DRAFT ENVIRONMENTAL IMPACT STATEMENT

500-kV TRANSMISSION LINE IN MIDDLE TENNESSEE

TENNESSEE VALLEY AUTHORITY

APRIL 2003

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Draft Environmental Impact Statement **April 2003**

Proposed project: 500-kV Transmission Line in Middle Tennessee
Stewart, Houston, Montgomery, Dickson, Cheatham, and Davidson Counties, Tennessee

Lead agency: Tennessee Valley Authority

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Comments must be submitted by June 10, 2003

Abstract: The Tennessee Valley Authority (TVA) proposes to construct and operate a 500-kV transmission line in northern Middle Tennessee. The electrical load growth in this area, including Nashville, will soon exceed the capacity of the high-voltage transmission lines serving it. The proposed transmission line would address this need. The proposed transmission line would connect TVA's Cumberland Fossil Plant in Stewart County, Tennessee, with either TVA's Montgomery 500-kV Substation in Montgomery County, or with TVA's Davidson 500-kV Substation in Davidson County. The EIS considers two study area alternatives based on the two alternative transmission line destinations, and various corridors within each alternative study area. Depending on the study area alternative and corridor, the proposed transmission line would be between about 32 and 51 miles long. The effects of these alternatives, as well as the No Action alternative, are discussed in this Draft EIS. Following public review of this Draft EIS, TVA will appropriately refine analyses and issue a Final EIS.

SUMMARY

This summary covers the major points of the Environmental Impact Statement (EIS) prepared for the 500-Kilovolt (kV) Transmission Line in Middle Tennessee Project proposed by the Tennessee Valley Authority (TVA). The proposed new transmission line project would originate at TVA's Cumberland Fossil Plant near Cumberland City in Stewart County. It would terminate at either TVA's Montgomery 500-kV Substation near Clarksville in Montgomery County, or at TVA's Davidson 500-kV Substation near Nashville in Davidson County. This EIS has been prepared to assist TVA in meeting the requirements of the National Environmental Policy Act.

PURPOSE OF AND NEED FOR ACTION

TVA's 500-kV transmission system transmits large quantities of electricity over long distances between generating facilities, 500-kV substations, and interconnection points with neighboring power systems. TVA has made few additions to its 500-kV transmission system since the early 1980s, and the system's capacity has generally been adequate despite recent growth in electric loads. The projected continued growth in the Nashville and surrounding areas of middle Tennessee, as well as the addition of new generating facilities to the western portion of the TVA system now are forecasted to exceed the capacity of area's 500-kV system.

The following are the purposes or objectives for increasing transmission capacity into the Nashville/Middle Tennessee area:

- Maintain transmission system reliability pursuant to TVA's statutory responsibilities;
- Minimize environmental impacts in keeping with TVA's commitment to resource stewardship;
- Minimize costs as part of TVA's obligation to provide electric power at the lowest possible cost; and
- Meet the in-service date of June 1, 2006, the earliest date which is reasonably achievable.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

After identifying the need for increased high-voltage transmission capacity, TVA evaluated various alternatives to meet this need. All of the action alternatives involved constructing and operating a new 500-kV transmission line. The length of the line, as well as the endpoints of the line, varied among alternatives.

The Proposed Transmission Line

The characteristics of the proposed 500-kV transmission line, as well as its construction and operation, are similar across action alternatives. The transmission line would use self-supporting, galvanized, laced steel structures between about 85 and 125 feet tall. The average distance between structures would be about 1,000 feet. The electrical conductors

would consist of three sets of three cables suspended beneath the structure cross-arms by insulators.

The transmission line would be built on a right-of-way (ROW) 175 feet in width. TVA would purchase easements from landowners for the new ROW. Because of the need to maintain adequate clearance between tall vegetation and transmission line conductors, as well as to provide access for construction equipment, most trees and shrubs would be initially removed from the entire width of the ROW. Trees outside of the right-of-way which are tall enough to pass within 10 feet of a conductor if they fell towards the line would also be removed. Marketable timber would be salvaged where feasible; otherwise, woody debris and other vegetation would be piled and burned, chipped, taken offsite, or occasionally windrowed along the edge of the ROW to serve as sediment barriers depending on the location, weather conditions, and the desires of the landowners.

Following line construction, the ROW would be revegetated with low-growing plants. The transmission line ROW can be used by the landowner for many purposes that do not interfere with maintenance and operation of the line. The construction of permanent buildings, trees that grow high enough to reach the height of the electrical conductor, and storage of any flammable material would be prohibited.

