RUTHERFORD-WILLIAMSON-DAVIDSON

POWER SUPPLY IMPROVEMENT PROJECT

ENVIRONMENTAL IMPACT STATEMENT

SCOPING DOCUMENT

TENNESSEE VALLEY AUTHORITY

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INTRODUCTION

The Tennessee Valley Authority (TVA) is proposing to construct, operate and maintain a new or expanded 500-kV substation and associated transmission line upgrades in Middle Tennessee. The substation would be located in Rutherford, Williamson, or Davidson County. Other project components would be located in these counties and in other counties in Middle Tennessee.

Following the requirements of the National Environmental Policy Act (NEPA), TVA is preparing an Environmental Impact Statement (EIS) that will evaluate the potential environmental impacts of the construction, operation, and maintenance of the proposed transmission facilities. NEPA regulations require an early and open process for deciding what should be discussed in an EIS – the scope of the document. The scoping process involves requesting and using comments from the public and interested agencies to help identify the issues and alternatives that should be addressed in the EIS. This document summarizes the input that TVA has received during the scoping process and defines the scope of the EIS. In addition to agency and public input, the EIS will also address specific requirements associated with a number of other federal laws, such as the Clean Water Act, the Endangered Species Act, and the National Historic Preservation Act.

PROJECT PURPOSE AND DESCRIPTION

The population in Murfreesboro, Franklin, and surrounding areas of Middle Tennessee has grown at a rate of 4.3 percent per year since 1990. TVA supplies bulk electricity to this area through its Davidson, Pinhook, and Wilson 500-kV Substations. As a result of the rapid population growth, the electrical load for this area has grown by about 3.5 percent per year and is expected to exceed the capacity of the three 500-kV substations serving the area by 2010. Several 161-kV transmission lines serving the area from these substations are also expected to become overloaded by 2010.

TVA has studied these problems and has tentatively concluded that the best method of remedying them is to either construct a new 500-kV substation or expand an existing 500-kV substation. The solution would also require the construction and operation of new 500-kV and 161-kV transmission lines and/or upgrades to existing transmission lines.

TVA identified three potential alternative solutions:

1) Construct and operate a new 500-kV substation in northeast Williamson County near Brentwood and upgrade about 126 miles of existing 161-kV transmission lines.

2) Expand the existing Pinhook 500-kV Substation in southeast Davidson County and upgrade about 134 miles of existing 161-kV transmission lines.

3) Construct and operate a new 500-kV substation in southwest Rutherford County near Eagleville, a new 25-30 mile 500-kV transmission line, and three 161-kV transmission lines totaling about 23 miles in length.

Note: The length of transmission lines to be upgraded for alternative solutions 1 and 2 are both greater than the 75 and 115 miles described in the July 1, 2005 Notice of Intent to prepare the EIS. Additional engineering studies conducted since then have shown the need for additional line upgrades.

PUBLIC INVOLVEMENT

Public participation in determining the scope of this EIS began in July 2005 when TVA published a Notice of Intent in the Federal Register (70 FR 38237-38238, July 1, 2005). The notice announced that TVA would prepare the EIS and invited interested parties to comment on its scope. Copies of the notice of intent were sent to four federal agencies, nine Tennessee state agencies, and one local agency (Table 1). Written comments were received from two federal agencies four state agencies, and one local agency.

Table 1. Agencies sent the notice of intent.

Agency	Submitted Comments
U.S. Department of Interior, Office of Environmental Policy and Compliance	
U.S. Fish and Wildlife Service, Tennessee Field Office	Yes
U.S. Army Corps of Engineers, Nashville District	Yes
Tennessee Department of Transportation	
Tennessee Department of Agriculture	
Tennessee Department of Economic and Community Development	
Tennessee Historical Commission	Yes
Tennessee Wildlife Resources Agency	
Tennessee Department of Environment and Conservation, Division of Natural Heritage	
Tennessee Department of Environment and Conservation, Division of Recreation Services	Yes
Tennessee Department of Environment and Conservation, Division of Air Pollution Control	Yes
Tennessee Department of Environment and Conservation, Division of Ground Water Protection	Yes
Greater Nashville Regional Council	Yes

TVA held a public scoping meeting on July 11 at Eagleville, Tennessee. This meeting was publicized though notices in local media, by TVA press releases, on the TVA Web site, and in letters to local elected officials. About 25 individuals attended the public meetings. Most of the public meeting attendees were landowners in the project area. Some attendees provided information on the location of natural and constructed features

important in the siting process. A few individuals also submitted written comments to TVA.

