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ENVIRONMENTAL
ROUTING STUDY

Part 6



DOMINION ENERGY VIRGINIA

Evergreen Mills 230 kV Line Loops And Evergreen Mills Switching Station

Environmental Routing Study

AECOM

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Evergreen Mills Switching Station
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ABBREVIATIONS & ACRONYMS

AMSL	above mean sea level
CCB	Center for Conservation Biology
CLI	Commercial/Light Industrial
CR1	Countryside Residential
e.g.	for example
EJ	Environmental Justice
EJSCREEN	Environmental Justice Screening Tool
FEMA	Federal Emergency Management Agency
FIR	Facility Interconnection Requirements
GB	General Business
GIS	Geographic Information System
HOA	Homeowners Association
IAD	International Airport Dulles
i.e.	that is
IPAC	Information, Planning, and Consultation
kV	kilovolt(s)
MW	megawatt(s)
NERC	North American Electric Reliability Corporation
NHDE	Natural Heritage Data Explorer
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NVCT	Northern Virginia Conservation Trust
NWI	National Wetland Inventory
PDCCRC	Planned Development – Commercial Center (Regional Center)
PDIP	Planned Development – Industrial Park
PDGI	Planned Development – General Industry
PDH4	Planned Development Housing-4
PDOP	Planned Development – Office Park
PDTC	Planned Development – Town Center
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub-shrub

PUB	palustrine unconsolidated bottom
R1	Single Family Residential-1
R2	Single Family Residential-2
R8	Single Family Residential-8
R16	Townhouse/Multifamily Residential-16
R24	Multifamily Residential-24
RC	Rural Commercial
ROW	Right(s)-of-way
SCC	State Corporation Commission
SPA	Suburban Policy Area
U.S.	United States
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VaFWIS	Virginia Fish and Wildlife Information Service
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation
VOF	Virginia Outdoors Foundation

EXECUTIVE SUMMARY

In order to provide service requested by a retail electric service customer (the "Customer"), to maintain reliable service for the overall growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company") proposes, in Loudoun County, Virginia, to construct:

- (i) a new 230 kV switching station on land owned by the Customer ("Evergreen Mills Switching Station");
- (ii) a new approximately 0.6-mile 230 kV double circuit loop of the Company's existing 230 kV Brambleton-Yardley Ridge Line #2172 on new right-of-way, supported by six new structures, from a tap point along those lines (the "Evergreen Mills Junction") to Evergreen Mills Switching Station (the "#2172 Loop"); and
- (iii) a new approximately 0.6-mile 230 kV double circuit loop of the Company's existing 230 kV Brambleton-Poland Road Line #2183 on new right-of-way, supported by nine new structures, from Evergreen Mills Junction to Evergreen Mills Switching Station (the "#2183 Loop").

The Evergreen Mills Switching Station, the #2172 Loop, and the #2183 Loop are collectively referred to as the "Project."

This routing study supports Dominion Energy Virginia's request for regulatory approval from the Virginia State Corporation Commission ("SCC") to build and operate the Project. Specifically, this study was prepared to develop alternative routes for the proposed Project; identify social, environmental, and engineering constraints along each alternative route; and analyze potential impacts resulting from the construction, operation, and maintenance of the alternative routes. Dominion Energy Virginia analyzed a total of three alternative routes in connection with the Project. Alternative routes potentially originating from existing Dominion Energy Virginia facilities approximately 1.4 miles west of the proposed Evergreen Mills Switching Station, although electrically viable, were dismissed from further consideration because they would be significantly longer and result in correspondingly greater costs and impacts on study area resources relative to the alternative routes retained for analysis in this study.

Based on the analysis presented in this study, Dominion Energy Virginia has selected Alternative Route 1 as its preferred alignment for the Project because it would have significantly fewer impacts on study area resources relative to the other alternatives that were evaluated. It is also the shortest and least costly alternative.

1 INTRODUCTION

This report summarizes the development of alternative routes and the environmental review for those alternatives conducted by AECOM on behalf of the Company for the Project. The Project would build two new overhead 230 kV double-circuit loops from existing Dominion Energy Virginia-owned 230 kV transmission lines in the study area to the proposed Evergreen Mills Switching Station. Existing and proposed residential, commercial, and transportation development in the study area, environmental constraints, and Dominion Energy Virginia operational requirements limited the number of practicable alternatives that could be considered. The routing study identified three feasible alternative routes that were carried forward for environmental review. The acquisition of new right-of-way ("ROW") would be required for construction of any of the alternative routes, as no existing ROW exists between the possible tap locations and Evergreen Mills Switching Station.

2 PROJECT DESCRIPTION

The proposed Evergreen Mills Switching Station would be built adjacent to the Customer's data center on Customer-owned land along the south side of Evergreen Mills Road near its intersection with Loudoun County Parkway. The land where the proposed station would be built, and where the Customer's data center is currently under construction, is part of a larger area of planned development known as Arcola Center that has received zoning approval from Loudoun County for a mixture of residential, commercial, retail, and office development. Arcola Center spans approximately 360 acres and is generally bounded by Evergreen Mills Road to the north, Loudoun County Parkway to the east, John Mosby Highway (U.S. Route 50) to the south, and a mixture of residential, institutional/public, and commercial uses to the west. The location of the proposed Evergreen Mills Switching Station is shown on **Figure 1**, which depicts the study area for this routing study. Existing, recognizable natural and human-built features within an approximately 1.5-mile radius of the proposed Evergreen Mills Switching Station were used to delineate the boundaries of study area. The study area is generally bounded to the north by the 230 kV Brambleton-Yardley Ridge Line #2172 and 230 kV Brambleton-Poland Road Line #2183; to the east by Loudoun County Parkway, the 230 kV Brambleton-Poland Road Line #2183, and 230 kV Shellhorn Road-Poland Road Line #2137; to the south by John Mosby Highway (U.S. Route 50); and by the 500/230 kV Loudoun-Brambleton Line #2045 and 500/230 kV Loudoun-Brambleton Line #2094 to the west.

The proposed #2172 Loop and #2183 Loop (together, the "Evergreen Mills Loops") that would supply energy to the proposed Evergreen Mills Switching Station would originate from existing Dominion Energy Virginia-owned transmission lines that are located within an approximately 1.5-mile radius of the proposed station. New transmission infrastructure would consist of two sets of overhead 230 kV double-circuit lines that would be supported on galvanized steel structures. The structures would be approximately 35 to 130 feet in height, excluding foundation reveal, and would be similar in appearance and construction to structures on the recently built 230 kV Brambleton-Poland Road Line #2183 and 230 kV Shellhorn Road-Poland Road #2137 along Loudoun County Parkway. A new 160-foot ROW would be required for the proposed Evergreen Mills Loops.

Existing Dominion Energy Virginia transmission lines in the study area include the following:

- 230 kV Brambleton-Yardley Ridge Line #2172 and 230 kV Brambleton-Poland Road Line #2183 approximately 0.9 mile to the northwest of the existing Yardley Ridge Switching Station;

- 230 kV Brambleton-Poland Road Line #2183 and 230 kV Shellhorn Road-Poland Road Line #2137 adjacent to the existing Yardley Ridge Switching Station and extending south along Loudoun County Parkway; and
- 230 kV Yardley Ridge-Shellhorn Road Line #2095 and 230 kV Brambleton-Yardley Ridge Line #2172 adjacent to and extending into the Yardley Ridge Switching Station.

The objective of the routing study was to identify viable alternative routes based on reasonable physical placement of the proposed transmission line and associated structures that avoided or minimized impacts on sensitive land uses and ecological, social, and cultural features in the study area. In evaluating the routing criteria, it is generally considered desirable to maximize favorable certain criteria along a given route, such as paralleling existing railroad or utility corridors. Such criteria are considered opportunities. Less desirable criteria for routing, such as existing residential and commercial structures, wetlands, and historic properties, are generally referred to as constraints. The process of developing route alternatives seeks to avoid or minimize the proximity of constraints to the Project.

When siting transmission lines, three main routing opportunities are generally focused on where viable. The first is to replace or upgrade existing lines in the existing ROW, which typically minimizes natural and social impacts and thereby eliminates or reduces additional ROW clearing. For the Evergreen Mills Loops, upgrading an existing local transmission line in an existing ROW to meet the Project need was not an option since existing transmission lines do not extend to the proposed site of the Evergreen Mills Switching Station.

The second potential opportunity is through corridor sharing. Corridor sharing pairs the transmission line with an existing linear feature, which can include roads, highways, railroad, gas pipelines, or other existing transmission lines. These corridors are considered opportunity areas because locating a new transmission line parallel to them may require less ROW, concentrates linear land uses and reduces fragmentation of the landscape, and creates an incremental impact rather than a new impact. Opportunities for the Evergreen Mills Loops to corridor share were not feasible in the study area because there are no existing alignments for roads, transmission lines, or other linear infrastructure between the locations of the proposed tie-in point and Evergreen Mills Switching Station.

The third opportunity is to use undeveloped areas such as forests, fields, and agricultural areas to identify routes that cross open lands. Identifying these routes involves assessment of parcel boundaries and land use practices to define alternative routes that minimize potential impacts to private properties, agricultural uses, and commercial activities.

Identifying alternative routes for the proposed Evergreen Mills Loops across undeveloped areas was determined to be the only practicable option for this Project. Focusing on this potential opportunity area, information obtained during the desktop review process was used to develop possible alternative routes across the study area.

Note that the site of the proposed Evergreen Mills Switching Station is limited by available space on the Customer's land and configuration requirements for its data center facility currently under construction. Therefore, alternative sites for the proposed station were not identified as part of this routing study.

3 EXISTING CONDITIONS

This section describes existing physical, social, and environmental resources and conditions in the study area. The information presented in this section is drawn from field observations and publicly-accessible resources such as federal, state, and local agency websites and documents, geographic information system ("GIS") mapping and data, and published articles from reputable news organizations.

3.1 Land Resources

Land resources evaluated in this section include land use, zoning, comprehensive plans, existing and planned developments, community facilities and recreation areas, conservation easements, transportation, utilities, and hazardous materials.

3.1.1 Land Use, Zoning, and Plans

3.1.1.1 Land Use

The study area encompasses 2.6 square miles (1,650 acres) in eastern Loudoun County immediately west of Dulles International Airport and north of U.S. Highway 50 (John Mosby Highway). Land uses in the study area include a mixture of large-lot as well as suburban-style single-family residential, health care, religious/institutional, commercial and light industrial, retail, and agricultural (e.g., sod farms). Generally within the study area, concentrations of these various land uses are separated by large swaths of wooded or otherwise minimally developed land. Vehicular access to and circulation within the study area is provided by major transportation corridors such as U.S. Route 50, Loudoun County Parkway, Evergreen Mills Road, and Stone Springs Boulevard (see **Section 3.1.4** for additional discussion).

Land use categories assigned by Loudoun County to properties in the study area as of July 2018 are illustrated on **Figure 2** (Loudoun County 2018a). Analysis of land use patterns in the study area identified a core of residential development in the central and western portions surrounded by a predominant area of vacant land that consists of forests, meadows, and agricultural uses. Light industrial land uses are centered in the northeast portion and multi-use areas consisting of office buildings, commercial businesses, and dense residential facilities are located in the southern portion.

3.1.1.2 Zoning

Loudoun County zoning districts within the study area are shown on **Figure 3** (Loudoun County 2018b). General characteristics of these districts are briefly discussed below.

- **Commercial/Light Industrial ("CLI")** – The CLI district covers parcels along the southern boundary of the study area north of U.S. Route 50. This district permits a mix of compatible light industrial uses, industrial-related business uses, and related retail uses.
- **Countryside Residential 1 ("CR1")** – This district includes numerous properties and extends almost to the northern boundary of the study area from a point just south of Hiddenwood Lane. The district was established to encourage the conversion of existing residential properties using well water and septic systems to a countryside hamlet pattern served by public water and sewer facilities to preserve open space and to achieve a traditional design envisioned in the Comprehensive Plan.

