



*System Facilities Study*

*Firm Point-To-Point Transmission Service  
Requests 303472 & 303473*

*Aquila Energy Marketing Corp.*

*From Aquila, Inc.*

*To The Board Of Public Utilities*

*In The Requested Amount Of 200MW  
With 200MW Allocated*

*Requested From January 1, 2003*

*To January 1, 2005*

*With Deferral To The Period From  
October 1, 2003 To October 1, 2005*

*SPP Coordinated Planning  
#SPP-2001-305*

**Created January 30, 2003**

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## **Executive Summary**

At the request of Aquila Energy Marketing Corp (Transmission Customer), the Southwest Power Pool (Transmission Provider) developed this Facilities Study to summarize the operating limits and to determine the financial characteristics associated with Transmission Service Requests 303472 and 303473. These requests are for 100MW each of Firm Point-To-Point Transmission Service from Aquila, Inc. (Missouri Public Service, MPS) to The Board of Public Utilities, Kansas City (KACY). The requested term of this Transmission Service is 2 years from January 1, 2003 to January 1, 2005.

To complete the request for Transmission Service, the Transmission Provider must receive an executed Service Agreement from the Transmission Customer within 15 days of receipt of this study. In this particular application, no unconditional and irrevocable letter of credit associated with the engineering and construction of assigned Network Upgrades excluding pre-payment requirements is required. The Transmission Customer must also confirm this request on the Transmission Provider's OASIS pursuant to the results of this Facilities Study.

Annual available transfer capability (ATC) allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period. For the development of this study, a contract date of February 1, 2003 was assumed. Allocated ATC and associated revenue requirements are based on this request being complete by this date. In the event that the Transmission Provider does not receive an executed Service Agreement and letter of credit by this date, then the ATC of the existing transmission system with Network Upgrades will have to be reevaluated due to subsequent delays in scheduling engineering and construction for the required Network Upgrades. The minimum ATC during the 2003 summer peak, from June 1 to October 1, is 0MW. The ATC increases from 0 to 200MW during the term of service as summarized in Table 8.

The ATC listed in Table 8 is insufficient to provide the Transmission Customer with reliable service for a significant portion of the requested reservation period without impairing or degrading reliability to existing firm services. Therefore, the Deferral of Service as provided for in section 15.5 of the Transmission Provider's Open Access Transmission Tariff (OATT) was deemed applicable to this request for Transmission Service. The period in which 2 years of requested Transmission Service may be provided at or near the capacity level requested is from October 1, 2003 to October 1, 2005.

Network Upgrades will be required on the Empire District Electric (EDE), Kansas City Power & Light (KACP), OG+E Electric Services (OKGE), and Southwestern Power Administration (SWPA) transmission systems. The engineering and construction cost estimates for assignable Network Upgrades total \$1,300,000 excluding expedited upgrades. The sum of engineering and construction cost estimates for expedited (non-assignable) Network Upgrades is \$2,500,000. Interest and other indirect expenses associated with expedited Network Upgrades are assigned and included in the total estimated cost.

Network Upgrades will also be required in the future that limit the rollover rights of the Transmission Customer. Currently identified facilities that will require upgrades are on the Southwestern Power Administration (SWPA), Western Farmers Electric Cooperative (WFEC) and Westar Energy (WR) transmission systems.

A Transmission Owner may require that a Transmission Customer pre-pay for all assignable Network Upgrades which it designs and constructs. These pre-payments are in the amount of the Transmission Owner's estimated engineering and construction costs. Pre-payments will be required prior to the scheduled in-service dates. However, levelized amortization and interest credits associated with these pre-payments are included in the monthly revenue requirements of the Transmission Customer.

The estimated levelized revenue requirements for providing the necessary Network Upgrades to accommodate the Transmission Service request are \$973,488 excluding pre-payments. Pre-payment costs are \$1,300,000 for estimated engineering and construction expenses. Therefore, the total assignable estimate for Network Upgrades is \$2,273,488. The average rate based on this total estimated cost of Network Upgrades, including the expediting of pre-planned Network Upgrades, is \$474/MW-Month over the entire term. Excluding the engineering and construction costs of upgrades being expedited and by accounting for only interest and other indirect costs over the term of Transmission Service, the average indirect cost multiplier is 1.7488 over the entire term.

The projected base rate transmission service charges (excluding charges for ancillary services) are \$4,224,000 during the reservation period based on the ATC of the existing transmission system with Network Upgrades. The Transmission Customer is required to pay the higher of either the base rate transmission service charges or the revenue requirements associated with the Network Upgrades. The total estimated revenue requirements for providing the necessary Network Upgrades to accommodate the Transmission Service request are \$2,273,488. As the estimated base rate transmission service charges are greater than the total estimated revenue requirements for Network Upgrades, the Transmission Customer shall pay the base rate transmission service charges.

The revenue requirements for generation re-dispatching are listed in Table 11. These requirements are only to accommodate the construction of Network Upgrades. The total estimated revenue requirements of the Transmission Customer on a monthly basis are listed in Table 12. A list of the average annual Transmission Service costs is in Table 13. A summary of all costs is included in Table 15. The total estimated cost is \$4,224,000. The average rate based on this total estimated cost is \$880/MW-Month over the entire term.

If a completed Service Agreement is received by the Transmission Provider on or before February 1, Firm Point-To-Point Transmission Service may be provided on approximately

October 1, 2003 given no unexpected delays in design, permitting, and construction. The upgrade of constraints identified in the corresponding Impact Study may not be completed until after the start-date of the requested Transmission Service due to lead times for engineering & construction.