Major areas of concern to scoping participants were the desire for more precise information on potential transmission line and substation locations, effects on property values, land use restrictions imposed by transmission line easements, the presence of caves and sinkholes, historic houses and battlefields, and endangered and threatened species. Issues raised by federal and state agencies included wetlands, streams, endangered and threatened species, habitat fragmentation, sensitive ecological sites, invasive species, historic and archaeological resources, recreation, subsurface sewage disposal systems, and public health concerns such as hazardous materials, noise, and occupational safety.

As described below in the Next Steps and Project Schedule sections, there will be additional future opportunities for public involvement in this project.

ISSUES TO BE ADDRESSED

Issues to be addressed in the EIS were initially identified through an internal scoping process and listed in the notice of intent. This list of issues was refined based on comments received during the public scoping. The major issues to be addressed in the EIS are impacts to:

- Water quality and quantity for both surface water and groundwater
- Vegetation
- Wildlife including habitat fragmentation
- Aquatic ecology
- Endangered and threatened species and their critical habitats
- Wetlands
- Managed areas and ecologically significant sites
- Recreation
- Visual resources
- Floodplains
- Land use including prime farmland
- Archaeological and historic resources
- Socioeconomics including property values and environmental justice.

Impacts related to air quality, hazardous and non-hazardous wastes, noise, and health and safety will be addressed but are not expected to require detailed evaluation.

SCREENING OF POTENTIAL ALTERNATIVE SOLUTIONS

As described above, TVA has identified three potential alternative solutions to correct the identified power supply problems. These alternative solutions are described here in more detail.

1) Construct and operate a new 500-kV substation in northeast Williamson County near Brentwood and upgrade about 126 miles of existing 161-kV transmission lines.

The new substation would require a tract of land 50 to 70 acres in size to accommodate the substation and 500-kV and 161-kV transmission line connections. Few suitable undeveloped tracts of land occur in northeast Williamson County, and the most likely location for it is an undeveloped 264-acre farm east of Tennessee Highway 252 (Wilson Pike) and south of Crockett Road (Figure 1). Based on the shape and topography of this tract, it could accommodate a 60+ acre substation in its southwest corner. This portion of the tract is close to TVA's Pinhook-Davidson 500-kV transmission line and East Franklin-Radnor Nos. 1 and 2 161-kV transmission lines which would be connected to the substation. No additional transmission line easements would be required to connect these transmission lines to the substation. Other portions of the tract are less suitable as a substation site.

The existing transmission lines to be upgraded are located in Davidson, Rutherford, Williamson, Sumner, Coffee, Franklin, and Bedford Counties. Approximately 9.1 miles of transmission lines would be rebuilt by removal and replacement of structures (i.e., poles or towers), insulators, and conductors (wires). About 66.5 miles of transmission lines would be reconductored; this involves replacing the conductors with new higher capacity conductors. About 50.6 miles of transmission lines would be uprated to allow them to safely operate at the higher temperatures and corresponding greater amount of sagging of the conductors that result from carrying a greater electrical load. Uprating typically involves adjusting the tension on the conductors and may also involve adding extensions to structures to increase the clearance between the conductors and the ground.

This alternative solution has an advantage over the others in having somewhat lower capital costs (8 % less than the Rutherford alternative solution and 3% less than the Pinhook alternative solution). When all costs are considered, including the cost of power losses during transmission, this alternative solution ranks second, with a cost of about $3 million more than the Rutherford alternative solution. Another disadvantage of this alternative solution is that the potential substation site is completely surrounded by residential development which would make the future connection of new transmission lines to the substation very expensive and disruptive of nearby land uses. The blasting of bedrock which would likely be necessary to construct the substation could also impact nearby residences.

