ESMONT – SCOTTSVILLE TRANSMISSION LINE REBUILD PROJECT

ALBEMARLE COUNTY SPECIAL USE PERMIT NARRATIVE

PROJECT PROPOSAL

Appalachian Power Company ("Appalachian Power" or "Company") is proposing to rebuild approximately six miles of the existing Clifford – Scottsville 46 kilovolt (kV) Transmission Line using current 69 kV design standards between the Esmont and Scottsville substations ("Esmont – Scottsville 46 kV Line rebuild") and replace the existing Esmont Switch structure in Albemarle County (the "Project"). The Project is part of the Central Virginia Transmission Reliability Project (CVTRP), which will help maintain adequate and reliable electric service and accommodate future growth in central Virginia counties, including Albemarle County. The remaining components of the CVTRP were approved by the Virginia State Corporation Commission in September 2021 (Case No. PUR-2021-00001). In addition to the CVTRP's other improvements to the electrical system, which mitigate thermal and voltage criteria violations, the Esmont – Scottsville 46 kV Line rebuild will enhance system reliability by replacing assets installed in the 1920s that are at the end of their useful lives. The result will be a robust electrical system in Albemarle County that is capable of continued operation and performance at industry standards and that meets current National Electrical Safety Code requirements. Construction for the Esmont – Scottsville 46 kV Line rebuild is expected to begin in January 2024 and last for approximately one year, ending in January 2025. The improvements at the Esmont Switch are expected to begin in September 2026 and are planned to be in-service by the end of December 2026.

The existing 46 kV line to be rebuilt was installed in the 1920s and requires upgrades to address thermal overload and voltage violations associated with the aging infrastructure. To increase reliability and replace aging infrastructure, the Company proposes the following improvements:

- **Rebuild the Esmont – Scottsville 46 kV Line:** Six miles of the existing transmission line will be rebuilt to 69 kV standards and operated at 46 kV between Appalachian Power's Esmont and Scottsville substations. The Project will largely be rebuilt in the existing right-of-way (ROW), which ranges from 80 to 100 feet wide. One slight deviation from the existing ROW is proposed east of Porters Road, near the Yancey School Community Center in order to minimize impacts to the community.

- **Replace the Esmont 46 kV Switch:** The existing Esmont three-way Phase-Over-Phase (POP) switch structure near Esmont Substation will be replaced with a new 69 kV, one-way POP switch on a new pole to accommodate the transmission line upgrades.

The existing wooden H-frame structures are on average 40 feet tall and are at the end of their useful life due to wood rot, insect damage, and age-related deterioration. The wooden structures will be replaced with dulled-galvanized steel H-frame structures that will be located near their existing structure locations. Final structure heights and locations are subject to change once final engineering and environmental studies are completed; however, based on the best available information, the proposed H-frame structures will be approximately 20 feet taller than the existing wooden structures to meet current electrical design standards, which includes adding shield wires to improve lightning protection.

Refer to **Figures 1 and 2** below for representative photos of the existing and proposed structures, respectively. The existing three-way POP switch structure near Esmont Substation is an approximately 70-foot-tall wooden pole and will be replaced with a dulled-galvanized steel pole which will be approximately 95 feet tall in order to meet current electrical design standards. A representative photo of the proposed POP switch structure is included as **Figure 3** below.



Figure 1: Representative Existing H-Frame Structure



Figure 2: Representative Proposed H-Frame Structure



Figure 3: Representative Proposed POP Switch Structure

The portion of the existing Esmont – Scottsville 46 kV Line to be rebuilt begins at the Esmont Substation, located off Route 6 (Irish Road), and continues southeast for approximately six miles to Scottsville Substation, located off James River Road. The Proposed Route for the Project and details regarding the location of the existing and proposed structures are depicted in **Attachment A**. The Project will be rebuilt within the existing ROW except for one slight deviation in the Porters Road area to avoid existing residential and outbuilding encroachments that are within the existing ROW (**Attachment A, Map Tile 1**). The existing ROW width is typically 80 feet wide, except in select locations where the width is 100 feet wide. The existing ROW widths will be maintained for the Project and at the Porters Road deviation, the new ROW will be 80 feet wide. Refer to **Figure 4** below for the typical cross section of the existing and proposed structures within the ROW.