Permanent access roads to each structure and other points along the ROW would be required. Existing roads would be used where feasible. New access roads would be located on the ROW wherever possible, and designed to avoid severe slope conditions and minimize stream crossings. Construction assembly areas would also be required for worker assembly, vehicle parking, and material storage. These areas, typically 5 to 10 acres in size, would be located along existing paved roads near the transmission line and would be leased from private landowners.

An additional bay containing a new 500-kV breaker would be constructed at the 500-kV switchyard at Cumberland Fossil Plant. Depending on the transmission line route selected, an additional length of new bus work would be needed inside the switchyard to connect the new bay to a line pull-off structure.

The completed transmission line would be periodically inspected by aerial surveillance and by ground observation. Periodic vegetation management would be conducted maintain adequate clearance around the conductors. This would consist of both the felling of tall trees adjacent to the ROW and control of vegetation within the cleared ROW. Management of vegetation within the cleared ROW would use an integrated vegetation management approach designed to encourage low-growing plant species and discourage tall-growing plant species. The two principal management techniques would be mechanical mowing using tractor-mounted rotary mowers, and herbicide application. Herbicides would be selectively applied from the ground with backpack sprayers or vehicle mounted sprayers, or, for larger areas, particularly in rugged terrain, by broadcast aerial spraying. Any herbicides would be applied in accordance with applicable state and federal laws and regulations and comply with EPA-approved label instructions.

Project and Siting Alternatives

The National Environmental Policy Act and its implementing regulations direct that federal agencies commence NEPA reviews early on in the planning of proposed actions. To do this, TVA employs a detailed, comprehensive siting process when it plans its transmission

line projects. This is an iterative process and takes into account sensitive environmental and cultural resource features that become “constraints” on locating proposed lines. Initially, broad study corridors are identified and line rights of way (ROWs) are eventually located within the study corridor selected for the project. Because transmission line ROWs are actually much narrower than these study corridors, sensitive features that are associated with specific corridors can often be avoided when final line routes are selected. Corridors and discrete line segments are discarded or redirected as analyses proceed. One of the last steps in the line siting process is selecting the exact locations for line structures after a final ROW has been identified and surveyors and construction forces begin work. It is at this point that potential impacts can be fully identified. However, TVA’s transmission line siting process ensures that decision makers and the public are apprised of potential impacts and their potential significance before this final step.

Alternative 1 – Cumberland Montgomery Study Area

This alternative involves the construction and operation of a 500-kV transmission line from Cumberland Fossil Plant to the Montgomery 500-kV Substation. Five 500-kV breakers would be installed at the Montgomery Substation.

Four broad alternative corridors for this transmission line have been evaluated. The corridors vary in width according to siting constraints and opportunities, and overlap in many locations. The four corridors vary in length from about 32 to 45 miles. Corridors A and B circle around the north side of Clarksville, and Corridors C and D circle around the south side of Clarksville.

Alternative 2 – Cumberland-Davidson Study Area

This alternative involves the construction and operation of a 500-kV transmission line from Cumberland Fossil Plant to the Davidson 500-kV Substation. A new bay containing a 500-kV breaker would be installed at the Davidson Substation.

Two broad alternate corridors from TVA’s Cumberland Fossil Plant to TVA’s Davidson 500-kV Substation have been identified. The corridors vary in width according to siting constraints and opportunities, and overlap at each end. The corridors are about 50 and 51 miles long.

Alternative 3 – No Action

Under the No Action Alternative, the proposed transmission line would not be constructed. This would result in the risk of loss of electric service in the Nashville area, which has a total load of over 4000 megawatts. There would also be risk of loss of system stability and resultant damage to generators at Cumberland and Paradise generating plants. In order to minimize the risk of instability, generation would have to be reduced at these plants during some system conditions. This could further exacerbate the risk to service in the Nashville area.

Alternatives Considered But Eliminated From Further Consideration

New Switching Station and Transmission Line - TVA briefly considered an alternative involving constructing a new 500-kV switching station in Humphries County, Tennessee and 500-kV transmission line from the switching station to the Davidson 500-kV Substation.

The switching station would be built near and connected to the existing Johnsonville–Davidson 500-kV transmission line. The new 500-kV transmission line would be at least 40 miles long and built on new right-of-way.

This alternative would have the additional costs and environmental impacts of a new 500-kV switching station. Detailed transmission system studies also showed that this alternative would not adequately meet the project need. This alternative was eliminated from further consideration.

Load Management/Conservation - A major objective of this project is to maintain transmission system reliability. Reliability is related to system loads as well as system configuration and external factors such as weather, catastrophic events and events on adjoining systems. In addition, the proposed project addresses a present risk to maintaining the current level of service; this risk will increase as system loads increase in the future.