The transmission lines to be upgraded as part of this alternative solution are critical components of the TVA transmission system and the number of lines that can be taken out of service simultaneously for upgrading is very limited. The time period during which lines can be taken out of service is also limited to the spring and fall. The sequence of line outages and the combinations of lines that can be out of service simultaneously are also important constraints. Because of these constraints, the transmission line upgrade work would extend from 2008 into 2011. With the overloading problems predicted to occur by 2010, the 2011 completion date therefore presents an unacceptable risk to the transmission system.

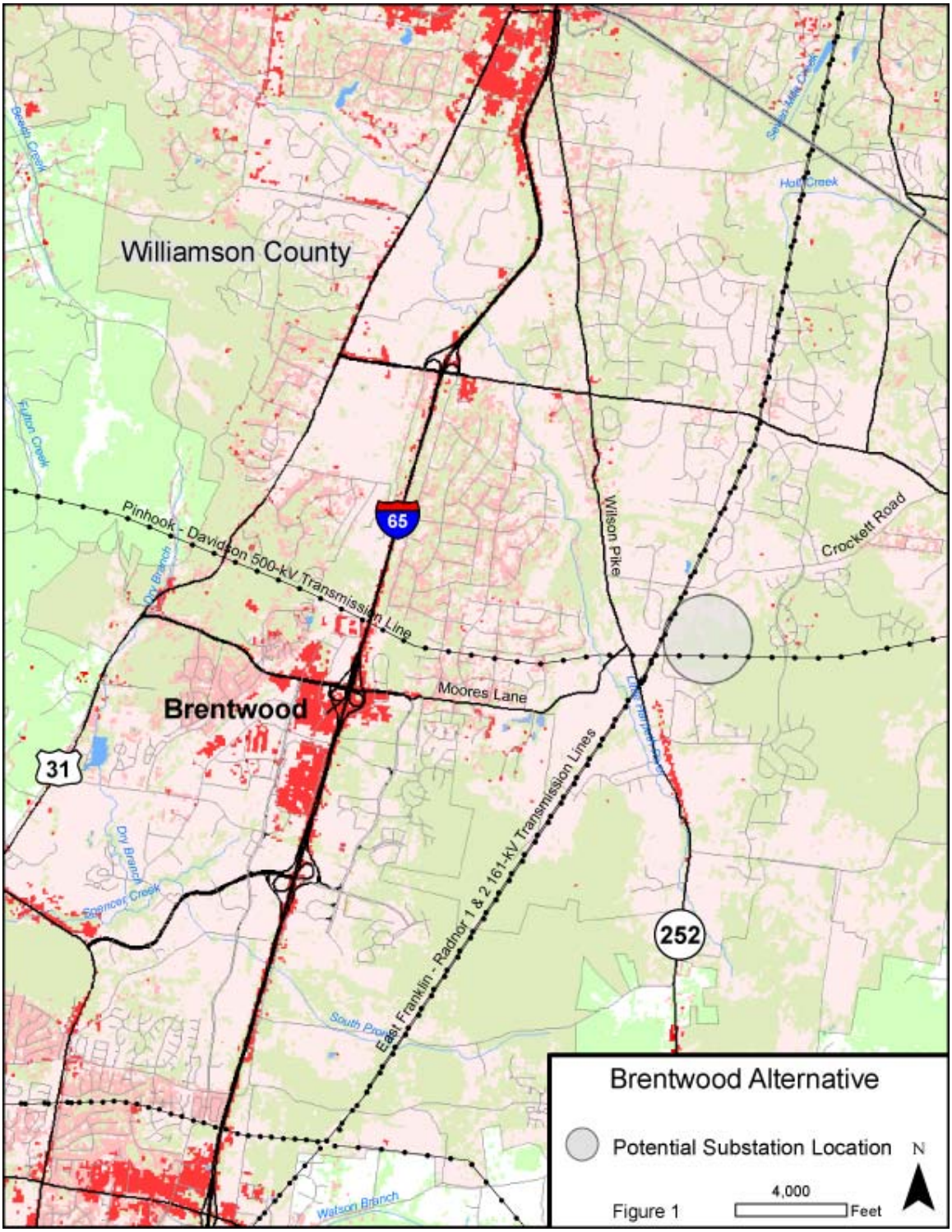

Figure 1. Location of the potential Brentwood 500-kV substation.

