SECTION III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL, AND HISTORIC FEATURES

The Stuart Area 138-kV Transmission Improvements Project ("Project") is organized into three components which are generally the construction sequence. The Siting Studies and the Virginia Department of Environmental Quality ("VDEQ") Supplements included in Volumes 2 and 3 respectively of this Application address scenic, environmental, and historic features associated with the Project. Brief responses to the Section III guideline questions are provided below, but for in-depth discussion of these issues, please refer to the Siting Studies (Volume 2) and the VDEQ Supplements (Volume 3) completed for each Project Component as part of the Company's Application.

The Overview Map for the Project is included as Exhibit 3. More detailed GIS constraints maps illustrating the various resources and sensitive features relative to each Component are included as Exhibits 7 through 9. Furthermore, the Siting Studies (Volume 2) include additional Project maps.

A. Describe the character of the area that will be traversed by this line, including land use, wetlands, etc. Provide the number of dwellings within 500 feet, 250 feet and 100 feet of the centerline, and within the ROW for each route considered. Provide the estimated amount of farmland and forestland within the ROW that the proposed project would impact.

Response:

Component 1:

Component 1 is located in Carroll and Patrick counties, Virginia between the Company's existing Willis Gap Substation and the proposed Claudville and Mayo River Substations. The character of the area is generally rolling hillsides and terrain with agricultural land uses. Major land uses in the area include agricultural, timbering/forest lands, and residential. The proposed Claudville Substation serves as a midpoint for the new transmission line, with more forested and agricultural properties to the west and more residential development to the east as the proposed line parallels the existing City of Danville's Pinnacles – Hydro 69-kV Transmission Line which generally parallels from west to east the Claudville/Dry Pond Highway (Route 103). Scattered residential development is located along local, county, or state-maintained roadways. These areas include residential development on Ararat Highway, Claudville/Dry Pond Highway, Salem Highway (Route 8), and Commerce Drive. In addition, industrial development associated with the Town of Stuart is located northwest of the proposed Mayo River Substation on Commerce Drive. The proposed Mayo River Substation is located in an existing agricultural field.

Mayo River – Willis Gap 138-kV Transmission Line Section between the existing Willis Gap Substation and Proposed Claudville Substation

- *Alternative Route A:* There are 43 dwellings within 500 feet, 16 dwellings within 250 feet, and three dwellings within 100 feet of the Alternative Route A centerline. There

are no known residences located within the right-of-way ("ROW") of the alternative route. Alternative Route A has approximately 1.6 acres of cropland within the ROW based on United States Geological Survey's National Land Cover Database ("NLCD") data and 107.0 acres of forest clearing based on digitized aerial photography.

- *Alternative Route B:* There are 37 dwellings within 500 feet, 15 dwellings within 250 feet and four dwellings within 100 feet of the Alternative Route B centerline. There are no known residences located within the ROW of the alternative route. Alternative Route B has zero acres of known cropland within the ROW based on NLCD data and 120.3 acres of forest clearing based on digitized aerial photography.
- *Alternative Route C (portion of Component 1 Proposed Route):* There are 31 dwellings within 500 feet, 11 dwellings within 250 feet, and three dwellings within 100 feet of the Alternative Route C (Component 1 Proposed Route) centerline. There are no known residences located within the ROW of the alternative route. Alternative Route C (Component 1 Proposed Route) has zero acres of known cropland within the ROW based on NLCD data and 131.2 acres of forest clearing based on digitized aerial photography.

Mayo River – Willis Gap 138-kV Transmission Line Section between the proposed Claudville and Mayo River substations

- *Alternative Route D*: Alternative Route D generally crosses an unfragmented-forested and mountainous area. There are 18 dwellings within 500 feet, seven dwellings within 250 feet, and one dwelling within 100 feet of Alternative Route D centerline. There are no known residences located within the ROW of the alternative route. Alternative Route D has approximately 1.2 acres of cropland within the ROW based on NLCD data and 101.0 acres of forest clearing will be anticipated based on digitized aerial photography.
- *Alternative Route E (portion of Component 1 Proposed Route):* Alternative Route E generally parallels the existing City of Danville's Pinnacles – Hydro 69-kV Transmission Line for this portion. There are 43 dwellings within 500 feet, 17 dwellings within 250 feet, and one dwelling within 100 feet of Alternative Route E (Component 1 Proposed Route) centerline. There are no known residences located within the ROW of the alternative route. Alternative Route E (Component 1 Proposed Route) has zero acres of known cropland within the ROW based on NLCD data and 105.2 acres of forest clearing will be anticipated based on digitized aerial photography.
- *Alternative Route F:* There are 43 dwellings within 500 feet, 15 dwellings within 250 feet, and two dwellings within 100 feet of Alternative Route F centerline. There is one residence located within the ROW of the alternative route. Alternative Route F has zero acres of known cropland within the ROW based on NLCD data and 93.9 acres of forest clearing will be anticipated based on digitized aerial photography.

Component 2:

Component 2 is generally a rebuild of the existing Floyd – Stuart 69-kV Transmission Line located in Patrick and Floyd counties, Virginia and travels between the communities of Stuart and Floyd, crossing the Blue Ridge Parkway. The area surrounding the existing line is largely rural with undeveloped forestland or pastureland with scattered residential development.

Residential areas are located predominantly along county and state-maintained roadways, and highways such as U.S. Route 58 (Jeb Stuart Highway), U.S. Route 221, Charity Highway (Route 40), Woolwine Highway (Route 8), and Fairystone Park Highway. The Component 2 Proposed Route (Alternative Route B and the Rebuild Route) is approximately 22.0 miles in length and is primarily located in or near existing ROW. The Component 2 Proposed Route proposes minor centerline shifts to minimize impacts to residential areas and other utility infrastructure.

Alternative Route A (4.2 miles) and Alternative Route B (3.5 miles) were developed and compared to connect the new Mayo River Substation site northward to a common point where the Rebuild Route (18.5 miles) begins generally in or near the existing Floyd – Stuart 69-kV Transmission Line ROW to the existing Floyd Substation. Alternative Routes in a new ROW for this existing line portion (Rebuild Route) are not reasonable.

- *Alternative Route A:* There are 14 dwellings within 500 feet, three dwellings within 250 feet, and one dwelling within 100 feet of the Alternative Route A centerline. There are no known dwellings within the ROW of Alternative Route A. The ROW of Alternative Route A does not cross any cropland and anticipates approximately 19 acres of tree clearing (for a 100-foot-wide ROW).
- *Alternative Route B (portion of Component 2 Proposed Route):* There is one dwelling within 500 feet and zero dwellings within 250 and 100 feet of the Alternative Route B centerline. There are no known dwellings within the ROW of Alternative Route B. The ROW of Alternative Route B does not cross any cropland and anticipates approximately 35 acres of tree clearing (for a 100-foot-wide ROW).
- *Rebuild Route (portion of Component 2 Proposed Route):* There are 59 dwellings within 500 feet, 30 dwellings within 250 feet, and 11 dwellings within 100 feet of the Rebuild Route centerline. There is one known dwelling within the ROW of the Rebuild Route and the Company plans to coordinate with the landowner. The ROW of the Rebuild Route does not cross any cropland and anticipates approximately 47 acres of tree clearing (for a 100-foot ROW).

Component 3:

Component 3 is largely a rebuild except for short sections into the proposed substations where alternatives are not reasonable. It is located in the eastern extents of Patrick County and in the northwest extents of Henry County, Virginia. The area within Component 3 is mixed residential, undeveloped forestland, and pastureland with industrial areas along the Smith River and communities such as Fieldale, Stanleytown, and Bassett. Residential areas are located predominantly along county and state-maintained roadways, and highways such as U.S. Route 220, Fairystone Park Highway (Route 57), Dillons Fork Road, and Route 680. The Component 3 Proposed Route is approximately 25.5 miles in length and is located in or near existing ROW. The Component 3 Proposed Route proposes minor centerline shifts and areas of new ROW to minimize impacts to residential areas and other utility infrastructure.

There are 263 dwellings within 500 feet, 100 dwellings within 250 feet, and 36 dwellings within 100 feet of the Component 3 Proposed Route centerline. There are seven known dwellings within the ROW of the Component 3 Proposed Route. There are potential designs

to avoid five of the seven dwellings, but the Company will work with the landowners to determine the best option. The ROW of Component 3 Proposed Route crosses 2.5 acres of cropland based on NLCD data and 90.7 acres of forest clearing based on digitized aerial photography. Component 3 did not have any alternative routes.

B. Describe any public meetings the Applicant has had with neighborhood associations and/or officials of local, state or federal governments that would have an interest or responsibility with respect to the affected area or areas.

Response:

Stakeholder input was collected during all phases of route development. As described in the Siting Studies for Components 1, 2, and 3, located in Volume 2 of the Application, the Siting Team initiated the Project by contacting various federal, state, and local agencies and/or officials to inform them of the Project and request data for the route planning process. Letters and maps regarding all components of the Project were sent to 33 representatives of federal, state, and local government agencies on November 23, 2021, and a total of nine responses were received. Agency correspondence and project reviews were used to develop, modify, and analyze study segments and alternative routes. A full list of agencies receiving a map and letter and responses is found in Volume 3 of the Application. The Company also met with local agencies and interested stakeholders or landowners throughout the route development process, which is described in the Siting Studies. Additionally, once a Proposed Route was initially identified, landowners were notified and Company ROW agents contacted a vast majority of all of the affected landowners on the Project including the new greenfield routes between Mayo River and Willis Gap. More meetings occurred to address concerns and minor route revisions were completed where reasonable.

Members of the Siting Team included Company employees and outside consultants with expertise in, but not limited to: transmission line and substation siting; distribution planning; impact mitigation; engineering; construction management; project management; and public relations, met with local jurisdictions on a particular Project component for which the locality was located to obtain input on existing and future land uses, comprehensive planning, and identify potential stakeholder groups. In addition to county meetings, the Siting Team conducted open houses (in-person and virtual) to gather public input on the Project components as described below.

Component 1:

Component 1 of the Stuart Project is located in Carroll and Patrick counties, Virginia. Members of the Siting Team met with Patrick County local officials numerous times throughout the siting process to introduce the Project and solicit input. Members of the Siting Team first met with Patrick County in 2019 to introduce the Project. Siting Team members later met with the Patrick County Administrator, Economic Development Administrator, and Building Official during a tech-to-tech meeting to review the scope of the Project. Siting Team members continued to meet with Patrick County officials virtually and in-person throughout 2022 to solicit input on the Project. The Siting Team did not meet with Carroll County in person because less than one tenth of one mile of Component 1 is located in Carroll County. However, a Public Affairs representative of the Company spoke with Carroll County officials in fall of 2021 to introduce the Project and the open house.

Two in-person public open house meetings were held for Component 1 of the Project to gather landowner and community feedback. The open house meetings were held October 20 and 21, 2021 from 3:00 – 7:00 p.m. at the Stuart Rotary Club (264 Woodland Drive) and the Ararat Ruritan Club (4711 Ararat Highway) in Stuart and Ararat, respectively, to present a Study Segment Network (detailed in Section 3.5 of the Component 1 Siting Study). A total of 67 people attended the first night and 77 people attended the second night. A total of 45 comment cards were received from both nights of the public open house meetings and were entered into the Project public comment database.

Due to COVID-19, two virtual open house town halls were held on the Project website via WebEx for Component 1. The virtual town halls were held on October 28, 2021, from 12:00 – 1:00 p.m. and from 5:00 – 6:00 p.m., and could be joined via computer or phone. Although in a digital format, the content provided during the virtual town hall was made similar to that of the in-person public open houses. A total of 8 people attended the virtual town halls.

The Component 1 Proposed Route was announced to the public on October 4, 2022, by mailing letters to landowners, publishing a news release, and updating the information on the Project website. In addition to the Project website, a virtual open house for the Component 1 was launched to allow landowners to provide input on the Project website. Content provided during the virtual open house was similar to that provided at in-person open houses. The virtual open house also allowed landowners and the public to submit comments to the Siting Team and identify properties through an address search tool. Approximately 265 responses were received via phone, mail, or the Project website.

For additional information regarding the public open houses, virtual town halls, and virtual open house, see Section 3.6 of the Component 1 Siting Study (Volume 2 of the Application).

Component 2:

Component 2 of the Stuart Project is located in Patrick and Floyd counties, Virginia. Members of the Siting Team met with Patrick County local officials numerous times throughout the siting process, first to introduce Component 1 and then to review Components 2 and 3. Siting Team members continued to meet with Patrick County officials virtually and

in-person throughout 2022 to solicit input on the Project. Siting Team members met with Floyd County officials on December 2, 2021.

Two in-person public open house meetings were held for Component 2 of the Project to gather landowner and community feedback. The open house meetings were held February 23 and 24, 2022, from 5:00 – 7:00 p.m. at Floyd Elementary School (531 Oak Hill Drive Southwest) and Stuart Rotary Field (420 Woodland Drive, Memorial Building) in Floyd and Stuart, respectively, to present a Study Segment Network (detailed in Section 3.0 of the Component 2 Siting Study). A total of eight (8) people attended the first night and 14 people attended the second night. A total of eight comment cards were received from both nights of the public open house meetings and were entered into the Project public comment database.

The Component 2 Proposed Route was announced to the public on February 9, 2022, by mailing letters to landowners, publishing a news release, and updating the information on the Project website. In addition to the Project website, a virtual open house for Component 2 was launched to allow landowners to provide input on the Project website. Content provided during the virtual open house was similar to that provided at in-person open houses. The virtual open house also allowed landowners and the public to submit comments to the Siting Team and identify properties through an address search tool. A total of approximately 27 comments were received via phone calls, U.S. mail, email, or the Project website in addition to the comment cards received during the open houses. For additional information regarding the public open houses and virtual open house, see Section 4.0 of the Component 2 Siting Study (Volume 2 of the Application).

Component 3:

Component 3 of the Stuart Project is located in Patrick and Henry counties, Virginia. Members of the Siting Team met with Patrick County local officials numerous times throughout the siting process, first to introduce Component 1, then to review Components 2 and 3. Siting Team members continued to meet with Patrick County officials virtually and in-person throughout 2022 to solicit input on the Project. Siting Team members met virtually with Henry County officials on March 4, 2022, to discuss the Project and solicit input.

Two in-person public open house meetings were held for Component 3 of the Project to gather landowner and community feedback. The open houses were held March 28 and 29, 2022, from 5:00 – 7:30 p.m. at Stuart Rotary Field (420 Woodland Drive, Memorial Building) and Bassett Train Station (3536 Fairystone Park Highway) in Stuart and Bassett, respectively, to present a Study Segment Network (detailed in Section 3.0 of the Component 3 Siting Study). A total of 30 people attended the first night and 49 people attended the second night. A total of 16 comment cards were received from both nights of the public open house meetings and were entered into the Project public comment database.

The Component 3 Proposed Route was announced to the public on March 17, 2022, by mailing letters to landowners, publishing a news release, and updating the information on the Project website. In addition to the Project website, a virtual open house for Component 3 was launched to allow landowners to provide input on the Project website. Content provided during the virtual open house was similar to that provided at in-person open houses. The

virtual open house also allowed landowners and the public to submit comments to the Siting Team and identify properties through an address search tool. A total of approximately 31 comments were received via phone calls, U.S. mail, email, or the Project website in addition to the comment cards received during the open house. For additional information regarding the public open houses and virtual open house, see Section 4.0 of the Component 3 Siting Study (Volume 2 of the Application).

C. Detail the nature, location, and ownership of each building that would have to be demolished or relocated if the project is built as proposed.