The risk to maintaining service to the greater middle Tennessee area is partially load dependent and could, therefore, be affected by load reduction. However, under present conditions, it would be necessary to decrease current peak loads by at least 4000 MW to maintain acceptable voltage levels. A 2002 study conducted by Pacific Energy Associates for TVA assessed a number of demand-side management options. This study showed that the maximum peak load reduction achievable within a 2 year period, using a number of demand-side management options, was expected to be about 187 MW throughout the TVA system. Achieving an on-peak reduction of 4000 MW in middle Tennessee through demand-side management is therefore not feasible.

Conservation and load management would not fully address the system stability issues that are an objective of the proposed action. These risks can only be decreased by addition of another high capacity transmission line in the area. The load management/conservation alternative was eliminated from further consideration.

Preferred Alternative

After evaluating the potential impacts to natural features, land use, and cultural features, as well as the engineering attributes of the alternatives and corridors, TVA has identified its preferred alternative as Alternative 1 – the Cumberland-Montgomery Study Area. Within this alternative, TVA has identified its preferred corridors as Corridors B and D.

AFFECTED ENVIRONMENT

Groundwater

Both alternative study areas contain similar groundwater resources. The areas are underlain by limestone aquifers in Mississippian rocks, in what is known as the Highland Rim aquifer system. Most of the freshwater circulation through this system is at depths of less than 300 feet below land surface, although some may be as deep as 500 feet. Hydraulic characteristics of the limestone aquifers vary greatly over short distances. Yields of wells penetrating them commonly range from 5 to 50 gallons per minute, and maximum yields may exceed 400 gallons per minute. The quality of groundwater in the Mississippian aquifers is generally good or readily treatable to meet drinking water standards.

Surface Water

The project area is located within the Cumberland River Basin. Two large impoundments, Lake Barkley and Cheatham Lake, occur on the portion of the Cumberland River in the project area.

Alternative 1 – Cumberland-Montgomery Study Area – Larger streams in this study area include Blooming Grove Creek, Antioch Creek, Budds Creek, the Red River and its West Fork and Little West Fork tributaries, Big McAdoo Creek, Little McAdoo Creek, Hurricane Creek, and Louise Creek, as well as the Cumberland River. Most of these streams are classified for fish and aquatic life, recreation, irrigation, and livestock watering and wildlife. The Cumberland River and part of the Red River have the additional classifications of domestic and industrial water supply, and the West Fork and Little West Fork Red River have the additional classification of industrial water supply.

Big McAdoo Creek, a portion of the Red River, Seven Springs Creek, the West Fork and Little West Fork Red River, and Dunbar Cave Stream are listed on the state Section 303(d) list as not supporting or partially supporting their use classifications because of pollution loadings exceeding water quality standards.

Alternative 2 – Cumberland-Davidson Study Area – Larger streams in this study area include Yellow Creek, Little Bartons Creek, Bartons Creek, Johnson Creek, Sams Creek, Pond Creek, and the Harpeth River and its tributaries including Jones Creek, Turnbull Creek, and the South Harpeth River. The Harpeth River in Davidson County is designated a State Scenic River and therefore considered a Tier II high quality stream, as is the South Harpeth River. Most of the streams in this study area are classified for fish and aquatic life, recreation, irrigation, and livestock watering and wildlife. Additional classifications include domestic and industrial water supply for the Harpeth River, South Harpeth River, and Turnbull Creek, industrial water supply for Jones Creek, and trout stream for Yellow Creek.

Portions of Cheatham Lake as well as the Harpeth River and Jones Creek are listed on the state Section 303(d) list as not supporting or partially supporting their use classifications because of pollution loadings exceeding water quality standards.

Vegetation

Alternative 1 – Cumberland-Montgomery Study Area – Major plant community types in this study area are dry ridge forests or woodlands of the dissected uplands, mesic oak and oak-hickory forests, lowland riparian forests, pine plantations, cultivated fields, pastures, and barrens. Upland forest comprises between 50 and 58% of the four corridors in this study area. Cultivated fields, pastures, and other grasslands comprise between 36 and 40% of the corridors. The average forest patch sizes in the four corridors range from 96 to 133 acres. Each corridor contains between 5 and 9 forest patches between 1,000 and 5,000 acres in size, but none larger than 5,000 acres.

At least one plant community of conservation concern, the Kentucky-Tennessee Big Barrens, is known to occur in the study area. High quality examples of this prairie-like community occur on the Fort Campbell Military Reservation.