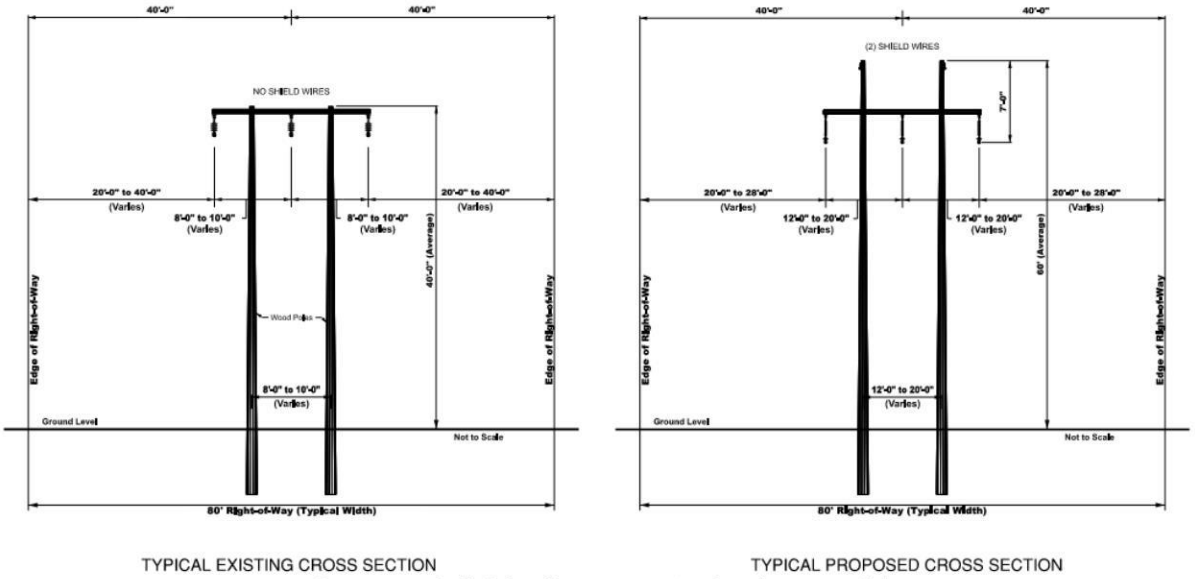


Figure 4: Typical Right-of-Way Cross Sections (not to scale)

When the transmission line was originally built in the 1920s, Appalachian Power acquired easements to construct electric transmission facilities from the landowners along the route. Some parcel boundaries have changed over the years and the existing transmission line is located on 48 different properties. On 19 of those 48 properties, specific restrictions within the easement documents required Appalachian Power to acquire supplemental ROW easements from the current landowners in order to secure the right to construct the proposed steel structures. Appalachian Power has obtained the necessary supplemental easements to construct and operate the Project. The list of properties crossed by the Project and the signatures obtained for the supplemental easements are provided in **Attachment B**. The proposed transmission line structures will generally be constructed in the same location within the existing ROW. The proposed Esmont Switch structure is located within the existing transmission ROW maintained by Appalachian Power and no supplemental or additional easements are needed to replace the structure. The Company will rebuild the Project, in generally the same location that the existing transmission line and switch structure have been for the last 100 years.

CONSISTENCY WITH COMPREHENSIVE PLAN

The existing and proposed Esmont – Scottsville 46 kV Line is located entirely in the "Rural Areas" land-use designation and outside of the designated "Development Areas" for which future development is encouraged, according to Albemarle County's Comprehensive Plan (adopted June 10, 2015) (the "Comprehensive Plan"). The "Rural Areas" designation is primarily intended to "support a strong agricultural and forestal economy" and includes protection for natural resources and the rural and historic landscapes within the county which makes up 95% of the Albemarle County's land area. The values specific to the "Rural Areas" in the Comprehensive Plan include protection for natural resources and the rural and historic landscapes within Albemarle County. Per Section 10.2.2(6) and 10.4 in the zoning ordinance, a Special Use Permit is required for transmission facilities in the "Rural Areas" district and structures that exceed 35 feet.

Using the best available data, the Project team identified constraints and opportunities within the Project area. Constraints are features that should be avoided to the extent practical to minimize impacts

to the human and natural environment. The existing transmission line ROW is the primary opportunity for the Project. The existing transmission line generally parallels Route 6 (Irish Road) through largely open areas as well as some forested areas near Esmont Substation and scattered residential areas near Scottsville Substation. One deviation from the existing ROW was identified to avoid constraints near Porters Road, including a community center playground and other residential buildings that have encroached into the existing ROW. The Proposed Route for the Project maximizes the use of the existing transmission line ROW and minimizes new impacts on the rural community landscape and the community. Visual simulations showing the existing conditions and depicting the proposed structures are included in **Attachment C**. The transmission line and switch structures have been in the existing ROW for the last 100 years and the Esmont – Scottsville 46 kV rebuild will not result in a noticeable difference in the landscape as the line will be rebuilt with structures located near the existing structures, which will be removed. Additionally, no substation equipment upgrades will be conducted outside of the existing fence line.