Response:

Component 1:

There are no residences located within the 100-foot ROW of the Component 1 Proposed Route. There is one outbuilding located within the 100-foot ROW of the Component 1 Proposed Route that will need to be relocated or demolished and will be finalized during landowner discussions with ROW agents (see Exhibit 7: Component 1 GIS Constraints Map).

Component 2:

There is one residence located within the proposed ROW of the Component 2 Proposed Route after preliminary engineering analysis. The Company has been in contact with the relevant landowner regarding this issue. Therefore, and subject to completion of final engineering design and ROW negotiations with affected landowners, the Company will work with the landowner to remove or relocate the dwelling as needed. There are eight outbuildings located within the existing and proposed ROW of Component 2 Proposed Route that will need to be relocated or demolished and will be finalized during landowner discussions with ROW agents (see Exhibit 8: Component 2 GIS Constraints Map).

Component 3:

There are seven residences located within the proposed 100-foot ROW of the Component 3 Proposed Route after preliminary engineering analysis. However, based on preliminary engineering review, a condensed transmission line design with shorter spans utilizing steel monopoles with braced posts is possible due to the flatter terrain and access. As a result, the ROW can be slightly reduced in width and the seven dwelling number can likely be reduced to two dwellings. A diversion out of the existing ROW into a new ROW was not reasonable due to the existing residential constraints. The Company has been in touch with the relevant landowners regarding this issue. Accordingly, and subject to completion of final engineering and ROW negotiations with affected landowners, the Company will continue to collaborate with landowners to remove or relocate dwellings as needed (see Company witness McMillen's direct testimony for more details). There are 25 outbuildings located within the proposed 100-foot-wide ROW of the Component 3 Proposed Route; however, and subject to completion of final engineering design and ROW negotiations with affected landowners, the Company does not expect that all of the outbuildings will need to be removed to accommodate the rebuilt lines (see Exhibit 9: Component 3 GIS Constraints Map).

D. Identify existing physical facilities that the line will parallel, if any, such as existing transmission lines, railroad tracks, highways, pipelines, etc. Describe the current use and physical appearance and characteristics of the existing ROW that would be paralleled, as well as the length of time the transmission ROW has been in use.

Response:

Component 1:

The Component 1 Proposed Route (Alternative Route E between the proposed Claudville and Mayo River Substations) parallels the City of Danville's existing Pinnacles – Hydro 69-kV Transmission Line for approximately 6.4 miles. This existing 69-kV ROW is well-maintained (cleared) and approximately 100-feet wide. Based off of historic aerials and topographic maps, this existing 69-kV line and ROW have been in place for over 75 years and portions have been improved or rebuilt (Exhibit 7: Component 1 GIS Constraints Map).

Component 2:

Component 2 of the Project proposes to rebuild in or near existing and cleared ROW (built over 70 years ago) for the majority of its length (18.5 miles of its 22.0-mile total length). Deviations from centerline are primarily minor to avoid residential and engineering constraints. The Component 2 Proposed Route deviates from existing ROW north of the Proposed Mayo River Substation east of the Town of Stuart to minimize impacts to residences, future business development, to connect to the new substation site, and to optimize engineering design to the extent practical. The existing East Tennessee Pipeline corridor bisects the Component 2 Proposed Route north of the Proposed Mayo River Substation (Exhibit 8: Component 2 GIS Constraints Map). The existing Fieldale – Stuart 69-kV Transmission Line near the Component 2 Proposed Route pre-dates this pipeline. The Company has initiated discussions with East Tennessee Natural Gas Company. As the Project progresses, the Company will continue discussions with East Tennessee Natural Gas Company to determine final centerline and structure locations within the Filing Corridor.

Component 3:

Component 3 of the Project proposes to rebuild in or near existing and cleared ROWs for the majority of its length (22.5 miles of its 25.5-mile total length). Deviations from centerline are primarily minor to avoid residential, land use, and engineering constraints (Exhibit 9: Component 3 GIS Constraints Map).

E. Indicate whether the Applicant has investigated land use plans in the areas of the proposed route and indicate how the building of the proposed line would affect any proposed land use.

Response:

The Siting Team considered impacts to existing and future land uses that may not be compatible with transmission facilities. The Components of the Stuart Project are located in multiple central Virginia counties and thus various land use plans were reviewed. At the

start of the route development process, the Company met with officials from Carroll, Patrick, Floyd, and Henry counties to discuss existing and future land use plans of the respective Component areas. No localities discussed any specific future land use plans or conflicts in their locality and the Project is not anticipated to affect any proposed land use as identified by the local jurisdictions.

Component 1:

Various land uses exist within Carroll and Patrick counties. The Siting Team reviewed future land uses and county-specific goals to evaluate areas of constraints and opportunities in each of the county's comprehensive planning documents. Component 1 is located in the southeastern extents of Carroll County (less than 0.1 mile) and the southwestern and central extents of Patrick County. The review of these plans is summarized in Section 3.6.3 of the Component 1 Siting Study found in Volume 2 of this Application. It is expected that the Component 1 Proposed Route will not affect proposed land use in any counties crossed based on the comprehensive planning documents and discussions with county officials.

Component 2:

Component 2 is located in the northern extents of Patrick County and the southeastern extents of Floyd County. The Siting Team reviewed the Comprehensive Plans developed by each locality for the various land uses that exist within Patrick and Floyd counties. The review of these plans is summarized in Section 2.3 of the Component 2 Siting Study found in Volume 2 of this Application. It is expected that the Component 2 Proposed Route will not affect proposed land use in any localities crossed.

Component 3:

Component 3 is located in the eastern extents of Patrick County and the northwestern extents of Henry County. The Siting Team reviewed the Comprehensive Plans developed by each locality for the various land uses that exist within Patrick and Henry counties. The review of these plans is summarized in Section 2.3 of the Component 3 Siting Study found in Volume 2 of this Application. It is expected that the Component 3 Proposed Route will not affect proposed land use in any localities crossed.

F. Government Bodies

1. **Indicate if the Applicant determined from the governing bodies of each county, city and town in which the proposed facilities will be located whether those bodies have designated the important farmlands within their jurisdictions, as required by § 3.2-205 B of the Code.**

   Response:

   After inquiry to the affected Counties by the Company's routing consultant and review of available planning documents and meetings with local County staff, the proposed Project

ROWs do not cross any designated important farmlands in Carroll, Patrick, Floyd, or Henry counties.

2. **If so, and if any portion of the proposed facilities will be located on any such important farmland:**

    a. **Include maps and other evidence showing the nature and extent of the impact on such farmlands;**

    Response:

    Not applicable.

    b. **Describe what alternatives exist to locating the proposed facilities on the affected farmlands, and why those alternatives are not suitable; and**

    Response:

    Not applicable.

    c. **Describe the Applicant's proposals to minimize the impact of the facilities on the affected farmland.**

    Response:

    Not applicable.

G. Identify the following that lie within or adjacent to the proposed ROW:

Per the *Guidelines for Assessing Impacts of Proposed Electric Facilities on Historic Resources in the Commonwealth of Virginia* (2008) ("Guidelines"), issued by the Virginia Department of Historic Resources ("VDHR"), POWER completed a Pre-Application Analysis for each of the three components (included as Attachment 2.H.1 to the VDEQ Supplements included in Volume 3 of this Application).

1. **Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**

    Response:

    <u>Component 1:</u>

    None.

    <u>Component 2:</u>

    None.

Component 3:

There is one National Register of Historical Places ("NRHP") listed resource that lies within or adjacent to the proposed 100-foot ROW and within the 600-foot filing corridor of Component 3. See the Component 3 Pre-Application Analysis in the VDEQ Supplement, located in Volume 3 of the Application for additional details.

NRHP-listed Resource/District	VDHR# / NR	Distance from Centerline to Resource	Potential Impact
Eltham Manor	VDHR# 044-5011 / NR-99000960	0 feet	**Minimal.** The existing and proposed transmission line run along the southwest boundary of the resource and can be seen from the southwest portion of the resource. However, the existing and proposed transmission line cannot be seen from the primary resource, the manor building, as it is blocked by intervening vegetation and terrain.

2. Any historic architectural, archaeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources (DHR);

Response:

Component 1:

None.

Component 2:

There are two Virginia Landmark Register-listed or VDHR determined eligible resources that lie within or adjacent to the proposed 100-foot ROW or within the 600-foot filing corridor of Component 2.

VDHR Resource (Listed/Eligible)	VDHR # / NR	Distance from Centerline to Resource	Potential Impact
The Pines / Valentine M. Sowder House (Eligible)	VDHR #031-0169	0 feet	**Minimal**. There will be no considerable difference in the viewshed between the existing and proposed conditions. The existing transmission line in addition to several others are currently visible from the resource.
Blue Ridge Parkway Historic District (Eligible)	VDHR #080-5161	0 feet	**Minimal:** The proposed and existing transmission line runs through the resource for 0.9 mile, running north to south. Four proposed structures are planned to replace the five existing structures within the resource boundary. These structures will be taller but will have minimal impact on the existing viewshed.

Component 3:

There are two Virginia Landmark Register-listed or VDHR determined eligible resources that lie within or adjacent to the proposed 100-foot ROW and within the 600-foot filing corridor of Component 3.

VDHR Resource (Listed/Eligible)	VDHR # / NR	Distance from Centerline to Resource	Potential Impact
Eltham Manor	VDHR# 044-5011 / NR-99000960	0 feet	**Minimal.** The existing and proposed transmission line run along the southwest boundary of the resource and can be seen from the southwest portion of the resource. However, the existing and proposed transmission line cannot be seen from the primary resource, the manor building, as it is blocked by intervening vegetation and terrain

Bassett Historic District	VDHR# 044-5180	0 feet	**Moderate.** The existing and proposed transmission line run through portions of the resource and the proposed Smith River Substation is located within the resource. A Phase I survey has already been conducted at the location of the proposed Smith River Substation, and the VDHR has concurred with the assessment of moderate impacts. The Siting Team will continue VDHR coordination.

3. Any historic district designated by the governing body of any city or county;

Response:

None.

4. **Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**

Response:

Component 1:

None.

Component 2:
Three previously recorded archaeological sites are located within the existing ROW of the Component 2 Proposed Route.

- Unnamed (44FD0153)
- Rock Castle III (44PK0064)
- Unnamed (44PK0323)

These sites are discussed in the Component 2 Pre-Application Analysis in the VDEQ Supplement, located in Volume 3 of the Application. None of the sites have been evaluated for eligibility for listing in the NRHP.

Component 3:
Three previously recorded archaeological sites are located within the ROW of the Component 3 Proposed Route.

- Unnamed (44HR0241)
- Unnamed (44PK0049)

The Hordsville Enslaved / Freed African American Cemetery (44HR0220) is not within the Component 3 Proposed Route corridor, but is located just north of the proposed Stoneleigh Substation site. The Company has completed initial studies and started coordination with VDHR and does not expect to impact the cemetery. See Company witness Santos's direct testimony for additional discussion. The Company will continue coordination with VDHR and local stakeholders and develop mitigations if determined necessary.

These sites are discussed in the Component 3 Pre-Application Analysis in the VDEQ Supplement, located in Volume 3 of the Application. None of the sites have been evaluated for eligibility for listing in the NRHP.

5. **Any underwater historic assets designated by the DHR, or predecessor agency or board;**

Response:

None.

6. **Any National Natural Landmark designated by the U.S. Secretary of the Interior;**

   Response:

   None.

7. **Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation ("DCR");**

   Response:

   None.

8. **Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**

   Response:

   None.

9. **Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**

   Response:

   For the following discussion see Exhibits 7, 8, and 9 GIS Constraints Maps.

   Component 1:

   There is one United States Fish and Wildlife Service ("USFWS") conservation easement and one Patrick County forest/open space maintenance agreement easement ("Maintenance Easement") adjacent (but not crossed) to the Component 1 Proposed Route. The Proposed Route crosses the northern panhandle of the parcel on which the USFWS easement is located. The easement is along the Ararat River and Doe Run Creek that make up the southern and southeastern boundaries of the parcel. The USFWS easement is not crossed by the Proposed Route or Filing Corridor and no impact is anticipated. The Maintenance Easement is not crossed by the Proposed Route ROW but is located within the Filing Corridor. No existing or proposed Virginia Outdoors Foundation ("VOF") conservation easements are located immediately adjacent to or crossed by the Component 1 Proposed Route or ROW. Additionally, there are no existing or proposed Virginia Department of Forestry ("VDOF") conservation easements crossed by or in proximity to Component 1.

   Component 2:

   There are three VOF conservation easements crossed by the Component 2 Proposed Rebuild Route within existing ROW (no new ROW will be required): one approximately

110-acre VOF conservation easement, one approximately 93-acre VOF conservation easement, and one approximately 276-acre VOF conservation easement. The Blue Ridge Parkway conservation easement is also crossed by the Component 2 Proposed Route near the border of Patrick and Floyd Counties. The Proposed Route will cross at its existing location and no new ROW is anticipated. Additionally, there are no known or proposed VDOF conservation easements adjacent to or crossed by the Component 2 Proposed Route.

Component 3:

There is one approximately 235-acre VOF conservation easement crossed by the Component 3 Proposed Route. The Proposed Route crosses the easement at its existing crossing ROW and no new ROW will be required. In addition, Component 3 crosses several parcels subject to a conservation easement from the Blue Ridge Land Conservancy. The Company plans to coordinate with the land conservancy as necessary. There are no known or proposed VDOF conservation easements adjacent to or crossed by the Component 3 Proposed Route.

10. Any state scenic river;

Response:

Component 1:

None.

Component 2:
The Component 2 Proposed Route crosses a state scenic river, the South Mayo River, in Patrick County, north of the proposed Mayo River Substation (see Exhibit 8 Component 2 GIS Constraints Map).

Component 3:
The Component 3 Proposed Route crosses a state scenic river, the North Mayo River, in Patrick County, at its existing crossing east of the existing Patrick Henry Substation (see Exhibit 9 Component 3 GIS Constraints Map).

11. Any lands owned by a municipality or school district; and

Response:

Component 1:

None.

Component 2:

The Component 2 Proposed Route crosses a Patrick County owned parcel north of the proposed Mayo River Substation off Campbell Farm Loop and is adjacent to two other

parcels also owned by Patrick County southwest of the parcel crossed by the proposed ROW. Additionally, the Component 2 Proposed Route crosses a Floyd County parcel south of the Floyd Substation, across U.S. Route 221 North Highway.

Component 3:

The Component 3 Proposed Route and ROW do not directly cross any lands owned by a municipality or school district. The Component 3 Proposed Route is adjacent to the Bassett High School parcel owned by the Henry County Board of Supervisors. Additionally, the Component 3 Proposed Route is adjacent to a parcel owned by Henry County at the Blackberry Road crossing.

12. Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.

Response:

Component 1:

There are no federal or state parks crossed by the Component 1 Proposed Route. The Blue Ridge Highlands Loop, a designated wildlife viewing driving route, crosses the Proposed Route ROW in Patrick County.

Component 2:

The existing line and proposed rebuild route crosses the Blue Ridge Parkway near the border of Patrick and Floyd Counties. No state parks are crossed by the Component 2 Proposed Route. The Fairy Stone Loop and Sweet Mountain Laurel Loop, designated wildlife viewing driving routes, are both crossed twice respectively by Component 2.

Component 3:

Component 3 crosses a portion of the Philpott Lake Recreation Area, United States Army Corps of Engineers-owned property at the northern end of the proposed rebuild route. The Component 3 Proposed Route crosses at its existing location in the existing ROW. The Fairy Stone Loop, a designated wildlife viewing driving route, is also crossed by the Component 3 Proposed Route.

H. List any registered aeronautical facilities (airports, helipads) where the proposed route would place a structure or conductor within the federally defined airspace of the facilities. Advise of contacts, and results of contacts, made with appropriate officials regarding the effect on the facilities' operations.

