



**Generation Interconnection Feasibility
Study**

For

>Omitted Text<

SPP-GEN-2002-013

2 December 2002

Introduction

This report summarizes the results of a Feasibility Study performed for the Southwest Power Pool (SPP) by Westar Energy to evaluate a generation interconnection request by >Omitted Text< for 200 MW of wind-powered generation on the Westar Energy transmission system near Teeterville, Kansas. The projected in-service date of the generating facility is September 2003.

Project Location and Existing Facilities

The project is located south of Beaumont, Kansas, in Butler County approximately 5 miles southeast of Burns, Kansas. Two Westar Energy transmission lines are near the project site: the Midian – Tecumseh Hill 161 kV transmission line; and the Lang – Wichita 345 kV. Figure 1 shows the area transmission facilities with the estimated location of the project substation.

The 95.00-mile Lang – Wichita 345 kV transmission line is a 1967 vintage line built using wood H-frame structures. The conductor is bundled 795 kcmil ACSR conductor. The transmission line is equipment limited to 956 MVA. The line is at the project substation. The point of interconnection on this line would be approximately 44 miles from the Wichita substation.

The 117.91-mile Midian – Tecumseh Hill 161 kV line is a 1942 vintage line built using wood H-frame structures. The conductor is 250 kcmil 24R1 expanded copper and is equipment limited to 84 MVA. The line routinely experiences heavy loading and is operated normally open at the Williams Brothers pipeline station approximately 14 miles south of Tecumseh Hill.

Connection Options

For estimating interconnection costs, line mileage is calculated from the point identified as the project substation on Figure 1. Connection options considered to integrate the proposed project into the area transmission system include:

- Option 1 - Tap the existing Lang – Wichita 345 kV line.
- Option 2 - Tap the existing Midian – Tecumseh Hill 161 kV line.

Westar Energy also maintains its own Facility Connection Requirements, which may be found on our web-site (wr.com). Estimated costs do include both PTs and CTs for interconnection metering located at the project substation. **Estimated costs do not include land for the interconnection substation. Estimated costs do not include possible tax consequences that may increase costs by as much as 66 percent.**

Option 1 - Tap the Existing Lang - Wichita 345 kV Line

The existing Lang – Wichita 345 kV line is a 1967 vintage line built using wood H-frame construction. The line is 95 miles long. The point of interconnection would be 44.15 miles northeast of the Wichita 345 kV terminal in Section 18, T-23-S, R-06-E, Sycamore

Township. Westar Energy Facility Connection Requirements specify that all generation interconnections at 230 kV or higher voltage be at least a ring-bus configuration. The new substation would be located under the existing line and have three terminals. One position in the ring would connect to Lang, one position in the ring would connect to Wichita, and one position in the ring would be the delivery point to the proposed project. With either 345 kV line out of service at the new 345 kV interconnection substation, the full output of the project could be delivered to the system through the point of interconnection. The time required for this option is 68 weeks. Everything not a part of the interconnection substation is the project owner's to engineer, procure, and construct. Costs for those facilities are included in the estimate.

345 kV interconnection substation – \$4,747,000

345 kV interconnection metering at project substation – \$247,000

Total for Option 1 – \$4,994,000

Option 2 – Tap the Existing Midian – Tecumseh Hill 161 kV Line

To interconnect the proposed project to this line requires the complete rebuilding of the entire line and replacing the 161 kV transformers at Midian and Tecumseh Hill. The estimated cost for rebuilding the entire 118-mile 161 kV line is estimated to be just over \$38,000,000. **Based solely upon this cost, the 161 kV option is not considered feasible.**

Conclusion

The entire output of the proposed project can be delivered into the Westar Energy system with suitable system facilities. In order to interconnect with the Lang – Wichita 345 kV transmission line a new 345 kV ring bus substation is required. The time required to complete this option is over 12 months and may run as long as 18 months. **The estimated time to complete any option does not include time to acquire land for the interconnection substation.**