The southern extents of Albemarle County consist of historic properties and the Comprehensive Plan considers the importance and preservation of these resources. The portion of the transmission line to be rebuilt between Esmont Substation and Langhorne Road (approximately four miles) crosses through the Southern Albemarle Rural Historic District, which was listed in the National Register of Historic Places (NRHP) in November 2007 (**Attachment A, Map Tiles 1 – 4**). The Project does not cross any other NRHP-listed or -eligible sites, though some architectural resources contributing to the historic district are within proximity to the line rebuild but are not expected to be impacted. The Project will largely replace structures near their existing locations with a similar character, to minimize impacts to the historic district and contributing visual resources.

The Project will support the CVTRP and provide continued reliable electric service to the central Virginia area, including Albemarle County, and is consistent with the goals of the Comprehensive Plan to ensure adequate and safe utility services. Replacing aging structures is supported by Section 5.1.12 of the zoning ordinance, which requires public utility structures to be in good condition so that they do not become a hazard to public safety. Installing new dulled-galvanized steel H-frame structures in generally the same locations as the existing wooden structures supports the purpose and intent of the zoning ordinance and its regulations, promotes public health, safety, and general welfare, will not be a substantial detriment to adjacent lots, or change the character of the zoning district.

IMPACTS ON PUBLIC FACILITIES AND PUBLIC INFRASTRUCTURE

Three Albemarle County-owned facilities are located within 0.5 mile of the Proposed Route: Simpson Park, Yancey School Community Center, and the Albemarle County Fire Rescue Station 17. The Proposed Route deviates from the existing ROW near Porters Road and moves approximately 75 feet further away from the Yancey School Community Center and Simpson Park. The Albemarle County Fire Rescue Station 17 near the intersection of Route 6 (Irish Road) and Mountain Vista Road is approximately 0.4 mile north of the existing and proposed line that will be rebuilt in the existing ROW. No other public facilities are located in the vicinity of the Project.

Modern equipment upgrades to the existing infrastructure can reduce the need for fire and rescue emergency services. The Project will not require fire/rescue training related to the new equipment and materials to be installed. Intermittent traffic can be expected along Route 6 (Irish Road), Porters Road, Langhorne Road, and Warren Street during construction of the Project for crews to access the ROW.

Construction for the transmission line is expected to begin in January 2024 and last about one year (January 2025) and then traffic to the ROW will be reduced to maintenance and inspection activities. As required by the Virginia Department of Environmental Quality, construction entrances and access roads installed for the Project will be removed once the Project is completed. As a result, the Project is not anticipated to have a substantial detriment to public facilities and public infrastructure.

IMPACTS ON ENVIRONMENTAL FEATURES

The Project will minimize new impacts to the natural and human environments by rebuilding the transmission line largely within the existing ROW. One deviation from the existing ROW will minimize impacts to the community by avoiding existing residential and outbuilding encroachments that are within the existing ROW.

Appalachian Power met with Albemarle County staff in 2019 and 2020 to discuss potential visual impacts of the Project and structure design options. For the Project, the Company proposes to use dulled-galvanized steel, H-frame structures, which are proven and effective visual mitigations. The proposed dulled-galvanized steel finish will minimize the contrast with the landscape, whereas the existing wooden structures or a weathering steel finish are much darker, contrast with the surrounding landscape and sky, and are more visible (see **Figure 5**). The proposed H-Frame structures, although taller than the existing structures from the 1920s, will support the addition of shield wires to improve performance of the transmission line and will meet current design standards. The Company considered using monopole structures with an optimized design for the Project, which would reduce the total number of poles but also increase the height of the structures by another 15 feet (approximately 75 feet total). In coordination with Albemarle County, the Company concluded the use of monopole structures would increase the visibility of the transmission line and result in structures placed in new locations. The existing and proposed transmission lines generally parallel Route 6 (Irish Road) which is a Virginia Byway; however, vegetation along Route 6 (Irish Road) and the distance between the road and the Project minimize the potential for visual impacts to the Virginia Byway. The Company and County anticipate that the proposed dulled-galvanized steel H-Frame structures will reduce viewshed impacts on scenic assets including the historic district, Route 6 (Irish Road), and open agricultural areas by reducing visual contrast and minimizing changes to the existing structure locations and character (see **Attachment C**).