2) Expand the existing Pinhook 500-kV Substation in southeast Davidson County and upgrade about 134 miles of existing 161-kV transmission lines.

The Pinhook substation is located near the intersection of Old Hickory Boulevard and U.S. Highway 41 / Murfreesboro Road (Figure 2). It would be expanded by adding a second 500-kV transformer bank on the east side of the existing substation facilities. This expansion would require the clearing and grading of 2 to 3 acres of land presently owned by TVA. A large amount of blasting of limestone bedrock would be required to prepare the expansion site for installing transformer foundations.

The transmission lines to be upgraded are located in Davidson, Rutherford, Williamson, Sumner, Wilson, Franklin, and Bedford Counties. Approximately 92.3 miles of transmission line would be reconductored, and 41.9 miles of transmission line would be uprated.

The capital costs of this alternative solution are about 3.0 % more than the Brentwood alternative solution and 6.0% less than the Rutherford alternative solution. The overall project costs, however, are about $20 million more than the Rutherford alternative and $17 million more than the Brentwood alternative. Transmission line losses make up a large proportion of these cost differences and are considerably higher for Pinhook than for the other alternative solutions. Another disadvantage in expanding the Pinhook substation is the effects of the required blasting on existing substation components. Sensitive control equipment in the existing transformer bank could be damaged, resulting in an outage of the substation and connecting transmission lines.

As with the Brentwood substation alternative solution, the transmission lines to be upgraded are critical components of the TVA transmission system and the number of lines that can be taken out of service simultaneously for upgrading is very limited. The time period during which lines can be taken out of service is also limited to the spring and fall. The sequence of line outages and the combinations of lines that can be out of service simultaneously are also important constraints. Because of these constraints, the transmission line upgrade work would extend from 2008 into 2012. With the overloading problems predicted to occur by 2010, the 2012 completion date therefore presents an unacceptable risk to the transmission system.

3) Construct and operate a new 500-kV substation in southwest Rutherford County, a new 25-30 mile 500-kV transmission line, and three 161-kV transmission lines totaling about 23 miles in length.

The new substation would require about 60 acres. Potential sites under consideration for the substation are located in two distinct areas and shown in Figures 3 and 4. The northern area consists of about 310 acres in the Patterson community along Patterson Road about two miles east of U.S. Highway 41A/31A. The area is presently undeveloped rolling agricultural land with many rock outcrops. It is located about one mile north of TVA's vacant Hartsville-Maury 500-kV transmission line right-of-way (see below) and about one mile south of TVA's Murfreesboro-Triune-East Franklin transmission line. The likely location of the substation in this area would be determined after additional environmental and engineering studies are completed.