- **General Business ("GB")** – The GB district applies to on property in the central portion of the study area along Stone Springs Boulevard. This district provides for general destination business uses which serve the needs of residences and businesses in the vicinity.
- **International Airport Dulles ("IAD")** – This district covers Dulles International Airport, which is operated and maintained by the Metropolitan Washington Airports Authority.
- **Planned Development-Commercial Center (Regional Center) ("PDCCRC")** – Land in this district is located along the eastern and southeastern boundary of the study area. This district permits the development of large-scale commercial centers providing a wide range of retail, office, and service uses with one or more anchor stores.
- **Planned Development – General Industry ("PDGI")** – This district primarily covers land in the eastern and northeastern portions of the study area. Select properties in the south, west, and northwestern portions of the study area are also within this district. The PDGI district permits medium industrial uses with a public nuisance potential and necessary accessory uses and facilities that are built in a manner that is compatible with surrounding land uses.
- **Planned Development Housing-4 ("PDH4")** – Small portions of higher density residential properties along the northern boundary of the study area are within this district.
- **Planned Development – Industrial Park ("PDIP")** – This district covers land in the east-central portion and northeastern, northwestern, and southwestern corners of the study area. The PDIP district permits the development of light and medium industrial uses, office uses, and necessary supporting accessory uses, and facilities designed with a park-like atmosphere to complement surrounding land uses by means of appropriate siting of buildings and service areas, attractive architecture, and effective landscape buffering. This district includes Customer-owned land where its data center is currently under construction and where the proposed Evergreen Mills Switching Station would be built.
- **Planned Development – Office Park ("PDOP")** – This district covers land along the southern boundary of the study area immediately north of U.S. Route 50.
- **Planned Development – Town Center ("PDTC")** – The PDTC district underlies land in the central portion of the study area immediately northwest of the proposed Evergreen Mills Switching Station.
- **Single Family Residential-1 ("R1")** – Land in this district is located in the northwestern portion of the study area. The R1 district permits single family detached residences served by public water and sewer on lots of 40,000 square feet or more.
- **Single Family Residential-2 ("R2")** – This district applies to a small portion of land along the western boundary of the study area.
- **Single Family Residential-8 ("R8")** – The R8 district covers a small area of medium density residential development in the southeastern corner of the study area.
- **Townhouse/Multifamily Residential-16 ("R16")** – Select properties in the southern portion of the study area are in this district. The R16 district provides for manufactured housing, townhouse, and multiple family dwelling units at densities not to exceed 16 units per acre in areas served by public water and sewer service and designated primarily for infill development.
- **Multifamily Residential-24 ("R24")** – This district underlies a small pocket of maximum density residential land at the southeastern corner of the study area.

- **Rural Commercial ("RC")** – The RC district underlies a swath of land in the central portion of the study area. This district is intended to support the conversion of existing commercial properties zoned C-1 under the 1972 Zoning Ordinance but deemed appropriate to be retained as commercially zoned land for development to a more preferred development pattern.

The analysis of zoning indicates that much of the land in the study area, including the Customer-owned data center and the proposed Evergreen Mills Switching Station, is zoned to support commercial, light-industrial, and mixed-use development. Land within zoning districts supporting these types of development includes large open or undeveloped areas. Land zoned PDTC in the center of the study area is reflective of the Arcola Center development plan that includes proposed residential, commercial, retail, and office development at this location. Smaller areas zoned to support residential development are in the southern and western areas of the study area.

3.1.1.3 Plans

Loudoun County Comprehensive Plan

Loudoun County issued its Draft 2040 Comprehensive Plan in March 2019. As shown in this plan, the study area is located in the Suburban Policy Area ("SPA") (Loudoun County 2019). The SPA encompasses 46,000 acres in the easternmost portion of the county, extending from the Potomac River in the north to just south of U.S. Route 50 and from the Fairfax County line west to the Goose Creek and Beaverdam Reservoirs. Land uses in the SPA generally consist of a mix of commercial areas and neighborhoods; the commercial areas are focused areas for employment uses within a variety of commercial and workplace environments, including traditional office and industrial parks, mixed use employment centers, and commercial centers. As envisioned in the Draft 2040 Comprehensive Plan, the SPA offers a mix of residential, commercial, and employment uses and a full complement of public services and facilities.

The Draft 2040 Comprehensive Plan defines a number of "place types" to define the basic expectations for permitted land uses in specific areas as well as preferred development patterns, streetscapes, and design features. Place types in and near the study area includes Suburban Industrial/Mineral Extraction, Suburban Employment, Suburban Neighborhood, and Suburban Mixed Use. These place types are briefly summarized below:

- **Suburban Industrial/Mineral Extraction** – Land with this designation in the study area is generally located north of Evergreen Mills Road and west of Dulles Airport. These areas consist primarily of one- or two-story buildings used for warehousing, data centers, or general and heavy manufacturing and assembly. Other predominant uses can include fleet and equipment sales and service, research and development, outdoor storage, public utilities, quarries, and outdoor manufacturing.
- **Suburban Employment** – Land in the study area with this designation is generally located immediately east and west of Stone Springs Boulevard and south of Evergreen Mills Road. These areas provide opportunities for a broad array of employment uses within an urban style environment with the intent of providing gathering spaces and opportunities for synergies among businesses. Predominant uses in this category include office buildings, flex space, and light production.
- **Suburban Neighborhood** – Land with this designation in the study area is generally to the north of Racefield Lane and west of the Suburban Employment area along Stone Springs Boulevard. Suburban Neighborhood areas include Loudoun's premier master planned neighborhoods arranged on medium to large lots. Uses in these areas predominantly consist of single family

detached residential, single family attached residential, and civic, cultural, and community facilities.

- **Suburban Mixed Use** – Land in the study area with this designation is north of U.S. Route 50 and east of the Suburban Employment areas along Stone Springs Boulevard. Suburban Mixed Use areas provide compact, pedestrian-oriented environments with opportunities for a mix of residential, commercial, entertainment, cultural, and recreational amenities. Although this area provides for residential uses, commercial and entertainment uses are the primary draw to the mixed-use center.

The Arcola area immediately west of IAD is identified as a Light Manufacturing Economic Activity Zone in the economic development section of the Draft 2040 Comprehensive Plan. The plan also identifies IAD and adjacent areas to the west and south, including the study area, as the potential subject of a future small-area plan addressing growth and development issues particular to that portion of the county. However, no policies specific to that smaller area are presented in the Draft 2040 Comprehensive Plan.

3.1.2 Existing and Planned Developments and Subdivisions

The following provides a summary of the existing and planned development and subdivision projects in the study area.

3.1.2.1 Arcola Center

Arcola Center is a proposed mixed-use residential, commercial, and retail development that would be built over several years on approximately 365 acres generally bounded by Evergreen Mills Road to the north, Loudoun County Parkway to the east, U.S. Route 50 to the south, and properties adjacent to Stone Springs Boulevard to the west. Proposed elements of the Arcola Center development are described below.

The Offices: This area would provide 185,000 square feet of office space covering nearly 24 acres.

Business Park: Approximately 545,000 square feet of single-story office space would be available in this 43-acre area.

The Shops: This area would provide 660,000 square feet of retail space and a 90,000-square foot hotel on approximately 79 acres.

Main Street: Elements of this area would include 515,000 square feet of office space, 185,000 square feet of retail space, a 40,000-square foot fitness center, and an 80,000-square foot hotel across 31 acres.

The Residences at Main Street: This 55-acre area would have 870 medium- and high-density dwelling units. Much of this area has been constructed.

Corporate Park: This area would provide 475,000 square feet of office space and a 90,000-square foot hotel over 36 acres.

The Village: Approximately 300 medium-density dwelling units, a two-story elementary school, 450,000 square feet of office space, and 80,000 square feet of retail space would be provided in approximately 62 acres.

Central Park: This area would include the Arcola Slave Quarters Site (see Section 3.3.3), a public park, community open space, nature trails, and stream valley and tree preservation areas on approximately 35 acres.

In May 2018, the developers of Arcola Center submitted an application to rezone 279 acres encompassing the Offices, Business Park, Corporate Park, Main Street, and a portion of the Central Park as PDIP to support the development of additional data centers within the area. The Loudoun County Planning Commission approved this rezoning request in October 2018.

The Customer's data center facility is currently being built on a 91-acre tract within the area designated as PDIP on the Arcola Center Zoning Concept Plan Amendment, Zoning Map Amendment map dated June 2016 (included as Attachment III.A.1 in the SCC Transmission Appendix). The adjacent Evergreen Mills Switching Station to be built by Dominion Energy Virginia would also be built in this area. None of the other proposed areas within Arcola Center are being developed at this time.

Due to the location of the proposed Evergreen Mills Switching Station, alternative routes would have the potential to cross areas proposed for future development within Arcola Center (Figure 3).

3.1.2.2 Evergreen Commerce Center

The Evergreen Commerce Center is currently under development between Evergreen Mills Road, Loudoun County Parkway, and Arcola Road. An Amazon data center that will eventually consist of at least four rectangular buildings is under construction at the northern end of this development parcel. A multi-pump gas station/convenience store is under construction south of Yardley Ridge Drive, which bisects the parcel. A recently built commercial self-storage facility stands at the southeastern corner of the Yardley Ridge-Evergreen Mills Road intersection. It is anticipated that a mixture of service-oriented commercial and retail uses will be built on the remainder of currently undeveloped land south of Yardley Ridge Road near the intersection of Loudoun County Parkway and Evergreen Mills Road.

3.1.2.3 Winsbury Subdivision

The Winsbury Subdivision flanks Stone Springs Boulevard near its intersection with Evergreen Mills Road. The subdivision consists of approximately 60 single-family homes built on 0.25-acre lots. Homes in this subdivision were generally built in the 2008-2011 timeframe. A wooded, approximately 3-acre parcel east of Stone Springs Boulevard and south of homes on that side of the road is included within the subdivision. The subdivision is within the RC zoning district.

3.1.2.4 Stone Springs Hospital Center

Stone Springs Hospital Center is on the northeast corner of the U.S. Route 50 and Stone Springs Boulevard intersection. It is a full-service, 124-bed medical and surgical hospital. The hospital is in the PDOP zoning district.

3.1.2.5 Arcola Grove Subdivision

The Arcola Grove subdivision consists of 17 lots along the east side of Stone Springs Boulevard. Azalea Lane provides connectivity from Stone Springs Boulevard within the subdivision. At least seven parcels within the subdivision appear to be undeveloped or minimally developed, while the remainder appear to be developed with commercial or light-industrial businesses. The subdivision is zoned RC.

3.1.2.6 Glascock Field at Stone Ridge

This subdivision consists of seven individual parcels totaling approximately 45 acres along the northwest side of Stone Springs Boulevard near its intersection with U.S. Route 50. The northwestern extent of the

subdivision extends to Hiddenwood Lane. Development on parcels in the subdivision includes a Montessori school and an unattended fuel station. The subdivision is within the PDGI zoning district.

3.1.2.7 Glascock Field at Stone Ridge 1A

This residential townhome subdivision is north of U.S. Route 50 and northeast of the Stone Springs Hospital Center off of Dehavilland Drive. Approximately 40 to 50 percent of the subdivision appears to be developed as of the date of this report. The subdivision is zoned R16.

3.1.2.8 Inova Health System Foundation

This subdivision consists of two parcels totaling approximately 95 acres and extends from U.S. Route 50 to Racefield Lane. A working sod farm occupies both parcels. The existing #2045/#2094 Loudoun-Brambleton 500/230 kV transmission line crosses the western side of the subdivision. The subdivision is in the PDIP zoning district.

3.1.2.9 Arcola Commercial Center

This subdivision consists of an approximately 21-acre parcel along the west side of Stone Springs Boulevard immediately south of the Winsbury Subdivision. The parcel is in the GB zoning district and has been approved for development of up to 162,500 square feet of community-serving commercial uses such as educational institutions, dance and gymnastics studios, sports training and fitness centers, and veterinary services. Currently, the parcel is minimally developed with a vehicle parking/storage area and multiple semi-permanent barn or shed-type structures. The majority of the property is densely wooded. South Fork Broad Run traverses the western side of the property.

A linear 30-foot open space easement extends generally north to south on the property approximately parallel to South Fork Broad Run. This easement was dedicated to Loudoun County in accordance with Title 10.1, Chapter 17 of the Code of Virginia as part of the proffer process during rezoning of the property. The easement will be recorded prior to the approval of the first certificate of occupancy for the property.

3.1.2.10 Quail Ridge Farm

Quail Ridge Farm is a 104-acre property consisting of multiple parcels along the north side of Racefield Lane near its intersection with U.S. Route 50. The property has 71 acres of land available for development and was purchased in 2017 by a commercial real estate firm with a history of mixed-use and technology-oriented development projects. There are no immediate plans to develop the property. Chantilly Turf Farms, Inc. currently occupies the property. The property is zoned PDIP.