Given the pre-payment requirements in this particular case, the Transmission Provider does not require an unconditional and irrevocable letter of credit before the Transmission Owners incur initial engineering and construction costs. This amount is for all assignable Network Upgrades less pre-payment requirements. The amount of the letter of credit will be adjusted on an annual basis to reflect amortization of these costs. 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 this allocated capacity.

The Transmission Customer is responsible for the cost of upgrading all identified third-party facilities that are overloaded due to the requested service. In this case, third-party facilities were identified. Not all third-party facilities were monitored during the development of the corresponding Impact Study. Therefore, additional third-party facility upgrades may be required to accommodate the requested Transmission Service.

### **Introduction**

The principal objective of this Facilities 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.

Another objective is to estimate the levelized revenue requirement for all identified Network Upgrades by Transmission Owner. The levelized revenue requirement is based on cost components of each upgrade including depreciation, weighted cost of capital, composite income tax, other tax, and deferred income tax credit. This information will be used to allocate revenue to Transmission Owners even if it is not the basis for billing the Transmission Customer pursuant to “or” pricing.

Facilities identified as limiting the requested Transmission Service have been reviewed to determine the required in-service date of each Network Upgrade. The year that each Network Upgrade is required to accommodate a request is determined by interpolating between the applicable model years given the respective loading data. Both previously assigned facilities and the facilities assigned to this request for Transmission Service were evaluated.

In some instances due to lead times for engineering and construction, Network Upgrades may not be available when required to accommodate a request for Transmission Service. When this occurs, the ATC with available Network Upgrades will be less than the capacity requested during either a portion of or all of the requested reservation period. As a result, the lowest seasonal ATC within each annual period will be offered to the Transmission Customer on an applicable annual basis within the reservation period.

A corresponding Impact Study was completed that identified limitations and required modifications of the Transmission Provider system necessary to provide the specified Transmission Service. The Network Upgrades that were not assigned to a previous request and are required to provide the specified Transmission Service are listed in Table 1. Due to the in-service dates of these Network Upgrades, some may limit and delay the requested Transmission Service. The ATC values associated with only transfer-limiting upgrades are listed in Table 7.

All Network Upgrades assigned to previous Transmission Service requests that have not yet been constructed were monitored to determine whether the previously assigned upgrades are adequate to support this additional request. To accommodate a new request for Transmission Service, a previously assigned Network Upgrade may require capacity in addition to that previously specified. A previously assigned Network Upgrade may be required to be in service at an earlier date than previously indicated to accommodate a new request. With regard to the capacity and in-service date of a previously assigned Network Upgrade, an upgrade may require both additional capacity and an earlier in-service date to accommodate this request for Transmission Service.

Network Upgrades that were previously assigned and will require only accelerated in-service dates to accommodate the specified Transmission Service are listed in Table 2. Network Upgrades that were previously assigned and will require only additional capacity to accommodate the specified Transmission Service are listed in Table 3. Network Upgrades that were previously assigned and will require both additional capacity and accelerated in-service dates to accommodate the specified Transmission Service are listed in Table 4. Due to the in-service dates of these Network Upgrades, some may limit and delay the requested Transmission Service. The ATC values associated with only transfer-limiting upgrades are listed in Table 6.

Some constraints identified in the Impact Study are not addressed in this Facilities Study as the Transmission Owners determined that upgrades are not required due to various reasons. These facilities are listed in Table 5.

Given the estimated dates when Network Upgrades will be required for the specified Transmission Service to be provided, there are facility limits that may either delay the start date of the service or limit the ATC to less than that requested. Transfer-limiting facilities are listed in Tables 6 and 7. Seasonal and annual transfer limits given engineering and construction lead times

are also listed in these tables. A summary of ATC throughout the reservation period is included in Table 8.

The Transmission Provider does not accept requests for firm Transmission Service without restrictions if the design criteria specified in the corresponding Impact Study are not met. However, the Transmission Provider may accept a request with either or both of the following: 1) a reduction of provided capacity to designated levels within the specified time frames, and 2) a deferral of service, as listed in Table 8. The Transmission Provider accepts this request for Transmission Service given this allocation of capacity of which is available after the requested start-date of January 1, 2003. Thereafter, the specified capacity throughout the remainder of the reservation period through September 2005 is available to accommodate the Transmission Service deferred to the period from October 1, 2003 to October 1, 2005.

Tables 6 through 10, 12 and 13 include lists of capacity of which may be less than that requested through the reservation period. Table 9 includes the ATC and the estimate of base rate transmission service charges. The ATC and the estimate of levelized revenue requirements plus any pre-payments for Network Upgrade are provided in Table 10. The Transmission Customer shall pay the higher of the base rate transmission service charges or the revenue requirements for the Network Upgrades.

### **Third-Party Facilities**

For third-party facilities listed in Table 14, the Transmission Customer is responsible for obtaining arrangements for the necessary upgrades of the facilities per Section 21.1 of the Transmission Provider's OATT. If requested, the Transmission Provider is willing to undertake reasonable efforts to assist the Transmission Customer in making arrangements for necessary engineering, permitting, and construction of the third-party facilities.

All modeled facilities within the Transmission Provider system were monitored during the development of the corresponding Impact Study. Third-party facilities must be upgraded when it is determined that they are overloaded while accommodating the requested Transmission Service. Third-party facilities include those owned by members of the Transmission Provider who have not placed their facilities under the Transmission Provider's OATT.

