



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

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September 24, 2018

Via Electronic Mail to aemasters@tva.gov

Attn: Anita E. Masters, NEPA Project Manager
Tennessee Valley Authority
1101 Market St., BR2
Chattanooga, TN 37402

Dear Ms. Masters:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority (TVA) *Draft Programmatic Environmental Impact Statement* (PEIS) which considers the potential environmental, social, and economic effects associated with the proposed management of vegetation within TVA's transmission rights-of-way (ROW). The purpose of TVA's transmission system vegetation management program is to strategically manage TVA's existing transmission line ROW consistent with applicable laws, orders, standards, practices and guidance while providing reliable energy and protecting environmental resources. According to the Draft PEIS, the need for the proposed action includes; to improve the effectiveness of TVA's vegetation management program to eliminate vegetation that interferes with the operation of the existing transmission system so that TVA can continue to provide safe and reliable electric power in a cost-effective and environmentally sound manner; to comply with all current and future North American Electric Reliability Corporation (NERC) Reliability Standards to maintain transmission lines in a safe and reliable operating condition, thereby minimizing TVA's potential for costly fines for NERC noncompliance; and to enhance public safety through controlled vegetation management of TVA's transmission lines.¹

Actions considered in detail within the Draft PEIS include:

- **Alternative A – No Action Alternative.** Under the No Action Alternative, there would be no change to the current process by which TVA manages vegetation along the transmission line ROW pursuant to the injunction entered in the *Sherwood v. TVA* lawsuit. No re-clearing of the buffer would be conducted under this alternative. This vegetation management process is prescribed by the court injunction order currently in place in the *Sherwood v. TVA* litigation. Under the Order, TVA must leave existing trees in the maintained area of the ROW so long as they do not pose an immediate hazard to the transmission lines or structures. Additionally, TVA may remove or trim any tree in the previously maintained areas of ROW, or in the non-maintained areas of ROW, or any danger tree outside the transmission ROW, in accordance

¹ TVA's current vegetation management practices are identified in a July 31, 2017 injunction Order from the U.S. District Court. This injunction requires "TVA [to] maintain buffer zones on the edges of its ROW in a manner as described in its 1997 and 2008 Line Maintenance Manuals" until TVA prepares and publishes a thorough Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA) analyzing TVA's ROW vegetation management program.

with its contract rights, that TVA deems to present an immediate hazard to its transmission line or structures. Tree work in remaining buffer areas would be limited subject to the terms of the court-ordered injunction.² Floor work would continue to be managed on a nominal 3-year cycle in previously cleared areas.

According to TVA's assessment, the No Action Alternative does not adequately address the potential for service outages from trees growing into the line, falling into the line, or creating a fire hazard to the transmission lines and structures and as such creates an increasing risk to reliability.³ The net present value (NPV) of the cost to maintain the transmission ROW for the next 20 years under the No Action Alternative is estimated to be approximately \$206 million. The cost for initial re-clearing is not included under this alternative, as it is in all of the other alternatives, as that action is not permitted under the injunction.⁴ However, tree work costs are higher for this alternative and will increase over time due to the inefficiencies inherent in removal of only immediate hazard trees, as opposed to removal of all incompatible trees during the vegetation maintenance activity. This increase would be a direct result of continued vegetation growth until the vegetation grows sufficiently to meet the definition of immediate hazard, which would necessitate addressing that imminent hazard in the next maintenance cycle. In addition, the increased costs include management of new trees that sprout and grow as a result of the less aggressive vegetation maintenance under the injunction. Consequently, TVA does not believe this alternative would satisfy the project purpose and need and, therefore, is not considered a viable or reasonable vegetation management alternative.