Alternative 2 – Cumberland-Davidson Study Area – The major plant community types in this study area are the same as the Alternative 1 study area. The two study area corridors are both about 74% forested upland and about 23% cultivated fields, pastures, and other

grasslands. The average forest patch sizes in the two corridors are about 193 and 202 acres. The two corridors contain 13 and 17 forest patches between 1,000 and 5,000 acres in size, but none larger than 5,000 acres.

Six plant communities of conservation concern are known from the study area counties, and four of these communities are potentially occur in the study area corridors. These communities are the Kentucky-Tennessee Big Barrens, the Limestone Cliff-Talus Seep, the Little Bluestem–Broomsedge–Grasslands, and the Western Highland Rim Escarpment Post Oak Barrens.

Wildlife

Alternative 1 – Cumberland-Montgomery Study Area – Wildlife populations in this study area are dominated by species characteristic of woodland and fields. A high number of grassland bird species, including some of very limited distribution in Tennessee, are known from the area. Because of the fragmented nature of woodlands in the study area, the diversity of forest-dwelling wildlife is only moderate. This study area contains several wetland areas, and areas managed for waterfowl occur along the Cumberland River. A great blue heron colony occurs near Cumberland Fossil Plant. Of the four corridors, Corridor D probably has the least diverse wildlife populations, and Corridors A and B probably have the most diverse wildlife populations.

Alternative 2 – Cumberland-Davidson Study Area – Compared to the Alternative 1 study area, this study area, which is more heavily forested, probably contains a greater overall diversity of wildlife. It contains a few species of neotropical migrant birds not reported from the Alternative 1 study area. There is likely little difference in the wildlife populations of the two study area corridors.

Aquatic Ecology

Alternative 1 – Cumberland-Montgomery Study Area – This study area includes a wide range of aquatic habitats, including Lake Barkley and both large and small streams. Streams in the Western Highland Rim area (including both alternative study areas) typically support a very diverse aquatic fauna. In the vicinity of Cumberland Fossil Plant, Lake Barkley exhibits characteristics typical of large river tailwaters, and is probably inhabited by close to 60 fish species. Yellow Creek is known to support at least 34 fish species, and the Red River supports at least 43 fish species, a very good black bass fishery, and an excellent channel and flathead catfish fishery. Yellow Creek is regularly stocked with trout. Fish population sampling results are not available from other streams in the study area.

Alternative 2 – Cumberland-Davidson Study Area – In addition to Yellow Creek, described above, fish population sampling results are available for Jones Creek, Turnbull Creek, and the Harpeth River. Jones Creek supports at least 31 fish species and Turnbull creek supports at least 22 species. Historically, 62 fish species have been reported from the Harpeth River; more recent studies reported 28 species. The fish communities in all three of these are considered healthy. Fish population sampling results are not available from the other streams in the study area.

Endangered and Threatened Species

Alternative 1 – Cumberland-Montgomery Study Area – One plant listed as threatened under the Endangered Species Act, Price's potato-bean, and one candidate for such listing,

Lesquereux's mustard, are known from at least one corridor in this study area. An additional four plants listed as endangered in Tennessee, six plants listed as threatened in Tennessee, and 12 plants considered to be of special concern are known from corridors in this study area.

The gray bat and Indiana bat, both listed an endangered under the Endangered Species Act, occur in caves within three of the study area corridors. The bald eagle, listed as threatened under the Endangered Species Act, nests along Lake Barkley a short distance downstream of the study area and winters in the study area. Two species listed as threatened in Tennessee, the northern pine snake and Bewick's wren, are known from Corridor C. An additional 6 animals listed as in need of management in Tennessee have been reported from the study area corridors.

Two mussels listed as endangered under the Endangered Species Act, the tan riffleshell and birdwing pearly mussel, historically occurred in study area streams; they are both presumed extirpated. The lake sturgeon, considered endangered in Tennessee, likely occurs in the affected portion of the Cumberland River. An additional two fish species listed as threatened and four fish considered in need of management in Tennessee are known from streams within the study area corridors.

Alternative 2 – Cumberland-Davidson Study Area – One plant listed as threatened under the Endangered Species Act, Eggert sunflower, is known from both corridors in this study area. An additional three plants listed as threatened in Tennessee are known from corridors in this study area.

The northern pine snake, listed as threatened in Tennessee, is known from Corridor A. The four-toed salamander and the sharp-shinned hawk, both considered in need of management in Tennessee, is also known from Corridor A. The cerulean warbler, a species of concern to the U.S. Fish and Wildlife Service and in need of management in Tennessee, is known from both Corridor A and B.