3.1.3 Community Facilities and Recreation Areas

3.1.3.1 Arcola Community Center

This facility occupies the former Arcola Elementary School on the east side of Stone Springs Boulevard immediately south of the Winsbury Subdivision. The facility is owned by Loudoun County and primarily serves Arcola area residents as a central drop-off location for recyclables. The facility ceased functioning as a full-service community center in 2006; however, maintained athletic fields are present on the property immediately east of the former school building.

Arcola Elementary School is listed in the National Register of Historic Places (“NRHP”); see additional discussion in **Section 3.3.3**.

3.1.3.2 Loudoun County-Owned Land

Loudoun County owns a 15-acre parcel along Evergreen Mills Road that is the site of the Arcola Slave Quarters, which is also listed in the NRHP (see additional discussion in **Section 3.3.3**). The property is currently not accessible to the general public but is proposed as a park/open space as part of the planned Arcola Center development.

3.1.4 Transportation

The study area is well-served by a robust vehicular transportation network. Roads in Loudoun County are maintained by the Virginia Department of Transportation (“VDOT”).

Major transportation corridors in and near the study area are discussed below.

3.1.4.1 U.S. Route 50 (John Mosby Highway)

U.S. Route 50 is a six-lane median-divided highway that serves as the primary east-west vehicular corridor in the vicinity of the study area. This road extends from Interstate 66 (“I-66”) in west-central Fairfax County to the West Virginia state line and effectively serves as the southern boundary of the study area. Uses along U.S. Route 50 in the vicinity of the study area generally consist of commercial and retail businesses; residential uses, although present, are generally set well back from the main roadway.

3.1.4.2 Loudoun County Parkway

Loudoun County Parkway is a four- to six-lane median-divided road extending from Braddock Road approximately 2 miles south of the study area to County Route 7 (“Harry Byrd Highway”) near the Potomac River approximately 8 miles to the north. Recently widened and improved between U.S. Route 50 and Old Ox Road, the road is the primary north-south vehicular corridor in the study area and forms a portion of its eastern boundary.

3.1.4.3 Evergreen Mills Road

Evergreen Mills Road is a two-lane local collector that is the primary means of east-to-west vehicular circulation through the study area. The road runs in a generally southeast to northwest direction from its intersection with Loudoun County Parkway to the town of Leesburg approximately 10 miles to the northwest. Important intersections along Evergreen Mills Road within the study area include those at Loudoun County Parkway, Arcola Road, and Stone Springs Boulevard. Uses along Evergreen Mills Road within the study area include a mixture of single-family residences, commercial businesses, and religious facilities.

The segment of Evergreen Mills Road within the study area has been proposed for widening to a four-lane facility. Because this Project is in the early stages of planning, the proposed alignment and construction timeframe are not available.

3.1.4.4 Stone Springs Boulevard (Gum Spring Road)

Stone Springs Boulevard/Gum Spring Road is a two-lane local collector that runs in a generally north-south direction between U.S. Route 50 and Evergreen Mills Road. Uses along this roadway within the study area include a mixture of residential developments, commercial businesses, and community open space.

3.1.4.5 Arcola Road

Arcola Road is a narrow gravel roadway that extends for approximately one mile in a north to south direction from Loudoun County Parkway to Evergreen Mills Road. A number of commercial businesses bound the roadway to the west, while adjacent land to the east is undeveloped. This segment of Arcola Road is planned for widening to a four-lane, median-separated facility. The road is also planned for extension from Evergreen Mills Road to U.S. Route 50 as development of Arcola Center progresses. The widened and extended road would be renamed Arcola Boulevard. Timeframes for widening of the existing segment of Arcola Road and extension through Arcola Center are not known.

3.1.5 Utilities

Existing 230 kV and 500 kV transmission lines in the study area are identified in **Section 2**. No other high voltage transmission systems are located in the area. A Dominion natural gas pipeline borders the 500 kV/230 kV Loudoun-Brambleton Line #2045 and 500 kV/230 kV Loudoun-Brambleton Line #2094 along the western edge of the study area. Local utilities in the study area include stormwater and sanitary sewer infrastructure, natural gas lines, and overhead electric distribution and voice/data lines.

3.1.6 Hazardous Materials

Environmentally regulated sites in the study area have been identified using publicly-available GIS databases obtained from the U.S. Environmental Protection Agency ("USEPA") and the Virginia Department of Environmental Quality ("VDEQ"). These databases provide information about facilities, sites, or places subject to environmental regulation or of environmental interest. These include sites that use and/or store hazardous materials, waste producing facilities operating under permits from the EPA or other regulatory authorities, sites undergoing cleanup, Superfund sites, the storage of petroleum, petroleum release sites, and solid waste sites. The identification of a site in the databases does not mean that the site necessarily has contaminated soil or groundwater.

Based on a review of the USEPA and VDEQ databases, there are no federal Superfund or Brownfield sites within the study area. Some industrial and commercial facilities in the study area generate hazardous waste in accordance with applicable regulatory requirements. Other facilities, such as gas stations and automotive repair shops, have been the site of recorded spills and leaks that have contaminated local soils and groundwater.

3.2 Natural and Environmental Resources

Natural and environmental resources evaluated in this section include geology and topology, soils, vegetation, wildlife, protected species, waterbodies and resource protection areas, wetlands and other areas of ecological significance.

3.2.1 Geology and Topography

The study area is located within the Northern Piedmont physiographic province, which is bounded on the west by the fall line of the Blue Ridge province and on the east by a zone of rapids and waterfalls that mark the transition to the Coastal Plain province. This area is dominated by hard, crystalline igneous and metamorphic formations with unconsolidated material, or regolith, of various composition overlying the bedrock. Characteristics of the landscape include broad upland areas and low to moderate slopes (VDEQ 2014). Based on a review of U.S. Geological Survey ("USGS") mapping, elevation in the vicinity of the study area ranges between 260 and 370 feet above mean sea level ("AMSL") (USGS 2019).

3.2.2 Soils

A review of the Natural Resources Conservation Service ("NRCS") soil database indicates a large portion of soils in the study area are hydric or soils that contain hydric inclusions (NRCS 2019) (Figure 4). These soils border most of the stream channel network that flows through the study area and are also located across broadly sloped hillsides, particularly along the study area's southeastern boundary. Hydric soils are a potential indicator of wetlands and should be avoided during the siting of alternative routes when practicable.

Other soil characteristics of note from the NRCS include the presence of prime highly erodible soils, soils with high shrink-swell potential, and soils that are weathered material from basalt or diabase. Diabase glades can support plant species with narrow habitat tolerances. The Virginia Department of Conservation and Recreation ("VDCR") has identified the potential for state-rare plant species to occur in certain landscapes underlain with basic rock, such as diabase-derived soil.

Upland areas generally consist of prime farmland or statewide important agricultural soils that have been historically used as croplands. Although several active sod farms are located in the study area, much of this land is being converted to new housing and commercial uses through suburban development.

3.2.3 Vegetation

The study area is in Northern Virginia, which has experienced intensive development and alteration by human activity, such as clearing, agriculture, logging, and land development. Vegetation in the area is generally a mixture of early successional forests, bottomland hardwood forests, agricultural fields, and pasture land. Given the large concentration of development in the region, less than half of the study area consists of forested habitat, much of which is proposed for commercial or residential development. Forested vegetation in many of these areas is relatively new growth as a result of the decline in agricultural uses and consists of shade-intolerant pines and hardwoods such as loblolly pine (*Pinus taeda*) and black locust (*Robinia pseudoacacia*). Undeveloped stream valleys have stands of older trees that provide more diversity and include more shade tolerant species such as oaks, maples, and hickories.

3.2.4 Wildlife

The suburban setting of the study area provides limited wildlife habitat. Common wildlife species expected to occur in and around the study area include white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus mallurus*), gray fox (*Urocyon cinereoargenteus*), eastern gray squirrel (*Sciurus carolinensis carolinensis*), and a variety of other small mammals, birds, reptiles and amphibians, fish, and invertebrates that are conditioned to an urbanized environment and a high degree

of human activity. The Virginia Department of Game and Inland Fisheries ("VDGIF") maintains lists of native species and their occurrence by county (VDGIF 2019).

3.2.5 Protected Species and Other Areas of Ecological Significance

To identify federally and state listed threatened, endangered, and protected or sensitive species, critical habitat, and other areas or species of ecological significance and importance, queries were conducted using the following online tools:

- U.S. Fish and Wildlife Service ("USFWS") Information for Planning and Consultation ("IPAC"),
- VDCR Natural Heritage Data Explorer ("NHDE"), and
- VDGIF Virginia Fish and Wildlife Information Service ("VaFWIS").

A summary of species identified through the online review process is provided in **Table 3-1**. Copies of the results from the database queries above are included as **Appendix 1**.

TABLE 3-1: Potential Protected Species in Study Area

Species Common Name	Species Scientific Name	Status
AMPHIBIANS		
Wood Turtle	<i>Glyptemys insculpta</i>	State threatened
MUSSELS		
Yellow lance mussel	<i>Elliptio lanceolate</i>	Federal threatened
Dwarf wedgemussel	<i>Alasmodonta heterodon</i>	Federal/state endangered
Brook floater	<i>Alasmodonta varicose</i>	State endangered
Green floater	<i>Lasmignoa subviridis</i>	State threatened
MAMMALS		
Northern long-eared bat	<i>Myotis septentrionalis</i>	Federal/state threatened
Little brown bat	<i>Myotis lucifugus</i>	State endangered
Tri-colored bat	<i>Perimyotis subflavus</i>	State endangered
BIRDS		
Peregrine falcon	<i>Falco peregrinus</i>	State threatened
Loggerhead shrike	<i>Lanius ludovicianus</i>	State threatened
Migrant loggerhead shrike	<i>Lanius ludovicianus migrans</i>	State threatened
Henslow's sparrow	<i>Ammodramus henslowii</i>	State threatened
Insect		
Appalachian grizzled skipper	<i>Pygrus Wyandot</i>	State threatened

The Center for Conservation Biology's ("CCB") Eagle Nest Locator website was queried to determine the potential presence of active bald eagle nests in or near the study area. The nearest documented eagle nest is located approximately 5.6 miles northeast of the study area (CCB 2019). If an eagle nest is identified within 1,350 feet of the Project ROW prior to construction, Dominion Energy Virginia would work with the appropriate regulatory agencies (e.g., USFWS, VDGIF) to minimize impacts on this species.

3.2.6 Waterbodies and Resource Protection Areas

A review of USGS topographic mapping notes two named streams within the study area, Broad Run and West Fork Broad Run (USGS, Arcola Quadrangle 2016). Broad Run extends along the northern boundary of the study area and West Fork Broad Run bisects the study area in a southwest to northeast direction (**Figure 5**). Based on the USGS maps, these streams are perennial and are connected to a series of intermittent tributaries.

A review of VDEQ data indicates that these streams are Class III (non-tidal) waters that are not part of the local water supply and do not support trout. VDEQ's 2016 Water Quality Monitoring assessment concluded that Broad Run and West Fork Broad Run are impaired due to unknown sources and are not supportive of aquatic life or recreational use (VDEQ 2019).

The 100-year floodplain is defined as areas adjacent to streams or other water bodies which would be inundated by a flood elevation that has a 1-percent chance of being equaled or exceeded each year. The Federal Emergency Management Agency ("FEMA") delineates the extent of most 100-year floodplains. In the study area, 100-year floodplains are located along Broad Run and West Fork Broad Run (FEMA 2019).

3.2.7 Wetlands

Several small wetlands occur in the study area as shown on USFWS National Wetlands Inventory ("NWI") mapping (**Figure 5**). These wetlands primarily occur within floodplain areas near streams and are considered palustrine features. Palustrine systems include all non-tidal vegetated wetlands and are further classified based on the dominant plant type. These classifications include palustrine emergent ("PEM") herbaceous systems, palustrine scrub-shrub ("PSS") systems, and palustrine forested ("PFO") systems. Other palustrine categories account for shallow water ponds that are listed as palustrine unconsolidated bottom ("PUB") features (USFWS 2017).

3.3 Social Resources

Social resources evaluated in this section include socioeconomics, environmental justice, cultural resources, and visual resources.