- **Alternative B – Cyclical-Based Control Strategy.** Under Alternative B, the full extent of the transmission ROW subject to TVA vegetation management would be cleared on a recurring cycle (typically every 3 years) to ensure that vegetation would not threaten transmission lines or structures until the next cycle of treatment. Re-clearing all buffer vegetation would be conducted under this alternative using a mix of mechanical (about 85 percent) and manual (about 15 percent) methods. Vegetation within the floor of the ROW on lands primarily managed by TVA would be controlled using a mix of approximately 90 percent herbicide, 6 percent mechanical and 4 percent manual methods. However, under this alternative TVA would continue to use a context sensitive approach to tool selection for vegetation maintenance. All vegetation with the potential to interfere with the safe and reliable operation of the transmission system would be removed using a combination of mechanical or manual methods depending on the specific site condition. TVA would continue to use all assessment techniques under Alternative B except LIDAR.⁵

² For more details, Pages 69 and 70 of the PEIS describe the trimming terms of the court-ordered injunction.

³ In addition, this approach would lead to a marked increase in worker safety concerns, due to the increased risk of serious injuries and fatalities associated with the increased need to undertake manual removal of large danger trees.

⁴ The cost to maintain the floor remains constant assuming an annual inflation rate of 2.5 percent.

⁵ Because no LIDAR assessment would be used under this alternative, incompatible vegetation would be determined by field inspections. During a ground inspection, the transmission ROW would be visually evaluated to identify vegetation that could interfere with the safe and reliable operation of the transmission system. The process first would require the inspector to visually identify a potential threat and then to utilize a range finder to measure the clearance between the transmission line and the vegetation to confirm its status. The clearance would be measured against the closest point in the transmission line at its current state without consideration of the potential change in vertical or horizontal positioning of the transmission line from thermal (ambient heat dissipation of the electricity in line from wind velocity/direction, ambient air temperature and precipitation) or physical loading (factors such as ice and wind loading that affect sag and sway of the line). In addition, due to the yearly volume of transmission lines to be inspected and the allotted timeframe, the inspections would be performed by multiple inspectors – leading to potential inconsistencies due to subjectivity in evaluation. Although ground inspection provides another perspective of the conditions, it is limited to the individual inspector's ability to identify potential threats while navigating the diverse terrain, dealing with environmental factors and coordinating with property owners.

TVA previously has allowed property owners to maintain trees on their property within the transmission ROW. However, this practice is unsafe for the landowner as well as for the reliability of the transmission system because implementation, timing and consistency of owner maintenance can be unreliable. Accordingly, this practice would no longer be allowed under this alternative. The NPV of the cost to maintain the transmission ROW for the next 20 years under Alternative B is estimated to be approximately \$171 million.⁶ This cost estimate assumes that danger trees would be identified by field inspection in lieu of LIDAR, which reduces cost but which also increases the risk of missing a higher priority threat compared to a LIDAR inspection. As such, danger tree costs are strictly budget-based and may be underestimated for this alternative as this estimate does not address danger trees outside of the transmission ROW.

- **Alternative C – Condition-Based Control Strategy – End-State Meadow-like, Except for Areas Actively Maintained by Others (Compatible Trees Allowed).** Under Alternative C, TVA would implement a process of vegetation community conversion within the full extent of the transmission ROW actively maintained by TVA. TVA would use an Integrated Vegetation Management (IVM) approach to promote the establishment of a plant community dominated by low-growing herbaceous and shrub-scrub species that do not interfere with the safe and reliable operation of the transmission system. The goal of this vegetation management alternative would be to allow compatible vegetation to establish and propagate to reduce the presence of woody species. TVA would continue to use all assessment techniques, including LIDAR.

