitting, and construction of the transmission limiting facility.

Given the estimated dates in which the Network Upgrades are required for requested Transmission Services to be provided, there are facility limits that will delay the start date of the service. The estimated time required to complete the engineering and construction of the first transfer-limiting facility of the Summer is Thirty (30) Months after CSWS's receipt of authorization to proceed from SPP. CSWS'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 2003 Summer peak, from June 1 to October 1, is 0MW due to the available transfer capability being reserved for transmission reservation 221099.

Firm Point-To-Point Transmission Service may be provided to CPS in the amount requested after the IPC Jefferson to Lieberman facility upgrade is in service. If a completed service agreement is received by SPP on or before January 1, 2001, from the transmission customers of reservation 221099 and

171555 then the requested service may be provided on approximately February 1, 2004 given no unexpected delays in design, permitting and construction.

SPP does not accept and approve requests for firm transmission service without restrictions if the design criteria specified in the corresponding impact study is not met. However, SPP may accept a request if the Transmission Customer agrees to the reduction of allocated capacity to designated levels within specified time frames with no financial discounts. If CPS is agreeable to these terms, then SPP will accept and approve the requested service beginning after 1) a signed service agreement and letter of credit are received by SPP, and 2) all transmission owners' receipt of authorization from SPP to proceed with the Network Upgrades.

### **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 credit, 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).

The zone interfaced to the sink with the lowest rate for firm point-to-point transmission service is Kansas City Power & Light (KCPL). The current base rate of KCPL is \$880/MW-Month. Table 5 includes a summary of ATC values with all previously assigned and presently assigned Network Upgrades energized by the Dates Available specified in Table 4. Only one facility has an available in service date after the start date of the requested transmission service. Given these values of ATC, corresponding base rate revenues are listed on a monthly basis in Table 6. The projected base revenues from the requested service are estimated to be \$880,000.

The estimate of total Revenue Requirements listed in Table 7 for the required Network Upgrades throughout the requested transaction period is \$4,955,479. The estimate of monthly Revenue

Requirements is \$206,478 throughout the requested transaction period. The projected base revenues from the requested service are estimated to be less than the estimated Revenue Requirements for the required Network Upgrades over the requested transaction period. Therefore, there will be costs assigned to the Transmission Customer for the Network Upgrades. The total estimated cost, including only Network Upgrade costs, throughout the transaction period is \$4,199,322.

The Southwest Power Pool and the affected transmission owner CSWS shall use due diligence to add necessary facilities or upgrade the Transmission System to provide the requested Transmission Service, provided CPS 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 CPS 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 \$4,199,322 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.

### **Conclusion**

Given the constraints identified in the System Impact Study SPP-2000-045, 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 previously assigned Network Facility Upgrade costs are assumed accepted by the previous transmission customers. 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. The customer is responsible for upgrading the Rayburn Country Electric Cooperative (RCEC), Jacksonville to Overton 138 kV, facility that is a third-party line.

Based on the results of the Impact Study SPP-2000-045, Network Upgrades that were identified as required to provide the requested transmission service are listed in Tables 1, 1A, 1B, 1C, 1D, 2, and 2A. Tables 1 thru 1D include the Network Upgrades and Costs assigned to previous transmission customers that are required to accommodate Transmission Service Request 194672 from Central and South West Services to MidAmerican Energy Company. Tables 2 and 2A includes the Network Upgrades and Costs assigned to Transmission Service Request 194672 from Central and South West Services to MidAmerican Energy Company that are also required to provide the requested service.

Throughout the transaction period of the requested Transmission Service, the estimate of the Revenue Requirements for the required Network Upgrades is \$4,955,479 for Transmission Service Request 194672. A listing of ATC values and monthly revenue requirements for the required Network Upgrades is in Table 7. The base revenues are estimated to be \$880,000 and the monthly revenue requirements are listed in Table 6. As the Revenue Requirements for the required Network Upgrades are higher than the base rate revenues, the revenue requirements from the Transmission Customer are those required for the Network Upgrades.

In the event that previously assigned facilities listed Tables 1, 1A, 1B, 1C, and 1D are not confirmed by the previous transmission customers, the assignment of the Network Facility Upgrade Costs will need to be reevaluated.