3.3.1 Socioeconomics

This section presents data on population and employment in the study area.

3.3.1.1 Population Trends

Based on the 2010 Census, Loudoun County is one of the fastest growing counties in the United States. The U.S. Census Bureau indicates that the population increased from 169,599 in 2000 to 312,311 in 2010, which is an 84% increase (Loudoun County 2011).

3.3.1.2 Employment

Data from the U.S. Census Bureau's 2011-2015 American Community Survey 5-Year Estimate for Loudoun County are presented in **Table 3-2** (U.S. Census Bureau 2015). The largest professional industries in Loudoun County are as follows:

- Professional, scientific, and management and administrative and waste management services (26.2 percent);
- Educational services, health care and social assistance industries (16.4 percent); and
- Retail trade (9.5 percent).

TABLE 3-2: Loudoun County Economic Data (2015)

County Labor Force (Unemployed)	County Labor Force (Unemployed)	Unemployment Rate	Median Household Income
194,311	7,837	3.1%	\$123,453

3.3.2 Environmental Justice

USEPA's online environmental justice ("EJ") screening tool ("EJSCREEN") was used to assess the demographic and environmental conditions in the study area (USEPA 2018). The summary information provided is in the form of EJ Indexes which combine demographic information with a single environmental indicator, such as proximity to traffic, that can help identify communities living in areas with greater potential for environmental and health impacts.

Data from the review notes the following:

- The percentage of persons above 65 years of age in the study area is similar the statewide average of 14.6 percent;
- The share of minority persons in the study area block group is between 36.9 percent and 55.3 percent compared to the statewide average of 36.9 percent;
- The study area population is relatively well educated with income levels higher than the state average. Therefore, the share of low-income persons in the study area will be lower than the statewide average of 11.4 percent;
- The study area population comprises a sizeable Asian population, therefore the percentage of native English speakers will be lower than the statewide average; and
- The proportion of the study area population with less than a high school education is less than 25 percent.

EJSCREEN data computed for the EJ Indexes is presented using percentiles. Based on technical documentation published by USEPA, a relatively high percentile means the value for that particular indicator or environmental factor is relatively uncommon, and the environmental stresses are greater in those areas. Overall, nearly all the EJ Indexes for the study area are less than the 50-percentile category indicating that no indicators of concern were identified by the screening.

3.3.3 Cultural Resources

There are no National Historic Landmarks within a 1.5-mile radius of any of the alternatives, and there are no battlefields within a 1.0-mile radius of any of the alternatives. Therefore, the Project would have no potential to affect these resources.

Two sites listed in the NRHP are located within the study area (Figure 6). The Arcola Slave Quarters is less than 0.25 mile northwest of the proposed Evergreen Mills Switching Station and was listed in the

NRHP in November 2009. Information from the Virginia Department of Historic Resource (“VDHR”) notes the slave quarters was built around 1800 as part of the Lewis Plantation (VDHR 2018). The stone slave quarters structure is the primary component of the historic site and is currently located on an approximate 15-acre parcel owned by Loudoun County. The Arcola Center development plan proposes that the land underlying and around the slave quarters be used as community open space with the slave quarters as the centerpiece of the area.

Arcola Elementary School is 0.6 mile to the west of the proposed Evergreen Mills Switching Station and was listed in the NRHP in June 2013. Constructed in 1939, the school was the county’s first elementary school for white students that offered individual classrooms for each grade. Marking a shift in the county away from one-room schools with limited curriculums, the multi-room school had space to support an expanded grade-based curriculum (VDHR 2018).

3.3.4 Religious and Institutional Facilities

Religious and institutional facilities in the study area, and their distance and direction from the proposed Evergreen Mills Switching Station, consist of the following:

- Arcola United Methodist Church, 0.5 mile northwest;
- Shirdi Sai Mandir Hindu Temple, 0.5 mile northwest;
- Montessori of Chantilly preschool, 0.9 mile west; and
- Stone Springs Hospital Center, 0.9 mile southwest.

These facilities are shown on **Figure 6**. Also shown on the figure is the site of a new elementary school that is a proposed component of the Arcola Center development plan. This facility would be located along the south side of Evergreen Mills Road approximately 0.3 mile northwest of the proposed Evergreen Mills Switching Station.

3.3.5 Conservation Easements

At least four parcels containing conservation easements are within the study area (**Figure 6**) (Loudoun County 2019). These easements are managed and administered under the Loudoun County Conservation Easement Stewardship Program. All are in the general vicinity of one another just west of the Evergreen Mills Road-Stone Springs Boulevard intersection. Of these four, one is a linear parcel adjacent to South Fork Broad Run that was placed into easement as part of the proffer process for the larger property within which it is located, as discussed in **Section 3.1.2.9**.

The other three nearby easements appear to be conservation easements associated with the Briarfield Estates Homeowners Association (“HOA”). These easements were established when the adjacent property was subdivided for residential development.

The Arcola Community Center and its adjacent recreational fields, discussed in **Section 3.1.3.1**, are identified as “Locally Managed Conservation Land” in VDCR’s Natural Heritage Data Explorer online mapping tool (VDCR 2019).

There are no conservation lands within the study area administered by the Virginia Outdoors Foundation (“VOF”) or Northern Virginia Conservation Trust (“NVCT”). Similarly, no Loudoun County agricultural and forestal districts are within the study area.

3.3.6 Visual Resources

The visual character of an area is a function of the land use, land cover, and terrain. There are few natural forested areas and no pristine or noteworthy landscapes located within the study area. There are also no federal- or state-owned lands, designated scenic byways, or scenic rivers. Visual characteristics of the landscape are dominated by human-influenced suburban development and current construction. The study area is gently rolling with gradual changes in elevation, which provides a high degree of visibility for vertical structures, such as transmission lines and towers, on the landscape. However, existing buildings, homes, and vegetation tend to block any long views or vistas within the study area. Planned development in Arcola Center, once built, will further contribute to the area's suburban visual character.

4 ALTERNATIVE ROUTE OVERVIEW

Alternative routes identified during the routing study are discussed in this section.

4.1 Alternative Route Development

Based on the existing and projected capacity of Dominion Energy Virginia's transmission network in and near the study area, it was determined that transmission lines with sufficient capacity to tap for the proposed Evergreen Mills Loops consist of:

- 230 kV Brambleton-Yardley Ridge Line #2172 and 230 kV Brambleton-Poland Road Line #2183 located along the northern edge of the study area approximately 0.7 mile north of the proposed Evergreen Mills Switching Station; and
- The two sets of parallel 230 kV lines extending northwest from the Yardley Ridge Switching Station approximately 0.5 mile northeast of the proposed station. These lines comprise the following systems:
 - 230 kV Brambleton-Poland Road Line #2183 and 230 kV Shellhorn Road-Poland Road Line #2137; and
 - 230 kV Yardley Ridge-Shellhorn Road Line #2095 and 230 kV Brambleton-Yardley Ridge Line #2172.

It was also determined early in the alternative route development process that the 500/230 kV Brambleton-Loudon Line #2045 and Brambleton-Loudoun Line #2094, located approximately 1.4 miles west of the proposed Evergreen Mills Switching Station, could be tapped to serve the need for the project. However, preliminary analysis determined that potential alternative routes originating from those lines would have substantially greater length, cost, and adverse impact on study area resources relative to alternative routes originating from the lines listed above. Therefore, alternative routes potentially tapping Line #2045 or Line #2094 were dismissed from further evaluation in this Routing Study.

Following this review, AECOM and Dominion Energy Virginia conducted a site visit in the study area to observe existing conditions and potential opportunities and constraints. Following the site visit and additional discussion between AECOM and Dominion Energy Virginia, three alternative routes were identified that are the focus of the detailed analysis in this document. These alternative routes are shown on **Figure 7** and described as follows.

4.1.1 Alternative Route 1 (Proposed Route)

Alternative Route 1 would originate from the existing Brambleton-Yardley Ridge Line #2172 / Brambleton-Poland Road Line #2183 double-circuit system at a tap point approximately 0.1 mile west of the Yardley Ridge Switching Station, which is located near Loudoun County Parkway and Evergreen Mills Road. The new 230 kV double-circuit transmission lines would extend approximately 0.6 mile to the proposed Evergreen Mills Switching Station.

Alternative Route 1 would be built in two parts. During Part A, the Company proposes to acquire the 160-foot ROW for the full Project, to construct the Evergreen Mills Switching Station, and to construct the #2172 Loop. The #2183 Loop and the remainder of the Evergreen Mills Switching Station would be built during Part B.

From the tap point, this route would extend for 0.3 mile southwest to Evergreen Mills Road within a forested stream valley associated with an intermittent tributary to Broad Run. The alignment in this section is constrained by planned commercial development to the east and an existing sanitary easement to the west that parallels the stream.

Angling to the south, the route would span Evergreen Mills Road and extend for 0.3 mile to the proposed station. This segment would span two unnamed intermittent tributaries to Broad Run and a stormwater management basin, then extend into the proposed station adjacent to the Customer's data center facility within Arcola Center.

4.1.2 Alternative Route 2 North (2N)

Alternative Route 2N would originate from the existing Brambleton-Poland Road Line #2183 / Brambleton-Yardley Ridge Line #2172 double-circuit system at a point approximately 0.8 mile northwest of the existing Yardley Ridge Substation. The route would consist of a new 230 kV double-circuit transmission line and would extend approximately 1.2 miles to the proposed Evergreen Mills Switching Station. This route would be built in two parts in a manner similar to that described for Alternative Route 1.

From the tap point, this route would extend south for 0.5 mile crossing the perennial South Fork Broad Run and extending through forested and developed areas to Evergreen Mills Road. The developed areas include a private residence and the Shirdi Sai Mandir Hindu Temple that would be in close proximity the route.

Turning to the east, the route would parallel the north side of Evergreen Mills Road for 0.4 mile crossing an undeveloped parcel, Trade West Drive, four commercial properties, and Arcola Road.

The final 0.3 mile would involve turning south to span over Evergreen Mills Road, two unnamed intermittent tributaries to Broad Run, and a stormwater management basin then extending into the proposed station.

Due to the degree of existing constraints and potential impacts that would result from its construction, it is noted that Alternative Route 2N is an alternative that would not typically be identified or recommended when applying industry-standard siting practices. However, because existing operational, physical, social, and environmental constraints in the study area limit the number of potential routing opportunities for the proposed Evergreen Mills Loops, Alternative Route 2N is included for analysis in this study as an electrically equivalent alternative to Alternative Routes 1 and 2S (see Section 4.1.3).

4.1.3 Alternative Route 2 South (2S)

Alternative Route 2S would originate from the existing Brambleton-Poland Road Line #2183 / Brambleton-Yardley Ridge Line #2172 double-circuit system at a point approximately 0.8 mile northwest of the existing Yardley Ridge Substation. The route would consist of a new 230 kV double-circuit transmission line and would extend 1.2 miles to the proposed Evergreen Mills Switching Station. This route would be built in two parts in a manner similar to that described for Alternative Route 1.

From the tap point, this route would extend south for 0.5 mile to the south side of Evergreen Mills Road, crossing the perennial South Fork Broad Run and extending through forested and developed areas. The developed areas include a private residence and the Shirdi Sai Mandir Hindu Temple that would be in close proximity the route.

Turning to the east, the route would parallel the south side of the road for 0.3 mile, crossing agricultural fields in Arcola Center that are planned for future development, two narrow sections of Loudoun County owned land, and a private residence.

The final 0.4 mile would involve spanning back and forth over Evergreen Mills Road again and turning south to span two unnamed intermittent tributaries to Broad Run, and a stormwater management basin before extending into the proposed station.

4.2 Proposed Structures and Right-of-Way Widths

As previously noted, the Project would consist of overhead conductor lines supported on galvanized steel structures approximately 35 to 130 feet in height excluding foundation reveal. Alternative Route 1 would have approximately 16 structures along its length; the number of structures along Alternative Routes 2N and 2S has not been determined at this stage of planning. Generally, the number and height of structures along each route would be dependent on their overall length, the number of turns, and other engineering and operational considerations. All of the proposed and alternative routes would necessitate a 160-foot ROW to account for the two sets of double-circuit transmission lines required for the Project.