Figure 5: Dismissed Structure Types - Comparison of weathering steel finish (left) and dulled-galvanized steel finish (right)

One Virginia Outdoors Foundation (VOF) conservation easement (**Attachment A, Map Tile 1**) surrounds the existing Esmont Substation. VOF easements limit new development, including utility infrastructure; however, the Esmont Substation, transmission line to be rebuilt, and existing access road from Route 6 (Irish Road) predate the conservation easement. The Esmont switch structure will be replaced within the existing ROW near Esmont Substation. Between existing structures 437-254 and 437-257, the transmission line crosses another VOF easement (**Attachment A, Map Tile 1**), but the line to be rebuilt will remain on existing centerline to minimize new impacts to the VOF easement.

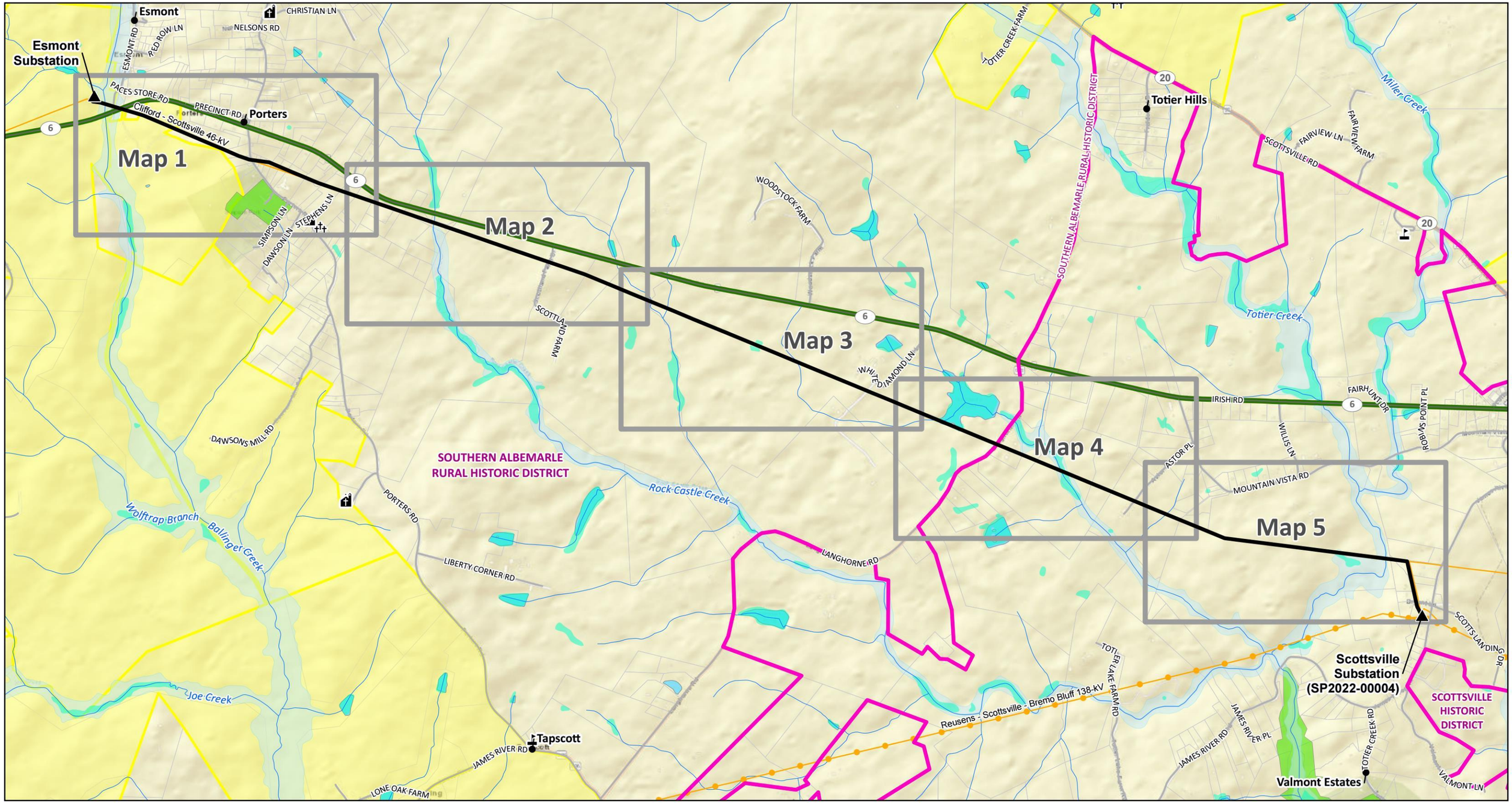
Appalachian Power has a Transmission Vegetation Management Plan (TVMP) in place outlining the management strategy for vegetation in and along transmission line ROW corridors. The goal of the TVMP is to convert the vegetative cover types to low growing grass-forbs-herb covers that inhibit the germination, establishment, and growth of most incompatible vegetative species. The ANSI A300 - Part 7 (2018) standard defines Integrated Vegetative Management (IVM) as "a system of managing plant communities in which managers set objectives; identify compatible and non-compatible vegetation; consider action thresholds; and evaluate, select, and implement the most appropriate control method or methods to achieve those objectives. The choice of control method or methods is based on their environmental impact and anticipated effectiveness, along with site characteristics, security, economics, current land use, and other factors." Appalachian Power uses an array of control methods, as outlined in IVM, to manage vegetation including mechanical, manual, and herbicide practices. Since mowing is a mechanical method included in IVM, it is included in the program. In many cases, mowing provides the ability to re-clear and re-start in the ROW and then create the opportunity to conduct more selective practices to convert the area to more compatible vegetation. Throughout this process, coordination with landowners for a cooperative relationship to consider their values and objectives where feasible is of the utmost importance.