Response:

No conflicts with federally defined airspace are expected. Nonetheless, the Blue Ridge Airport is located within 20,000 linear feet of Component 3 according to a letter received

from the Virginia Department of Aviation on December 7, 2021. Any portion of the Project within 20,000 linear feet of an airport and/or reaches a height of 200 feet above ground level requires a 7460 Airspace Study to be submitted to the Federal Aviation Administration for review.

I. Advise of any scenic byways that are in proximity to or that will be crossed by the proposed transmission line and describe what steps will be taken to mitigate any visual impacts on such byways. Describe typical mitigation techniques for other highways' crossings.

Response:

Component 1:

The Component 1 Proposed Route crosses Route 8, a designated scenic road by Virginia Department of Transportation ("VDOT"). The Component 1 Proposed Route will introduce a new crossing of Route 8; however, the proposed structures will be offset from the road and the Component 1 Proposed Route parallels an existing 69-kV transmission line that crosses Route 8, thus it will have minimal impacts on the existing visual character.

Component 2:

The Component 2 Proposed Route crosses the Blue Ridge Parkway, a National Parkway, within existing ROW near the border of Floyd and Patrick counties; however, minimal new impact is anticipated due to utilization of existing ROW. See Component 3 Pre-Application Analysis in the VDEQ Supplement, located in Volume 3 of the Application.

In Patrick County, the Component 2 Proposed Route also crosses Route 8, a designated scenic road by VDOT. The Component 2 Proposed Route will cross Route 8 in its current ROW location and the proposed structure locations will be near the existing structures and are not anticipated to introduce new impacts.

Component 3:

None.

J. Identify coordination with appropriate municipal, state, and federal agencies.

Response:

The Siting Team coordinated with various federal, state, and local agencies and/or officials early in the route development process to inform them of the Project and obtain relevant information. A full list of this coordination is included in Volume 2 of the Application.

K. Identify coordination with any non-governmental organizations or private citizen groups.

Response:

The Company coordinated with known non-governmental organizations and/or private citizen groups throughout the route development process to solicit information and gain feedback on the Project. The results of these meetings are summarized in the siting studies for each Component in Volume 2 of the Application.

Component 1:

None.

Component 2:

The Company met with the Patrick County Hospital representatives to discuss proposed study segments.

Component 3:

The Company met with Harmony Hall Assisted Living facility to discuss the proposed Smith River Substation. As of May 2023, the Company has been informed that this facility is closed in perpetuity.

L. Identify any environmental permits or special permissions anticipated to be needed.

Response:

The following list of typical environmental permits or special permissions are anticipated to be needed for the various Components of the Project:

- General Virginia Pollutant Discharge Elimination System Permit for Discharges of Stormwater from Construction Activities from the VDEQ.
- Subaqueous Bed Permit from the Virginia Marine Resources Commission Virginia Water Protection Permit from the VDEQ.
- United States Army Corps of Engineers Nationwide Permit 57 for impacts to waters of the United States under Section 404 of the Clean Water Act and spanning of navigable waters under Section 10 of the Rivers and Harbors Act of 1899.
- Surveys and coordination with the United States Fish and Wildlife Service and the Virginia Department of Wildlife Resources, formerly the Virginia Department of Game and Inland Fisheries, for potential occurrence of state and federally protected species.

- Consultation with the VDHR under *Section 106 of the National Historic and Preservation Act of 1966* for potential impacts to historic properties.

- Local building permits where applicable for the Project.

- Renew existing Special Use Permit for the Blue Ridge Parkway crossing.

SECTION IV. HEALTH ASPECTS OF EMF

A. State the calculated maximum electric and magnetic field (EMF) levels that are expected to occur at the edge of the right-of-way. If the new transmission line is to be constructed on an existing electric transmission line right-of-way, provide the present EMF levels as well as the maximum levels calculated at the edge of right-of-way after the new line is operational.

***Response**:*

The following is an analysis of electric and magnetic fields (or "electromagnetic fields", both "EMF") associated with the transmission line components of the Project.

EMF levels were computed at the right-of-way ("ROW") edges of the existing and proposed line configurations at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the ROW edges, as levels decline with distance.

Factors that affect EMF include the ROW width, operating voltage, current flow and direction, electrical unbalance, line configuration, conductor height above ground, and other nearby objects. Nominal voltages and balanced conditions are assumed, with maximum current levels and directions expected during normal system operation. No trees, shrubs, buildings, or other objects that can block EMF are assumed in proximity to the existing and proposed lines.

Normal maximum loading levels, representing peak load conditions, were assumed in the analysis to maximize the calculated magnetic fields. These loading levels are based on winter 2026-2027 projected system conditions. Daily/hourly loads will fluctuate below these levels. All calculations were obtained at the height of 3.28 feet (one meter) above ground using the Electric Power Research Institute ("EPRI") EMF Workstation computer program.

The maximum EMF levels for the proposed Project are 0.64 kilovolts per meter ("kV/m") and 9.51 milligauss ("mG") (assuming a 100-foot-wide ROW), which is less than maximum EMF levels on the existing line (0.89 kV/m and 14.01 mG). This Project has multiple components, the respective transmission lines and their associated EMF levels are listed below. For an illustration of the Transmission Line Circuit Configurations for this Project, see Confidential Exhibit 6-C.

Mayo River – Willis Gap 138-kV Transmission Line (Component 1)
This is a new 138-kV transmission line between the existing Willis Gap 138-kV Substation and a new Mayo River 138-kV Substation. The proposed Mayo River – Willis Gap 138-kV Transmission Line is a single-circuit line from the new Mayo River Substation, to the existing Willis Gap Substation, and through the new Claudville Substation. The maximum EMF levels expected to occur at the ROW edge of this proposed circuit are 0.64 kV/m and 9.51 mG, respectively.

Mayo River – Woolwine and Floyd – Woolwine 138-kV Transmission Lines (Component 2)
This portion of the Project upgrades the existing 69-kV line to a 138-kV circuit from the existing Floyd Substation to the new Mayo River Substation through the existing Woolwine Substation. The proposed transmission lines will have double-circuit and single-circuit sections. Please see the direct testimony of Company witness Liu for additional details on the breakdown of double- and single-circuit sections for these Transmission Lines. The maximum EMF levels expected to occur at the ROW edge of the proposed double-circuit sections are 0.15 kV/m and 8.54 mG, respectively. The maximum EMF levels expected to occur at the ROW edge of the proposed single-circuit sections are 0.62 kV/m and 6.12 mG, respectively.

The existing circuits in the existing ROW mainly consist of a single H-frame Floyd – Stuart 69-kV circuit. The maximum existing EMF levels for this section are 0.40 kV/m and 9.38 mG, respectively. The existing ROW also contains a section where the Floyd – Stuart 69-kV circuit is paralleled with the Claytor-West Bassett 138-kV Transmission Line. The maximum existing EMF levels for this section are 0.93 kV/m and 9.09 mG, respectively.

Mayo River – Smith River 138-kV Transmission Line (Component 3)
This 138-kV transmission line splits from the Mayo River – Woolwine 138-kV line and runs to the new Smith River Substation and through the existing Patrick Henry Substation. This proposed line is primarily single-circuit, with a double-circuit section from the Stoneleigh Tap Structure to the new Smith River Substation. The maximum EMF levels expected to occur at the ROW edge of the proposed double-circuit (from the Stoneleigh Tap Structure to Smith River Substation) are 0.15 kV/m and 7.82 mG, respectively. The maximum EMF levels expected to occur at the ROW edge of the proposed single-circuit section are 0.27 kV/m and 6.58 mG, respectively.

The existing circuits in the existing ROW mainly consist of the single H-frame Fieldale-Stuart 69-kV circuit. The existing maximum EMF levels are 0.20 kV/m and 6.58 mG, respectively.

Fieldale Extension and Stoneleigh Extension 138-kV Transmission Lines (Component 3)
This proposed line section will have double- and single-circuit sections. The proposed Fieldale Extension 138-kV line will be a single-circuit line from the Stoneleigh Tap Structure to the existing Fieldale Substation. The proposed Stoneleigh Extension line will be a double-circuit line from the Stoneleigh Tap Structure to the new Stoneleigh Substation. The double-circuit section carries the Fieldale – Smith River circuit in and out of the Stoneleigh Substation. The maximum EMF levels expected to occur at the ROW edge of the proposed double-circuit (from the Stoneleigh Tap Structure to Stoneleigh Substation) are 0.15 kV/m and 7.82 mG, respectively. The maximum EMF levels expected to occur at the ROW edge of the proposed single-circuit are 0.62 kV/m and 6.12 mG, respectively.

The existing circuits in the existing ROW mainly consist of single H-frame Fieldale -West Bassett No. 2 69-kV circuit by itself with maximum EMF of 0.44 kV/m and 3.37 mG, respectively. The section also includes the single H-frame Fieldale -West Bassett No. 2 69-kV circuit in parallel with Fieldale -West Bassett 69-kV single H-frame circuit. The maximum existing EMF levels of this section are 0.89 kV/m and 14.01 mG, respectively.

Philpott Dam - Smith River 138-kV Transmission Line (Component 3)
The proposed Philpott Dam – Smith River 138-kV Transmission Line is a single-circuit line from existing Structure 1365-4, located near the existing Philpott 138-kV Switch Station (to be retired), to the new Smith River Substation. The maximum EMF levels expected to occur at the ROW edge of this proposed circuit are 0.62 kV/m and 1.01 mG, respectively.

B. If Company is of the opinion that no significant health effects will result from the construction and operation of the line, describe in detail the reasons for that opinion and provide references or citations to supporting documentation.

Response*:*
EMF occur naturally in the environment. An electric field is present between the earth and its atmosphere and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kV/m; the higher the voltage, the greater is the electric field. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases; these fields are measured in units known as gauss, or mG.

Electric fields are blocked by trees, shrubs, buildings, and other objects. Magnetic fields are not easily blocked and can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

EMF associated with power lines and household appliances oscillate at the power frequency (60 Hertz [“Hz”] in the United States). When people are exposed to these fields, small electric currents are produced in their bodies. These currents are weaker than natural electric currents in the heart and nervous system.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to

consistently replicate those results in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table IV-1 below.

Table IV-1
Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2" (0.1 feet)	12" (1.0 feet)	User Distance
AC Adapters	3	1.4 – 863	0 - 7.5	0 - 0.8
Blood Pressure Monitors	4	4.2 - 39.6	0 - 0.3	0 – 0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 - 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 - 0.1	0 - 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5[1]	0 – 0.1[1]	0 - 0.1[1]
Computers, Desktop	3	3.8 – 68.9	0 -1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	17.1 – 155	28.3 – 61.5
Electric Toothbrushes	5	3.6 - 742	0 – 4.8	3.6 – 742
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 - 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 - 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 - 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9[2]	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0-0.3

Source: Electric Power Research Institute [1]

As part of the National Energy Policy Act of 1992, United States Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination ("EMF RAPID") program. The National Institute of Environmental Health Sciences ("NIEHS") was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency "EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard." Nonetheless, the report stated that "this finding is insufficient to warrant aggressive regulatory concern." [2]

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection ("ICNIRP") wrote in its review of the epidemiologic literature on EMF and health that "given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established." [3]

Also, in 2001, International Agency for Research on Cancer ("IARC") published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power-frequency "magnetic fields are 'possibly carcinogenic to humans,' based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia."[4] IARC assigns its "possibly carcinogenic to humans" classification (Group 2B) if there is "limited evidence" of carcinogenicity in both humans and experimental animals, or if there is "sufficient evidence" in animals, but "inadequate evidence" in humans. Group 2B includes some 288 "agents" such as coffee, pickled vegetables, carpentry, textile manufacturing and gasoline, among others (last update: October 26, 2015).

A comprehensive assessment of the EMF health risks was published by the World Health Organization ("WHO") in 2007. In its assessment, WHO wrote: "Scientific evidence suggesting that every day, chronic, low-intensity (above 0.3-0.4 mT) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia."[5] It added, however, that "virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern."

Regarding acute effects, WHO noted, "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz [kilohertz] that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects." [5]

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exists to support the cause-and-effect relationship.

In view of the scientific evidence, the Institute of Electrical and Electronics Engineers ("IEEE") and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the general public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6™-2002 [6] recommends the following limits:

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0*
Magnetic Field Limit (mG)	9,040	27,100

*10.0 kV/m within power line ROW.

To address public concerns about EMF, the Government of Canada in 2012 updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: "Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors." [7]

Similarly, in 2013, the updated website of the World Health Organization concluded: "to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health." [8]

Most recently, in its January 2015 report, the Scientific Committee on Emerging and Newly Identified Health Risks ("SCENIHR"), an independent advisory body to the European Commission on Public Health, issued the following opinion: "Overall, existing studies do not provide convincing evidence for a causal relationship between ELF MF [extremely low frequency magnetic field] exposure and self-reported symptoms." [9]

AEP has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. Also, AEP is a member of EPRI, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory and exposure studies.

The transmission line construction proposed in this Project will be compliant with the EMF limits specified in IEEE Standard C95.6™-2002.

C. Describe any research studies the Company is aware of that meet the following criteria:

1. Became available for consideration since the completion of the Virginia Department of Health's most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;

2. Include findings regarding EMF that have not previously been reported and/or provide substantial additional insight into previous findings; and

3. Have been subjected to peer review.

In its report to the Virginia General Assembly, issued on October 31, 2000, the Virginia Department of Health stated the following: "the Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency electromagnetic fields emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans." [10]

Key publications on the subject, which became available after that report, are included below as references to the discussion contained in Section IV.B and C of this Response to Guidelines.

Section IV References

[1] "Magnetic Fields from Electrical Appliances and Devices," Electric Power Research Institute, Product ID 1021221, September 28, 2010.

[2] "NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields," National Institute of Environmental Health Sciences, National Institutes of Health, NIH Publication No. 99-4493, May 4, 1999. (http://www.niehs.nih.gov/about/materials/niehs-report.pdf).

[3] "Review of the Epidemiologic Literature on EMF and Health," International Commission for Non-Ionizing Radiation Protection (ICNIRP) Standing Committee on Epidemiology, Environmental Health Perspectives, Volume 109, Supplement 6, December 2001.

(http://www.icnirp.de/documents/epireview1.pdf).

[4] "IARC Finds Limited Evidence that Residential Magnetic Fields Increase Risk of Childhood Leukemia," International Agency for Research on Cancer, Press Release No 136, June 27, 2001. (http://www.iarc.fr/en/media-centre/pr/2001/pr136.html).

[5] “Extremely Low Frequency Field (Environmental Health Criteria 238),” World Health Organization, June 1, 2007. (http://www.who.int/peh-emf/publications/Complet_DEC_2007.pdf).

[6] “C95.6™ IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz,” IEEE Standards Coordinating Committee 28, October 23, 2002.

[7] “Electric and Magnetic Fields from Power Lines and Electrical Appliances,” Healthy Canadians, November 7, 2012.

(http://www.healthycanadians.gc.ca/environment-environnement/home-maison/emf-cem-eng.php).

[8] “What are Electromagnetic Fields? Summary of Health Effects,” World Health Organization, 2013. (http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html).

[9] “Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF),” Scientific Committee on Emerging and Newly Identified Health Risks, SCENIHR, January 27, 2015. (http://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_041.pdf).

[10] “Monitoring of Ongoing Research on the Health Effects of High Voltage Transmission Lines (Final Report),” Virginia Department of Health, October 31, 2000. (http://www.vdh.state.va.us/Epidemiology/DEE/publichealthtoxicology/documents/pdf/highfinal.PDF).