### **Financial Methodology**

The revenue requirements associated with each assigned Network Upgrade is calculated using the estimated installed cost for each Network Upgrade reflected herein and the annual fixed charge rate of the constructing Transmission Owner. A present worth analysis is conducted, based on each Transmission Owner's annual fixed charge rates including weighted cost of capital, to determine the levelized revenue requirement of each Network Upgrade. The levelized revenue requirements of all applicable Network Upgrades are summed to determine the total revenue requirements for Network Upgrades associated with the Transmission Service request.

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 facilities are upgraded throughout the reservation period, the Transmission Customer shall 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 usable facilities based on their respective book values.

The amortization period for Network Upgrades and Direct Assignment facilities shall be the lesser of 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 fixed charge rate

for each Transmission Owner shall be based on the sum of expenses for a previous calendar year, including weighted cost of capital, composite income tax, other tax, 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 1) amortized engineering and construction costs associated with the new facilities, 2) annual carrying charges, excluding depreciation, based on the product of a) applicable gross and net engineering and construction costs associated with the new facilities, and b) annual fixed 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 respective remaining depreciation periods, 4) the salvage value credit of non-usable facilities, 5) annual carrying charge credits, excluding depreciation, based on the product of a) applicable gross and net book values associated with all replaced usable facilities, and salvage value of non-usable, and b) annual fixed charge rate (per-unit). The costs allocated to the Transmission Customer throughout the entire 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.

In the event that the engineering and construction of a previously assigned Network Upgrade may be expedited, with no additional upgrades, to accommodate a new request for Transmission Service, then the levelized present worth of only the incremental expenses though the reservation period of the new request, excluding depreciation, shall be assigned to the new request. These incremental expenses, excluding depreciation, include 1) the levelized difference in present worth of the engineering and construction expenses given the change in date to complete construction to account for additional interest expense and reduced engineering and construction expense due to inflation, 2) the levelized present worth of all expediting fees, and 3) the levelized present worth of the incremental annual carrying charges, excluding depreciation and interest, during the new reservation period taking into account both a) the reservation in

which the project was originally assigned, and b) a reservation, if any, in which the project was previously expedited.

If the capacity of a previously assigned Network Upgrade is insufficient to accommodate a new request for Transmission Service, expediting the upgrade may be needed, and sufficient time is available for the Transmission Owner to accomplish necessary re-design and construction of the upgrade with additional capacity while accommodating previous requests, then the levelized present worth of only the incremental expenses though the reservation period of the new request, including depreciation, shall be assigned to the new request. These incremental expenses include 1) if expediting, the levelized difference in present worth of the previously assigned engineering and construction expenses given the change in date to complete construction to account for additional interest expense and reduced engineering and construction expense due to inflation, 2) if expediting, the levelized present worth of all expediting fees, 3) the levelized present worth of the incremental annual carrying charges associated with the previously assigned upgrade, excluding depreciation and interest, during the new reservation period taking into account both a) the reservation in which the project was originally assigned, and b) a reservation, if any, in which the project was previously expedited, and 4) the levelized present worth of the incremental annual carrying charges, including depreciation, associated with the additional capacity though the reservation period of the new request.

A Transmission Owner may require that a Transmission Customer pre-pay for all assignable Network Upgrades which it designs and constructs. These pre-payments are the Transmission Owner's estimated engineering and construction costs. Pre-payments will be required prior to the scheduled in-service dates. However, amortization and associated interest reductions are made to the total monthly revenue requirements of the Transmission Customer due to all pre-payment requirements. Pre-payment dates and costs are listed in Tables 1 through 4. In the event that a previously assigned Network Upgrade is expedited, then the Transmission Customer requiring the expediting will make the pre-payment prior to the new in-service date. When the Transmission Customer with the earlier reservation, which the Network Upgrade was

previously assigned to, submits its pre-payment, the Transmission Provider will immediately reimburse the Transmission Customer requiring the expediting in the amount of the pre-payment.

### **Financial Analysis**

The zone interfaced to the sink with the lowest zonal rate for Firm Point-To-Point Transmission Service is the Kansas City Power & Light Company. The current zonal rate of KACP is \$880/MW-Month. Table 10 includes a summary of ATC values with all assigned Network Upgrades energized by the Date In Service specified in Tables 6 and 7. Given the lesser of these values of ATC and the requested capacity, corresponding base rate transmission service charges are listed on a monthly basis in Table 9. The base rate transmission service charges for the Transmission Service are estimated to be \$4,224,000.

The estimate of total revenue requirements for the required Network Upgrades throughout the reservation period is determined on a levelized basis. A Transmission Owner may require that a Transmission Customer pre-pay for all assignable Network Upgrades which it designs and constructs in the amount of estimated engineering and construction costs. When a pre-payment is required, the estimate of total monthly revenue requirements is reduced by a credit including amortization and associated interest. Pre-payment dates and costs are listed in Tables 1 through 4 with a total cost of \$1,300,000.

The sum of the estimated monthly revenue requirements listed in Table 10 for the required Network Upgrades throughout the reservation period is \$2,273,488. These monthly revenue requirements include pre-payment requirements for a Transmission Owner's engineering and construction costs. The estimated revenue requirements for the required Network Upgrades are less than the projected base rate transmission service charges over the specified reservation period. Therefore, the Transmission Customer will be responsible for the base rate transmission service charges of which are estimated to be \$4,224,000 throughout the reservation period.

The revenue requirements for generation re-dispatching are listed in Table 11. These requirements are only to accommodate the construction of Network Upgrades. The total estimated revenue requirements of the Transmission Customer on a monthly basis are listed in Table 12. A list of the average annual Transmission Service costs is in Table 13. A summary of all costs is included in Table 15.