The two endangered mussels mentioned above in the Alternative 1 study area also historically occurred in the Alternative 2 study area. The blue sucker, listed as threatened in Tennessee, as well as three other fish considered in need of management in Tennessee has been reported from this study area.

Wetlands

Alternative 1 – Cumberland-Montgomery Study Area – The National Wetland Inventory was used to identify wetlands within the study areas. Wetlands are present in all four of the corridors in this study area. A large area of forested and scrub-shrub wetlands occurs along Lake Barkley near Cumberland Fossil Plant. Two larger wetlands areas are present further upstream in the Cumberland River floodplain in Corridors A and B. Small forested wetlands are present along many of the streams in all four corridors.

Alternative 2 – Cumberland-Davidson Study Area – Many small and large (up to 20 acres) wetlands are present in the riparian zones of many of the streams in both corridors. Many of these wetlands are forested.

Floodplains

Both alternative study areas, as well as their various proposed corridors, cross the 100-year floodplain areas of several rivers and streams. These floodplains vary in width from a few feet to hundreds of yards. The Cumberland Fossil Plant switchyard, the Montgomery 500-kV Substation, and the Davidson 500-kV Substation are located outside the limits of the 100-year floodplain.

Managed Areas

Alternative 1 – Cumberland-Montgomery Study Area – Managed areas and/or ecologically significant sites occur in all four corridors in this study area. The Cross Creeks National Wildlife Refuge is a short distance downstream from Cumberland Fossil Plant. Three streams in the study area are listed on the National Rivers Inventory: Red River (Corridors A and B), Yellow Creek (Corridors A, B, and C), and West Fork Red River (Corridors C and D). The Shelton Ferry and Mark's Slough wetland sites are in Corridors A and B, and the Long Pond Slough wetland site is in Corridor C. Corridor C also contains the Wooten's Bluff site and the Austin Peay State University Environmental Education Center. Corridor D passes through a portion of the Fort Campbell Military Reservation and contains the Barnett Woods Preserve and the Coleman Cave and Bellamy Cave sites.

Alternative 2 – Cumberland-Davidson Study Area – Both corridors cross the Harpeth State Scenic River and Jones Creek, listed on the National Rivers Inventory. Other National Rivers Inventory streams with the corridors include Yellow Creek (Corridor A), Big Turnbull Creek (Corridor B), and South Harpeth River (Corridor B). Corridor A bisects the large, state-owned Cheatham Wildlife Management Area and contains the Hidden Lakes unit of Montgomery Bell State Resort Park. Corridor B contains the Hava-Lakatu and Svenson's Bluff sites.

Recreation

Alternative 1 – Cumberland-Montgomery Study Area – The predominant recreation activities in this study area are dispersed activities including hunting, fishing, wildlife observation, and off-road vehicle use. The wildlife management areas, as well as the Cross Creeks refuge, support high levels of dispersed recreation. Dispersed recreational activities also occur on private lands in the study area. Lake Barkley is heavily used for boating. Developed recreation facilities are located in municipal areas in association with municipal parks and schools.

Alternative 2 – Cumberland-Davidson Study Area – As in the Alternative 1 study area, dispersed recreational activities are widespread and concentrated in the wildlife management areas. Developed recreation facilities are located in municipal areas in association with municipal parks. Portions of the Harpeth River also receive heavy use by canoeists.

Prime Farmland

Both alternative study areas, as well as their various proposed corridors, cross prime farmland. No prime farmland occurs at the site of the proposed activities at the Cumberland Fossil Plant switchyard, the Montgomery 500-kV Substation, or the Davidson 500-kV Substation.

Visual Resources

Alternative 1 – Cumberland-Montgomery Study Area – The visual character of Cumberland Fossil Plant is primarily industrial. The rest of the four Alternative 1 corridors cross diverse landscapes including Lake Barkley, several streams, areas of farms, forest, low density residential development, as well as areas of higher density residential development and commercial development near Clarksville. Scenic attractiveness is common and scenic integrity is moderate over much of the corridors.

Alternative 2 – Cumberland-Davidson Study Area – The general visual character of the Alternative 2 corridors is similar to the Alternative 1 corridor, although more of the Alternative 2 corridors is forested. Both corridors cross the mostly undeveloped and scenic Harpeth River and its tributaries and have a concentration of major roads at their southeast ends. State highways run lengthwise through much of Corridor B, while several sections of Corridor A are relatively undeveloped and scenic.