SECTION V. NOTICE

A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposes to be noticed, provide minimum, maximum and average structure heights.

Response:
The Proposed Route descriptions for Components 1, 2, and 3 are provided below. The requested Public Notice Map is included as Exhibit 2.

Public Notice Route Descriptions
The proposed transmission Project is organized into three components, which are generally the construction sequence. Component 1 contains a new 24.5-mile 138-kilovolt ("kV") transmission line beginning at Willis Gap Substation near the Patrick/Carroll County line to the proposed Mayo River Substation located in Patrick County near the Town of Stuart. Component 2 includes a 22-mile 69-kV to 138-kV transmission line rebuild from the proposed Mayo River Substation to the existing Floyd Substation in Floyd County. Component 3 contains a 25.5-mile 69/138-kV to 138-kV transmission line rebuild from near Mayo River Substation to the existing Fieldale Substation and to the existing transmission line Structure No. 1365-4 near Philpott Dam in Henry County. The proposed transmission line routes for each component are described below.

Component 1:
The Proposed Route for Component 1 begins at the Company's existing Willis Gap Substation (2086 Orchard View Drive) west of Ararat near the Carroll/Patrick County line. From the Willis Gap Substation, the Proposed Route crosses Orchard View Drive, enters Patrick County and parallels the Company's existing Huffman – Willis Gap 138-kV Transmission Line for about 0.5 mile. The Proposed Route turns southeast for about 3.0 miles through mostly forested land and crosses State Routes ("SR") 676 (Ahart Ridge Road), 803 (Easton Lane), and 677 (Willis Gap Mountain Road). The Proposed Route turns east for about 9.0 miles and crosses SR 674 (Farmers Road), SR 631 (Hunters Chapel Road), Smith Ranch Road, SR 773 (Ararat Highway, just south of Ararat), SR 645 (Homeplace Road), SR 614 (Unity Church Road), SR 773 (Ararat Highway) three times, the Dan River, Simmons Mountain, and enters the Company's proposed Claudville Substation located on SR 738 (Hookers Creek Road) north of the community of Claudville.

From the proposed Claudville Substation, the Proposed Route parallels the City of Danville's existing Pinnacles – Hydro 69-kV Transmission Line (which generally parallels from west to east the Claudville/Dry Pond Highway, Route 103) southeast for about 3.0 miles and east for about 6.0 miles and crosses SR 646 (Little Dan River Road), SR 103 (Claudville/Dry Pond Highway) three times, SR 663 (Elastic Plant Road), SR 662 (Collinstown Road), Turkey Hollow Lane, SR 741 (Elk Creek Road), SR 644 (Creasey Chapel Road), and SR 8 (Salem Highway). The Proposed Route turns north from the existing City of Danville transmission line for about 3.0 miles, crosses SR 652 (Shingle

Shop Road), SR 631 (Wayside Road), and SR 682 (Big A School Road), and enters the proposed Mayo River Substation on Commerce Street southeast of the Town of Stuart.

Component 2:

Component 2's Proposed Route exits north from the Company's proposed Mayo River Substation, in Patrick County, for about 1.0 mile, crosses SR 681 (Commerce Street), the South Mayo River, and U.S. Route 58 (Jeb Stuart Highway), and connects to the Company's existing Fieldale – Stuart 69-kV Transmission Line, which will be rebuilt as part of Component 3 of the Project. The Proposed Route continues northwest for about 2.0 miles to the Company's existing Floyd – Stuart 69-kV Transmission Line right-of-way ("ROW"), crossing SR 687 (Tudor Orchard Road) and ascending Bull Mountain. The Proposed Route continues north in the Company's existing ROW for approximately 3.5 miles and descends Bull Mountain, crosses SR 57 (Fairystone Park Highway), and generally parallels SR 8 (Woolwine Highway). The Proposed Route shifts east of the Company's existing ROW for about 1.0 mile, crosses SR 775 (Harbour School Lane), and returns to the existing ROW to cross SR 824 (Crestview Road). The Proposed Route shifts west of the existing ROW for about 1.0 mile to cross SR 613 (Pilson Sawmill Road) and then uses the existing ROW for approximately 2.0 miles to cross SR 708 (Bob White Road) before turning west, spanning Smith River, and entering the Company's existing Woolwine Substation (8548 SR 8/Woolwine Highway, Woolwine, Virginia 24185).

From the existing Woolwine Substation, the Proposed Route travels to the east and then turns north in the existing ROW for about 0.3 mile. The Proposed Route parallels the Company's existing ROW for approximately 0.6 mile and crosses SR 618 (Elamsville Road) and SR 8 (Woolwine Highway). The Proposed Route then continues in the existing ROW for approximately 5.5 miles and crosses SR 709 (Ridge Road), SR 40 (Charity Highway), Griffith Valley Lane, SR 678 (Eanes Mountain Road), Sugarloaf Mountain, and the Blue Ridge Parkway and enters Floyd County. The Proposed Route continues in the existing ROW for approximately 5.0 miles crossing SR 708 (Whispering Rock Road), SR 637 (New Haven Road SE), SR 615 (Barberry Road SE), Midkiff Road SE, SR 681 (Franklin Pike SE), U.S. Route 221 (Floyd Highway), and Commerce Center Drive NE and ends at the existing Floyd Substation (437 Christiansburg Pike, NE, Floyd, Virginia 24091) northeast of the Town of Floyd.

Component 3:

Component 3's Proposed Route begins north of the proposed Mayo River Substation in Patrick County and travels east in the existing Fieldale – Stuart 69-kV Transmission Line ROW for approximately 2.0 miles, crossing Dr. Kay Lane, SR 694 (Animal Clinic Road), Jim Lane, SR 694 (Animal Clinic Road), Pine Knoll Farms Loop, and SR 686 (Tudor Orchard Road). The Proposed Route continues in about 0.7 mile of new ROW just north of Patrick Springs and crosses Clearview Drive and SR 866 (Circle Drive). The Proposed Route uses the existing ROW for approximately 7.0 miles crossing SR 689 (VFW Road), SR 680 (Spring Road), SR 772 (Old Mill Road), No Business Mountain, SR 626 (Abram Penn Highway) three times, SR 810 (Hollandsworth Drive) twice, and SR 627 (County Line Road) and enters Henry County near the existing Patrick Henry Substation site (SR 627, Patrick Springs, Virginia 24133).

From the Patrick Henry Substation site, the Proposed Route continues east in the Company's existing ROW for about 6.0 miles and crosses SR 627 (Wilson Mill Road), SR 698 (Airport Road), SR 830 (Bull Run Road), SR 627 (Wingfield Orchard Road), Reliance Drive, SR 687 (Stones Dairy Road), SR 609 (Dillons Fork Road), SR 774 (Plaster Road), SR 761 (Valley Drive), Pruitt Drive, and SR 683 (The Great Road). After crossing The Great Road, the Proposed Route turns north, in new ROW for approximately 1.3 miles, crossing Green Road and Idlewilde Drive before reaching a junction point near existing ROW.

From this junction point, Component 3's Proposed Route diverges in three different directions. First, a portion of Component 3's Proposed Route turns southeast and travels approximately 1.7 miles in the Company's existing ROW to enter the existing Fieldale Substation (4645 Appalachian Drive, Fieldale, Virginia 24089) crossing U.S. Route 220 (William F. Stone Highway), SR 57 (River Road) and the Smith River. Second, from the junction point, another portion of Component 3's Proposed Route travels northeast in new ROW for approximately 0.3 mile to enter the proposed Stoneleigh Substation located on SR 57 (River Road) southeast of Stanleytown. Third, from the junction point, the Proposed Route for Component 3 travels approximately 3.0 miles northwest and then north along the existing Fieldale – West Bassett No. 2 69-kV Transmission Line ROW and crosses SR 683 (The Great Road), SR 680 (Columbus Drive), and SR 698 (Blackberry Road). South of Bassett, the Proposed Route turns northwest in new ROW for approximately 1.0 mile and crosses SR 712 (Mary Hunter Drive) before turning northeast to enter the proposed Smith River Substation located on SR 57 (Fairystone Park Highway), just north of Bassett.

From the proposed Smith River Substation, Component 3's Proposed Route travels southwest and then northwest in new ROW for about 1.0-mile crossing SR 57 (Fairystone Park Highway), SR 735 (Wells Hollow Road), and SR 674 (Trenthill Drive). The Proposed Route then uses the existing Claytor – Fieldale 138-kV Transmission Line ROW for approximately 1.7 miles crossing SR 901 (Dam Spillway Road) and ends at the existing transmission line Structure No. 1365-4 near the existing Philpott Switch Station and south of the Philpott Dam.

The predominant structure type anticipated for this Project will be single-circuit 138-kV galvanized-steel H-frame structures ranging in height from approximately 55 feet to 115 feet, with an average height of approximately 80 feet. The Project will also use single-circuit monopole structures with braced posts with a height range from 65 feet to 100 feet and an average height of approximately 80 feet. The Project will also use double-circuit 138-kV monopole structures with davit arms with a height range between approximately 75 feet and 145 feet and an average height of approximately 100 feet. Approximately five 138-kV lattice towers may be necessary with an average height of 105 feet and a range between 80 feet to 120 feet.

For the rebuild portions of the Project, the proposed galvanized-steel structures will typically be 35 feet taller on average than the existing wood structures on Component 2 and 45 feet taller on average than the existing wood structures on Component 3 in order to meet current electrical clearance requirements.

B. **List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.**

Response:
This Application and all exhibits, tables, and maps made a part hereof will be available for inspection at the following locations:

Carroll County Public Library
101 Beaver Dam Road
Hillsville, VA 24343

Patrick County Library
116 W. Blue Ridge Street
Stuart, VA 24171

Jesse Peterman Memorial Library
P.O. Box 69
Floyd, VA 24091

Bassett Branch Library
3969 Fairystone Park Highway
Bassett, VA 24055

This Application, exhibits, and maps are also digitally available on the Project website: **https://aeptransmission.com/virginia/Stuart/.**

C. List all federal, state, and local agencies and/or officials that may reasonably be expected to have an interest in the proposed construction and to whom the Applicant has furnished or will furnish a copy of the application.

Response:

Federal
United States Army Corps of Engineers, Norfolk District, Western Virginia Regulatory Section
United States Department of Agriculture, Natural Resources Conservation Service
United States Department of Transportation, Federal Highway Administration, Virginia Division
United States Environmental Protection Agency, Region 3
United States Fish and Wildlife Service, Virginia Ecological Services
United States National Park Service, Blue Ridge Parkway
United States House of Representatives, 9th District (H. Morgan Griffith)*

State
Virginia State Corporation Commission (SCC)**
Virginia Department of Agriculture and Consumer Services
Virginia Department of Aviation

Virginia Department of Conservation and Recreation
Virginia Department of Environmental Quality* *(VDEQ coordinates the Application's environmental review with the state agencies)*
Virginia Department of Forestry
Virginia Department of Health, Office of Drinking Water
Virginia Department of Historic Resources
Virginia Department of Transportation, Salem District
Virginia Department of Wildlife Resources
Virginia Marine Resources Commission
Virginia Outdoors Foundation
Senate of Virginia, 20th District (William M. Stanley, Jr.)*
Senate of Virginia, 19th District (David R. Suetterlein)*
Virginia House of Delegates, District 9 (Wren M. Williams)*
Virginia House of Delegates, District 16 (Les Adams)*
Virginia House of Delegates, District 7 (Marie March)*

Local
Carroll County, Planning Commission (Beverly Tipton, Chairman)
Carroll County, Administration (Michael Watson, County Administrator)**
Carroll County, Attorney (Steven V. Durbin)
Carroll County, Board of Supervisors (Robbie McCraw, Supervisor At Large)

Patrick County, Administration (Donna Shough, Assistant County Administrator)**
Patrick County, Planning Commission (Larry Cowley, Chairman)
Patrick County, Board of Supervisors (Denis Stirewalt, Vice-Chair)
Patrick County, Board of Supervisors (C. Clayton Kendrick, Jr., Chairman)
Patrick County, Attorney (Jim Guynn and Mark Popovich)

Floyd County, Administration (Linda S. Millsaps, County Administrator)**
Floyd County, Planning Commission, (Jeremy Yuvanavattana, Vice Chair)
Floyd County, Planning Commission, (Deborah Baum, Chair)
Floyd County, Board of Supervisors (Joe D. Turman, Chairman)
Floyd County, Board of Supervisors (Jerry W. Boothe, Vice-Chairman)
Floyd County, Attorney (Stephen V. Durbin)

Henry County, Administration (Dale Wagoner, County Administrator)**
Henry County, Department of Planning, Zoning & Inspection (Lee H. Clark, Director of Planning, Zoning and Inspection)
Henry County, Board of Supervisors (Jim Adams, Chairman)
Henry County, Board of Supervisors (Joe Bryant, Vice-Chairman)
Henry County, Attorney (George Lyle)

Town of Stuart, Mayor (Ray Weiland)
Town of Stuart, Town Manager (Bryce Simmons)**
Town of Stuart, Attorney (Christopher A. Corbett)

Town of Floyd, Mayor (William R. Griffin)
Town of Floyd, Town Manager (Andrew Morris)
Town of Floyd, Attorney (James W. Shortt)

* The Company will provide access to an electronic copy of the Application and related materials to these officials or agencies.
** The Company will distribute a hard copy of the Application and related materials to these officials.

D. **If the application is for a transmission line with a voltage of 138 kV or greater, provide a statement and any associated correspondence indicating that prior to the filing of the application with the SCC the Applicant has notified the chief administrative officer of every locality in which it plans to undertake construction of the proposed line of its intention to file such an application, and that the Applicant gave the locality a reasonable opportunity for consultation about the proposed line (similar to the requirements of § 15.2-2202 of the Code for electric transmission lines of 150 kV or more).**

Response:
As detailed in Section III.B, the Company introduced the Project to the localities crossed by the Project (Henry, Floyd, Patrick, and Carroll Counties, and the towns of Stuart and Floyd, Virginia). In addition, the Company met virtually and in-person with local officials from the listed counties and municipalities throughout the siting process to aid in the route planning process. The local officials were advised at that time of the Company's plans to file an application with the SCC for approval of the Project and will be notified when the Proposed Route is announced to the public.