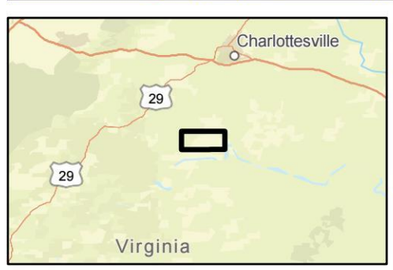
The Project crosses several National Hydrography Dataset features including Rock Castle Creek and Totier Creek, as well as several wetland areas. The proposed transmission line will continue to span across these features and minimize new impacts. Approximately 0.2 mile west of Langhorne Road, the National Wetland Inventory lists a wetland beside existing structure 437-292. A formal wetland delineation will be conducted, and it is expected that the final engineering design will be able to avoid the wetland resource.

A United States Fish and Wildlife Service Information for Planning and Consultation report indicates the potential presence of the northern long-eared bat and one clam species that are considered threatened or endangered within 0.5 mile of the transmission line to be rebuilt. Any required state and/or federal surveys and permits will be completed prior to the start of construction to minimize any impacts to any protected species.

Overall, rebuilding the Esmont – Scottsville 46 kV Line primarily within the existing ROW will minimize new impacts to the natural and human environments while addressing the thermal overload and voltage violations associated with the aging infrastructure. The Project will increase reliability and replace structures installed in the 1920s with modern structures in generally the same location, and the deviation from the existing ROW will minimize impacts to the community. Appalachian Power has secured the easements necessary to rebuild and maintain the transmission line and will use vegetation management methods that encourage the natural growth of compatible and native species.

ATTACHMENT A: AERIAL MAPBOOK





- Existing APCo Substation
- Proposed Centerline
- Existing APCo Transmission Line (69 kV or lower)
- Existing APCo Transmission Line (115-230 kV)
- Populated Place
- School
- Church
- Cemetery
- Virginia Byway
- Road
- Stream (NHD)
- Historic District (VDHR)
- NWI Wetland
- Lake/Pond (NHD)
- Floodplain
- Local Park
- VOF Easement
- Parcel Boundary
- Map Tile

Albemarle County, Virginia

Date: 7/13/2022; Author: ckunde; Project: 159298

0 2,000 4,000

Feet

1" = 2,000'

INDEX

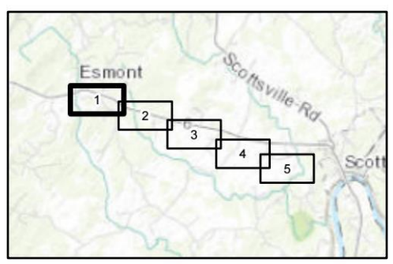
Esmont-Scottsville Transmission Line Rebuild Aerial Mapbook

APPALACHIAN POWER
An AEP Company

Central Virginia Transmission Reliability Project

The temporary access roads and construction entrances depicted are preliminary and based on desktop data. The final access road and construction entrance locations will be determined after final engineering, environmental surveys, and landowner discussions.