The Transmission Provider and the affected Transmission Owners shall use due diligence to add necessary facilities or upgrade the Transmission System to provide the requested Transmission Service, provided the Transmission Customer agrees to compensate the Transmission Provider for such costs pursuant to the terms of Section 27 of the Open Access Transmission Tariff. Partial Interim Service is available per Section 19.7 of the Open Access Transmission Tariff.

Engineering and construction of all new facilities and modifications will not start until after an executed Service Agreement has been received by the Transmission Provider and the affected Transmission Owners receive the appropriate authorization to proceed from the Transmission Provider. In accordance with section 19.4 of the Open Access Transmission Tariff, the Transmission Customer shall provide an unconditional and irrevocable letter of credit to the Transmission Provider for the initial engineering and construction costs to be incurred by the Transmission Owners. This amount is for all assignable Network Upgrades less pre-payment requirements. In this application given the pre-payment requirements, no letter of credit is required. The Transmission Customer shall also maintain a letter of credit in effect during the term of the Transmission Service Agreement. The amount of the letter of credit will be adjusted on an annual basis to reflect amortization of these costs. 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 corresponding Impact Study, 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 Transmission 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 when the Transmission Provider notifies the Transmission Owners to proceed with the necessary projects.

Based on the results of the corresponding Impact Study, Network Upgrades that were identified as required to provide the requested Transmission Service are listed in Tables 1 through 4. Table 1 includes the Network Upgrades and costs assigned to the Transmission Customer to accommodate its Transmission Service Request. Table 2 includes previously assigned Network Upgrades requiring only accelerated in-service dates. Table 3 includes previously assigned Network Upgrades requiring only additional capacity to accommodate this request. Table 4 includes previously assigned Network Upgrades requiring both additional capacity and accelerated in-service dates to accommodate this request.

Throughout the reservation period of the specified Transmission Service, the estimate of the levelized revenue requirements for the required Network Upgrades is \$2,273,488 for Transmission Service Requests 303472 and 303473. ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC on an annual basis. A listing of ATC values and monthly revenue requirements for the required Network Upgrades is in Table 10. The base rate transmission service charges are estimated to be \$4,224,000 and the monthly revenue requirements are listed in Table 9. As the base rate transmission service charges are greater than the revenue requirements for the required Network Upgrades, the revenue requirements from the Transmission Customer are for the base rate transmission service charges. The total estimated revenue requirement is listed in Table 12 in the amount of \$4,224,000.

To complete the request for Transmission Service, the Transmission Provider must receive an executed Service Agreement from the Transmission Customer within 15 days of receipt of this

study. In this particular application, no unconditional and irrevocable letter of credit associated with the engineering and construction of assigned Network Upgrades is required. The Transmission Customer must also confirm this request on the Transmission Provider's OASIS pursuant to the results of this Facilities Study. Upon receipt of this item and confirmation by the Transmission Customer, the Transmission Provider will authorize the applicable Transmission Owners to proceed with the engineering and construction of the Network Upgrades assigned to this request.

In the event that Transmission Customers do not confirm other requests for Transmission Service that have previously assigned Network Upgrades, the assignment of applicable Network Upgrades will need to be reevaluated.



**Table 2  
Previously Assigned Network Upgrades  
Requiring Only Accelerated In-Service Dates**

| Facility,<br>Previously Assigned Network Upgrade,<br>& Transmission Owner         | Previous<br>Request (No.) | Engineering &<br>Construction<br>Cost (\$) | Eng. & Const.<br>Lead Time<br>(Months) | Const. Only<br>Lead Time<br>(Months) | Date<br>Needed<br>(M/D/Y) | Previous Date<br>In Service<br>(M/D/Y) | Scheduled Date<br>In Service<br>(M/D/Y) | Pre-Payment<br>Date<br>(M/D/Y) |
|---|---------------------------|--|--|--------------------------------------|---------------------------|--|---|--------------------------------|
| Beeline - Tibbens 69kV: Construct new Tibbens Road 138/12.5kV Substation by OKGE. | Trans. Owner              | 2,500,000                                  | 15                                     |                                      | 6/1/04                    | 6/1/08                                 | 6/1/04                                  |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
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|   |                           |  |  |                                      |                           |  |   |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
|   |                           |  |  |                                      |                           |  |   |                                |
| <b>Total</b>  |                           | \$2,500,000                                |  |                                      |                           |  |   |                                |

Note: Pre-payment dates are only specified when applicable.

**Table 3**  
**Previously Assigned Network Upgrades**  
**Requiring Only Additional Capacity**

| Facility,<br>Previously Assigned<br>Network Upgrade,<br>& Transmission Owner | New<br>Network Upgrade | Previous<br>Request<br>(No.) | Previous<br>Eng. & Const.<br>Costs (\$) | New<br>Eng. &<br>Const. Costs<br>(\$) | Assigned<br>Eng. &<br>Const. Costs<br>(\$) | Eng. &<br>Const. Lead<br>Time<br>(Months) | Const.<br>Only Lead<br>Time<br>(Months) | New<br>Date<br>Needed<br>(M/D/Y) | Previously<br>Scheduled Date<br>In Service<br>(M/D/Y) | Pre-<br>Payment<br>Date<br>(M/D/Y) |
|--|------------------------|------------------------------|---|---------------------------------------|--|---|---|----------------------------------|---|------------------------------------|
| None.  |                        |                              |   |                                       |  |   |   |                                  |   |                                    |
|  |                        |                              |   |                                       |  |   |   |                                  |   |                                    |
|  |                        |                              |   |                                       |  |   |   |                                  |   |                                    |
|  |                        |                              |   |                                       |  |   |   |                                  |   |                                    |
| <b>Total</b>   |                        |                              | \$0                                     | \$0                                   | \$0  |   |   |                                  |   |                                    |

Note: Pre-payment dates are only specified when applicable.  
 Assignable and pre-payment amounts are only the difference of the previous and new cost estimates for engineering and construction.