Cultural Resources

Alternative 1 – Cumberland-Montgomery Study Area – Historic properties, identified for their architectural/historical or archaeological significance, occur in all four corridors. Corridor A contains eight properties presently listed in the National Register of Historic Places. Corridor B contains eight such listed properties, Corridor C contains nine, and Corridor D contains seven listed properties. The listed properties include historic iron furnaces, historic buildings, and archaeological sites. Each corridor also contains several properties identified as eligible or potentially eligible for listing on the National Register. There is potential for the discovery of additional historic properties within all four corridors.

Alternative 2 – Cumberland-Davidson Study Area – Both Alternative 2 corridors contain historic properties listed in the National Register of Historic Places – eleven in Corridor A and seven in Corridor B. These properties include historic iron furnaces, historic buildings, and archaeological sites. Both corridors also contain several properties identified as eligible or potentially eligible for listing on the National Register. There is potential for the discovery of additional historic properties within all four corridors.

Socioeconomics

Both alternative study areas vary greatly in socioeconomic characteristics. The two most urban counties, Davidson and Montgomery, have the highest minority population and relatively low employment rates. The two most rural and least populous counties, Houston and Stewart, have high unemployment rates, low median household incomes, and low minority populations compared to the study area and state averages.

ENVIRONMENTAL CONSEQUENCES

Groundwater

Alternatives 1 and 2 – Cumberland-Montgomery and Cumberland-Davidson Study Areas – Best management practices would be used during the construction and operation of the proposed transmission line. With implementation of these measures, any impacts to groundwater would be insignificant.

Alternative 3 – No Action – No impacts to groundwater are expected to result from implementation of this alternative.

Surface Water

Alternative 1 – Cumberland-Montgomery Study Area – Construction of the proposed transmission line in any of the Alternative 1 corridors would require crossing the Cumberland River, as well as several other streams. Potential impacts to streams include siltation and removal of the streamside tree canopy. These impacts would be minimized through avoiding stream crossings where possible, by implementation of best management practices, and by minimizing vegetation clearing on streambanks. Impacts to surface waters are expected to be insignificant.

Alternative 2 – Cumberland-Davidson Study Area – Construction of the proposed transmission line in either of the Alternative 2 corridors would require crossing several streams, including the Harpeth River. Potential impacts to streams include siltation and removal of the streamside tree canopy. These impacts would be minimized through avoiding stream crossings where possible, by implementation of best management practices, and by minimizing vegetation clearing on streambanks. Impacts to surface waters are expected to be insignificant.

Alternative 3 – No Action – No impacts to surface waters are expected to result from implementation of this alternative.

Vegetation

Alternative 1 – Cumberland-Montgomery Study Area – Construction and operation of the proposed transmission line in any of the Alternative 1 corridors would result in the permanent conversion of forested areas to early successional habitats. The magnitude of this impact is dependent on the location of the final transmission line route. Based on the forested area in each corridor, it would likely be greater in Corridors A and B than in C and D. Plant communities of conservation concern could also be affected; impacts to the Kentucky-Tennessee Big Barrens community would likely be insignificant as right-of-way management can be compatible with this early successional community. Some other plant communities could be adversely affected; specific impacts will be determined once final transmission line routes are known.

Alternative 2 – Cumberland-Davidson Study Area – As with Alternative 1, construction and operation of the proposed transmission line in either of the Alternative 2 corridors would result in the permanent conversion of forested areas to early successional habitats. Based on the forested area in each of the corridors, this impact would likely be slightly greater in Corridor B than in Corridor A. This impact would also be greater in either of the Alternative 2 corridors than in any of the Alternative 1 corridors. Plant communities of conservation concern could also be affected; the nature of this impact cannot be determined until final transmission line routes are known and field surveys have been conducted.

Alternative 3 – No Action – No impacts to vegetation are expected to result from implementation of this alternative.

Wildlife

Alternative 1 – Cumberland-Montgomery Study Area – Potential impacts to wildlife would result from the permanent conversion of forest to early successional habitats and from the creation of forest-edge habitats. This would be detrimental to forest-dwelling wildlife but beneficial to species requiring early successional grassland/shrub habitats. The magnitude of these impacts varies with the amount of affected forest in each of the corridors. It would likely be greatest in Corridors A and B, somewhat lower in Corridor C, and lowest in Corridor D. Some of the corridors also include wildlife management areas.

Alternative 2 – Cumberland-Davidson Study Area – As in the Alternative 1 study area, potential impacts to wildlife would result from the permanent conversion of forest to early successional habitats and from the creation of forest-edge habitats. This would be detrimental to forest-dwelling wildlife but beneficial to species requiring early successional grassland/shrub habitats. The magnitude of these impacts varies with the amount of affected forest in each of the corridors, which is very similar in the two corridors. Corridor A would also impact the Cheatham Wildlife Management Area.