Re-clearing of all buffer vegetation (the buffer zone is a subset of the border zone) would be conducted under this alternative using a mix of mechanical (about 85 percent) and manual (about 15 percent) methods. Routine vegetation management includes the identification and removal of vegetation within the transmission ROW incompatible with TVA's desired end-state condition. Within transmission ROWs primarily maintained by TVA, floor work would continue on an established cycle and in general, vegetation within the ROW would be controlled using a mix of approximately 90 percent herbicide, 6 percent mechanical and 4 percent manual methods. All danger trees would be removed using a combination of mechanical or manual methods depending on the specific site conditions. However, under this alternative, TVA would continue to use a context sensitive approach to tool selection for vegetation maintenance. In the long-run, the frequency of vegetation maintenance within the entire transmission system may be the same as under Alternative B because the continual growth of vegetation will require routine maintenance. However, Alternative C is expected to result in the establishment of a stable, low-growing plant community that would reduce the intensity of vegetation control once the desired end state in each location has been achieved.

Under this alternative TVA would have the option to allow compatible trees to remain in areas actively maintained by others (such as residential lands, orchards, forest plantations, agricultural lands or other similar areas). The maintenance of trees in these areas would be optimized with the use of various inspection methods. These methods include aerial patrols, ground patrols, photogrammetry, and LIDAR surveys to identify the extent of any tree removal needed⁷. The NPV of the cost to maintain the transmission ROW for the next 20 years under this alternative is estimated to be approximately \$183 million.⁸ The cost of maintaining the transmission ROW under a condition-based strategy would

⁶ The cost to maintain the floor remains constant assuming an annual inflation rate of 2.5 percent.

⁷ These tools allow TVA to implement a targeted approach through the identification of categories that define the risk of current and future danger trees.

⁸ The cost to maintain the floor remains constant assuming an annual inflation rate of 2.5 percent.

potentially be higher than Alternative B in the near-term. This is because vegetation would most likely need to be controlled more often until low-growing plant communities are established. In the long-term, however, it would be less expensive to maintain the transmission ROW under this alternative because less re-clearing would be needed.

- **Alternative D – Condition-Based Control Strategy – End-State Compatible Vegetation Variable by Zone, Except for Areas Actively Maintained by Others (Compatible Trees Allowed).** Under Alternative D, TVA would manage vegetation within the transmission ROW using a wire zone/border zone approach. This alternative was formulated based upon input during the scoping process. As with Alternative C, TVA would implement a process of vegetation community conversion within the transmission ROW wire zone using an IVM approach. This alternative would promote the establishment of low-growing compatible herbaceous and shrub-scrub dominated plant communities that do not interfere with the safe and reliable operation of the transmission system. However, under Alternative D, the buffer zone would be allowed to redevelop with compatible species of shrubs and trees. The goal of this vegetation management alternative is to promote a soft or "feathered" edge which could be used to provide a transition from forested habitat into the meadow-like habitat of the wire zone. TVA would continue to use all assessment techniques under Alternative D including LIDAR.

Re-clearing of all buffer vegetation would be conducted under this alternative using a mix of mechanical (about 85 percent) and manual (about 15 percent) methods. Routine vegetation maintenance would include identification and removal of incompatible vegetation within the transmission ROW to achieve the desired end-state condition. Within lands primarily maintained by TVA, floor work would continue on an established cycle and in general, vegetation within the transmission ROW would be controlled using a mix of approximately 90 percent herbicide, 6 percent mechanical and 4 percent manual methods. However, under this alternative TVA would continue to use a context sensitive approach to tool selection for vegetation management.

Under this alternative, TVA has the option to allow compatible trees to remain in areas actively maintained by others (such as residential lands, orchards, forest plantations, agricultural lands or other similar areas). Management of trees in these areas would be optimized with the use of various inspection methods including aerial patrols, ground patrols, photogrammetry, and LIDAR surveys to identify the extent of tree removal needed. These tools would provide information which would allow TVA to implement a targeted approach through the identification of categories that define the risk and accordingly the need for removal of danger trees in these areas. All danger trees would be removed using a combination of mechanical and manual methods depending on site-specific conditions. The NPV of the cost to maintain the transmission ROW for the next 20 years under this alternative is estimated to be approximately \$225 million. The cost of this alternative is greater than Alternative C because of the increased effort required by field crews to include staff trained to identify plant species that require selective control based on species composition and growth form.