4.3 Construction, Operation, and Maintenance Process

Construction of new overhead transmission lines may involve some or all of the following elements:

- Detailed survey of the route alignment,
- ROW acquisition and clearing,
- Construction of access roads, where necessary,
- Installation of tower foundations,
- Assembly and erection of new structures,
- Stringing and tensioning of the conductors, and
- Final clean-up and land restoration.

Although the Project would be built in two parts, the Company would acquire and clear the entire 160-foot ROW prior to beginning construction. For any tree clearing in the ROW, trees will be cut to no more than three inches above ground level. Trees located outside of the proposed right-of-way that are tall enough to potentially impact the transmission line, commonly referred to as "danger trees," may also need to be cut. Danger trees will be cut to be no more than three inches above ground level, limbed, and remain where felled. Debris that is adjacent to occupied structures or proposed development will

be disposed of by chipping or removal. In other areas, debris may be mulched or chipped as practicable. Danger tree removal will be accomplished by hand in wetland areas and within 100 feet of streams, if applicable. Care will be taken to remove debris that inadvertently migrates to streams or wetlands. Matting may be used for heavy equipment in these areas. Erosion and sediment control measures will be used on an ongoing basis during all clearing and construction activities.

Erosion and sediment control measures will be maintained and temporary stabilization for all soil-disturbing activities will be used until the right-of-way has been restored. Upon completion of the Project, the Company will restore the right-of-way utilizing site rehabilitation procedures outlined in the Company's *Standards & Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities* that is approved yearly by VDEQ. The implementation of permanent stabilization measures may be dependent on time of year and weather conditions.

All appropriate materials for the proposed 230 kV structures would be delivered and assembled at each structure location in the ROW. Detailed foundation design will not be completed until prior to construction; however, depending on soil conditions, could include poured concrete that requires excavation, or steel piles or caissons that might be vibrated, drilled, or driven into place. Structures would be erected with a crane and anchored to the foundation during final assembly. If there is excess soil from foundation construction, it would be evenly distributed at each structure and the soil replanted and stabilized. Typical construction equipment may include motorized augers and other drilling equipment, cranes, wire-stringing rigs, tensioners, backhoes, and trucks.

All conductors and shield wires would be strung under tension. This system involves stringing a "lead line" between structures for the conductors and ground wires. The rope pulls a steel cable that is connected to the conductors and shield wires, which are pulled through neoprene stringing blocks to protect the conductor and shield wire from damage. Stringing the conductors and shield wires under tension protects the wires from possible damage should they be allowed to touch the ground, fences, or other objects.

Maintaining the ROW under the transmission lines is essential for the reliable operation of the line as well as public safety. Operation and maintenance of the line would consist of periodic inspections of the line and the ROW, occasional replacement of hardware as necessary, periodic clearing of vegetation, either mechanically or by selective, low-volume application of approved herbicides of vegetation within the corridor, and the cutting of danger trees outside the ROW. Danger trees are trees outside the cleared corridor that are sufficiently tall to potentially impact the transmission line should the trees fall into the ROW. Periodic inspections would occur on a regular basis and utilize both aerial and walking patrols. Normal operation and maintenance would require only infrequent visits by Dominion Energy Virginia or its contractors.

Most maintenance activities consist of selective, low-volume herbicide applications targeting only tree species on the ROW every 3 to 5 years, and the cutting of danger trees every 3 years. Dominion Energy Virginia only uses USEPA-approved herbicides within transmission line ROWs.

5 RESOURCES AFFECTED

This section describes the potential effect of the three alternative routes on the physical, social, and environmental resources and conditions in the study area. The analysis presented in this section is based on a quantitative assessment of the alternative route alignments relative to the publicly-accessible resource data discussed in in **Section 3.0** and a qualitative assessment based on field observations and professional judgement. A summary of the analysis presented in this section is

provided in Table 5-1. All length and area values presented in this section are approximate based on analysis of preliminary engineering data, GIS mapping, and publicly-available mapping products.

As noted in Section 4.1, the Project would be built in two parts. However, the Project is analyzed in this Routing Study as if both parts would be constructed simultaneously to present an estimate of potential effects on study area resources.

TABLE 5-1: Environmental Features Comparison¹

Environmental Feature	Unit	Alternative Route 1 (Proposed Route)	Alternative Route 2A	Alternative Route 2S
Route				
Route Length Total	Miles	0.6	1.2	1.2
New	Miles	0.6	1.2	1.2
Existing ROW	Miles	0	0	0
New ROW	Acres	12.2	22.3	23.3
Land Use Features / Constraints				
State Owned Lands	Miles	0	0	0
Local Government Lands	Miles	0	0	0.02
Federal Government Lands	Miles	0	0	0
Private Lands Crossed (total)	Number	3	13	11
Northern VA Regional Park Authority	Number	0	0	0
MWAA Crossings (total)	Number	0	0	0
VDOT Crossings (roads)	Number	1	2	3
Parcels Crossed by ROW (total)				
Existing ROW		N/A		
New ROW	Number	3	13	12
Existing Land Use (VDOF)				
Open /Vacant Land	Miles	0	0.7	1.0
Cropland	Miles	0	0	0
Developed	Miles	0.3	0.5	0.3
Forested	Miles	0.3	0	0
Wetland	Miles	0	0	0
Zoning				
Commercial	Miles	0	0.2	0.2
Industrial	Miles	0.6	1.0	0.7
Planned Units	Miles	0	0	0.3
Residential	Miles	0	0	0
Tysons	Miles	0	0	0
Other	Miles	0	0	0
Uncategorized/ROW	Miles	0	0	0
Planned Developments Crossed (Centerline)	Miles	0.3	0.3	0.7

TABLE 5-1: Environmental Features Comparison¹

Environmental Feature	Unit	Alternative Route 1 (Proposed Route)	Alternative Route 2N	Alternative Route 2S
Planned Developments Crossed (ROW)	Acres	6.4	6.4	13.2
Recreational Areas Crossed				
National Park Service Land	Number	0	0	0
County Parks	Number	0	0	0
NOVA Parks	Number	0	0	0
Virginia Birding and Wildlife Trails Crossed	Number	0	0	0
Other Land Use Constraints				
Single-family residences within 500 feet	Number	0	4	4
Single-family residences within 200 feet	Number	0	0	1
Single-family residences within 100 feet	Number	0	0	1
Multi-family buildings within 500 feet	Number	0	0	0
Multi-family buildings within 200 feet	Number	0	0	0
Multi-family buildings within 100 feet	Number	0	0	0
Single-family residences in New ROW	Number	0	0	1
Multi-family residences within 60 feet of New ROW	Number	0	0	0
Single-family buildings within 60 feet of New ROW ¹	Number	0	0	0
Multi-family building within 60 feet of New ROW	Number	0	0	0
Buildings within New Right-of-Way (total)				
Single-family Residences	Number	0	0	1
Multi-family Buildings	Number	0	0	0
Cemeteries within 500 feet	Number	0	0	0
Churches within 500 feet	Number	0	2	2
Schools within 500 feet	Number	0	0	0
Environmental Constraints				
Wetlands Crossed by New Right-of-Way (total)	Acres	0.4	0.2	0.2
Freshwater Emergent	Acres	0	0	0
Forested	Acres	0.4	0.2	0.2
Waterbody Crossings (total)	Number	1	3	3
Perennial	Number	0	1	1
Intermittent	Number	1	2	2
Open Waters	Number	0	0	0
100-year Floodplains Crossed	Number	0	1	1
Forested Lands Crossed				
New ROW	Miles	0.3	0.4	0.4

¹ The development of a new ROW within 60 feet of a residence would invoke the provisions of Va. Code § 56-49.

TABLE 5-1: Environmental Features Comparison¹

Environmental Feature	Unit	Alternative Route 1 (Proposed Route)	Alternative Route 2A	Alternative Route 2B
New ROW	Acres	6.4	7.8	7.8
State and Local Conservation Easements Crossed	Number	0	0	0
Cultural Resources Constraints				
Archaeology (VDHR)				
Archaeological Sites Within Right-of-Way	Number	0	0	0
Architectural Resources (VDHR)				
Architectural Resources Within Right-of-Way (Battlefields listed below)	Number	0	0	0
National Register-Eligible and -Listed Properties, Battlefields, Historic Landscapes, and National (NRHPNLR), Historic Landmarks within 0.5 mile of centerline	Number	1	1	1
National Register-Listed Properties, Battlefields, Historic Landscapes, and National Historic Landmarks between 0.5 and 1.0 mile of centerline	Number	0	0	0
National Historic Landmarks between 1.0 and 1.5 miles of centerline	Number	0	0	0
Historic Districts (VDHR) Crossed	Number	0	0	0
Battlefields (NPS, ABPP, VDHR)				
Battlefields Crossed	Number	0	0	0
Geological or Physical Constraints				
Mines or Mining Areas Crossed	Number	0	0	0
Visual Features / Constraints				
Length Parallel to Scenic Byway/Road	Number	0	0	0
VDOT Impacts				
Length of New ROW Within VDOT ROW	Miles	0	0	0
Crossings of VDOT Limited Access Freeways	Number	0	0	0
Structures on VDOT ROW	Number	0	0	0
Structures inside VDOT Soundwall	Number	0	0	0
Forest Land in VDOT ROW	Acres	0	0	0
Routing Opportunities				
Collocation Opportunities (total)				
Road	Number	0	0	0
Electric Line	Number	0	0	0
Electric Line and Road	Number	0	0	0
Note:				
1. Length and area values presented in this table are approximate and rounded to the nearest single decimal place, as applicable.				

5.1 Land Resources

This section discusses potential effects from the Project on land use, zoning, comprehensive plans, existing and planned developments, community facilities and recreation areas, conservation easements, transportation, utilities, and hazardous materials.

5.1.1 Land Use, Zoning, and Plans

5.1.1.1 Land Use

The following is a summary of the type and extent of land use categories that would be crossed by the three alternative routes.

- **Alternative Route 1:** A portion of this alternative would extend across undeveloped land. Approximately half of this length (0.3 mile) would be in the portion of the planned Arcola Center dedicated to the development of the Customer's data center, which is presently under construction.
- **Alternative Route 2N:** Note that two parcels along this alignment are classified as vacant but field observations confirmed the presence of commercial businesses on these lands. In light of this field-verified condition, this alternative (1.2 mile) would extend across 0.7 mile of vacant land (61%), 0.3 mile across residential land (27%), and 0.1 mile across commercial land (12%).

Similar to Alternative Route 1, this option would cross 0.3 mile of vacant land that is being developed as the Customer's data center within Arcola Center. Construction and operation of this alternative would necessitate the acquisition and removal of the residential and commercial structures along the north side of Evergreen Mills Road that would be within the Alternative 2N ROW.

- **Alternative Route 2S:** This alternative (1.2 mile) would extend across 1.0 mile of vacant land (79%) and 0.3 mile across residential land (0.2%).

Similar to the other alternatives, this route would cross 0.3 mile of vacant land that is being developed as the Customer's data center within Arcola Center. Another 0.3 mile would extend across a portion of Arcola Center that is proposed for development as a new Loudoun County elementary school and dense (i.e., townhome) residential housing. The construction and operation of this alternative would also necessitate the acquisition and removal of a residential structure along the south side of Evergreen Mills Road.

This analysis indicates that Alternative Route 1 would have fewer impacts on land use in the study area relative to Alternative Routes 2N and 2S.

5.1.1.2 Zoning

The following is a summary of the type and extent of zoning categories that would be crossed by the three alternative routes.

- **Alternative Route 1:** Almost half of this alignment (0.3 mile) would be located in the PDGI zoning district and the remaining section (0.3 mile) in the PDIP district where it terminates at the Evergreen Mills Switching Station.

- **Alternative Route 2N:** This alternative extends predominantly across land zoned PDGI (0.6 mile) and PDIP (0.3 mile). Note that the residential parcel on the north side of Evergreen Mills Road is zoned PDGI. A 0.2-mile segment also spans land zoned RC at the site of a private residence and the Shirdi Sai Mandir Hindu Temple that would be in close proximity the route.
- **Alternative Route 2S:** This alternative extends predominantly across land zoned PDGI (0.3 mile) and PDIP (0.4 mile). Note that the residential parcel on the south side of Evergreen Mills Road is zoned as PDIP. This alternative would also cross a 0.3 mile section of the PDTC zoning district where a new Loudoun County elementary school and dense residential development is proposed. A 0.2 mile segment also spans land zoned RC at the site of a private residence and the Shirdi Sai Mandir Hindu Temple that would be in close proximity the route.