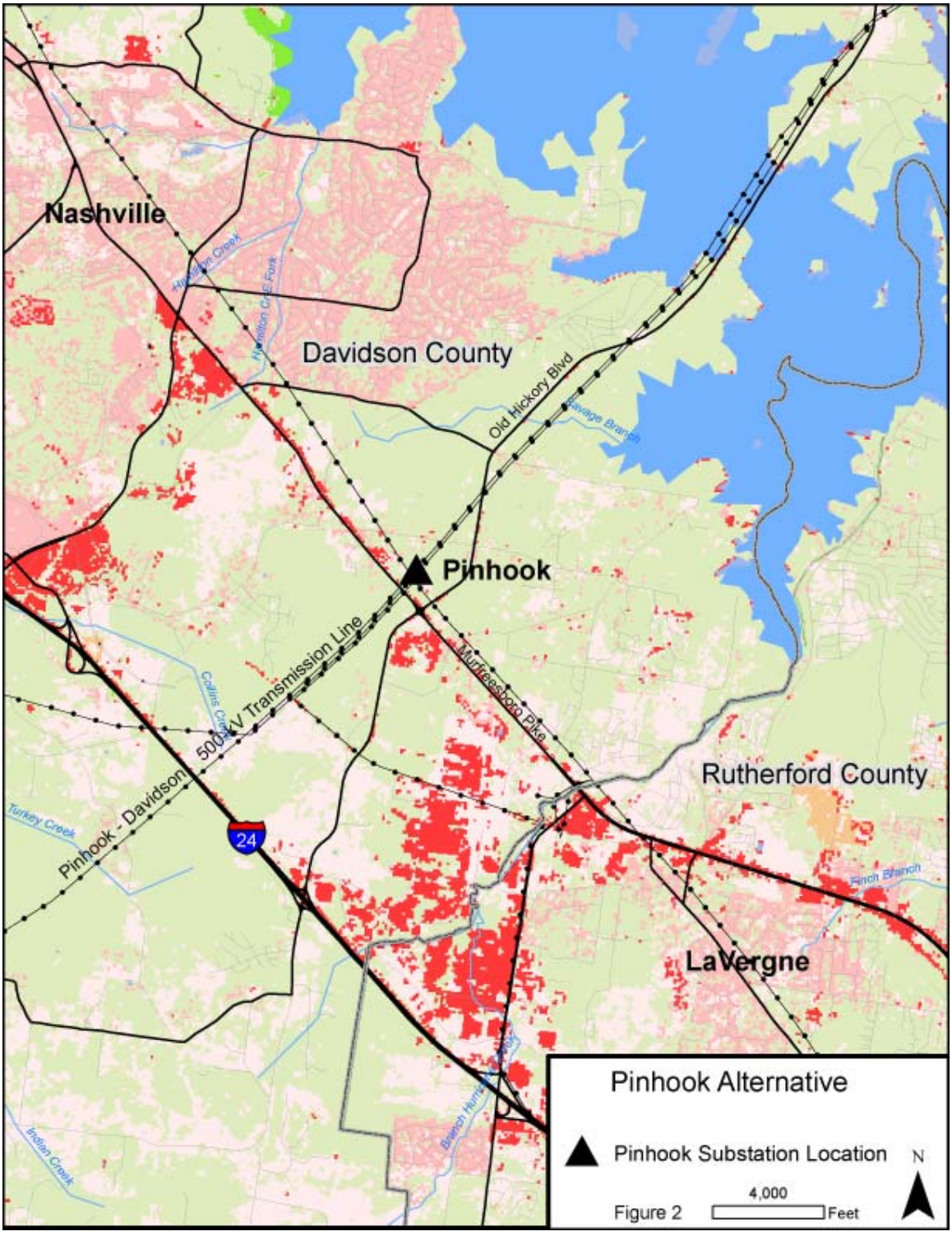

Figure 2. Location of TVA's existing Pinhook 500-kV substation.

The second potential substation area consists of about 750 acres about two miles northeast of Eagleville (Figures 3 and 4). The area is about 1.5 miles east of U.S. Highway 41A and bounded on the north by Rocky Glade Road and on the south by the Harpeth River / Concord Creek. It is presently undeveloped flat agricultural land with few visible rock outcrops. The area is about 1.5 miles south of TVA's vacant Hartsville-Maury 500-kV transmission line right-of-way land about 5 miles south of TVA's Murfreesboro-Triune-East Franklin transmission line. One or more likely locations of the substation in this southern area would be determined after additional environmental and engineering studies are completed.

The proposed 500-kV transmission line would extend from TVA's existing Maury 500-kV Substation, located in Maury County a short distance north of Columbia, northeast through the southeast corner of Williamson County to the new 500-kV substation in Rutherford County (Figure 3). It would be built on right-of-way that TVA purchased in the 1970s to construct the Hartsville-Maury 500-kV transmission line. This line was never completed and the portion of the right-of-way under consideration here has remained in TVA ownership; most of it was never cleared. A few short stretches of this right-of-way have been used for short 161-kV transmission line connections to distributor substations. These transmission lines were designed to allow the construction of a future 500-kV transmission line without acquiring new rights-of-way.

One of the proposed 161-kV transmission lines would run from the new 500-kV substation northward to TVA's existing Almaville 161-kV substation located near Tennessee Highway 102 west-northwest of Murfreesboro (Figure 4). Most of this 7-mile long line would be built on vacant TVA-owned right-of-way.