Total for Option 1 – \$4,994,000 – 68 weeks

Butler County, KS Interconnection Point

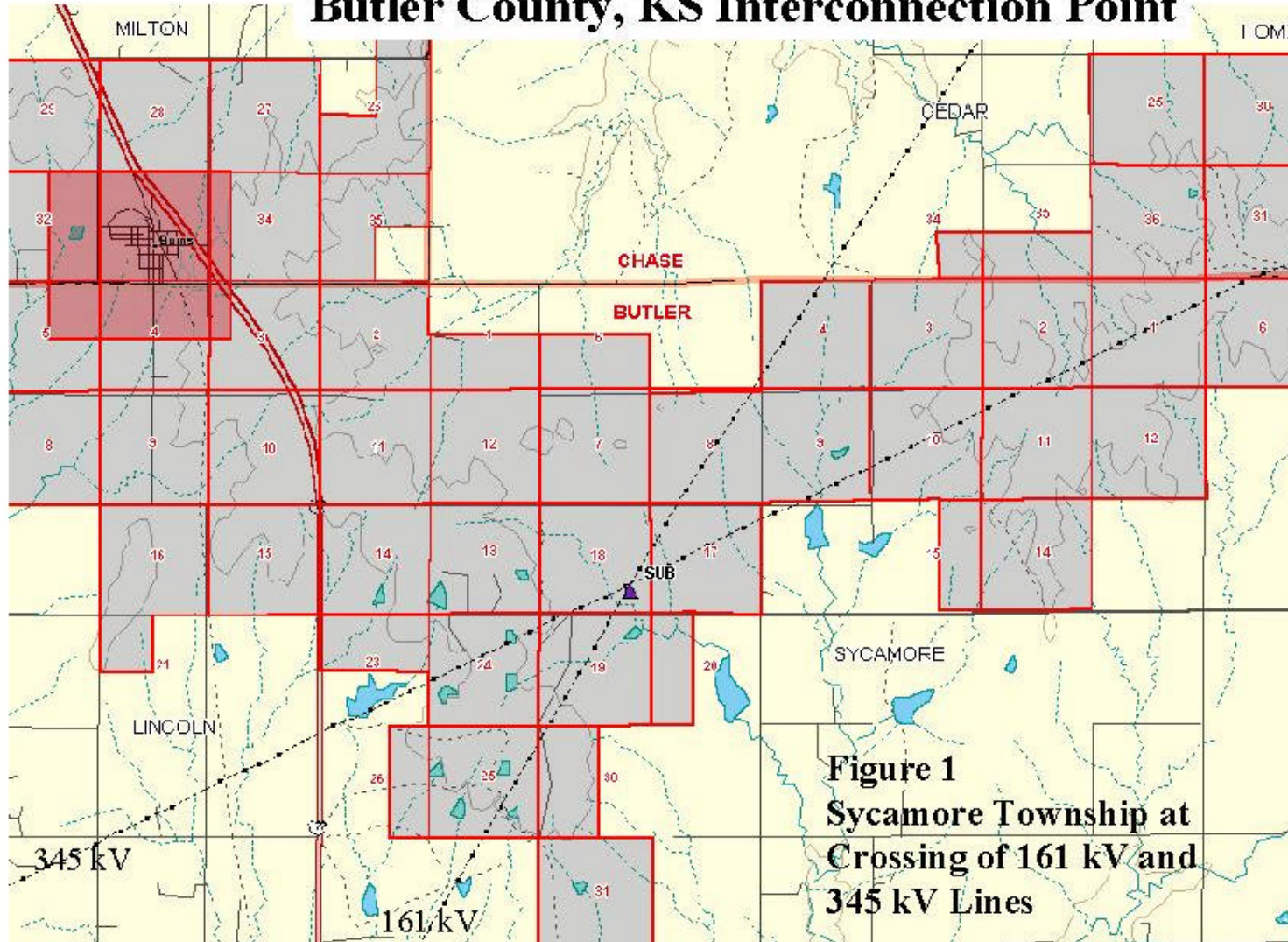


Figure 1