**Table 4**  
**Previously Assigned Network Upgrades**  
**Requiring Both Accelerated In-Service Dates And Additional Capacity**

| Facility,<br>Previously Assigned<br>Network Upgrade,<br>& Trans. Owner | New<br>Network Upgrade | Previous<br>Request<br>(No.) | Previous<br>Eng. &<br>Const. Cost<br>(\$) | New<br>Eng. &<br>Const. Cost<br>(\$) | Assigned<br>Eng. &<br>Const. Cost<br>(\$) | Eng. &<br>Const. Lead<br>Time<br>(Month) | Const.<br>Only Lead<br>Time<br>(Month) | New<br>Date<br>Needed<br>(M/D/Y) | Previous<br>Date In<br>Service<br>(M/D/Y) | New<br>Scheduled Date<br>In Service<br>(M/D/Y) | Pre-<br>Payment<br>Date<br>(M/D/Y) |
|--|------------------------|------------------------------|---|--------------------------------------|---|--|--|----------------------------------|---|--|------------------------------------|
| None   |                        |                              |   |                                      |   |  |  |                                  |   |  |                                    |
|  |                        |                              |   |                                      |   |  |  |                                  |   |  |                                    |
|  |                        |                              |   |                                      |   |  |  |                                  |   |  |                                    |
|  |                        |                              |   |                                      |   |  |  |                                  |   |  |                                    |
| <b>Total</b>   |                        |                              | \$0                                       | \$0                                  | \$0                                       |  |  |                                  |   |  |                                    |

Note: Pre-payment dates are only specified when applicable.  
 Assignable and pre-payment amounts are only the difference of the previous and new cost estimates for engineering and construction.



**Table 6  
Facilities That Limit Transmission Service  
And Have Network Upgrades Assigned To Previous Reservations**

| Previous Reservations     |   |              |                            |                          |                        |               | This Reservation       |            |                      |                        |                                     |
|---------------------------|---|--------------|----------------------------|--------------------------|------------------------|---------------|------------------------|------------|----------------------|------------------------|-------------------------------------|
| Reservation / Study (No.) | Facility & Network Upgrade, Plus Summary Of Restricted Operating Period   | Trans. Owner | Eng. & Const. Lead (Month) | Const. Only Lead (Month) | Possible (1)           |               | Scheduled              | ATC (MW)   | Impact Study (Model) | Upgrade Needed (M/D/Y) | Changes Required (3)                |
|                           |   |              |                            |                          | Date Available (M/D/Y) | Delay (Month) | In Service (2) (M/D/Y) |            |                      |                        |                                     |
| Trans. Owner              | Hawthorne - Randolph 161kV: Reconductor 2.01 miles 1192 ACSR with new hi-temp 1192 ACSS and upgrade necessary substation equipment.                             | KACP         | 5                          | 2                        | 11/14/03               | 5.5           | 6/1/04                 | 0          | 03SP                 | 6/1/03                 | None as expediting is not possible. |
| Trans. Owner              | Avondale - Randolph 161kV: Reconductor 3.53 miles 1192 ACSR with new hi-temp 1192 ACSS and upgrade necessary sub equipment including 161kV breaker at Randolph. | KACP         | 5                          | 2                        | 11/14/03               | 5.5           | 6/1/04                 | 0          | 03SP                 | 6/1/03                 | None as expediting is not possible. |
| Trans. Owner              | Beeline - Tibbens 69kV: Construct new Tibbens road 138/12.5kV substation.   | OGKE         | 15                         |                          | 5/2/04                 |               | 6/1/08                 | 0          | 05SP                 | 6/1/04                 | Expedite to 6/1/04.                 |
|                           | <b>Minimum 6/1 - 10/1, 2003:</b>  |              |                            |                          |                        |               |                        | <b>0</b>   |                      |                        |                                     |
|                           | <b>Minimum 6/1 - 10/1, 2004:</b>  |              |                            |                          |                        |               |                        | <b>200</b> |                      |                        |                                     |
|                           |   |              |                            |                          |                        |               |                        |            |                      |                        |                                     |

- Note: (1) Some existing facilities may not be taken out of service during the summer peaking period. When a facility may not be taken out of service and the projected completion of a Network Upgrade is between either 1) June 1 and September 15, or 2) September 15 and the date when construction ends given construction starts September 15, then the construction time is added to September 15. However, the Possible Date Available is limited to June 1 of the following year. Delay is the difference of the Possible Date Available and the Upgrade Needed date for the previous reservation.
- (2) The Scheduled In Service date is based on when continuous annual service may be started that is on or after the Possible Date Available. If N/A, then the facility upgrade/addition is not required, due to its lead time for engineering and construction, as a) continuous annual service above the ATC limit may be provided only after the requested reservation period, or b) the facility is not required at a later time within the reservation period due to reduced loading of the facility below its emergency rating. The Scheduled In Service date may be later than the Possible Date Available when either a) another facility with a lower value of associated ATC has a longer Engineering & Construction Lead time, or b) the start of the season, in which the Network Upgrade is required, is later than the Possible Date Available.
- (3) Changes Required may include expediting the previously assigned Network Upgrade to an earlier Scheduled In Service date and providing additional capacity. The Scheduled In Service date is based on items received by an assumed date as documented in this study including a) a signed Service Agreement and letter of credit received by the Transmission Provider, and b) authorization to proceed with engineering and construction received by the Transmission Owners from the Transmission Provider.