**Table 1**

**Estimated Network Upgrade Costs, Lead Times And Required Dates Assigned to Transmission Service Request 221099 from ERCOTE to Entergy during the Period from January 1, 2001 To January 1, 2006 that limit the requested 50MW transfer.**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Jacksonville - Pine Grove 138kV: Reset CTs By CSWS	\$1,000	Four (4) Months	4/1/01	5/1/01
IPC Jefferson - Lieberman 138kV: Replace Jumpers & Wavetrap by CSWS	10,000	Six (6) Months	6/1/01	2/1/02
IPC Jefferson - Lieberman 138kV: Reconductor 26.35 miles To 795MCM by CSWS	6,231,585	Thirty (30) Months * ATC = 0	6/1/01	2/1/04
Cherokee REC - Knox Lee 138kV: Reconductor To 1272MCM by CSWS	720,000	Twelve (12) Months	6/1/01	2/1/02
Waterworks - Arsenal Hill 69kV: Replace Three Sets of Switches by CSWS	60,000	Six (6) Months	6/1/01	2/1/02
East Centerton - Gentry REC 161kV: Replace Breaker & Switches by CSWS	167,960	Twelve (12) Months	6/1/01	2/1/02
Cherokee REC - Tatum 138kV: Reconductor To 1272MCM by CSWS	1,300,000	Eighteen (18) Months	6/1/01	2/1/03
Rock Hill - Tatum 138kV: Reconductor 0.81 miles To 1272MCM & Replace Wavetrap by CSWS	190,000	Twelve (12) Months	6/1/01	2/1/02
Tipton Ford - Monett 161kV: Reconductor To 795MCM by EDE	5,700,000	Eighteen (18) Months	6/1/01	2/1/03

**Table 1 (Continued)**

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

**Assigned to Transmission Service Request 221099 from ERCOTE to Entergy during the Period from January 1, 2001 To January 1, 2006 that limit the requested 50MW transfer.**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Flournoy - Longwood 138kV: Replace Jumpers by CSWS	10,000	Six (6) Months	6/1/04	6/1/04
Alumax Tap - NW Texarkana 138kV: Replace Switches by CSWS	30,000	Nine (9) Months	12/1/04	12/1/04
SUBTOTAL	\$14,420,545			

Note: \* Limits start of requested 150MW transfer amount.

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 1A**  
**Estimated Network Upgrade Costs, Lead Times And Required Dates**  
**Assigned To The Kansas Municipal Energy Agency For Requests 163951 & 163958**  
**That limit the requested 50MW transfer.**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Dyess - E. Rogers 161kV Line Upgrade To 1590MCM By CSWS	\$4,000,000	Eighteen (18) Months	6/1/01	2/1/03
Flint Creek – Gentry 161kV: Replace Switch By CSWS	60,000	Six (6) Months	6/1/04	6/1/04
SUBTOTAL	\$4,060,000			

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 1B****Estimated Network Upgrade Costs, Lead Times And Required Dates****Assigned to Transmission Service Request 171555 CSWS to Entergy during the****Period from April 1, 2001 To September 30, 2004 that limit the requested 50MW transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
IPC Jefferson - Lieberman 138kV: Reconductor 0.65 miles To 795MCM & Replace Lieberman Switches by CSWS	\$153,967	Thirty (30) Months * ATC = 0	6/1/01	2/1/04
Rock Hill - Tatum 138kV: Reconductor 5.76 miles To 1272MCM & Reset Rock Hill CTs by CSWS	1,090,000	Eighteen (18) Months	6/1/01	2/1/03
NW Henderson – Poynter 69kV: Replace Jumpers & Bus By CSWS	45,700	Six (6) Months	6/1/01	2/1/02
Elm Springs REC - Flint Creek 161kV: Replace Switches by CSWS	40,000	Nine (9) Months	6/1/01	2/1/02
North Marshall - Woodlawn 69kV: Replace Jumpers by CSWS	10,000	Six (6) Months	6/1/01	2/1/02
Tupelo - Tupelo Tap 138kV: Replace Wavetrap by WFEC	8,700	Eight (8) Months	12/1/01	2/1/02
Northwest Texarkana - Patterson 138kV: Replace Switches & Breaker by CSWS	150,000	Twelve (12) Months	12/1/01	2/1/02
Longwood - Noram 138kV: Reconductor To 1590MCM by CSWS	1,274,374	Fifteen (15) Months	6/1/02	6/1/02

**Table 1B(Continued)**

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

**Assigned to Transmission Service Request 171555 CSWS to Entergy during the  
Period from April 1, 2001 To September 30, 2004 that limit the requested 50MW transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Hope - Patmos 115kV: Reconductor To 1272MCM by CSWS	1,576,468	Eighteen (18) Months	6/1/04	6/1/04
Hawkins - Hawkins REC 69kV: Reconductor To 795MCM by CSWS	375,000	Twelve (12) Months	6/1/04	6/1/04
Beaver – Eureka Springs 161kV: Reset Relays & CTs, Replace Metering By SWPA	22,500	Eight (8) Months	6/1/04	6/1/04
Beaver – Eureka Springs 161kV Reconductor To 1590MCM By CSWS	515,000	Twelve (12) Months	6/1/04	6/1/04
<b>SUBTOTAL</b>	<b>\$5,261,709</b>			

Note: \* Limits start of requested 150MW transfer amount.