Sycamore Township at
Crossing of 161 kV and
345 kV Lines

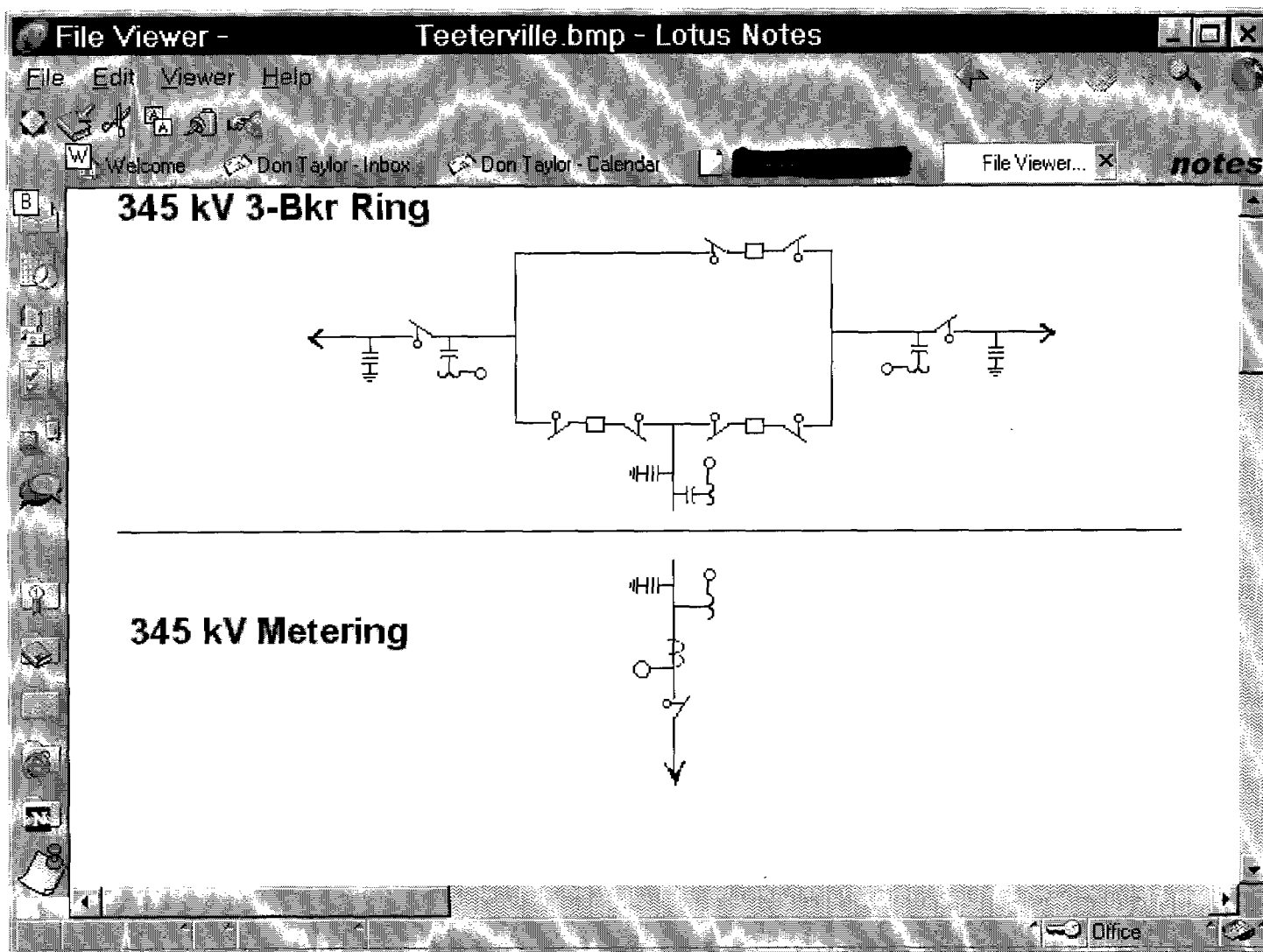


Figure 2 – Interconnection Substation One-Line