Existing Structures: 437-252A - 437-266
Proposed Structures: 1295-63 - 1295-50



- Proposed Structure
- Proposed APCo Switch Structure
- Proposed Temporary Construction Entrance
- Proposed Centerline
- Existing Access Road
- Proposed Temporary Access Road
- Proposed ROW (80' Typical)
- Project Easement Parcels
- Existing APCo Substation
- Existing APCo Transmission Line (69 kV or lower)
- Existing APCo Transmission Line (To Be Removed)
- Existing APCo Structure to be Removed
- Local Park
- Populated Place
- Church
- Cemetery
- Community Center
- Scenic Highway
- Road
- Stream (NHD)
- NWI Wetland
- Lake/Pond (NHD)
- Floodplain
- Residential Structure in the Existing ROW
- Non-Residential Structure in the Proposed ROW
- Architectural Resource (VDHR)
- VOF Easement
- Map Tile

Albemarle County, Virginia

Date: 7/13/2022; Author: ckunde; Project: 159298

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Feet

1" = 400'

Map 1 of 5

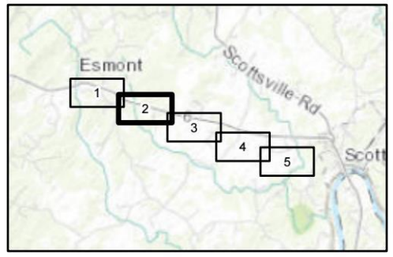
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Existing Structures: 437-266 - 437-278
Proposed Structures: 1295-50 - 1295-38



- Proposed Structure
- Proposed Temporary Construction Entrance
- Proposed Centerline
- Existing Access Road
- Proposed Temporary Access Road
- Proposed ROW (80' Typical)
- Project Easement Parcels
- Existing APCo Structure to be Removed
- Scenic Highway
- Road
- Stream (NHD)
- NWI Wetland
- Lake/Pond (NHD)
- Floodplain
- Non-Residential Structure in the Proposed ROW
- Architectural Resource (VDHR)
- Map Tile

Albemarle County, Virginia

Date: 7/13/2022; Author: ckunde; Project: 159298

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Feet

1" = 400'

Map 2 of 5

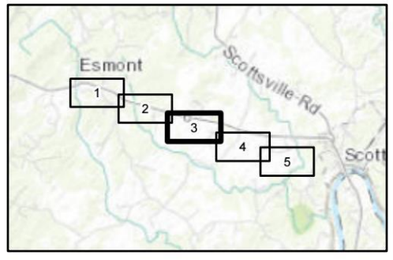
Esmont-Scottsville Transmission Line Rebuild Aerial Mapbook

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Central Virginia Transmission Reliability Project

The temporary access roads and construction entrances depicted are preliminary and based on desktop data. The final access road and construction entrance locations will be determined after final engineering, environmental surveys, and landowner discussions.

Existing Structures: 437-278 - 437-290
Proposed Structures: 1295-38 - 1295-26



- Proposed Structure
- Proposed Centerline
- Existing Access Road
- Proposed Temporary Access Road
- Proposed ROW (80' Typical)
- Project Easement Parcels
- Existing APCo Structure to be Removed
- Scenic Highway
- Road
- Stream (NHD)
- NWI Wetland
- Lake/Pond (NHD)
- Architectural Resource (VDHR)
- Map Tile

Albemarle County, Virginia

Date: 7/13/2022; Author: ckunde; Project: 159298

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Feet

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Map 3 of 5

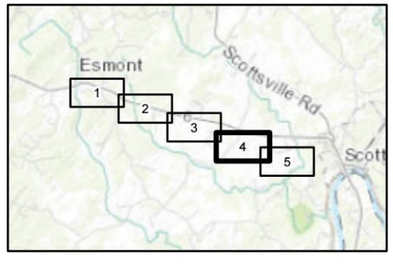
Esmont-Scottsville Transmission Line Rebuild Aerial Mapbook

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Central Virginia Transmission Reliability Project

The temporary access roads and construction entrances depicted are preliminary and based on desktop data. The final access road and construction entrance locations will be determined after final engineering, environmental surveys, and landowner discussions.