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 1C**  
**Estimated Network Upgrade Costs, Lead Times And Required Dates**  
**Assigned to CPS' Transmission Service Requests 194656 & 194657 CSWS To Entergy**  
**During The Period From December 1, 2002 To December 1, 2004**  
**That limit the requested 50MW transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Forbing Tap - South Shreveport 69kV: Replace Jumpers By CSWS	\$12,000	Six (6) Months	6/1/03	6/1/03
Raines - Noram 138kV: Reconductor To 1595MCM by CSWS	1,447,081	Eighteen (18) Months	6/1/04	6/1/04
Diamond Jct. - Sarcoxie SW 69kV: Reconductor To 336.4MCM by EDE	700,000	Twelve (12) Months	6/1/04	6/1/04
SUBTOTAL	\$2,159,081			

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 1D****Estimated Network Upgrade Costs, Lead Times And Required Dates****Assigned to CPS' Transmission Service Requests 194668 & 194669 CSWS To Ameren****During The Period From December 1, 2002 To December 1, 2004****That limit the requested 50MW transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Ellerbe Road – Forbing Tap 69kV: Replace Bus & Jumpers by CSWS	\$28,723	Six (6) Months	6/1/04	6/1/04
Hallsville – Longview Heights 69kV: Reconductor To 795MCM by CSWS	1,626,291	Eighteen (18) Months	6/1/04	6/1/04
Sabine Mining Co. – SE Marshall 138kV: Replace Switches by CSWS	194,505	Twelve (12) Months	6/1/03	6/1/03
Marshall – North Marshall 69kV: Replace Bus & Jumpers by CSWS	23,356	Nine (9) Months	6/1/03	6/1/03
Chilocco Tap – Chikaskia 69kV: Reconductor 12 Miles To 477MCM By OKGE	2,017,492	Eighteen (18) Months	6/1/04	6/1/04
Chilocco Tap – Chikaskia 69kV: Reconductor 7.56 Miles To 477MCM By WFEC	1,270,080	Eighteen (18) Months	6/1/04	6/1/04
Cherokee – Knox Lee 138kV: Replace Switches by CSWS	55,879	Nine (9) Months	6/1/04	6/1/04

**Table 1D(Continued)**

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

**Assigned to CPS' Transmission Service Requests 194668 & 194669 CSWS To Ameren**

**During The Period From December 1, 2002 To December 1, 2004**

**That limit the requested 50MW transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Rock Hill – Tatum 138kV: Replace Jumpers to Breaker by CSWS	12,000	Six (6) Months	6/1/04	6/1/04
SUBTOTAL	\$5,228,326			

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 Transmission Service Request 194672**  
**From Central and South West Services To MEC**  
**During The Period From December 1, 2002 To December 1, 2004**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Patterson – South Nashville 138kV: Reconductor 17.72 miles To 795MCM by CSWS	\$4,126,061	Twenty – Seven (27) Months	6/1/03	6/1/03
SUBTOTAL	\$4,126,061			

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 2A**  
**Estimated Network Upgrade Costs, Lead Times And Required Dates**  
**For Facilities assigned to previous Transmission Requests requiring**  
**Additional Facility Upgrades For Transmission Service Request 194672**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Hope – Patmos 115kV: Replace Circuit Switcher by CSWS	\$73,261	Six (6) Months	6/1/04	6/1/04
SUBTOTAL	\$73,261			

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 3**  
**Network Facility Upgrades Assigned To Previous Transmission Customers**  
**Requiring An Earlier In Service Date Due To The 50MW Transfer**

NETWORK SYSTEM IMPROVEMENT	ENGINEERING & CONSTRUCTION COSTS (\$ 2000 )	ENGINEERING & CONSTRUCTION LEAD TIME	REQUIRED DATE (M/D/Y)	DATE IN SERVICE (M/D/Y) (1)
Cherokee – Knox Lee 138kV: Replace Switches by CSWS	\$55,879	Nine (9) Months	6/1/03	6/1/03
Rock Hill – Tatum 138kV: Replace Jumpers to Breaker by CSWS	12,000	Six (6) Months	6/1/03	6/1/03
SUBTOTAL	\$67,879			