The second proposed 161-kV line would be a double circuit line about 13 miles long built on new right-of-way 100 feet wide between the new 500-kV substation and TVA's existing Christiana 161-kV Substation located near the junction of US Highway 231 and Tennessee Highway 260 south of Murfreesboro. The study area for this proposed Christiana-Rutherford transmission line is shown in Figure 4.

The third proposed 161-kV transmission line would be a 2.5-mile long line connecting the Murfreesboro-Triune-E. Franklin 161-kV transmission line to the new 500-kV substation. Potential routes for this line are shown in Figure 4. The eastern segment of the Murfreesboro-Triune-E. Franklin line was originally constructed as a 46-kV line and has been out of service for several years. TVA proposes to rebuild this line segment as a 161-kV transmission line; this project has independent utility and is not a part of the Rutherford-Williamson-Davidson power supply project.

As described above, the capital cost of the Rutherford alternative is higher than either of the other alternative solutions. Its project cost, however, is about $3 million less than the Brentwood alternative and $20 million less than the Pinhook alternative because of its greatly reduced transmission line losses. The Rutherford alternative would involve the most construction on greenfield sites, and thus the environmental impacts to some resources would be greater than those of the other alternative solutions. The Rutherford alternative would not require the extended transmission line outages associated with the other alternative solutions, and could be completed by the target date of 2010.