Based on this analysis, the alternative routes would cross land with zoning designations that generally support development of electrical transmission lines. However, existing and planned building development that would be crossed by segments of Alternatives 2N and 2S within these zoning districts would not allow for construction of the transmission line. Alternative Route 1 would be preferable relative to Alternative Routes 2N and 2S because it would cross land with either no existing development or land with development that is compatible with the underlying zoning (i.e., the Customer's data center).

5.1.1.3 Plans

Loudoun County Comprehensive Plan

Based on review of the Draft Loudoun 2040 Comprehensive Plan, each of the alternative routes extends from an area characterized as being used for Suburban Industrial/Mineral Extraction uses to the proposed site of the Evergreen Mills Switching Station, which would be located in an area characterized as Suburban Mixed Use. Building the transmission lines in the Suburban Industrial/Mineral Extraction area would be compatible with the proposed development patterns in the area, whereas installation of the station in the Suburban Mixed Use area may be considered less compatible.

Potential effects on land use in the study area resulting from construction and operation of the alternative routes would be localized. Such effects would be limited to a small number of properties and would not have the potential to impede or prevent current or proposed large-scale development patterns in the Arcola area or Loudoun County. Development of the alternative routes would directly support a county-approved land use.

As such, the alternative routes would not be considered counter to the intent of the Loudoun County Draft 2040 Comprehensive Plan.

5.1.2 Existing and Planned Developments and Subdivisions

Each of the alternative routes would cross portions of the Arcola Center but have no direct effect on any other planned development or subdivision on the study area. Alternative Routes 1 and 2N would have similar, short (0.3 mile) alignments across the north-central portion of Arcola Center that includes a stormwater management basin that is anticipated to remain in place as part of the stormwater management network for that development. The alignment of these two routes would then extend directly into the proposed Evergreen Mills Switching Station that will be located adjacent to the Customer's data center currently under construction. Based on the Arcola Center development plan and approved Loudoun County zoning, both of these facilities would be located in an area that supports their development.

Alternative Route 2S would mirror the 0.3-mile segments of Alternative Routes 1 and 2N and would also include an additional 0.4-mile crossing in the northwestern section of the Arcola Center. This segment would cross the proposed Town Center portion of the development where a new Loudoun County elementary school and dense residential housing is planned. Construction and operation of Alternative Route 2S would reduce the planned capacity for housing in this area and be situated adjacent to, or potentially prevent development of, the proposed school building.

Based on this analysis, Alternative Route 2S would have a greater potential impact on the planned Arcola Center development relative to the other alternatives.

5.1.3 Community Facilities and Recreation Areas

None of the alternative routes would cross or impede the operation of the Arcola Community Center, nor would they have the potential to cross or impact the operations of other community facilities or recreation areas in the study area.

A segment of the nearest alternative, Alternative Route 2S, would be approximately 0.4 mile northeast of the community center. Segment of Alternative Route 2S would also cross portions of Loudoun County-owned land along the south side of Evergreen Mills Road. This county-owned land underlies the Arcola Slave Quarters and is proposed as a public park/open space within the planned Arcola Center development.

This summary indicates that Alternative Route 2S would have a greater potential impact on community facilities and recreation areas in the study area relative to the other alternatives.

5.1.4 Transportation

The following is a summary of the effects of the three alternative routes on the transportation network.

- **Alternative Route 1:** Alternative Route 1 would span Evergreen Mills Road once. Dominion Energy Virginia would coordinate with VDOT and Loudoun County as needed to incorporate the planned widening of the road at this location in the engineering and design of Alternative Route 1.
- **Alternative Route 2N:** This alternative would cross three roads (Trade West Drive, Arcola Road, and Evergreen Mills Road) and the driveway of the Shirdi Sai Mandir Hindu Temple along the north side of Evergreen Mills Road. As noted in **Section 3.1.4**, Arcola Road and Evergreen Mills Road are planned for widening. As needed, Dominion Energy Virginia would coordinate with the Shirdi Sai Mandir Hindu Temple to span its driveway and with VDOT and Loudoun County to incorporate the planned widening of these roads in the engineering and design of Alternative Route 2N. Among other requirements, transportation safety guidelines may involve necessary setbacks of the transmission line structures from the road edge, which would possibly involve moving the alignment further onto the parcels that would be crossed.
- **Alternative Route 2S:** This alternative would the driveway of the Shirdi Sai Mandir Hindu Temple along the north side of Evergreen Mills Road and would cross Evergreen Mills Road three times. As described for Alternative Route 2N, Dominion Energy Virginia would coordinate with the Shirdi Sai Mandir Hindu Temple to span its driveway and with VDOT and Loudoun County to incorporate the planned widening of Evergreen Mills Road in the engineering and design of Alternative Route 2S.

All of the alternatives could require temporary road closures during their construction phase to string wires or conduct other aspects of the Project. Temporary closures could also be periodically required to conduct line maintenance. Such closures would be coordinated with VDOT and Loudoun County as necessary and would be conducted at off-peak times to the extent practicable to minimize effects on traffic. Overall, Alternative Route 1 would likely require fewer temporary road closures during construction and/or maintenance relative to the other alternatives as it would involve only one road crossing.

This summary indicates that Alternative Route 1 would have less of an effect on the transportation network in the study area relative to the other alternatives.

5.1.5 Utilities

None of the alternative routes would cross, be collocated with, or situated parallel to any existing transmission line or pipeline ROW corridors in the study area. To varying degrees, construction and operation of all of the alternative routes would necessitate spanning local utility distribution infrastructure (i.e., water, sewer, stormwater, gas, voice/data, electrical). Any such crossings would be incorporated in the engineering and design of the alternative routes. Alternative Route 1 would parallel and cross over a county-owned sanitary sewer line ROW located in the stream valley near the proposed tap point with the 230 kV Brambleton-Poland Road Line #2183 and 230 kV Brambleton-Yardley Ridge Line #2172. This utility would not be affected by construction and operation of Alternative Route 1; however, its presence was a constraint and defining factor in the development of this alternative.

This summary indicates that none of the alternative routes would have an impact on utilities in the study area.

5.1.6 Hazardous Materials

Table 5-2 presents the number of environmentally regulated sites as listed in USEPA and VDEQ databases within a 1.0-mile radius of the alternative route centerlines.

TABLE 5-2: Number of Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 1 Mile of the Alternative and Proposed Routes

Category	Alternative Route 1	Alternative Route 2N	Alternative Route 2S
Waste	4	4	4
Toxics	0	0	0
Land	0	0	0
Air	2	1	1
Water	2	2	2
Solid Waste Facilities	0	0	0
Petroleum Facilities	4	3	3
Petroleum Releases	10	11	11
Total	22	21	21

Notes:

Waste = Facilities that handle or generate hazardous wastes

Toxics = Facilities that release toxic substances to the environment

Land = Site cleanup under RCRA Corrective Action, Superfund, or Brownfield programs

Air = Facilities with a release of pollutants to the air

Water = Facilities that discharge storm or process water to surface water

Solid Waste Facilities = Former and existing landfills

TABLE 5-2: Number of Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 1 Mile of the Alternative and Proposed Routes

Database	Alternative Route 1	Alternative Route 2N	Alternative Route 2S
Petroleum Facilities = Regulated petroleum storage Petroleum Releases = Typically associated with storage tank releases Sources: https://nepassisttool.epa.gov ; https://apps.deq.virginia.gov (Accessed 24 Oct 2019)			

Based on a review of sites listed in USEPA and VDEQ databases (see **Section 3.1.6**) and listed in **Table 5-2**, none of the alternative routes would cross a Superfund or Brownfield site. All three routes would be located within 500 feet of three regulated facilities, including a water discharge site, a Conditionally Exempt Small Quantity Waste Generator, and a synthetic minor emissions facility. A previously-reported petroleum release site is also located within 500 feet of the alternative routes; the case was closed in 1995. These conditions would be addressed as needed during planning and construction of the alternative routes and none would be anticipated to have an adverse effect on the Project.

Alternative Route 2N would cross several commercial properties along the north side of Evergreen Mills Road that appear to involve automotive maintenance/repair. As such, hazardous materials may be stored or used, and hazardous waste generated, on these properties. Dominion Energy Virginia would conduct site evaluations on these properties as needed prior to constructing Alternative Route 2N to determine the presence and extent of contamination from hazardous materials and/or hazardous waste.

Alternative Routes 1 and 2S primarily cross vegetated areas and/or land currently or formerly used for agricultural purposes. Therefore, this summary indicates that Alternative Route 2N would have the highest probability of being affected by the potential presence of hazardous materials relative to the other alternatives.

5.2 Environmental Constraints

The following is a review of the Project's potential effects on soils, vegetation, wildlife, protected species, waterbodies and resource protection areas, wetlands and other areas of ecological significance.

5.2.1 Soils

Each of the alternative routes would have the potential to disturb soils with hydric properties or identified as prime farmland. As outlined in Dominion Energy Virginia's *Standards & Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities* and discussed in **Section 4.3**, erosion and sediment control measures would be installed during construction to stabilize and minimize the erosion of exposed soils and corresponding sedimentation of receiving water bodies. Following construction of the Project, soils not built on would be revegetated with low-growing native species or restored to an otherwise permeable condition, thereby preventing continued soil erosion. Adherence to these measures would ensure that Project impacts on soils would be minimal.

Alternative Routes 2N and 2S would be anticipated to have greater impacts on soils relative to Alternative Route 1 because they would be approximately twice the length.

5.2.2 Vegetation

Estimated distances and areas of contiguous vegetation to be cleared by the alternative routes are presented in **Table 5-3**.

TABLE 5-3: Estimated Vegetation Clearing Along Alternative Routes

Alternative Route	Linear Feet	Acres
1	1,742	6.4
2N	2,112	7.8
2S	2,112	7.8

The majority of vegetation clearing associated with Alternative Route 1 would occur within the densely vegetated corridor between the tap location and Evergreen Mills Road. Similarly, most vegetation clearing associated with Alternative Routes 2N and 2S would be conducted between the tap location and the southern end of the wooded area immediately west of the Shirdi Sai Mandir Hindu Church along Evergreen Mills Road. The estimates presented in **Table 5-3** do not include individual or smaller clusters of tree removal that might be required along the alternative routes.

As discussed in **Section 4.3**, trees within the ROW of the alternative route would be cut to no more than three inches above ground level. Trees located outside the proposed ROW that are tall enough to potentially impact the transmission line, commonly referred to as "danger trees," may also need to be cut. Tree removal would be conducted by hand in wetland areas and within 100 feet of streams as applicable to minimize disturbance or migration of debris to receiving water bodies, and debris that inadvertently migrates to streams or wetlands would be removed. As noted above, soils exposed during construction would be revegetated with low-growing native species or otherwise restored to a permeable condition.

Following construction, the ROW would be maintained on a regular cycle to prevent interruptions to electric service and to provide ready access for routine repairs and maintenance. Periodic vegetation maintenance to control woody growth would consist of hand cutting, machine mowing, and herbicide application.

As shown in **Table 5-3**, Alternative Routes 2N and 2S would require a larger area of tree clearing and thus, would have a greater impact on vegetation relative to Alternative Route 1. However, in the context of vegetation within the overall area, impacts on vegetation from the alternative routes would be minimal.

5.2.3 Wildlife

As discussed above, the Project would involve forest clearing that would have some effect on the wildlife populations in the study area. Each of the alternative routes would also cross areas of maintained lawn or agricultural fields that would be less affected by the Project and therefore, less impactful to the habitat conditions for local wildlife that may occur in these areas.

Because Alternative Routes 2N and 2S would extend across more forested area (0.4 mile) relative to Alternative Route 1 (0.3 mile), those two alternatives would have a somewhat greater impact on wildlife in the study area.

5.2.4 Protected Species and Other Areas of Ecological Significance

Detailed information regarding the potential presence of protected species along the Alternative Routes will be provided as Project planning and coordination with applicable regulatory agencies continues.

The following summary is based on the protected species listed in **Table 3-1** and the habitat conditions noted along the three alternative routes.