Existing Structures: 437-290 - 437-303
Proposed Structures: 1295-26 - 1295-13



- Proposed Structure
- Proposed Temporary Construction Entrance
- Proposed Centerline
- Proposed Temporary Access Road
- Proposed ROW (80' Typical)
- Project Easement Parcels
- Existing APCo Structure to be Removed
- Scenic Highway
- Road
- Stream (NHD)
- NWI Wetland
- Lake/Pond (NHD)
- Floodplain
- Architectural Resource (VDHR)
- Map Tile

Albemarle County, Virginia

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Feet

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Map 4 of 5

Esmont-Scottsville Transmission Line Rebuild Aerial Mapbook

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Central Virginia Transmission Reliability Project

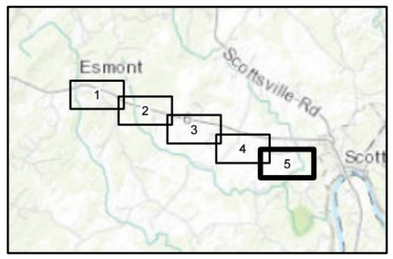
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ASTOR PL
MOUNTAIN VISTA RD
WILLIS LN
Miller Creek
Totier Creek
JAMES RIVER RD
BRYANT LN
Scottsville - US Rubber 46-kV
Reusens - Scottsville - Bremo Bluff 138-kV
Scottsville Substation (SP2022-00004)

130-11A
130-15
130-40C
130-40
130-41C
130-40A
130-41
130-41G1

Ex. Str: 437-301 Ex. Height: 38.5'
Prop. Str: 1295-15 Prop. Height: 64'
Ex. Str: 437-302 Ex. Height: 43'
Prop. Str: 1295-14 Prop. Height: 59'
Ex. Str: 437-303 Ex. Height: 38.5'
Prop. Str: 1295-13 Prop. Height: 55'
Ex. Str: 437-304 Ex. Height: 43'
Prop. Str: 1295-12 Prop. Height: 55'
Ex. Str: 437-305 Ex. Height: 43'
Prop. Str: 1295-11 Prop. Height: 73'
Ex. Str: 437-306 Ex. Height: 43'
Prop. Str: 1295-10 Prop. Height: 64'
Ex. Str: 437-307 Ex. Height: 43'
Prop. Str: 1295-9 Prop. Height: 55'
Ex. Str: 437-308 Ex. Height: 43'
Prop. Str: 1295-8 Prop. Height: 55'
Ex. Str: 437-309 Ex. Height: 43'
Prop. Str: 1295-7 Prop. Height: 55'
Ex. Str: 437-310 Ex. Height: 38.5'
Prop. Str: 1295-6 Prop. Height: 55'
Ex. Str: 437-311 Ex. Height: 43'
Prop. Str: 1295-5 Prop. Height: 68'
Prop. Str: 1295-4 Prop. Height: 77'
Ex. Str: 437-312 Ex. Height: 43'
Prop. Str: 1295-3 Prop. Height: 70'
Ex. Str: 437-313 Ex. Height: 47.5'
Prop. Str: 1295-2 Prop. Height: 73'
Ex. Str: 437-314 Ex. Height: 38.5'
Ex. Str: 437-315 Ex. Height: 38.5'
Prop. Str: 1295-1 Prop. Height: 77'
Ex. Str: 437-316 Ex. Height: 38.5'

Existing Structures: 437-301 - 437-316
Proposed Structures: 1295-15 - 1295-1



- Proposed Structure
- Proposed Temporary Construction Entrance
- Proposed Centerline
- Proposed Temporary Access Road
- Proposed ROW (80' Typical)
- Project Easement Parcels
- Existing APCo Structure
- Existing APCo Substation
- Existing APCo Transmission Line (69 kV or lower)
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- Map Tile

Albemarle County, Virginia

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Feet

1" = 400'