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

02AP: 4/1/02 – 6/1/02, Spring Minimum                      02FA: 10/1/02 – 12/1/02, Fall Peak

02G: 4/1/02 – 6/1/02, Spring Peak                              02WP: 12/1/02 – 4/1/03, Winter Peak

02SP: 6/1/02 – 10/1/02, Summer Peak



**Table 7  
Facilities That Limit Transmission Service  
And Have Network Upgrades Assigned To This Reservation**

| Facility & Network Upgrade,<br>Plus Summary Of<br>Restricted Operating Period | Trans.<br>Owner | ATC<br>(MW) | Impact<br>Study<br>(Model) | Upgrade<br>Needed<br>(M/D/Y) | Eng. &<br>Const. Lead<br>(Month) | Const.<br>Lead Only<br>(Month) | Possible (1)                 |                  | Scheduled                    |
|---|-----------------|-------------|----------------------------|------------------------------|----------------------------------|--------------------------------|------------------------------|------------------|------------------------------|
|   |                 |             |                            |                              |                                  |                                | Date<br>Available<br>(M/D/Y) | Delay<br>(Month) | In Service<br>(2)<br>(M/D/Y) |
| Springfield 161/69kV Transformer #3: Replace<br>25MVA trans. with 80MVA       | SWPA            | 15          | 03AP                       | 4/1/03                       | 12                               |                                | 2/1/04                       | 10               | 4/1/04                       |
| <b>Minimum 4/1 - 6/1, 2003:</b>   |                 | <b>15</b>   |                            |                              |                                  |                                |                              |                  |                              |
| <b>Minimum 4/1 - 6/1, 2004:</b>   |                 | <b>200</b>  |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |
|   |                 |             |                            |                              |                                  |                                |                              |                  |                              |

- Note: (1) Some existing facilities may not be taken out of service during the summer peaking period. When a facility may not be taken out of service and the projected completion of a Network Upgrade is between either a) June 1 and September 15, or b) September 15 and the date when construction ends given construction starts September 15, then the construction time is added to September 15. However, the Possible Date Available is limited to June 1 of the following year. Delay is the difference of the Possible Date Available and the Upgrade Needed date for this reservation.
- (2) The Scheduled In Service date is based on when continuous annual service may be started that is on or after the Possible Date Available. If N/A, then the facility upgrade/addition is not required, due to its lead time for engineering and construction, as a) continuous annual service above the ATC limit may be provided only after the requested reservation period, or b) the facility is not required at a later time within the reservation period due to reduced loading of the facility below its emergency rating. The Scheduled In Service date may be later than the Possible Date Available when either a) another facility with a lower value of associated ATC has a longer Engineering & Construction Lead time, or b) the start of the season, in which the Network Upgrade is required, is later than the Possible Date Available. The Scheduled In Service date is based on items received by an assumed date as documented in this study including a) a signed Service Agreement and letter of credit received by the Transmission Provider, and b) authorization to proceed with engineering and construction received by the Transmission Owners from the Transmission Provider.

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

02AP: 4/1/02 – 6/1/02, Spring Minimum      02FA: 10/1/02 – 12/1/02, Fall Peak  
02G: 4/1/02 – 6/1/02, Spring Peak      02WP: 12/1/02 – 4/1/03, Winter Peak  
02SP: 6/1/02 – 10/1/02, Summer Peak

**Table 8  
Summary Of Available Transfer Capability With Network Upgrades**

| Insufficient ATC (1)    |                              |          | Sufficient ATC          |                              |          |
|-------------------------|------------------------------|----------|-------------------------|------------------------------|----------|
| Operating Period (Year) | Operating Period (M/D - M/D) | ATC (MW) | Operating Period (Year) | Operating Period (M/D - M/D) | ATC (MW) |
| 2003                    | 1/1– 4/1                     | 0        | 2003                    | 10/1– 12/1                   | 200      |
| 2003                    | 4/1– 6/1                     | 15       | 2003                    | 12/1– 12/31                  | 200      |
| 2003                    | 6/1– 10/1                    | 0        |                         |                              |          |
|                         |                              |          | 2003                    | 10/1– 12/31                  | 200      |
| 2003                    | 1/1– 10/1                    | 0        |                         |                              |          |
|                         |                              |          | 2004                    | 1/1– 4/1                     | 200      |
|                         |                              |          | 2004                    | 4/1– 6/1                     | 200      |
|                         |                              |          | 2004                    | 6/1– 10/1                    | 200      |
|                         |                              |          | 2004                    | 10/1– 12/1                   | 200      |
|                         |                              |          | 2004                    | 12/1– 12/31                  | 200      |
|                         |                              |          |                         |                              |          |
|                         |                              |          | 2004                    | All                          | 200      |
|                         |                              |          |                         |                              |          |
|                         |                              |          | 2005                    | 1/1– 4/1                     | 200      |
|                         |                              |          | 2005                    | 4/1– 6/1                     | 200      |
|                         |                              |          | 2005                    | 6/1– 10/1                    | 200      |
|                         |                              |          |                         |                              |          |
|                         |                              |          | 2005                    | 1/1 – 10/1                   | 200      |
|                         |                              |          |                         |                              |          |
|                         |                              |          | 2003 - 2004             | 10/1 – 10/1                  | 200 (2)  |
|                         |                              |          | 2004 - 2005             | 10/1 – 10/1                  | 200 (2)  |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |
|                         |                              |          |                         |                              |          |

Note: Values of ATC are based on items received by February 1 including 1) a signed Service Agreement and letter of credit received by the Transmission Provider, and 2) authorization to proceed with engineering and construction received by Transmission Owners from the Transmission Provider. Annual ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period.