Alternative 3 – No Action – No impacts to wildlife are expected to result from implementation of this alternative.

Endangered and Threatened Species

Alternative 1 – Cumberland-Montgomery Study Area – Three species, a plant and two bats, listed as endangered or threatened under the Endangered Species Act, are known to occur within the Alternative 1 study area corridors. At least ten additional plant species and five additional animal species listed as endangered or threatened in Tennessee are known from the study area corridors, as are several additional species listed as of special concern or in need of management in Tennessee. Specific impacts to endangered and threatened species cannot be determined until final transmission line routes are known. TVA would minimize potential impacts to endangered and threatened species by avoiding populations during transmission line construction and, where this is not feasible, by mitigating impacts as necessary. Once potential impacts to species listed under the Endangered Species Act are known, TVA will consult as appropriate with the U.S. Fish and Wildlife Service.

Alternative 2 – Cumberland-Davidson Study Area – One plant listed as threatened under the Endangered Species Act is known from both Alternative 2 corridors. An additional three plants and two animals listed as threatened in Tennessee, as well as several additional species listed as of special concern or in need of management in Tennessee, are known from the study area corridors. Specific impacts to endangered and threatened species cannot be determined until final transmission line routes are known. TVA would minimize potential impacts to endangered and threatened species by avoiding populations during transmission line construction and, where this is not feasible, by mitigating impacts as necessary. TVA will consult with the U.S. Fish and Wildlife Service, as appropriate, once potential impacts to species listed under the Endangered Species Act are known.

Alternative 3 – No Action – No impacts to endangered or threatened species are expected to result from implementation of this alternative.

Wetlands

Alternative 1 – Cumberland-Montgomery Study Area – Construction and operation of the proposed transmission line in any of the Alternative 1 study area corridors has the potential to impact wetlands. The most common type of wetland impact would likely be the conversion of forested wetlands to scrub-shrub wetlands. Further assessment of potential wetland impacts would be conducted once final transmission line routes are known. TVA will minimize potential impacts to wetlands by avoiding wetlands during transmission line construction, by minimizing clearing in wetlands, and, where necessary, by appropriate mitigation. Corridor D appears to have a higher potential for wetland impacts than Corridors A, B, or C.

Alternative 2 – Cumberland-Davidson Study Area – Construction and operation of the proposed transmission line in either of the Alternative 2 study area corridors has the potential to impact wetlands. The most common type of wetland impact would likely be the conversion of forested wetlands to scrub-shrub wetlands. A detailed assessment of potential wetland impacts would be conducted once final transmission line routes are known. TVA will minimize potential impacts to wetlands by avoiding wetlands during transmission line construction, by minimizing clearing in wetlands, and, where necessary, by appropriate mitigation. The potential for wetland impacts is similar in Corridors A and B.

Alternative 3 – No Action – No impacts to wetlands are expected to result from implementation of this alternative.

Floodplains

Alternatives 1 and 2 – Cumberland-Montgomery and Cumberland-Davidson Study Areas – Floodplains occur in all of the corridors associated with each of these alternative study areas. TVA would avoid siting transmission structures in streams; siting transmission structures in associated floodplains is not expected to significantly affect floodplain functions or flooding regimes.

Alternative 3 – No Action – No impacts to floodplains are expected to result from implementation of this alternative.

Managed Areas

Alternative 1 – Cumberland-Montgomery Study Area – Managed areas and/or ecologically significant sites such as National Wildlife Refuges, Wildlife Management Areas, and streams listed in the National Rivers Inventory occur in all of the Alternative 1 study area corridors. Some of the smaller managed areas, as well as the National Wildlife Refuge, would probably be avoided when final line routes are known. Some other areas, because of their size and location within the corridors, cannot be avoided. The nature of impacts to these areas would depend on the characteristics and management objectives of the areas. TVA would work with the area managers to minimize and/or mitigate potential impacts. The potential for impacting managed areas is greater in Corridor D and lowest in Corridors A and B.

Alternative 2 – Cumberland-Davidson Study Area – Streams listed in the National Rivers Inventory as well as the Harpeth State Scenic River would be crossed by either of the Alternative 2 corridors. Corridor A would also cross Cheatham Wildlife Management Area. Two other small ecologically significant sites occur in Corridor B. Where avoidance of

managed areas is not feasible, TVA would minimize/mitigate impacts as described above. The potential for impacts to managed areas and ecologically significant sites is greater in Corridor A than in Corridor B.

Alternative 3 – No Action – No impacts to managed areas are expected to result from implementation of this alternative.