**Table 4**  
**Network Elements That Limit Requested Transfer Amount**  
**To Less Than 50MW Due To Delays In Engineering and Construction**

Network System Improvement	Date Available (M/D/Y)	Prior ATC (MW)	ATC Models	Restricted Seasons/Years (M/D - M/D) (Years)
221099 & 171555 / IPC Jefferson - Lieberman 138kV: Reconductor 27.0 miles To 795MCM by CSWS	2/1/04	0	01SP,04SP	<u>6/1 - 10/1</u> 2003

Note: Date Available is 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 Owners from SPP.

ATC Models

Example Season Designation: From Date – To Date (M/D/Y), Season Description

01SP: 6/1/01 – 10/1/01, Summer Peak

04SP: 6/1/04 – 10/1/04, Summer Peak

**Table 5**  
**Summary Of Available Transfer Capability With All Network Upgrades**  
**Including Facilities Assigned To Previous Reservations**  
**For Transmission Service Request 194672**  
**From Central And South West Services To MEC**  
**During The Period From December 1, 2002 Through December 1, 2004**

Operating Period (Year)	Operating Period (M/D - M/D)	ATC (MW)
2002 - 2003	12/1 – 6/1	50
2003	6/1 – 10/1	0
2003	10/1 – 12/31	50
2004	1/1 – 12/1	50

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 Owners from SPP.

**Table 6**  
**Summary Of Available Transfer Capability With All Network Upgrades**  
**And Base Rate Revenues Excluding Cost Of Network Upgrades**  
**For Transmission Service Request 194672**  
**From Central And South West Services To MEC**  
**During The Period From December 1, 2002 Through December 1, 2004**

Operating Period (Month)	2002 ATC (MW)	2002 Base Revenues (\$)	2003 ATC (MW)	2003 Base Revenues (\$)	2004 ATC (MW)	2004 Base Revenues (\$)
January	N/A	N/A	50	\$44,000	50	\$44,000
February	N/A	N/A	50	\$44,000	50	\$44,000
March	N/A	N/A	50	\$44,000	50	\$44,000
April	N/A	N/A	50	\$44,000	50	\$44,000
May	N/A	N/A	50	\$44,000	50	\$44,000
June	N/A	N/A	0	\$0	50	\$44,000
July	N/A	N/A	0	\$0	50	\$44,000
August	N/A	N/A	0	\$0	50	\$44,000
September	N/A	N/A	0	\$0	50	\$44,000
October	N/A	N/A	50	\$44,000	50	\$44,000
November	N/A	N/A	50	\$44,000	50	\$44,000
December	50	\$44,000	50	\$44,000	N/A	N/A
Subtotal		\$44,000		\$352,000		\$484,000
Total, All Years						\$880,000

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 Owners from SPP.

**Table 7**  
**Summary Of Available Transfer Capability With All Network Upgrades**  
**And Network Upgrade Revenues, The Total Revenue Requirements,**  
**For All Facilities Assigned To Transmission Service Request 194672**  
**From Central And South West Services To MEC**  
**During The Period From December 1, 2002 Through December 1, 2004**

Operating Period (Month)	2002 ATC (MW)	2002 Network Upgrade Revenues (\$)	2003 ATC (MW)	2003 Network Upgrade Revenues (\$)	2004 ATC (MW)	2004 Network Upgrade Revenues (\$)
January	N/A	N/A	50	\$206,478	50	\$206,478
February	N/A	N/A	50	\$206,478	50	\$206,478
March	N/A	N/A	50	\$206,478	50	\$206,478
April	N/A	N/A	50	\$206,478	50	\$206,478
May	N/A	N/A	50	\$206,478	50	\$206,478
June	N/A	N/A	0	\$206,478	50	\$206,478
July	N/A	N/A	0	\$206,478	50	\$206,478
August	N/A	N/A	0	\$206,478	50	\$206,478
September	N/A	N/A	0	\$206,478	50	\$206,478
October	N/A	N/A	50	\$206,478	50	\$206,478
November	N/A	N/A	50	\$206,478	50	\$206,485
December	50	\$206,478	50	\$206,478	N/A	N/A
Subtotal		\$206,478		\$2,477,736		\$2,271,265
Total, All Years						\$4,955,479

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 Owners from SPP.