- (1) When the ATC is insufficient to provide the Transmission Customer with reliable service for a significant portion of the requested reservation period without impairing or degrading reliability to existing firm services, the Deferral of Service is applicable.
- (2) Allocated ATC to the Transmission Customer on an annual basis.

**Table 9  
Base Rate Transmission Service Charges**

| Operating Period<br>(Month) | 2003        |                         | 2004        |                         | 2005        |                         |
|-----------------------------|-------------|-------------------------|-------------|-------------------------|-------------|-------------------------|
|                             | ATC (MW)    | Base Rate Revenues (\$) | ATC (MW)    | Base Rate Revenues (\$) | ATC (MW)    | Base Rate Revenues (\$) |
| January                     | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| February                    | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| March                       | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| April                       | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| May                         | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| June                        | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| July                        | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| August                      | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| September                   | 0           | 0                       | 200         | 176,000                 | 200         | 176,000                 |
| October                     | 200         | 176,000                 | 200         | 176,000                 | 0           | 0                       |
| November                    | 200         | 176,000                 | 200         | 176,000                 | 0           | 0                       |
| December                    | 200         | 176,000                 | 200         | 176,000                 | 0           | 0                       |
| Subtotal By Year            | \$528,000   |                         | \$2,112,000 |                         | \$1,584,000 |                         |
| Total For All Years         | \$4,224,000 |                         |             |                         |             |                         |

Note: Values of ATC are based on items received by February 1, 2003 including 1) a signed Service Agreement and letter of credit received by the Transmission Provider, and 2) authorization to proceed with engineering and construction received by Transmission Owners from the Transmission Provider. Annual ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period.

These monthly costs include charges associated with any applicable through and out rate.

**Table 10**  
**Network Upgrade Revenue Requirements Including Pre-Payments**

| Operating Period<br>(Month) | 2003        |                               | 2004      |                               | 2005      |                               |
|-----------------------------|-------------|-------------------------------|-----------|-------------------------------|-----------|-------------------------------|
|                             | ATC (MW)    | Network Upgrade Revenues (\$) | ATC (MW)  | Network Upgrade Revenues (\$) | ATC (MW)  | Network Upgrade Revenues (\$) |
| January                     | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| February                    | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| March                       | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| April                       | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| May                         | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| June                        | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| July                        | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| August                      | 0           | 1,300,000                     | 200       | 40,562                        | 200       | 40,562                        |
| September                   | 0           | 0                             | 200       | 40,562                        | 200       | 40,562                        |
| October                     | 200         | 40,562                        | 200       | 40,562                        | 0         | 0                             |
| November                    | 200         | 40,562                        | 200       | 40,562                        | 0         | 0                             |
| December                    | 200         | 40,562                        | 200       | 40,562                        | 0         | 0                             |
| Subtotal By Year            | \$1,421,686 |                               | \$486,744 |                               | \$365,058 |                               |
| Total For All Years         | \$2,273,488 |                               |           |                               |           |                               |

Note: Values of ATC are based on items received by February 1, 2003 including 1) a signed Service Agreement and letter of credit received by the Transmission Provider, and 2) authorization to proceed with engineering and construction received by Transmission Owners from the Transmission Provider. Annual ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period.

A Transmission Owner may require that a Transmission Customer pre-pay for all assignable Network Upgrades which it designs and constructs. These pre-payments are in the amount of the Transmission Owner's estimated engineering and construction costs. The estimated monthly revenue requirements listed in this table include these pre-payments. All estimated monthly revenue requirements excluding pre-payments are \$40,562.

**Table 11**  
**Generation Re-Dispatching Revenue Requirements**

| Operating Period<br>(Month) | Generation Re-Dispatching Revenue Requirements |              |              |              |              |              |
|-----------------------------|--|--------------|--------------|--------------|--------------|--------------|
|                             | 2003<br>(\$)                                   | 2004<br>(\$) | 2005<br>(\$) | 2006<br>(\$) | 2007<br>(\$) | 2008<br>(\$) |
| January                     | 0  | 0            | 0            | 0            | 0            | 0            |
| February                    | 0  | 0            | 0            | 0            | 0            | 0            |
| March                       | 0  | 0            | 0            | 0            | 0            | 0            |
| April                       | 0  | 0            | 0            | 0            | 0            | 0            |
| May                         | 0  | 0            | 0            | 0            | 0            | 0            |
| June                        | 0  | 0            | 0            | 0            | 0            | 0            |
| July                        | 0  | 0            | 0            | 0            | 0            | 0            |
| August                      | 0  | 0            | 0            | 0            | 0            | 0            |
| September                   | 0  | 0            | 0            | 0            | 0            | 0            |
| October                     | 0  | 0            | 0            | 0            | 0            | 0            |
| November                    | 0  | 0            | 0            | 0            | 0            | 0            |
| December                    | 0  | 0            | 0            | 0            | 0            | 0            |
| Subtotal By<br>Year         | \$0  | \$0          | \$0          | \$0          | \$0          | \$0          |
| Total For All<br>Years      | \$0  |              |              |              |              |              |