Exhibit 1: Stuart Area Map

Exhibit 1: Stuart Area Map

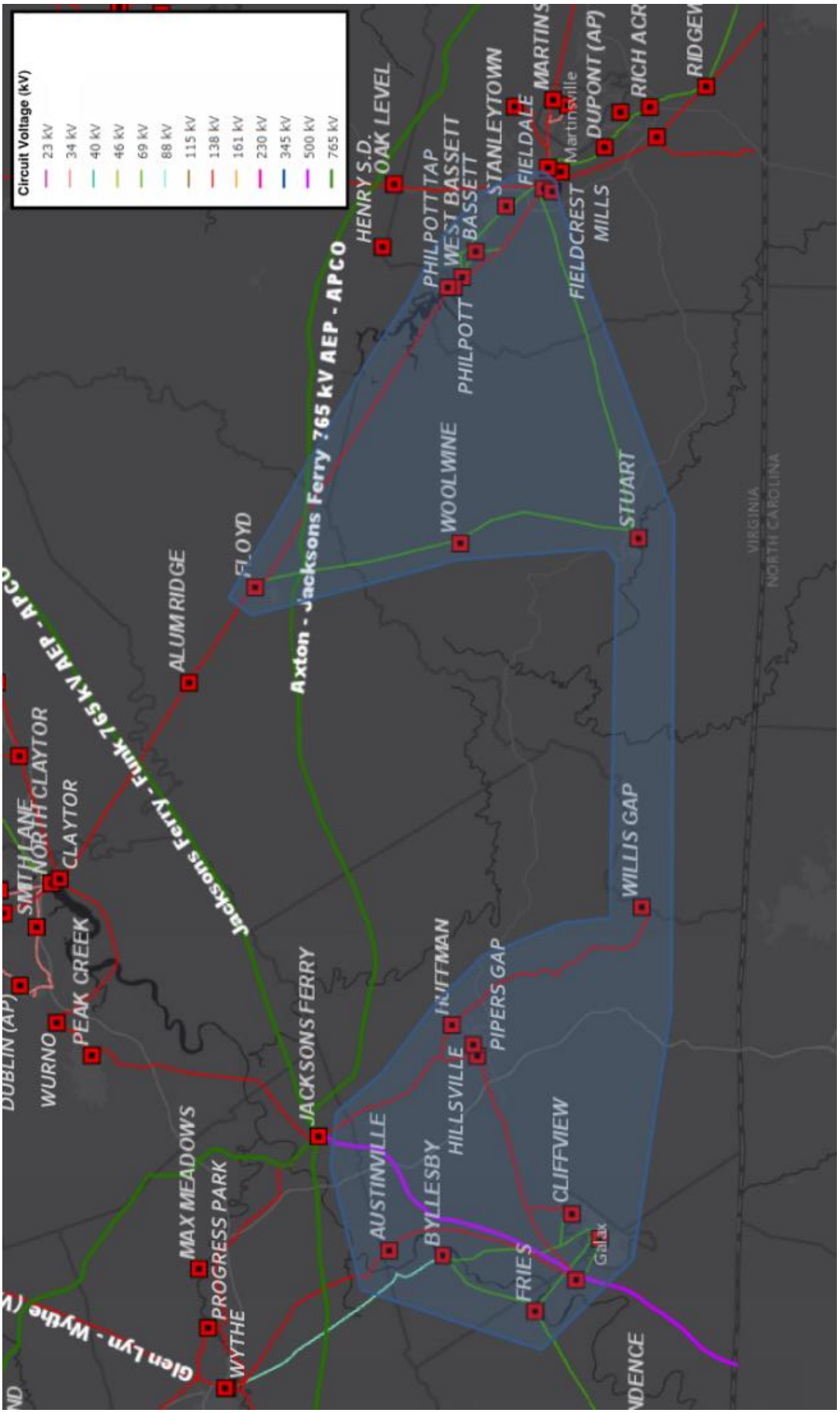


Exhibit 2: Public Notice Map

STUART AREA

138-KV TRANSMISSION IMPROVEMENTS PROJECT

APPALACHIAN POWER
An AEP Company
BOUNDLESS ENERGY

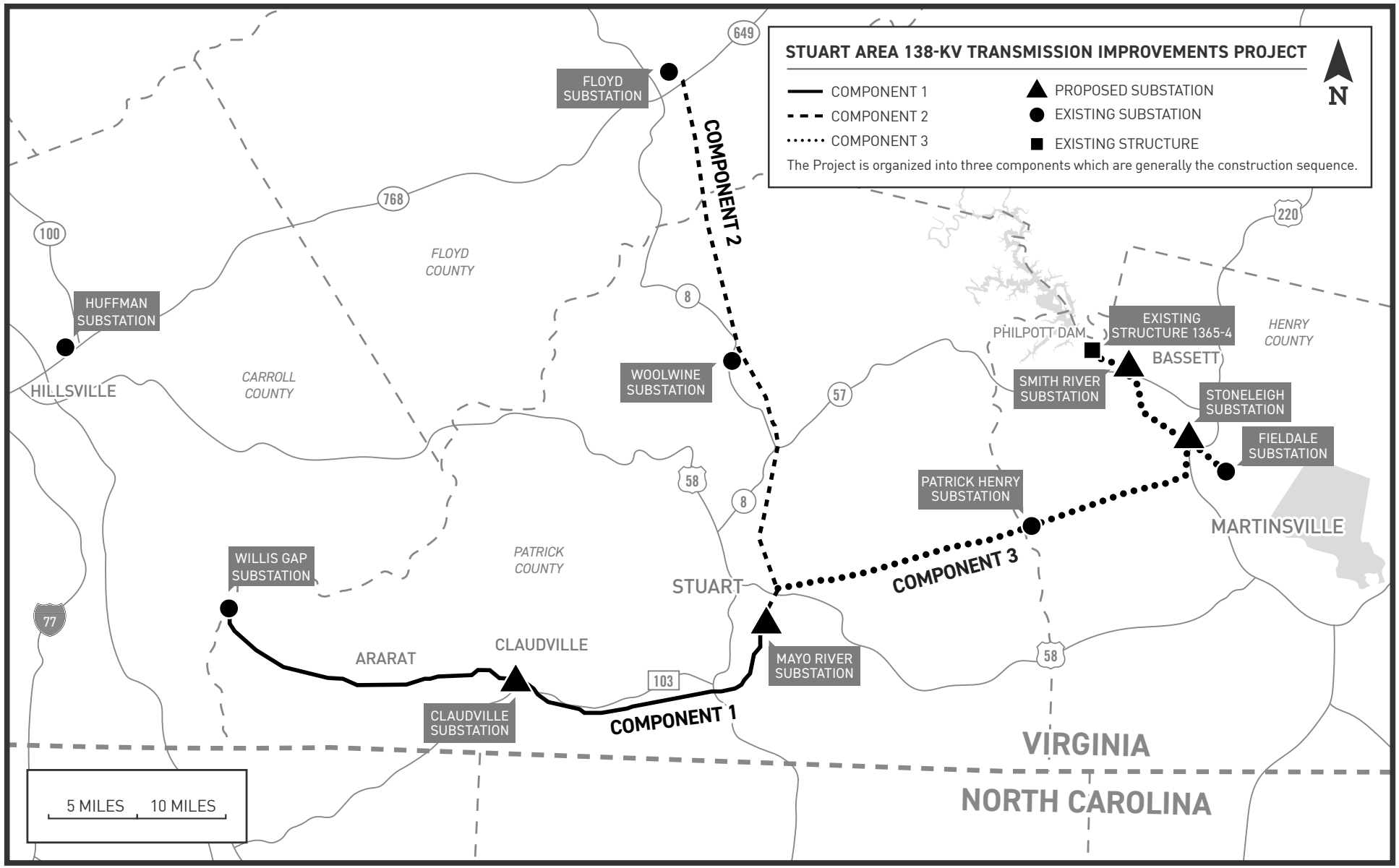


Exhibit 2: Public Notice Map

Exhibit 3: Project Overview Map

Exhibit 3: Project Overview Map

Claytor Substation

Future Rebuild
Between Claytor to Floyd
(Claytor - Fieldale 138kV Line Rebuild)

Alum Ridge Substation

Floyd Substation Upgrades

Potential Future Distribution Project for this ~7-mile existing ROW portion from near Floyd to the Patrick County Line

Huffman Substation Upgrades

Woolwine Substation Upgrades

Pinnacle Hydro-Generation Facility

Retire Stuart Substation

Proposed Mayo River Substation

Willis Gap Substation Upgrades

Proposed Claudville Substation

Patrick Henry Substation Upgrades

Philpott

Bassett

Fieldale

Fieldale - West Bassett No. 1 69 kV Transmission Line

Claytor - Fieldale 138 kV Transmission Line

Pinnacles - Hydro 69 kV Line (City of Danville)

Roanoke - Carolina 138 kV Line

Jacksons Ferry - Wyoming VA-765 kV Line

Jacksons Ferry - Pulaski 138 kV Line

Jacksons Ferry - Wythe 138 kV Line

Jacksons Ferry - Funk 765 kV Line

Axton - Jacksons Ferry 765 kV Line

Jubal Early - Wythe 138 kV Line

Jacksons Ferry - Cowans Ford 500 kV Line

Jacksons Ferry - Piper's Gap 138 kV Line

Jubal Early - Piper's Gap 138 kV Line

Huffman - Willis Gap 138 kV Line

Claytor - Wurno - Pulaski 138 kV Line

Dupont - Ridgeway 69 kV Line

Fieldale - Dan River 138 kV Line

Corning Glass - Ridgeway 69 kV Line

Claytor Lake

New River Trail State Park

Blue Ridge Parkway

Bull Mountain

Dublin

Pulaski

Galax

Carroll

Hillsville

Patrick Springs

Martinsville

Eden

Mt Airy

Flat Rock

Toast

FLOYD COUNTY

FRANKLIN COUNTY

CARROLL COUNTY

PATRICK COUNTY

HENRY COUNTY

GRAYSON COUNTY

SURRY COUNTY

STOKES COUNTY

ROCKINGHAM COUNTY

Philpott Dam (USACE* Hydro-Generation Facility) Substation

Philpott Lake

Fairystone Switch Station

Existing Structure 1365-4

Fairystone Substation Upgrades

Proposed Smith River Substation

Retire Philpott Switch Station

Retire West Bassett Substation

Retire Bassett Substation

Retire Stanleytown Substation

Proposed Stoneleigh Substation

Fieldale Substation Upgrades

* USACE = U.S. Army Corps of Engineers

0 2 4

Miles

Virginia

Project Location

- Existing APCo Substation
- Non-APCo Generation Facility
- Existing Switch Station
- Existing Switch Station to be Retired
- Existing Transmission Line
- Populated Place
- Blue Ridge Parkway
- Town Boundary
- County Boundary
- Existing Substation or Transmission Line to be Retired (Ordinary Extension Not Seeking SCC Approval)

Seeking SCC Approval

- Component 1
- Component 2
- Component 3

Project Overview Map

Carroll, Floyd, Henry, and Patrick Counties, Virginia

0 5 10

Miles

1" = 5 miles

OVERVIEW

Stuart Area 138-kV Transmission Improvements Project

APPALACHIAN POWER
An AEP Company

POWER ENGINEERS

Date: 4/14/2023; Author: elundy; Project: 158529

Path: G:\Projects\0_AEP\158529_AEP_StuartArea\Apps\158529_AEP_StuartArea_Story.aprx

Exhibit 4: AEP Transmission Planning Criteria and Guidelines for End-of Life and Other Asset Management Needs

AEP Transmission Planning Criteria and Guidelines for End-Of-Life and Other Asset Management Needs

December 2020

Document Control

Document Review and Approval

Action	Name(s)	Title
Prepared by:	Jomar M. Perez	Manager, Asset Performance and Renewal
Approved by:	Nicolas Koehler	Director, East Transmission Planning
Approved by:	Wayman L. Smith	Director, West Transmission Planning
Approved by:	Kamran Ali	Managing Director, Transmission Planning

Review Cycle

Quarterly	Semi-annual	Annual	As Needed
			X

Revision History

Version	Revision Date	Changes	Comments
1.0	01/04/2017	N/A	1st Release
2.0	1/18/2018	Format Update	2nd Release
3.0	11/09/2018	Content Additions	3rd Release
4.0	12/14/2020	End-Of-Life Criteria	4th Release

Table of Contents

1.0 Introduction

The American Electric Power (AEP) transmission system consists today of approximately 40,000 miles of transmission lines, 3,600 stations, 5,000 power transformers, 8,000 circuit breakers, and operating voltages between 23 kV and 765 kV in three different RTOs – the Electric Reliability Council of Texas (ERCOT), the PJM Interconnection (PJM), and the Southwest Power Pool (SPP), connecting over 30 different electric utilities while providing service to over 5.4 million customers in 11 different states.

AEP's interconnected transmission system was established in 1911 and is comprised of a very large and diverse combination of line, station, and telecommunication assets, each with its own unique installation date, design specifications, and operating history. As the transmission owner, it is AEP's obligation and responsibility to manage and maintain this diverse set of assets to provide for a safe, adequate, reliable, flexible, efficient, cost-effective and resilient transmission system that meets the needs of all customers while complying with Federal, State, RTO and industry standards. This requires, among other considerations, that AEP determine when the useful life of these transmission assets is coming to an end and when the capability of those assets no longer meets current needs, so that appropriate improvements can be deployed. AEP refers to these issues as transmission owner identified needs that address condition, performance and risk. AEP identifies these needs through the transmission planning criteria and guidelines outlined in this document. Specifically, this document constitutes the AEP transmission planning criteria and guidelines for End-Of-Life and other asset management needs as required in the FERC-approved Attachment M-3 to the PJM Tariff. AEP does not address any End-Of-Life or other asset management needs through the baseline planning criteria AEP files with its FERC Form 715.

AEP's transmission owner identified needs must be addressed to achieve AEP's obligations and responsibilities. Meeting these obligations requires that AEP ensures the transmission system can deliver electricity to all points of consumption in the quantity and quality expected by customers, while reducing the magnitude and duration of disruptive events. Given these considerations, criteria and guidelines are necessary to identify and quantify needs associated with transmission facilities comprising AEP's system. AEP identifies the needs and the solutions necessary to address those needs on a continuous basis using an in-depth understanding of the condition of its assets, and their

associated operational performance and risk, while exercising engineering judgment coupled with Good Utility Practices [1].

Whereas the End-Of-Life needs, as defined in the FERC-approved Attachment M-3 to the PJM Tariff, are limited to transmission facilities rated above 100 kV, these criteria and guidelines apply to all transmission voltages that comprise the AEP transmission system, including those defined as End-Of-Life needs in the FERC-approved Attachment M-3 to the PJM Tariff. In addition, projections of candidate End-Of-Life needs that result from the process outlined in these AEP criteria and guidelines will be provided to PJM in accordance with the provisions in the FERC-approved Attachment M-3 to the PJM Tariff. Current End-Of-Life and other asset management needs will be vetted with stakeholders in accordance with the provisions in the FERC-approved Attachment M-3 to the PJM Tariff.

Addressing these owner identified transmission system asset management needs, as they pertain to condition, performance and risk, will result in the following benefits to customers:

- Safe operation of the electric grid.
- Reduction in frequency of outage interruptions.
- Reduction in duration of outage interruptions.
- Improvement in service reliability and adequacy to customers.
- Reduction of risk of service disruptions (improved resilience) associated with man-made and environmental threats.
- Proactive correction of reliability constraints that stem from asset failures.
- Effective utilization of resources to provide efficient and cost-effective service to customers.

2.0 Process Overview

AEP's transmission owner needs identification criteria and guidelines are used for projects that address equipment material conditions, performance, and risk. AEP uses the three-step process shown in Figure 1 and discussed in detail in this document to determine the best solutions to address the transmission owner identified needs and meet AEP's obligations and responsibilities. This process is completed on an annual basis. In developing the most efficient and cost-effective solutions, AEP's long-term strategy is to pursue holistic transmission solutions in order to reduce the overall AEP transmission system needs.

Figure 1 – AEP Process for Identifying and Addressing Transmission Asset Condition, Performance and Risk Needs

3.0 Step 1: Needs Identification

Needs Identification is the first step in the process of determining system and asset improvements that help meet AEP's obligations and responsibilities. AEP gathers information from many internal and external sources to identify assets with needs. A collective evaluation of these inputs is conducted and considered, and thus, individual thresholds do not apply. In addition, factors can change over time. A sampling of the inputs and data sources is listed below in Table 1.