- **Alternative Route 1:** Alternative Route 1 would extend for 0.3 mile through a forested area that runs parallel to an intermittent tributary to Broad Run and span an intermittent tributary to Broad Run. Protected species that may be located in these habitat areas include the wood turtle, the three fresh water mussel species, and the three bat species.
- **Alternative Routes 2N and 2S:** These alternatives would extend for 0.4 mile through forested areas, span the perennial South Fork Broad Run, and span two intermittent tributaries to Broad Run. Protected species that may be located in these habitat areas include the wood turtle, the three fresh water mussel species, and the three bat species.

This summary indicates that Alternative Route 1 may have the least potential to affect protected species relative to the other two alternatives.

5.2.5 Waterbodies and Resource Protection Areas

The following summarizes potential effects from the three alternative routes on waterbodies and resource protection areas.

- **Alternative Route 1:** Alternative Route 1 would span one intermittent tributary to Broad Run and not cross any areas identified by FEMA as 100-year floodplains.
- **Alternative Routes 2N and 2S:** These alternatives would span the perennial South Fork Broad Run and two intermittent tributaries to Broad Run. Both of these alternatives would also span over the FEMA 100-year floodplain that borders South Fork Broad Run.

This summary indicates that Alternative Route 1 would have less potential to affect waterbodies and 100-year floodplains relative to Alternative Routes 2N and 2S.

5.2.6 Wetlands

The following summarizes the potential effects of the three alternative routes on wetlands.

- **Alternative Route 1:** Alternative Route 1 would cross a 0.4-acre area of NWI-identified PFO wetlands located near its tie-in point with the existing Brambleton-Yardley Ridge Line #2172 and 230 kV Brambleton-Poland Road Line #2183 transmission lines. Based on review of publicly available aerial imagery dated 2018, this mapped wetland area has been disturbed by the construction of a recently built Dominion Energy Virginia transmission line project that has removed the forest/shrub component. The current PEM wetland habitat would not require tree-clearing but would be permanently impacted by the installation of new structures and temporarily disturbed during construction.
- **Alternative Routes 2N and 2S:** These alternatives would span a 0.2-acre area of NWI-identified PFO/PSS wetlands located southeast of their tie-in point with the existing Brambleton-Yardley Ridge Line #2172 and 230 kV Brambleton-Poland Road Line #2183 transmission lines. Work associated with the Project that would occur in these wetlands would involve tree-clearing as well as temporary construction-related disturbance. No structures would be located in the wetland area.

This summary indicates that Alternative Routes 2N and 2S would have less potential to affect wetlands relative to Alternative Route 1.

5.3 Social Resources

The following is a review of the potential Project effects on socioeconomics, environmental justice, cultural resources, and visual resources.

5.3.1 Socioeconomics

None of the alternative routes will have a regional effect on population trends or employment. Alternative Route 2N and 2S would each require the acquisition and removal of existing privately owned residential structures to support development of the ROW. Alternative Route 2N would also require the acquisition and removal of three commercial businesses to support ROW development.

On a local level, Alternative Route 2N would have the greatest effect on socioeconomics relative to the other two alternatives.

5.3.2 Environmental Justice

As discussed in **Section 3.3.2**, no indicators of concern are present in the study area based on review of EJ Indexes in the USEPA's online EJSCREEN tool. Because overall environmental impacts from the Project are anticipated to be minimal, the Project would have no disproportionately adverse effects on EJ communities.

5.3.3 Cultural Resources

None of the alternative routes would cross or otherwise have a direct effect on the Arcola Elementary School. It is anticipated that most if not all elements of the alternative routes would be obscured from view from Arcola Elementary School by distance and existing vegetation, topography, and development in the study area. Thus, the alternative routes would have no or minimal effects on Arcola Elementary School.

The segments of all three alternative routes between Evergreen Mills Road and the proposed Evergreen Mills Switching Station would potentially be visible from the Arcola Slave Quarters and thus, would have a potential to adversely affect that property. Alternative Route 2S could also have additional visual effects on this property from the segment of the route along the south side of Evergreen Mills Road.

A Phase IA cultural resources assessment and pre-application analysis prepared by Dominion Energy Virginia determined that all of the alternatives would have moderate visual impacts on the Arcola Slave Quarters. Alternatives 2N and 2S would be visible from the Arcola Village Historic District, the Arcola Methodist Church, and a house at 24754 Evergreen Mills Road. However, these impacts are considered not significant because DHR has determined that the Arcola Village Historic District is not eligible for listing in the NRHP, and two separate investigations have recommended the Arcola Methodist Church and the house at 24754 Evergreen Mills Road as not eligible for the NRHP.

The portions of Alternatives 1, 2N, and 2S between the 230kV Brambleton-Yardley Line #2172 and Evergreen Mills Road have a moderate potential to impact significant undocumented archaeological sites potentially occurring along the small stream north of Evergreen Mills Road.

A copy of the Draft Phase IA cultural resources study is included as **Appendix 2**. Adverse effects on historic properties potentially resulting from the alternative routes would be mitigated as necessary through coordination between Dominion Energy Virginia, VDHR, and Loudoun County.

5.3.4 Religious and Institutional Facilities

In addition to these historic resources, Alternative Routes 2N and 2S would pass in close proximity to the Shirdi Sai Mandir Hindu Temple. Alternative Route 2S would also pass in close proximity to the Arcola United Methodist Church and across the parcel proposed for development of a Loudoun County elementary school in Arcola Center.

This summary indicates that Alternative Route 1 may have the least potential to affect religious and institutional facilities in the study area relative to Alternative Routes 2N and 2S.

5.3.5 Conservation Easements

None of the alternative routes would cross or be located in areas under conservation easements.

5.3.6 Visual Resources

The following is a summary of the potential visual effects of the three alternative routes.

- **Alternative Route 1:** Alternative Route 1 would span over Evergreen Mills Road once and then into the Evergreen Mills Switching Station site.
- **Alternative Route 2N:** This alternative would parallel the north side of Evergreen Mills Road, span the future widened Arcola Boulevard, and then span Evergreen Mills Road as it extends into the Evergreen Mills Switching Station site.
- **Alternative Route 2S:** This alternative would cross over Evergreen Mills Road, parallel the south side of the road, span back over to the north side of Evergreen Mills Road, and then span back over to the south side of this road as it extends into the Evergreen Mills Switching Station site.

As previously noted, the study area is previously disturbed and intensively developed in a generally suburban pattern. There are no pristine or noteworthy visual resources in the study area. The Project would be similar in scale and appearance to other development and infrastructure in the study area and would contribute to the area's predominant suburban character.

In part due to its shorter overall length, Alternative Route 1 would have less potential to affect the visual character of the study area relative to the other two alternatives.

6 CONCLUSIONS AND RECOMMENDATIONS

Dominion Energy Virginia and AECOM reviewed the potential effects of the three alternative routes and selected Alternative Route 1 as the Proposed Route for the Project. This route is illustrated in **Figure 8**.

Based on the analysis presented in **Section 5**, Alternative Route 1 is considered favorable to Alternative Routes 2N and 2S for multiple reasons. Alternative Route 1 is the shortest of the alternatives considered; would cross the fewest number of properties (three, including the Customer's property); is the subject of voluntary easements from private landowners; and would not require the displacement of existing residences and businesses. The alternative would also involve less soil disturbance, less forest and vegetation clearing, and fewer water body crossings; as such, it would potentially have fewer impacts on wildlife and threatened and endangered species. Relative to Alternatives 2N and 2S, Alternative 1 would involve fewer road crossings (one); would not cross land owned by federal, state, or local governments; and would directly support, rather than partially inhibit the development of, approved elements of Arcola Center.

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FIGURES



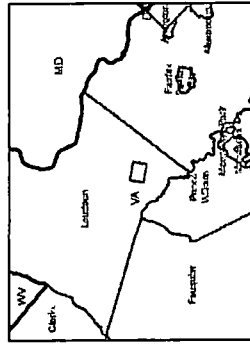
Legend

- Study
- Substation
- Existing Double Circuit 230 kV Transmission Line

Land Use

- Church
- Data Center
- General Office
- Group Quarter
- HOA
- Light Industrial Flex
- Medical Office
- Miscellaneous
- Residential
- Multi-Use
- Other: Non-Public
- Other: Public
- Public
- Retail
- Vacant

NAD 1983 State Plane Virginia North
Projection: Lambert Conformal Conic
Linear Unit: US Foot
Reference:
Loudoun Major Roadway
Loudoun County, VA
Current Date: 06/20/2011



AECOM

Figure 2
Land Use

Evergreen Mills 230 kV Line Loop and
Evergreen Mills Switching Station Project
Loudoun County, Virginia

Prepared By: GSP
Checked By: G708
Date: 04/20/11
US Project Number



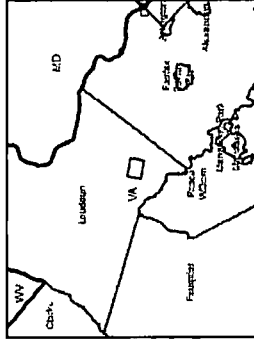
Legend

- Study
- Substation
- Existing Double Circuit 230 KV Transmission Line

Zoning Code

- CU - Light
- CR1 - Countryside
- GB - General Business
- IAD - Dulles International
- PDCRC - Commercial
- PDGI - General Industry
- PDH4 - Residential
- PDIP - Industrial Park
- PDOP - Office Park
- POTC - Town
- R1 - Light Residential
- R16 - Dense Residential
- R2 - Light Residential
- R24 - Dense Residential
- RC - Moderate Residential
- RC - Rural Commercial
- Arcola Center Boundary

1403 1803 West Pine 144N Virginia North
 Line 1 Unit 135 Post
 Reference
 Loudoun Major Roads Loudoun County, VA
 Loudoun County Zoning 2015



AECOM

Figure 3 Zoning Overview	
Evergreen Mills 230 KV Line Loop and Evergreen Mills Switching Station Project Loudoun County, Virginia	
Prepared by: E&F	Checked by: JWB
Date: Project Initiation	Date: 10/20/15



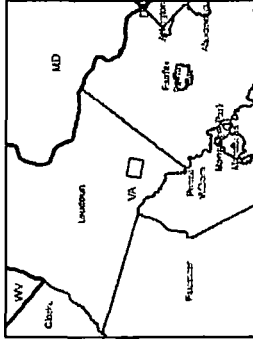
Legend

- Study Area
- Substation Areas
- Existing Double Circuit 230 kV Transmission Line
- Major Hydric Soils
- Hydric Inclusions
- Non-Hydric Soils

Soils



NAAD 1:62,500 Base Plan (ADON) Virginia Health
 Unit: 1:62,500 Feet
 Reference:
 Loudoun Major Roads (Loudoun County, VA)
 10/28/2010



AECOM

Figure 4
Soils

Evergreen Mills 230 kV Line Loop and
 Evergreen Mills Switching Station Project
 Loudoun County, Virginia

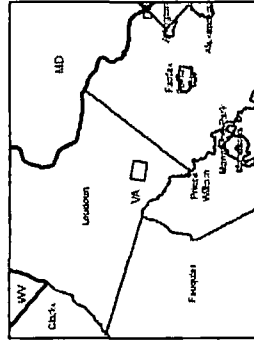
Prepared By: AEC	Checked By: J. P. 10/28/10
Job: Project Number	Date: 10/28/10



Legend

- Study Area
- Substation Areas
- Existing Double Circuit 230 kV Transmission Line
- NHD Wetlands
- NHD Streams
- 100 Year Floodplain

NAD 1983 State Plane HARR Virginia North
 Projection: Lambert Conformal Conic
 Units: Feet
 Reference:
 USGS Topographic Maps
 NHD Wetlands (NHDWL)
 NHD Streams (NHDSTR)
 Floodplain (FEMA)



AECOM

Figure 5
 Natural Environment

Evergreen Mills 230 kV Line Loop and
 Evergreen Mills Switching Station Project
 Loudoun County, Virginia

Prepared by: EEP	Checked by: JY/23
and Project Manager	Date: 4/20/18



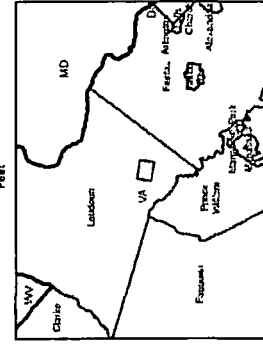


Legend

- Study Area
- Substation Areas
- Proposed Elementary School
- Existing Double Circuit 230 kV
- Transmission Line
- Alternative Routes**
 - Route 1
 - Route 2N
 - Route 2S
 - Proposed Right-of-Way
 - Loudoun County Parcels
 - County Owned Parcel
 - County Open Space
 - NRHP Listed Sites
 - Places of Worship
 - NHD Streams
 - Future Roadway Expansion
 - Arlco Center Boundary