Recreation

Alternative 1 – Cumberland-Montgomery Study Area – All of the proposed Alternative 1 study area corridors cross areas where dispersed recreation activities such as fishing, hunting, and wildlife observation take place; these activities are concentrated in wildlife management areas and a few other locations. Although some of these recreation activities could be disrupted during transmission line construction, the long-term impacts are expected to be insignificant. TVA will attempt to avoid developed recreation areas when identifying final line routes. The potential for impacts to recreation appears somewhat higher in Corridors C and D than in Corridors A and B.

Alternative 2 – Cumberland-Davidson Study Area – Both of the proposed Alternative 2 study area corridors cross areas where dispersed recreation activities such as fishing, hunting, and wildlife observation take place. The Cheatham Wildlife Management Area, which would be crossed by Corridor A, received a high level of dispersed recreational use. Although some of dispersed recreation activities could be disrupted during transmission line construction, the long-term impacts are expected to be insignificant. TVA will attempt to avoid developed recreation areas when identifying final routes.

Alternative 3 – No Action – No impacts to recreation are expected to result from implementation of this alternative.

Visual Resources

Alternative 1 – Cumberland-Montgomery Study Area – The construction and operation of the proposed transmission line in any of the Alternative 1 study area corridors would result in long-term changes in the visual character of the area. The magnitude of this change cannot be fully assessed until specific transmission line routes and structure locations are known, but potential impacts can be generally identified and are discussed in the EIS. Scenic areas within this study area include portions of the Cumberland River near Cumberland Fossil Plant and near Clarksville, as well as several rural areas with a low density of houses and other developments.

Alternative 2 – Cumberland-Davidson Study Area – The construction and operation of the proposed transmission line in either of the Alternative 2 study area corridors would result in long-term changes in the visual character of the area. Scenic areas within this study area include the Harpeth State Scenic River and several other stream valleys, the many forested ridges, and the Cheatham Wildlife Management Area (in Corridor A). There are also several scenic rural areas with a low density of houses and other developments in each corridor. The magnitude of this change cannot be fully assessed until specific transmission line routes and structure locations are known, but potential impacts can be generally identified and are discussed in the EIS.

Alternative 3 – No Action – No alterations of the visual character of the project area are expected to result from implementation of this alternative.

Cultural Resources

Alternative 1 – Cumberland-Montgomery Study Area – All four Alternative 1 study area corridors contain properties that are listed, eligible for listing, or potentially eligible for listing on the National Register of Historic Properties. Corridor D has fewer such identified properties than the other three corridors. Once transmission line routes are known, TVA will conduct detailed surveys to better identify potentially affected historic properties. TVA will minimize impacts to historic properties, including historic structures and archaeological sites, by either avoidance or mitigation.

Alternative 2 – Cumberland-Davidson Study Area – Both Alternative 2 study area corridors contain properties that are listed, eligible for listing, or potentially eligible for listing on the National Register of Historic Properties. Corridor A has fewer such identified properties than does Corridor B. Once transmission line routes are known, TVA will conduct detailed surveys to better identify potentially affected historic properties. TVA will minimize impacts to historic properties, including historic structures and archaeological sites, by either avoidance or mitigation.

Alternative 3 – No Action – No impacts to cultural resources are expected to result from implementation of this alternative.

Socioeconomics

Alternatives 1 and 2 – Cumberland-Montgomery and Cumberland-Davidson Study Areas – The construction of the proposed transmission line in either of the alternative study areas would result in some short-term employment, as well as some local expenditures for housing, food, and some purchases of materials. The labor force is expected to originate outside the study area, and local employment impacts would be minimal. TVA would pay fair market value for transmission line easements purchased from landowners and impacts to property values are expected to be insignificant. Based on a coarse scale analysis, environmental justice impacts are likely to be insignificant; they will be evaluated in detail once transmission line routes are known.

Alternative 3 – No Action – Under the No Action alternative, no immediate socioeconomic impacts are anticipated. Some long-term impacts could occur if reliable electric service to the middle-Tennessee area cannot be maintained because of inadequate transmission capacity.

Electric and Magnetic Fields

Alternatives 1 and 2 – Cumberland-Montgomery and Cumberland-Davidson Study Areas – New electric and magnetic fields would be created from the operation of the proposed transmission line. TVA would minimize public exposure to these fields through engineering features (e.g., conductor height, grounding of metal objects) and line routing decisions (e.g., buffers around occupied buildings), and no significant impacts from these fields are anticipated.

Alternative 3 – No Action – Under the No Action alternative, no new electric and magnetic fields would be created from the operation of the proposed transmission line.

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