Table 1 – Inputs Considered by AEP to Identify Transmission System Needs

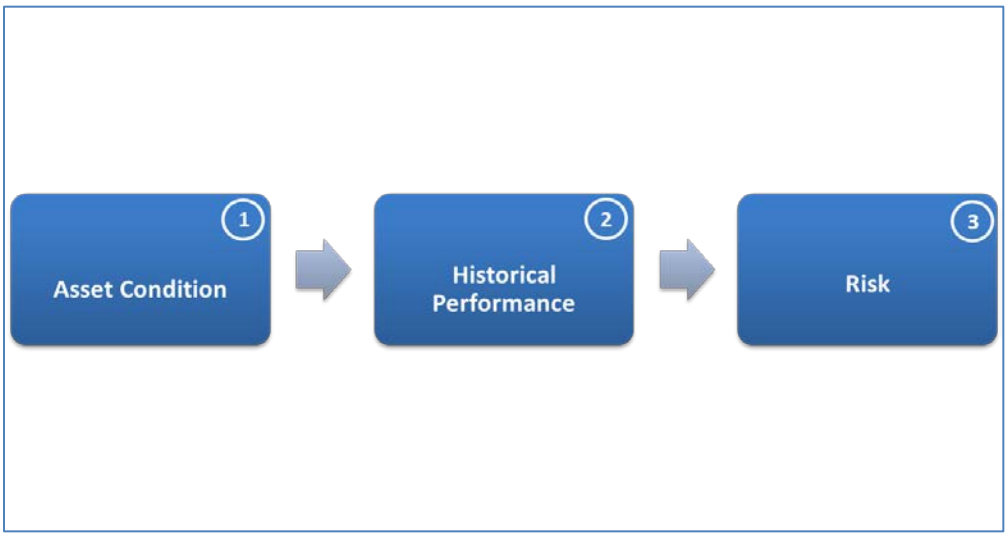
Internal, External, or Both	Inputs	Examples
Internal	Reports on asset conditions	Transmission line and station equipment deterioration identified during routine inspections (pole rot, steel rusting or cracking)
	Capabilities and abnormal conditions	Relay misoperations; Voltage unbalance
	Legacy system configurations	Ground switch protection schemes for transformers;; Transmission Line Taps without switches (hard taps); Equipment without vendor support
	Outage duration and frequency	Outages resulting from equipment failures, misoperations, or inadequate lightning protection
	Operations and maintenance costs	Costs to operate and maintain equipment
External	Regional Transmission Operator (RTO) or Independent System Operator (ISO) issued notices	Post Contingency Local Load Relief Warnings (PCLLRWs) issued by the RTO that can lead to customer load impacts
	Stakeholder input	Input received through stakeholder meetings, such as PJM's Sub Regional RTEP Committee (SRRTEP) meetings or through the AEP hosted Annual Stakeholder Summits
	Customer feedback	Voltage sag issues to customer delivery points due to poor sectionalizing; frequent outages to facilities directly affecting customers
	State and Federal policies, standards, or guidelines	NERC standards for dynamic disturbance recording
Both	Environmental and community impacts	Equipment oil/gas leaks; facilities currently installed at or near national parks, national forests, or metropolitan areas
	Standards and Guidelines	Minimum Design Standards, Radial Lines, Three Terminal Lines, Overlapping Zones of Protection
	Safety risks and concerns	Station and Line equipment that does not meet ground clearances; Facilities identified as being in flood zones; New Occupational Safety and Hazards Administration (OSHA) regulations

These inputs are reviewed and analyzed to identify the transmission assets that are exhibiting unacceptable condition, performance and risk, and thus, must be addressed through the FERC-approved Attachment M-3 planning process.

3.1 Methodology and Process Overview

The AEP transmission system is composed of a very large number of assets that provide specific functionality and must work in conjunction with each other in the operation of the grid. These assets have been deployed over a long period of time using engineering principles, design standards, safety codes, and Good Utility Practices that were applicable at the time of installation and have been exposed to varying operating conditions over their life. The Needs Identification methodology is shown below in Figure 2. AEP addresses the identified needs considering factors including severity of the asset condition and overall system impacts. These are subsequently evaluated versus constraints such as outage availability, siting requirements, availability of labor and material, constructability, and available capital funding in determining the timing and scope of mitigation.

Figure 2 – Needs Identification Methodology



It is AEP's strategy and goal to develop and provide the more efficient, cost-effective, safe, reliable, resilient, and holistic long-term solutions for the identified needs.

3.2 Asset Condition (Factor 1)

The Asset Condition assessment gathers a standard set of physical characteristics associated with an asset or a group of assets. The set of data points recorded is determined based on the asset type and class. Information assembled during the Asset Condition assessment is used to show the historical

deterioration, current condition, and future expectation of the asset or group of assets on the AEP system.

AEP annually assembles a list of reported condition issues for all of its assets in its system. A detailed follow-up review is conducted to determine if a transmission asset is in need of upgrade and/or replacement. Additionally, this Asset Condition review is used to determine an adequate scope of work required to mitigate the risk associated with a facility's performance and its identified issues. This level of risk is determined through the Future Risk assessment (Factor 3).

Beyond physical condition, AEP's ability to restore the asset in case of a failure is also considered. This is referred to as the future probability of failure adder. Typically, assets that are no longer supported by manufacturers or lack available spare parts are assigned a higher probability of failure adder.

To perform condition assessments, AEP classifies its Transmission assets in two main categories: Transmission Lines and Substations.

3.2.1 Transmission Line Considerations

Design Portion

A. Age (Original Installation Date)
B. Structure Type (Wood, Steel, Lattice)
C. Conductor Type (Size, Material & Stranding)
D. Static Wire Type (Size & Material)
E. Foundation Type (Grillage, Direct Embed, Caisson, Guyed V, Drilled Pier etc.)
F. Insulator Type (Material)
G. Shielding and Grounding Design Criteria (Ground Rod, Counterpoise, "Butt Wrap" etc.)
H. Electrical Configuration
    a. Three Terminal Lines
    b. Radial Facilities
I. NESC Standards Compliance
    a. Structural Strength (NESC 250B, 250C & 250D Compliance)
    b. Clearances (TLES-047 Compliance)

J. Easement Adequacy (Width, Encroachments, Type; etc.)

Physical Condition

A. Open Conditions (existing and unaddressed physical conditions associated with a Transmission Line component)
B. Closed Conditions (previously addressed physical conditions associated with a Transmission Line component)
C. Emergency Fixes (History of emergency fixes)
D. Accessibility (Identified areas of difficult access)

3.2.2 Substation Considerations

A. Transformers
    a. Manufacturer
    b. Manufacturing Date
    c. In Service Date
    d. Load Tap Changer Type & Operation History (if applicable)
    e. Dissolved Gas Analysis
    f. Bushing Power Factor
    g. Through Fault Events (Duval Triangles)
    h. Moisture Content (Oil)
    i. Oil Interfacial Tension
    j. Dielectric Strength
    k. Maintenance History
    l. Malfunction Records

B. Circuit Breakers
    a. Manufacturer & Type
    b. Manufacturing Date
    c. In Service Date
    d. Interrupting Medium
    e. Fault Operations
    f. Switched Operations

g. Spare Part Availability
h. Maintenance History
i. Malfunction Records
j. Breaker Type Population

C. Secondary/Auxiliary Substation Equipment*

a. Station Batteries
b. Control House
c. Station Security
d. Station Structures
e. Capacitor Banks
f. Bus, Cable and Insulators
g. Disconnect Switches
h. Station Configuration
i. Station Service
j. Relay Types
k. RTU Types
l. Voltage Sensing Devices

**AEP substation inspections include assessments of secondary/ancillary equipment. If needed, upgrades to these components are typically included in the scope of projects addressing major equipment and may not necessarily drive stand-alone projects.*

3.3 Historical Performance (Factor 2)

AEP's Historical Performance assessment quantifies how an asset or a group of assets has historically impacted the Transmission system's reliability and Transmission connected customers, helps identify the primary contributing factors to a facility's performance, and baselines the outage probability used in our Future Risk analysis. The metrics used as part of this historical performance assessment include:

A. Forced Outage Rates
B. Manual Outage Rates
C. Outage Durations (Forced Outage Duration in Hours)
D. System Average Interruption Indices (T-SAIDI, T-SAIFI, T-SAIFI-S, T-MAIFI)

E. Customer Minutes of Interruption (CMI)

F. Customer Average Interruption Indices (IEEE SAIDI, CAIDI & SAIFI)

G. Number of Customers Interrupted (CI)

AEP utilizes this standard set of metrics as a means to quantify the historical performance of an asset. These historical performance metrics allow AEP to further investigate assets that have historically impacted customers the most.

Due to the vast size of the AEP operating territory covering 11 states, AEP segments its needs into seven distinct operating company regions and six voltage classes. This segmentation ensures that variations in geography with respect to vegetation, weather patterns, and terrain can be accounted for within the process of identifying needs for each operating company area. In addition to customers of AEP operating companies, consideration for retail customers that are served at non-AEP wholesale customer service points is also included. In order to account for customers served behind wholesale meter points, AEP gathers information from the parent wholesale provider or in its absence, applies a surrogate customers per MW ratio to estimate the number of customers served by a wholesale power provider's delivery point. This customer count is used to calculate the individual metrics above.

AEP's standard approach is to annually review the historical performance of its assets based on a rolling three-year average, but in some cases AEP may extend the review period beyond three years. AEP classifies all transmission asset outage causes into the following five categories to conduct this review: Transmission Line Component Failure, Substation Component Failure, Vegetation (AEP), Vegetation (Non-AEP), and External Factors. Each transmission asset and its associated performance is quantified and compared against corresponding system totals to determine its percentage contribution to aggregated system performance. An evaluation of outage rates is also performed for Transmission line assets. The observed performance of the assets in any of these categories can point to a need that may need to be addressed.

3.4 Future Risk (Factor 3)

AEP reviews the associated risk exposure (future risk) inherent with each identified asset to determine an asset's level of risk. This risk exposure is quantified assuming the probability of an outage scenario

and is based on the reported condition of the asset and the severity of that condition and what the impact could be to customers or to the operation of AEP's Transmission system. Some of the key items to assess these impacts included in the risk criteria are:

A. Number of Customers Served
B. Load Served
C. Operational Risks
    a. Post Contingency Load Loss Relief Warnings (PCLLRW's)
    b. History of Load Shed Events
    c. Stations in Black Start Paths

In addition to the future risk calculation performed through this process, AEP is systematically reviewing its system to identify and remediate equipment and practices that have resulted in operational, restoration, environmental, or safety issues in the past that cannot be directly quantified, but that remain as acknowledged risks in the AEP Transmission system. These include:

A. Wood pole construction
B. Pilot wire protection schemes
C. Oil circuit breakers
D. Air Blast circuit breakers
E. Pipe type oil filled cables
F. Electromechanical relays
G. Legacy system configurations
    a. Missing or inadequate line switches (e.g., hard-taps)
    b. Missing or inadequate transformer/bus protection
    c. Three-terminal lines
    d. Overlapping zones of protection
H. Non-Standard Voltage Classes
I. Poor Lightning & Grounding Performance
J. Radial Facilities
K. Public vulnerability

These items as described above are reviewed on a case by case basis and considered when holistic system solutions are being developed.

4.0 Step 2: Solution Development

The development of solutions for the identified needs considers a holistic view of all of the needs in which several solution options are developed and scoped. AEP applies the appropriate industry standards, engineering judgment, and Good Utility Practices to develop these solution options. AEP solicits customer and external stakeholder input on potential solutions through the Annual Stakeholder Summits hosted by AEP and also through the PJM Project Submission process. This ensures that input from external stakeholders on identified needs can be received and considered as part of the solution development process.

Solution options consider many factors including, but not limited to, environmental conditions, community impacts, land availability, permitting requirements, customer needs, system needs, and asset conditions in ultimately identifying the best solution to address the identified need. Once the selected solution for a need or group of needs is defined, it is reviewed using the current RTO provided power-flow, short circuit, and stability system models (as needed) to ensure that the proposed solution does not adversely impact or create baseline planning criteria violations on the transmission grid. Finally, AEP reviews its existing portfolio of baseline planning criteria driven reliability projects and evaluates opportunities to combine or complement existing baseline planning criteria driven reliability projects with the transmission owner needs driven solutions developed through this process. This step ultimately results in the implementation of the more efficient, cost-effective, and holistic long-term solutions. Stand-alone projects are created to implement the proposed solution where transmission owner needs driven solutions cannot be integrated into existing projects.

5.0 Step 3: Solution Scheduling

Once solutions are developed to address the identified needs, the scheduling of the solutions will take place. As mentioned in the previous section, if opportunities exist to combine or complement existing baseline planning criteria driven reliability projects with the needs driven solutions developed

through this process, the scheduling will be aligned to the extent possible. In all other situations, AEP will schedule the implementation of the identified solutions in consideration of various factors including severity of the asset condition, overall system impacts, outage availability, siting requirements, availability of labor and material, constructability, and available capital funding. AEP uses its discretion and engineering judgment to determine suitable timelines for project execution.

6.0 Conclusion

This document outlines AEP's criteria and guidelines for transmission owner identified needs that address equipment material conditions, performance, and risk. It outlines the sources and methods considered by AEP to identify assets with needs on a continuous basis and it outlines how solutions are developed and scheduled. AEP will review and modify these criteria and guidelines as appropriate based upon our continuing experience with the methodology, acquisition of data sources, deployment of improved performance statistics and the receipt of stakeholder input in order to provide a safe, adequate, reliable, flexible, efficient, cost-effective and resilient transmission system that meets the evolving needs of all of the customers it serves.

7.0 References

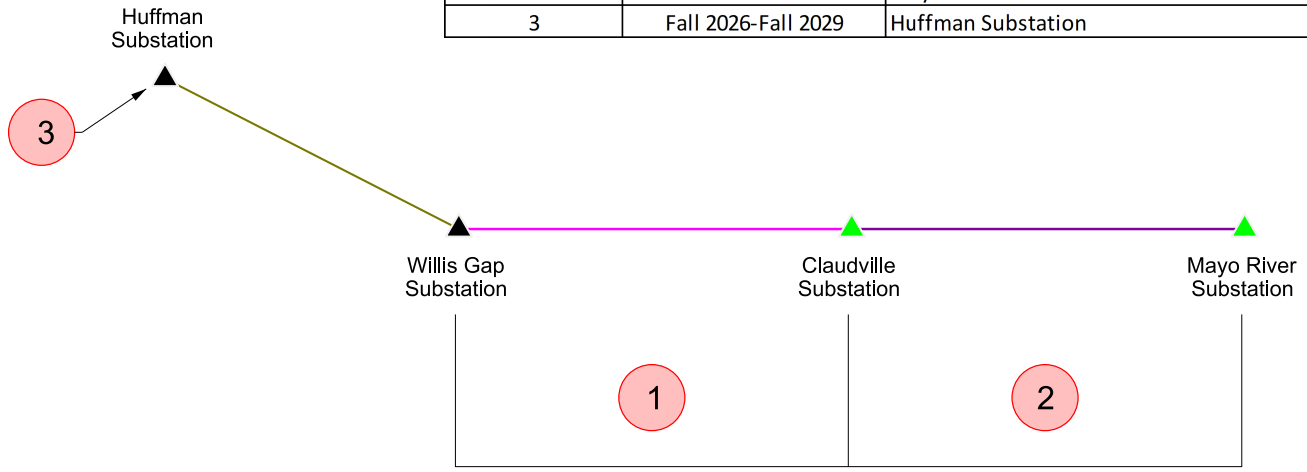
[1] FERC Pro Forma Open Access Transmission Tariff, Section 1.14, Definition of "Good Utility Practice".
Link: https://www.ferc.gov/legal/maj-ord-reg/land-docs/rm95-8-0aa.txt

[2] AEP Transmission Planning Documents and Transmission Guidelines.
Link: http://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/

Exhibit 5: Construction Sequence Drawings

STUART AREA 138-kV TRANSMISSION IMPROVEMENTS PROJECT
CONSTRUCTION SEQUENCE: COMPONENT 1

Sequence #	Planned Construction Time Frame	Circuit Section
1	Fall 2025-Fall 2026	Claudville Substation to Willis Gap Substation
2	Fall 2025-Fall 2026	Mayo River Substation to Claudville Substation
3	Fall 2026-Fall 2029	Huffman Substation



▲ Existing substation to be upgraded

▲ New Substation

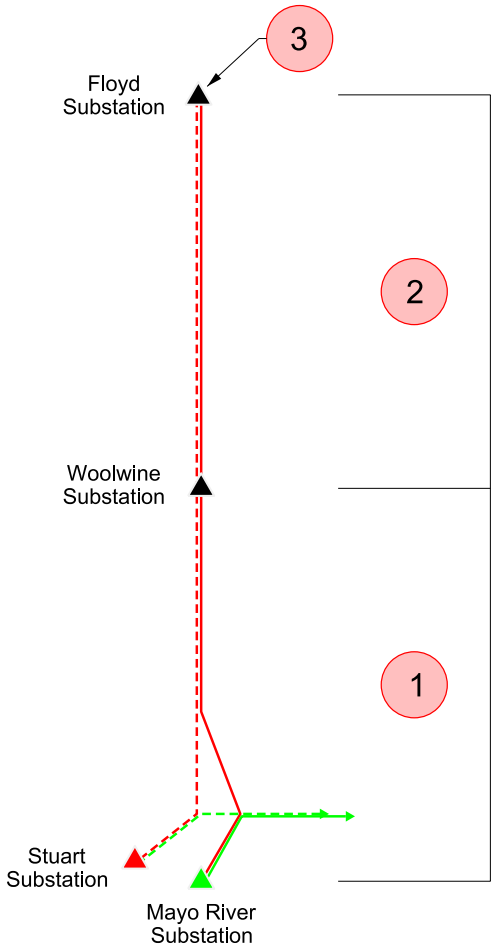
— Proposed Claudville - Mayo River 138-kV Circuit

— Proposed Claudville - Huffman (Claudville - Willis Gap Section) 138-kV Circuit

— Existing Huffman - Willis Gap 138-kV Circuit, Proposed Claudville - Huffman (Huffman - Willis Gap Section) 138-kV Circuit

Note 1: For context, reference Exhibit 3, Project Overview Map.
Note 2: The planned construction time frames are estimated based on current information and are subject to change.