**Table 12**  
**Total Estimated Revenue Requirements**

| Operating Period<br>(Month) | 2003        |                           | 2004        |                           | 2005        |                           |
|-----------------------------|-------------|---------------------------|-------------|---------------------------|-------------|---------------------------|
|                             | ATC (MW)    | Revenue Requirements (\$) | ATC (MW)    | Revenue Requirements (\$) | ATC (MW)    | Revenue Requirements (\$) |
| January                     | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| February                    | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| March                       | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| April                       | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| May                         | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| June                        | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| July                        | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| August                      | 0           | 1,300,000                 | 200         | 121,833                   | 200         | 121,833                   |
| September                   | 0           | 0                         | 200         | 121,833                   | 200         | 121,833                   |
| October                     | 200         | 121,833                   | 200         | 121,833                   | 0           | 0                         |
| November                    | 200         | 121,833                   | 200         | 121,833                   | 0           | 0                         |
| December                    | 200         | 121,833                   | 200         | 121,833                   | 0           | 0                         |
| Subtotal By Year            | \$1,665,499 |                           | \$1,461,996 |                           | \$1,096,497 |                           |
| Total For All Years         | \$4,223,992 |                           |             |                           |             |                           |

Note: Values of ATC are based on items received by February 1, 2003 including 1) a signed Service Agreement and letter of credit received by the Transmission Provider, and 2) authorization to proceed with engineering and construction received by Transmission Owners from the Transmission Provider. Annual ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period.

**Table 13**  
**Annual Average Transmission Service Costs**

| Calendar Period (Year) | Maximum ATC (MW) | Average Of Allocated Monthly Peak ATC (MW) | Total Revenue Requirements (\$) | Average Transmission Service Cost (1) (2) (\$/MW-Month) |
|------------------------|------------------|--|---------------------------------|---|
| 2003                   | 200              | 200.00                                     | 1,665,499                       | 2,775.83  |
| 2004                   | 200              | 200.00                                     | 1,461,996                       | 609.17  |
| 2005                   | 200              | 200.00                                     | 1,096,497                       | 609.17  |
| 2006                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2007                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2008                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2009                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2010                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2011                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2012                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2013                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2014                   | 0                | 0.00                                       | 0                               | 0.00  |
| 2015                   | 0                | 0.00                                       | 0                               | 0.00  |
| <b>Total</b>           | <b>200</b>       | <b>200.00</b>                              | <b>4,223,992</b>                | <b>880.00</b>   |

Note: Values of ATC are based on items received by February 1, 2003 including 1) a signed Service Agreement and letter of credit received by the Transmission Provider, and 2) authorization to proceed with engineering and construction received by Transmission Owners from the Transmission Provider. Annual ATC allocated to the Transmission Customer is determined by the least amount of seasonal ATC within each year of a reservation period.

- (1) The average transmission service cost is based on the average of the monthly peak ATC within the calendar year.
- (2) If revenues are required of the Transmission Customer for Network Upgrade pre-payments and generation re-dispatching prior to the calendar year that includes the initial portion of the first operating year, then these costs are added to those in the first calendar year for the purpose of determining an Average Transmission Service Cost in the first calendar year. Therefore, all costs prior to and including the first calendar year, which includes all or the first portion of the first operating year, are accumulated for determining the Average Transmission Service Cost as listed for the first calendar year.



**Table 15  
Summary Of Transmission Service Costs**

| Cost & Credit Components   | Units         | Costs           |
|--|---------------|-----------------|
| Start Date   | (M/D/Y)       | October 1, 2003 |
| End Date   | (M/D/Y)       | October 1, 2005 |
| Term   | (Years)       | 2.00            |
| Maximum Allocated Capacity   | (MW)          | 200             |
| Average Of Allocated Monthly Peak Capacity Over Term                               | (MW)          | 200.00          |
| Pricing Methodology  | (And/Or)      | Or              |
| <b><u>Base Rate Estimate</u></b>   |               |                 |
| Total Revenue Requirements   | (\$)          | 4,224,000       |
| Average Rate Over Term   | (\$/MW-Month) | 880.00          |
| <b><u>Network Upgrade Estimate</u></b>   |               |                 |
| Total Assigned Eng. & Const.   | (\$)          | 1,300,000       |
| Expedited Eng. & Const.  | (\$)          | 2,500,000       |
| Total Levelized Cost   | (\$)          | 2,273,488       |
| Average Rate Over Term   | (\$/MW-Month) | 473.64          |
| Average Indirect Cost Multiplier (Based On Assigned Eng. & Const.).                | (Per-Unit)    | 1.7488          |
| Network Upgrades   | (\$)          | 1,300,000       |
| Requiring Pre-Payment (Included In Assigned & Expedited Eng. & Const.)             |               |                 |
| <b><u>Generation Re-Dispatching Estimate As Required For Construction Only</u></b> |               |                 |
| Total  | (\$)          | 0               |
| Average Rate Over Term   | (\$/MW-Month) | 0.00            |
| Note: All Re-Dispatch Costs Require Pre-Payment                                    |               |                 |
| <b><u>Network Upgrade &amp; Generation Re-Dispatching</u></b>                      |               |                 |
| Total  | (\$)          | 2,273,488       |
| Average Rate Over Term   | (\$/MW-Month) | 473.64          |
| <b><u>Total Transmission Service</u></b>   |               |                 |
| Total Estimate Of Allocable Costs  | (\$)          | 4,223,992       |
| Average Rate Over Term   | (\$/MW-Month) | 880.00          |