Map 5 of 5

Esmont-Scottsville Transmission Line Rebuild Aerial Mapbook

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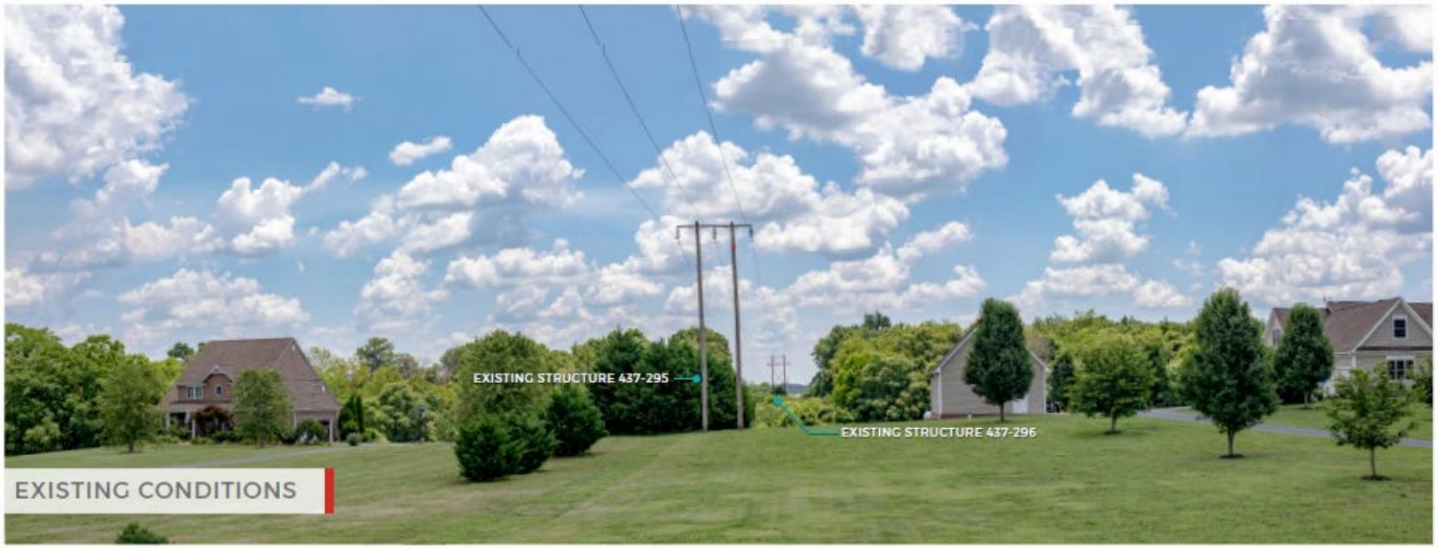
Central Virginia Transmission Reliability Project

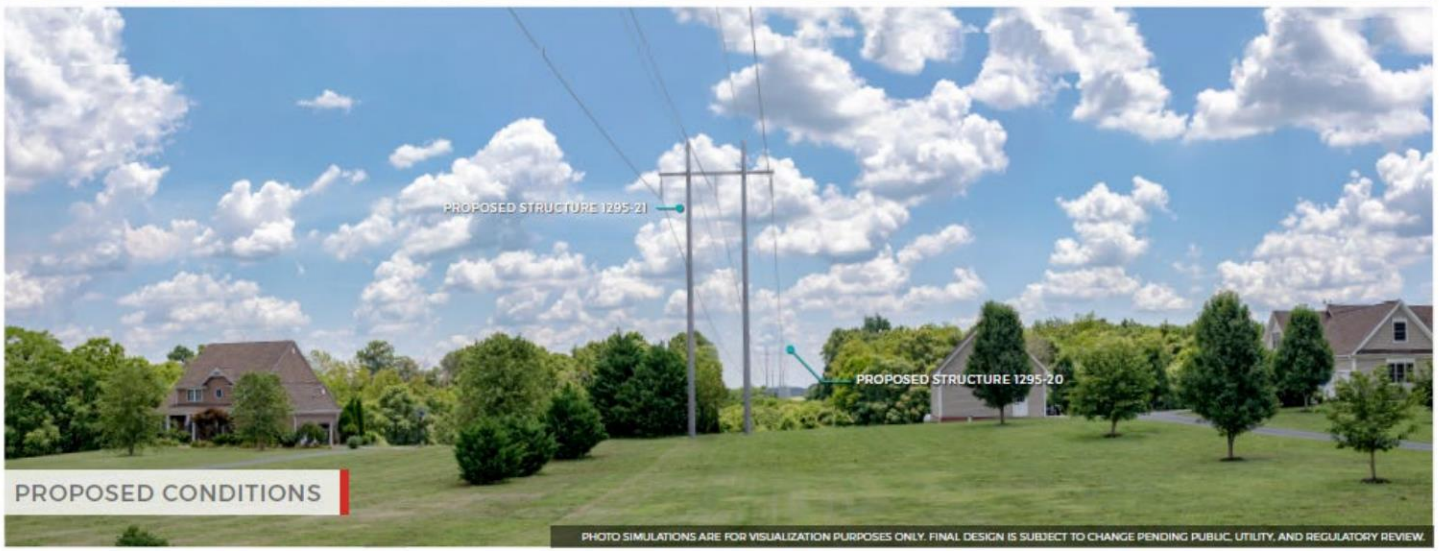
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ATTACHMENT C: VISUAL SIMULATIONS

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ATTACHMENT C – VISUAL SIMULATION OF PROPOSED STRUCTURE TYPE





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ATTACHMENT C – VISUAL SIMULATION OF PROPOSED STRUCTURE TYPE