TDEC has reviewed the Draft PEIS and has the following comments regarding the proposed action and its alternatives:

Cultural Resources

Based on information provided in the Draft PEIS, the proposed action and its alternatives have the potential to disturb significant archaeological resources within the proposed project areas. Manual or mechanical vegetation

clearing methods have the potential to adversely impact cultural resources. TDEC recommends that all unsurveyed locations to be disturbed by earthmoving activity from vegetation management be examined by a qualified professional archaeologist prior to project initiation; TVA should also adhere to best management practices where sites are known to exist.⁹

Air Resources

The preferred alternative could involve some level of open burning and if determined to be acceptable to use for a disposal method, would likely produce localized and insignificant air quality impacts that are of short term duration. TDEC recommends that all other disposal methods be evaluated before open burning is considered. In the event that open burning is to be undertaken, TDEC would propose that open burning on air quality alert days be avoided and that adequate planning and coordination with the local and state air programs and fire control agencies be established before undertaking any burning activities. TDEC encourages TVA to include these considerations in the Final PEIS.

Solid Waste

TDEC recommends that the Final PEIS reflect that materials generated (intentionally or accidentally) that are determined to be wastes be evaluated and managed in accordance with the Solid and Hazardous Wastes Rules and Regulations of the State (TDEC Division of Solid Waste Management Rule 0400 Chapters 11 and 12, respectively) in addition to other applicable regulations (federal, state) and TVA's best management practices.

Water Resources

All alternatives evaluated in the Draft PEIS include re-clearing of ROWs prior to the new maintenance phase. Depending on the scope of clearing, a Construction Stormwater General Permit (CGP) may be required in some cases (such as due to local terrain). Grubbing or bush-hogging would not necessarily require CGP coverage where root systems are left behind. If the machinery causes the vegetation to be ripped out, whereby ultimately disturbing the top layer of soil inadvertently, then coverage under a CGP would be necessary. TDEC encourages TVA to include additional information relating to its vegetation management practices, such as what equipment will be used, depth of disturbance, etc. in the Final PEIS to better identify the potential for impacts.

TDEC agrees that TVA must at a minimum identify site-specific characteristics and incorporate TVA's office-level sensitive area review (O-SAR) process to determine the selection of vegetation management methods employed. In some cases, O-SAR may be insufficient to determine the site-specific sensitivity. The sensitive environmental reviews should include potential for water supplies, springs, wetlands and streams to be impacted. In heavily karst topography, the presence and proliferation of sinkholes and other karst features need to be considered. Any herbicide spraying needs to include buffers near streams and other sensitive areas. The list of herbicides includes herbicides that public water systems are not required to monitor for. If the spraying is to occur in an area where it could potentially impact a public water system, TDEC and the water system should be informed prior to herbicide application. TDEC encourages TVA to include these considerations in the Final PEIS.

⁹ No comment can be made at this time concerning mitigation measures since the PA is still in negotiation. This is a state-level review only and cannot be substituted for a federal agency Section 106 review/response. Additionally, a court order from Chancery Court must be obtained prior to the removal of any human graves. If human remains are encountered or accidentally uncovered by earthmoving activities, all activity within the immediate area must cease. The county coroner or medical examiner, a local law enforcement agency, and the state archaeologist's office should be notified at once (Tennessee Code Annotated 11-6-107d).

TDEC appreciates the opportunity to comment on this Draft PEIS. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternatives, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Please contact me should you have any questions regarding these comments.

Sincerely,

A handwritten signature in cursive script that reads "Kendra Abkowitz".

Kendra Abkowitz, PhD

Assistant Commissioner, Office of Policy and Sustainable Practices

Tennessee Department of Environment and Conservation

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(615) 532-8689

cc: Daniel Brock, TDEC, DOA
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