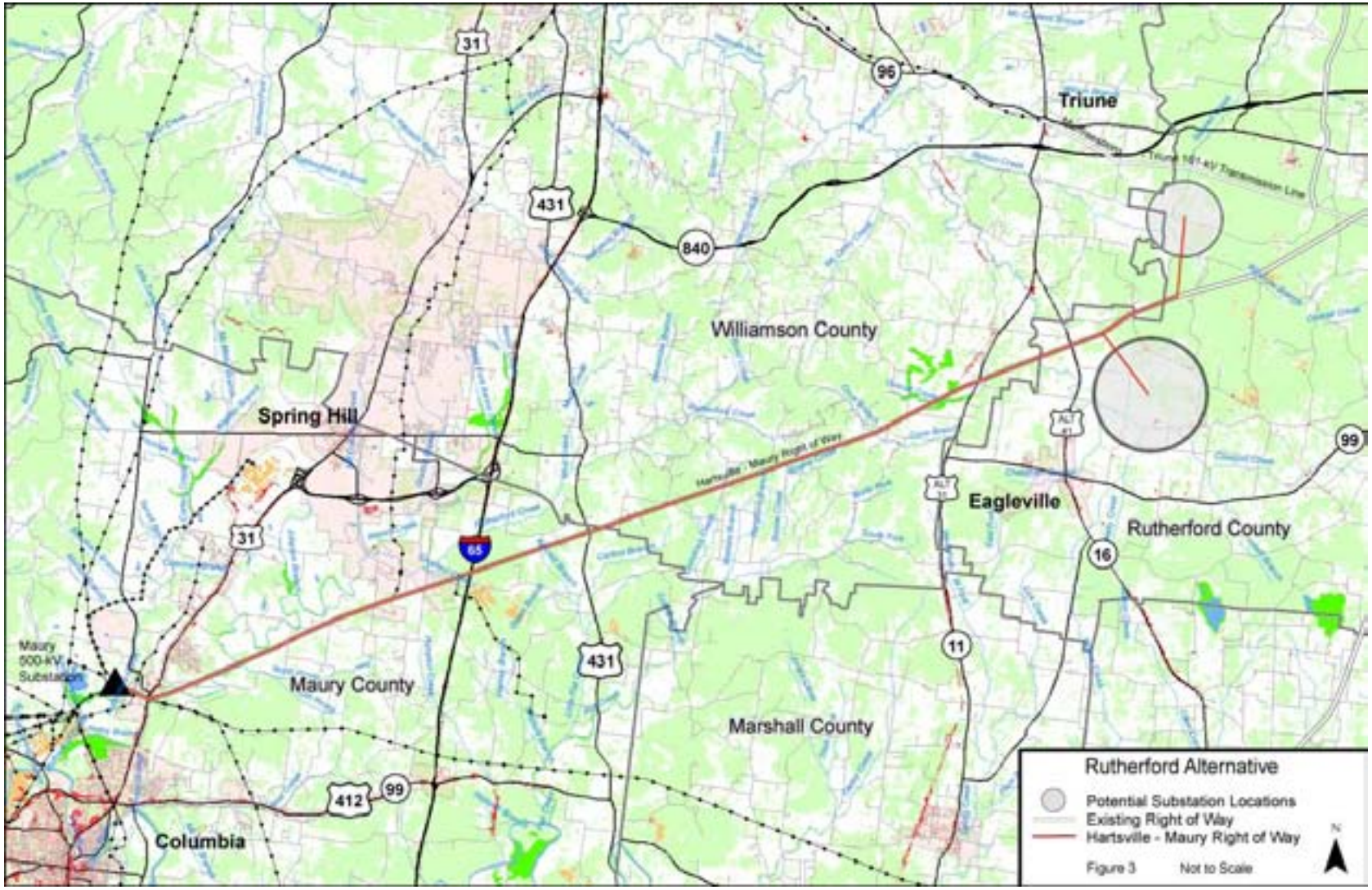

Figure 3. Location of potential Rutherford 500-kV substation sites and the proposed 500-kV transmission line on the vacant Hartsville-Maury right-of-way.