STUART AREA 138-kV TRANSMISSION IMPROVEMENTS PROJECT
CONSTRUCTION SEQUENCE: COMPONENT 2



Sequence #	Planned Construction Time Frame	Circuit Section
1	Fall 2026-Fall 2027	Mayo River Substation to Woolwine Substation
2	Fall 2027-Fall 2028	Woolwine Substation to Floyd Substation
3	Fall 2027-Summer 2029	Floyd Substation

▲ Existing substation to be upgraded
▲ New Substation (Component 1)
▲ Existing substation to be retired

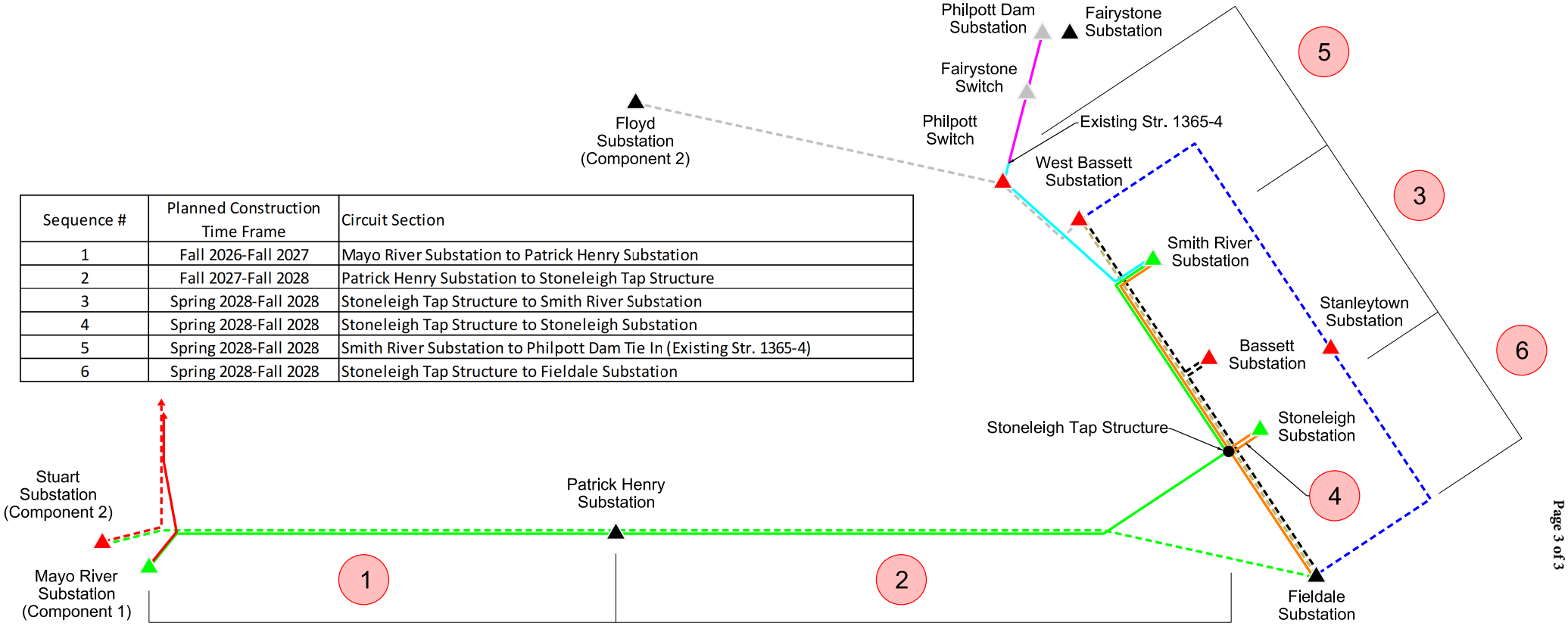
-- Existing Floyd - Stuart 69-kV Circuit to be retired
— Proposed Floyd - Mayo River 138-kV Circuit

-- Existing Fieldale - Stuart 69-kV Circuit to be retried (Component 3)
— Proposed Mayo River - Smith River 138-kV Circuit (Component 3)

Note 1: For context, reference Exhibit 3, Project Overview Map.
Note 2: The proposed retirements will occur after the Proposed Project is placed in service and are not a part of the SCC approval.
Note 3: The planned construction time frames are estimated based on current information and are subject to change.

STUART AREA 138-kV TRANSMISSION IMPROVEMENTS PROJECT
CONSTRUCTION SEQUENCE: COMPONENT 3

Sequence #	Planned Construction Time Frame	Circuit Section
1	Fall 2026-Fall 2027	Mayo River Substation to Patrick Henry Substation
2	Fall 2027-Fall 2028	Patrick Henry Substation to Stoneleigh Tap Structure
3	Spring 2028-Fall 2028	Stoneleigh Tap Structure to Smith River Substation
4	Spring 2028-Fall 2028	Stoneleigh Tap Structure to Stoneleigh Substation
5	Spring 2028-Fall 2028	Smith River Substation to Philpott Dam Tie In (Existing Str. 1365-4)
6	Spring 2028-Fall 2028	Stoneleigh Tap Structure to Fieldale Substation



- Tap Structure
- Existing substation
- Existing substation to be upgraded
- New Substation
- Existing substation to be retired
- Proposed Floyd - Mayo River 138-kV Circuit (Component 2)
- Existing Floyd - Stuart 69-kV Circuit to be retired (Component 2)
- Proposed Mayo River - Smith River 138-kV Circuit
- Existing Fieldale - Stuart 69-kV Circuit to be retired
- Proposed Fieldale - Smith River 138-kV Circuit
- Proposed Philpott Dam - Smith River 138-kV Circuit
- Existing Claytor - West Bassett 138-kV Circuit, Future Philpott Dam - Smith River 138-kV Circuit (rebuilt as part of separate rebuild project)
- Existing Fieldale - West Bassett No. 2 69-kV Circuit to be retired
- Existing Fieldale - West Bassett 138-kV Circuit to be retired
- Existing Claytor - West Bassett (Floyd to West Bassett Section) 138-kV Circuit to be retired
- Existing Fieldale - West Bassett No. 1 69-kV Circuit to be retired

Note 1: For context, reference Exhibit 3, Project Overview Map.
Note 2: The proposed retirements will occur after the Proposed Project is placed in service and are not a part of the SCC approval.
Note 3: The planned construction time frames are estimated based on current information and are subject to change.

Exhibit 6: Transmission Line Circuit Configuration Drawings

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 6-C FOR TRANSMISSION LINE CIRCUIT CONFIGURATION DRAWINGS

Exhibit 7: Component 1 GIS Constraints Map

Note 1: A typical 100 foot-wide ROW will be sited within an approximate 600-foot filing corridor. Based on its preliminary engineering analysis to date, the Company believes that the proposed ROW centerlines depicted on these maps are the most suitable alignments. However, the Company needs the flexibility to shift the centerlines no more than 250 feet in either direction from the proposed centerline as necessary after completion of ground surveys, geotechnical and environmental studies, additional interviews with landowners, and final engineering. Final line routes and structure locations will be determined during final engineering.

Note 2: The parcel boundaries depicted on these maps were obtained from Patrick County (2022) and are not based on accurate ground survey and should not be construed or used as exact descriptions of legal boundaries.

Willis Gap Substation

Huffman-Willis Gap 138kV Line

Stuart Substation (to be Retired)

Proposed Mayo River Substation

Proposed Claudville Substation

Floyd - Stuart 69kV Line

Pinnacles - Hydro 69 kV Line (City of Danville)

East Tennessee Pipeline

Map 1
Map 2
Map 3
Map 4
Map 5
Map 6
Map 7
Map 8
Map 9
Map 10
Map 11
Map 12
Map 13
Map 14
Map 15
Map 16
Map 17
Map 18
Map 19
Map 20

CARROLL COUNTY, VA
SURRY COUNTY, NC
PATRICK COUNTY, VA
STOKES COUNTY, NC
VIRGINIA
NORTH CAROLINA

TOWN OF STUART
TOWN OF MOUNT AIRY

Groundhog Mountain Airport

BLUE RIDGE PKWY

BARNARD FARM

Proposed APCo Substation
Existing APCo Substation to be Retired
Existing APCo Substation
Component 1 Proposed Route
Component 2 Proposed Route
Component 3 Proposed Route

Existing Transmission Line to be Retired
Existing APCo Transmission Line (115 kV - 230 kV)
Existing Non-APCo Transmission Line
Airport
Highway

Natural Gas Pipeline
Stream (NHD)
River (NHD)
Waterbody (NHD)
Local Conservation Land
Blue Ridge Parkway National Parkway

Historic District (VDHR)
Architectural Resource (VDHR)
Town Boundary
County Boundary
State Boundary
Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 1.5 3
Miles

INDEX

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The filing corridor has been expanded in this area to allow further coordination with landowner(s) per their request(s).

Willis Gap Substation

Dominion Rd

Orchard View Dr

Jean Ave

Orchard Vw

CARROLL COUNTY

PATRICK COUNTY

Blossom View Rd

Johnson Creek

Ahart Ridge Rd

Old School House Rd

Apple View Dr

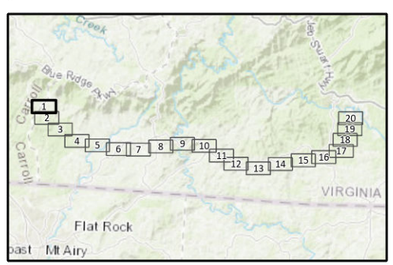
Huffman - Willis Gap 138 kV Line

See Note 3

Page 2

State Rte 671

Marshall Ridge Rd



- Existing APCo Substation
- Component 1 Proposed Route (Single-Circuit)
- Huffman - Willis Gap 138 kV Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- County Boundary
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Local Conservation Land
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 1 of 20

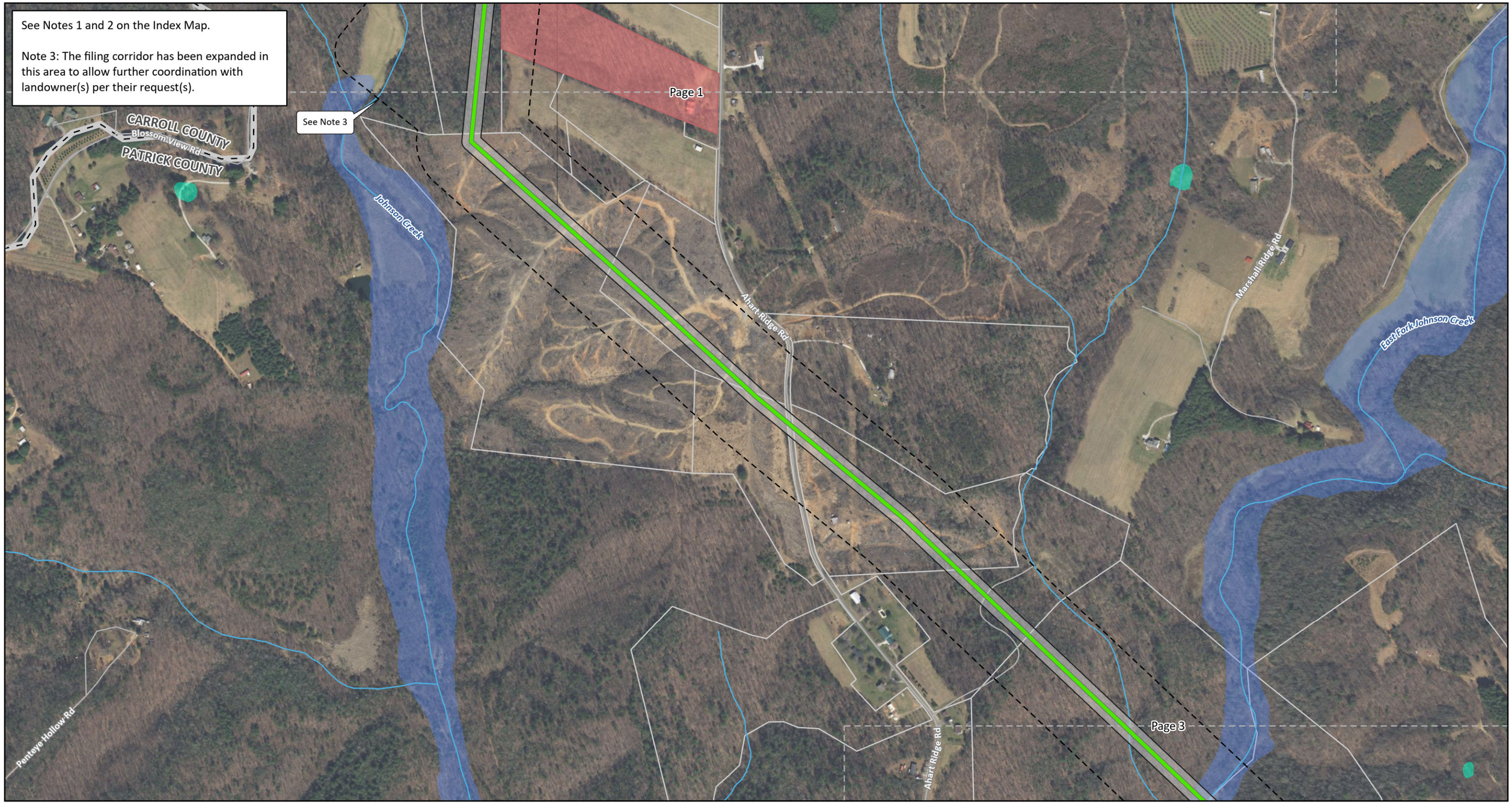
Exhibit 7: Component 1 GIS Constraints Map

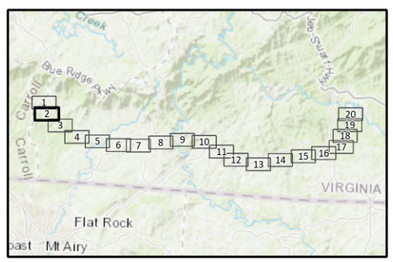
APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The filing corridor has been expanded in this area to allow further coordination with landowner(s) per their request(s).





- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- County Boundary
- Wetland (NWI)
- Floodplain
- Local Conservation Land
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

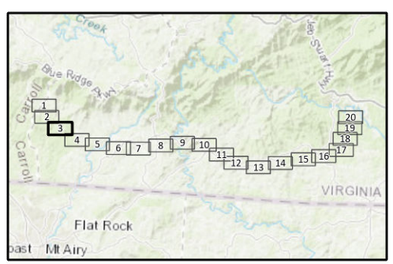
Map 2 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project: Component 1: Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Place of Worship
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 3 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

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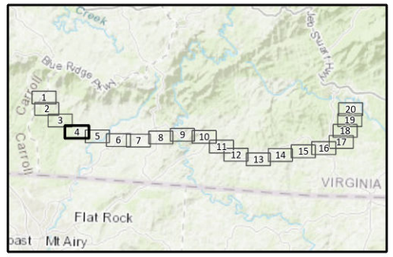
Page 5

Farmers Rd
Horseback Ln
Friends Mission Rd
Owens Branch
The Hollow Rd



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 4 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

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Page 6

Hunters Chapel Rd

Doe Run Creek

Doe Run Rd

Hunters Chapel Rd

Puckett Ln

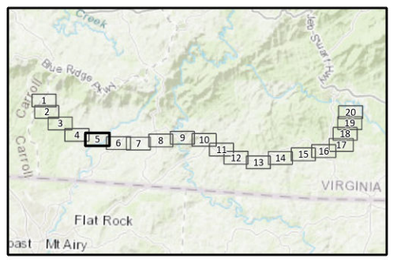
Birds Branch

Friends Mission Rd

Ararat River

Smith Ranch Rd

Lynn Dr



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Wetland (NWI)
- Floodplain
- Federal Conservation Easement
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 5 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Ararat River
Smith Ranch Rd
Page 5
Ararat Hwy
Ararat Hwy
Page 7
Cody Ln
Lynn Dr
Ararat Hwy
104
Homeplace Rd
Blue Ridge Highlands Loop
Ararat Hwy
King's Ct
Clarks Creek

- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Highway
- Road
- Recreation Trail
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 6 of 20

Exhibit 7: Component 1 GIS Constraints Map

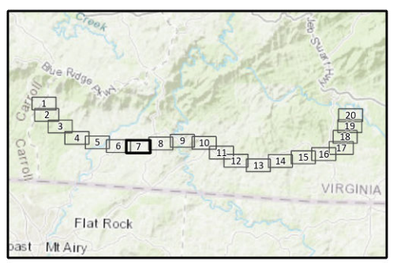
APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The filing corridor has been expanded in this area to allow further coordination with landowner(s) per their request(s).

Ararat Hwy
Blue Ridge Highlands Loop
Ararat Hwy
104
State Rte 773
Ararat Hwy
See Note 3
Cody Ln
Page 8
Page 6
Epperson Ln
State Rte 809
Clarks Creek



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Highway
- Road
- Recreation Trail
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 7 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Blue Ridge Highlands
Clark's Creek
Unity Church Rd
Fence Post Ln
Fall Creek
Page 7
Page 9
State Rte 867
Fallen Tree Ln
Unity Church Rd
Hainted Rock Ln
Big Branch

- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Highway
- Road
- Recreation Trail
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 8 of 20

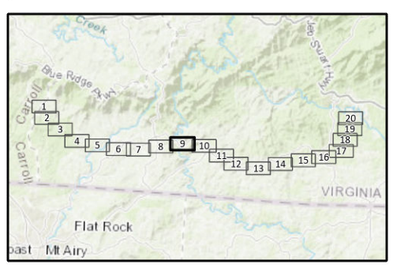
Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Brim Rd
Ararat Hwy
State Rte 813
Ararat Hwy
104
Page 8
Fall Creek
Ararat Hwy
Ararat Hwy
Ararat Hwy
MEADOWFIELD
SIMMONS MOUNTAIN
Page 10
State Rte 781



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Populated Place
- Highway
- Road
- Stream (NHD)
- River (NHD)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 9 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Ararat Hwy

Pinnacles - Hydro 69 kV Line (City of Danville)

Ararat Hwy

Page 9

104

Proposed Claudville Substation

Hookers Creek

Little Dan River Rd

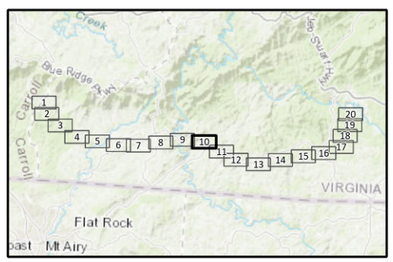
Hookers Creek Rd

Ararat Hwy

Page 11

Little Dan River Rd

103



- Proposed APCo Substation
- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Highway
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 10 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Highway
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 11 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Page 11

Page 13

Browns Dam River

Mitchell Mill Rd

Old Orchard Loop

Old Orchard Loop

Pine Crest Ln

Hookers Creek

Pinnacles - Hydro 69 kV Line (City of Danville)

Back Creek

Hatchers Chapel Rd

Hatchers Chapel Rd

103

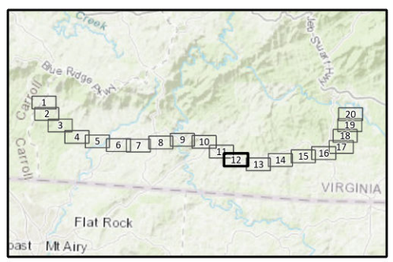
103

Dry Pond Hwy

Dry Pond Hwy

Little Dan River

Airview Trl



- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Highway
- Road
- Stream (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

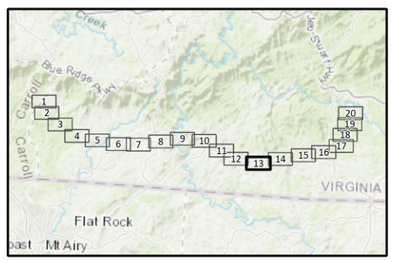
Map 12 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.



- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Highway
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

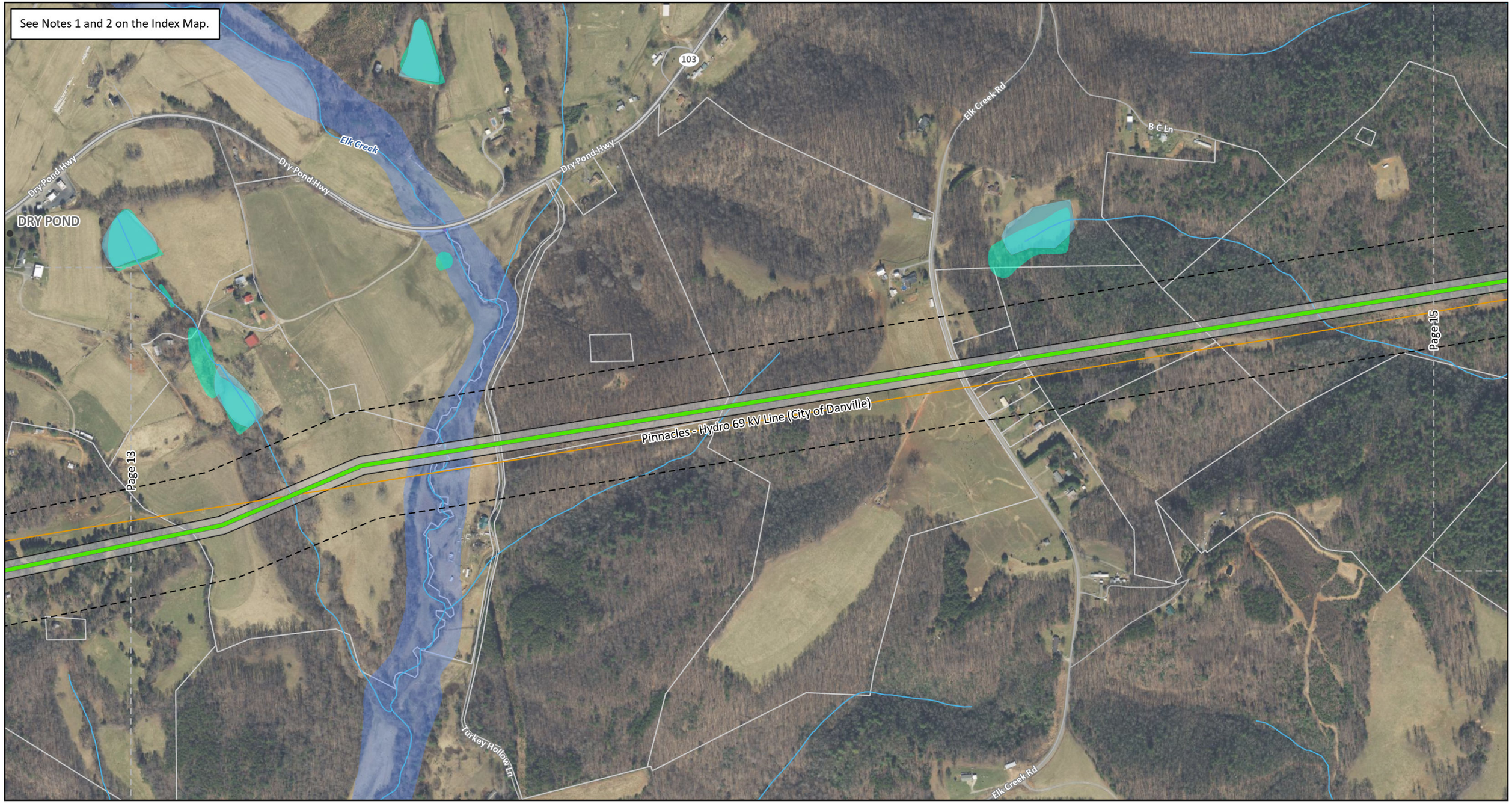
Map 13 of 20

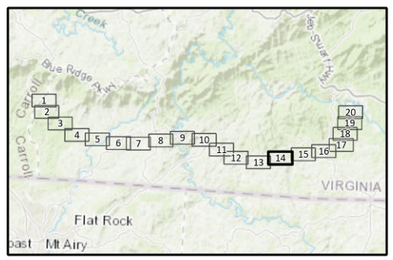
Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.





- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Populated Place
- Highway
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 14 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Long Branch

Pinnacles - Hydro 69 kV Line (City of Danville)

Horseshoe Hollow Rd

Horseshoe Hollow Rd

Peters Creek

Little Peters Creek

Creasey Chapel Rd

Creasey Chapel Rd

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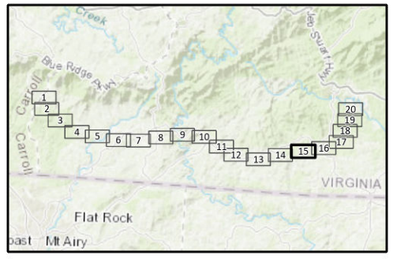


- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 15 of 20

Exhibit 7: Component 1 GIS Constraints Map

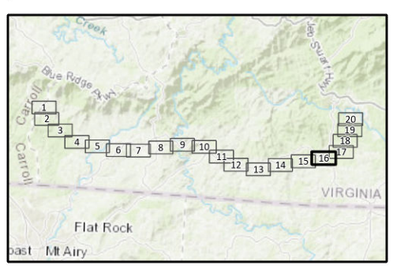
APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The filing corridor has been expanded in this area to allow further coordination with landowner(s) per their request(s).

Carter Mountain Rd
Lottie Ln
Rocky Branch
Little Peters Cr Rd
Little Peters Creek Rd
Dry Pond Hwy
Horseshoe Hollow Rd
Page 15
Dry Pond HWY
Pinnacles - Hydro 69 kV Line (City of Danville)
8
Page 17
Russell Creek Rd
Little Peters Creek
See Note 3
FIVE FORKS
Five Forks Rd



- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Populated Place
- Highway
- Scenic Route 8
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 16 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

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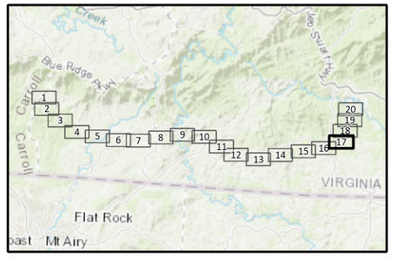
Shingle Shop Rd
Shingle Shop Rd
Shingle Shop Rd
Noels Branch
Rocky Branch
Witt Creek
Pinnacles - Hydro 69 kV Line (City of Danville)
Russell Creek Rd
Russell Creek



- Component 1 Proposed Route (Single-Circuit)
- Existing Non-APCo Transmission Line
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 17 of 20

Exhibit 7: Component 1 GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

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Shingle Shop Rd

Wayside Rd

Hughes Creek

Woodlin Ln

Wanda Dr

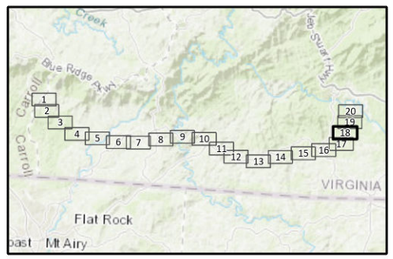
Ayers Dr

Wayside Park Rd

Noe's Branch

Conway Ln

Witt Creek



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 18 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

Hughes Creek

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Wayside Rd

Big A School Rd

Popular Dr

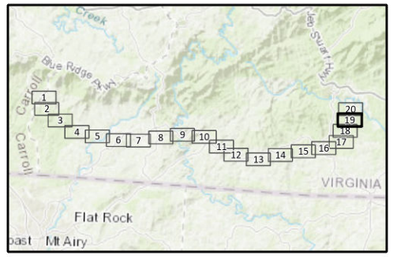
Gilbert Valley Rd

Page 18

Noels Branch

Wayside Rd

Big A School Rd



- Component 1 Proposed Route (Single-Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000

Feet

Map 19 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements

See Notes 1 and 2 on the Index Map.

TOWN OF STUART

Commerce Dr

Proposed
Mayo River
Substation

South Mayo River

Big A School Rd

Wayside Rd

Hughes Creek

Commerce Dr

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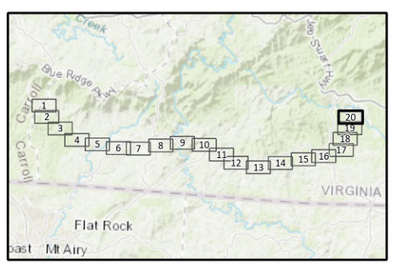

- Proposed APCo Substation
- Component 1 Proposed Route (Single-Circuit)
- Component 2 Proposed Route (Double Circuit)
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Cell Tower (FCC)
- Road
- South Mayo River (Scenic River)
- Stream (NHD)
- River (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Town Boundary
- Parcel Boundary (See Note 2)
- Substation Site Parcel
- Map Tile

Carroll & Patrick Counties, Virginia

Date: 5/22/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

Map 20 of 20

Exhibit 7:
Component 1
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project:
Component 1:
Mayo River (Stuart) to Willis Gap Transmission Improvements