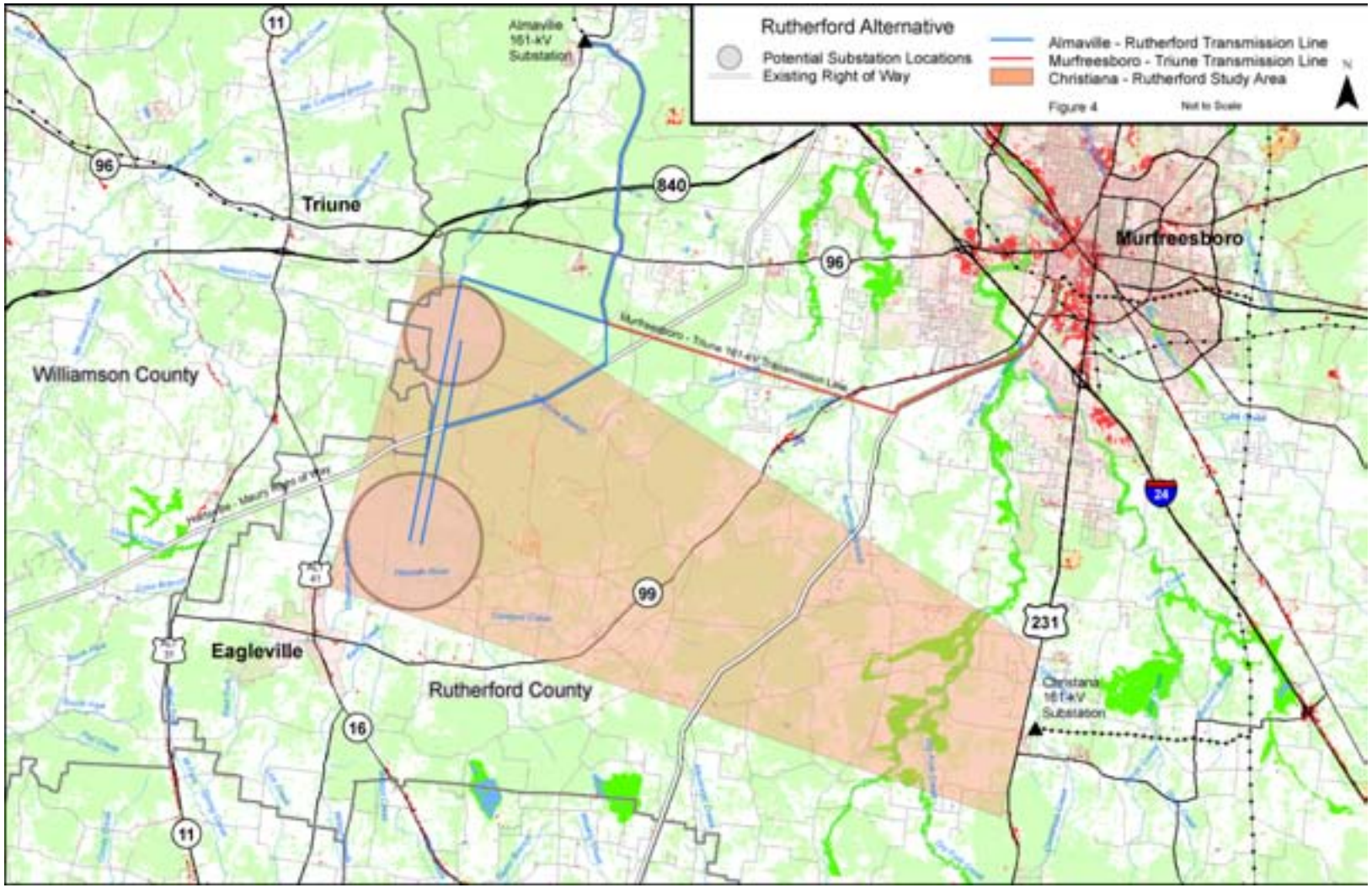

Figure 4. Location of potential Rutherford 500-kV substation sites, the proposed Almaville-Rutherford 161-kV transmission line, the proposed transmission line connecting the Rutherford substation to the Murfreesboro-Triune 161-kV transmission line, and the study area for the proposed Christiana-Rutherford 161-kV transmission line.

CONCLUSIONS FROM SCREENING OF ALTERNATIVE SOLUTIONS

Following is a summary of the advantages and disadvantages of each alternative solution:

Brentwood Substation Alternative Solution

- Lowest capital costs but ranks second for overall costs
- New substation on undeveloped site surrounded by residential development
- Due to surrounding residential development, limited ability to construct future transmission line connections to substation
- No new transmission lines proposed but extensive upgrade work on existing lines
- Due to restrictions on when existing transmission lines can be taken out of service for upgrades, the 2010 in-service date is not achievable.

Pinhook Substation Expansion Alternative Solution

- Second lowest capital costs and highest overall costs
- No new property acquisition
- Blasting for site preparation could damage existing substation equipment
- No new transmission lines proposed but extensive upgrade work on existing lines
- Due to restrictions on when existing transmission lines can be taken out of service for upgrades, the 2010 in-service date is not achievable.

Rutherford Substation Alternative Solution

- Highest capital costs and lowest overall costs
- New substation on undeveloped site in rural area
- Up to 53 miles of new transmission lines, with about 37 miles on right-of-way owned by TVA
- Most of right-of-way owned by TVA is presently vacant
- Little to no upgrade work on existing lines
- Meeting 2010 in-service date appears achievable.

Based on these factors, especially the overall costs and ability to meet the in-service date, TVA has eliminated the Brentwood and Pinhook alternative solutions from further consideration. Future planning efforts will be on the Rutherford alternative solution and its sub-alternatives.

NEXT STEPS

Following the elimination of the Brentwood and Pinhook alternative solutions from further consideration, TVA's next steps are to better define potential sites for the Rutherford substation and potential routes for the connecting transmission lines. These studies are expected to result in two or more potential substation sites and several potential transmission line routes. These substation sites and transmission line routes will be presented for public review at an upcoming open house that TVA will hold in the project area. This meeting will be announced in the local media and on the TVA web site at http://www.tva.gov/power/projects/rutherford/index.htm. Potentially affected landowners will also be mailed notices of the meeting.

PROJECT SCHEDULE

Following is a tentative schedule for this project, assuming that TVA proceeds with the proposed action. These dates are subject to change.

Winter/Spring 2006	Open house and comment period on alternative substation sites and transmission line routes
Spring 2006	Announce decision on a preferred site / route(s) for field studies
Summer 2006	Complete field survey work
Fall 2006	Issue Draft EIS
Winter 2006/07	Open house for comments on the draft EIS
Winter 2007	Close draft EIS comment period
Spring 2007	Issue Final EIS; announce preferred site and route
Spring 2007	Issue Record of Decision for EIS
Late spring 2007	Begin acquiring property / easements
Winter 2007/08	Begin construction
Spring 2010	Project complete and in service