HA01533 State Plane NAD83 Virginia North
Central Zone
Linear Unit: US Feet

References
Loudoun Major Roads (Loudoun County, VA)
Conservation Easements (Loudoun Co.)
NHD Streams (USGS)



AECOM

Figure 7 Alternative Routes

Evergreen Mills 230 kV Line Loop and
Evergreen Mills Switching Station Project
Loudoun County, Virginia

Prepared By: ESR
Checked By: JTB
Job Project Name: 20191025Jmrd



APPENDIX 1 – Agency Protected Species Query Results

VaFWIS Search Report Compiled on 10/21/2019, 2:29:38 PM[Help](#)

Known or likely to occur within a 2 mile radius around point 38,56,55.9 -77,31,22.4
in 107 Loudoun County, VA

[View Map of
Site Location](#)

504 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 31) (31 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
060003	FESE	Ia	<u>Wedgemussel, dwarf</u>	Alasmidonta heterodon		BOVA
050022	FTST	Ia	<u>Bat, northern long-eared</u>	Myotis septentrionalis		BOVA
060029	FT	IIa	<u>Lance, yellow</u>	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	<u>Bat, little brown</u>	Myotis lucifugus		BOVA
050027	SE	Ia	<u>Bat, tri-colored</u>	Perimyotis subflavus		BOVA
060006	SE	Ib	<u>Floater, brook</u>	Alasmidonta varicosa		BOVA,HU6
030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Potential</u>	BOVA,Habitat,HU6
040096	ST	Ia	<u>Falcon, peregrine</u>	Falco peregrinus		BOVA
040293	ST	Ia	<u>Shrike, loggerhead</u>	Lanius ludovicianus		BOVA
040379	ST	Ia	<u>Sparrow, Henslow's</u>	Ammodramus henslowii	<u>Potential</u>	BOVA,BBA,HU6
100155	ST	Ia	<u>Skipper, Appalachian grizzled</u>	Pyrgus wyandot		HU6
060081	ST	IIa	<u>Floater, green</u>	Lasmigona subviridis		BOVA
040292	ST		<u>Shrike, migrant loggerhead</u>	Lanius ludovicianus migrans		BOVA
030063	CC	IIIa	<u>Turtle, spotted</u>	Clemmys guttata		BOVA,HU6
030012	CC	IVa	<u>Rattlesnake, timber</u>	Crotalus horridus		BOVA
040092		Ia	<u>Eagle, golden</u>	Aquila chrysaetos		BOVA
040040		Ia	<u>Ibis, glossy</u>	Plegadis falcinellus		HU6
040306		Ia	<u>Warbler, golden-winged</u>	Vermivora chrysoptera		BOVA
100248		Ia	<u>Fritillary, regal</u>	Speyeria idalia idalia		BOVA,HU6
040213		Ic	<u>Owl, northern saw-whet</u>	Aegolius acadicus		BOVA,HU6
040052		IIa	<u>Duck, American black</u>	Anas rubripes		BOVA,HU6
040036		IIa	<u>Night-heron, yellow-crowned</u>	Nyctanassa violacea violacea		BOVA
040181		IIa	<u>Tern, common</u>	Sterna hirundo		HU6

040320		IIa	<u>Warbler, cerulean</u>	Setophaga cerulea		BOVA,HU6
040140		IIa	<u>Woodcock, American</u>	Scolopax minor		BOVA,HU6
060071		IIa	<u>Lampmussel, yellow</u>	Lampsilis cariosa		BOVA
040203		IIb	<u>Cuckoo, black-billed</u>	Coccyzus erythrophthalmus		BOVA
040105		IIb	<u>Rail, king.</u>	Rallus elegans		BOVA
040304		IIc	<u>Warbler, Swainson's</u>	Limnothlypis swainsonii		HU6
100154		IIc	<u>Butterfly, Persius duskywing.</u>	Erynnis persius persius		HU6
100166		IIc	<u>Skipper, Dotted</u>	Hesperia attalus slossonae		BOVA,HU6

10/21/2019 10:23:00 AM

To view All 504 species [View 504](#)

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
 Virginia Wildlife Action Plan Conservation Opportunity Ranking:
 a - On the ground management strategies/actions exist and can be feasibly implemented.;
 b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
 c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

[View Map of All Query Results from All Observation Tables](#)

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (1 records)

[View Map of All Fish Impediments](#)

ID	Name	River	View Map
1233	QUAIL RIDGE DAM	TR-BROAD RUN	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (10 records)
[View Map of All Query Results](#)
[Species Observations](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE *	Highest Tier **	
58701	SppObs	Jul 5 1999	JOHN WHITE	3		III	Yes
605575	SppObs	Feb 25 2008	Claudia; Thompson-Diehl	1			Yes
425216	SppObs	Sep 6 2005	VCU - INSTAR	17			Yes
302377	SppObs	Oct 8 2003	Robert Ballantine	4			Yes
300696	SppObs	Jul 8 2001	ROGER B. CLAPP	1			Yes
58700	SppObs	Jul 5 1999	JOHN WHITE	1			Yes
58721	SppObs	Aug 2 1998	JOHN WHITE	1			Yes
58728	SppObs	May 24 1998	JOHN WHITE	2			Yes
58736	SppObs	May 3 1998	JOHN WHITE	1			Yes
363955	SppObs	Jan 1 1900		1			Yes

Displayed 10 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (7 Reaches)
[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species						View Map
	Highest TE *	BOVA Code, Status *, Tier **, Common & Scientific Name					
Broad Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Cabin Branch (20700081)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
Ellick Run (20700101)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
Lenah Run (20700081)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
Stallion Branch (20700081)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700081)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700101)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>
tributary (20700101)	ST	030062	ST	Ia	<u>Turtle, wood</u>	Glyptemys insculpta	<u>Yes</u>

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (4 records)

[View Map of All Query Results](#)
[Virginia Breeding Bird Atlas Blocks](#)

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE *	Highest Tier **	
50204	<u>Arcola, CE</u>	41		III	<u>Yes</u>
50202	<u>Arcola, NE</u>	43		III	<u>Yes</u>
51203	<u>Herndon, CW</u>	29		IV	<u>Yes</u>
51201	<u>Herndon, NW</u>	47	ST	I	<u>Yes</u>

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
107	<u>Loudoun</u>	438	FTSE	I

USGS 7.5' Quadrangles:

Arcola
Herndon

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL17	<u>Broad Run-Lenah Run</u>	49	ST	I
PL18	<u>Horsepen Run</u>	61	ST	I
PL42	<u>Upper Bull Run</u>	68	FTSE	I
PL45	<u>Cub Run</u>	70	FTST	I

Compiled on 10/21/2019, 2:29:38 PM 1998129.0 report=all searchType=R dist= 3218 poi= 38,56,55.9 -77,31,22.4

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

Phone: (804) 693-6694 Fax: (804) 693-9032

<http://www.fws.gov/northeast/virginiafield/>



1012210028

IPaC Record Locator: 160-18825871

October 24, 2019

Subject: Consistency letter for the 'Evergreen Mills' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Craig Carver:

The U.S. Fish and Wildlife Service (Service) received on October 24, 2019 your effects determination for the 'Evergreen Mills' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

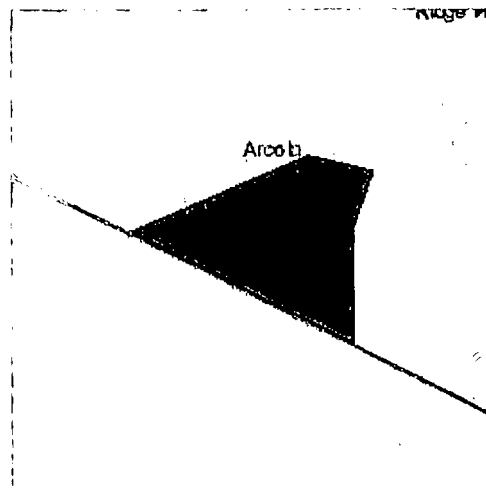
Evergreen Mills

2. Description

The following description was provided for the project 'Evergreen Mills':

Public utility company is proposing to build and operate a switching station and 230-kilovolt ("kV") double-circuit transmission line in the Arcola area of eastern Loudoun County.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.94302063906449N77.53619816551034W>

**Determination Key Result**

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

No

2. Will your activity purposefully **Take** northern long-eared bats?

No

3. Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered

No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

6. Will the action involve Tree Removal?

Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

6.4

2. If known, estimated acres of forest conversion from April 1 to October 31

6.4

3. If known, estimated acres of forest conversion from June 1 to July 31

6.4

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0



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<http://www.fws.gov/northeast/virginiafield/>



191210028

In Reply Refer To:

October 24, 2019

Consultation Code: 05E2VA00-2019-SLI-1775

Event Code: 05E2VA00-2020-E-01076

Project Name: Evergreen Mills

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2019-SLI-1775

Event Code: 05E2VA00-2020-E-01076

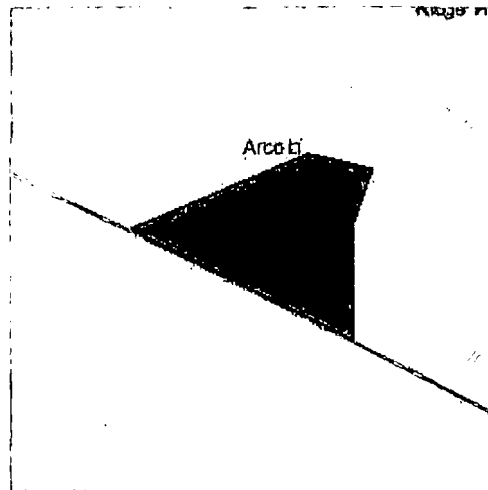
Project Name: Evergreen Mills

Project Type: ** OTHER **

Project Description: Public utility company is proposing to build and operate a switching station and 230-kilovolt ("kV") double-circuit transmission line in the Arcola area of eastern Loudoun County.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.94302063906449N77.53619816551034W>



Counties: Loudoun, VA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

NLEB Winter Habitat and Roost Trees

va dept. game &

Evergreen Mills Rd, Leesburg, VA, 21 X

ALLEGHENY PENNSYLVANIA

and Roost Trees Fort Wayne

Show search results for Evergre...

inland fisheries

AMERICAN

+

Wildbrush

Kokomo

Lafayette

Munde

Indianapolis

Terre Haute INDIANA

Dayton

Columbus

OHIO

Cincinnati

Hoosier National Forest

Evansville

Louisville

Frankfort

Lexington

KENTUCKY

Bowling Green

Daniel Boone National Forest

Clarksville

Cumberland

-77.457 37.644 Degrees

Murfreesboro 60mi

TENNESSEE

Knoxville

Kingsport

Johnson City

Cherokee National Forest

New

Bristol

Winston

Greensboro

Durham

Raleigh

Rocky Mount

Greensboro

New

Winston

Cherokee

Johnson

Knoxville

Kingsport

Bristol

New

Greensboro

Durham

Raleigh

Rocky Mount

Greensboro

New

Winston

Cherokee

Johnson

Knoxville

Kingsport

Bristol

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Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Web Project ID: WEB00000011900

Client Project Number:

PROJECT INFORMATION

TITLE: Modification to "Evergreen Mills 230kV Line Loop and Evergreen Mills Switching Station"

DESCRIPTION: Project description is the same as "Evergreen Mills 230kV Line Loop and Evergreen Mills Switching Station".

EXISTING SITE CONDITIONS: Same as "Evergreen Mills 230kV Line Loop and Evergreen Mills Switching Station"

QUADRANGLES: Arcola

COUNTIES: Loudoun

Latitude/Longitude (DMS): 38° 56' 59.3055" N / 77° 31' 44.7881" W

Acreage: 41 acres

Comments: The northern tie-in has been shifted slightly. Prior DCR initial response was dated April 4, 2019 and was addressed to Stefan Brooks.

REQUESTOR INFORMATION

Priority: N

Tier Level: Tier I

Tax ID:

Contact Name: Catey Lavagnino

Company Name: AECOM

Address: 4840 Cox Road

City: Glen Allen

State: VA

Zip: 23060

Phone: 8045158454

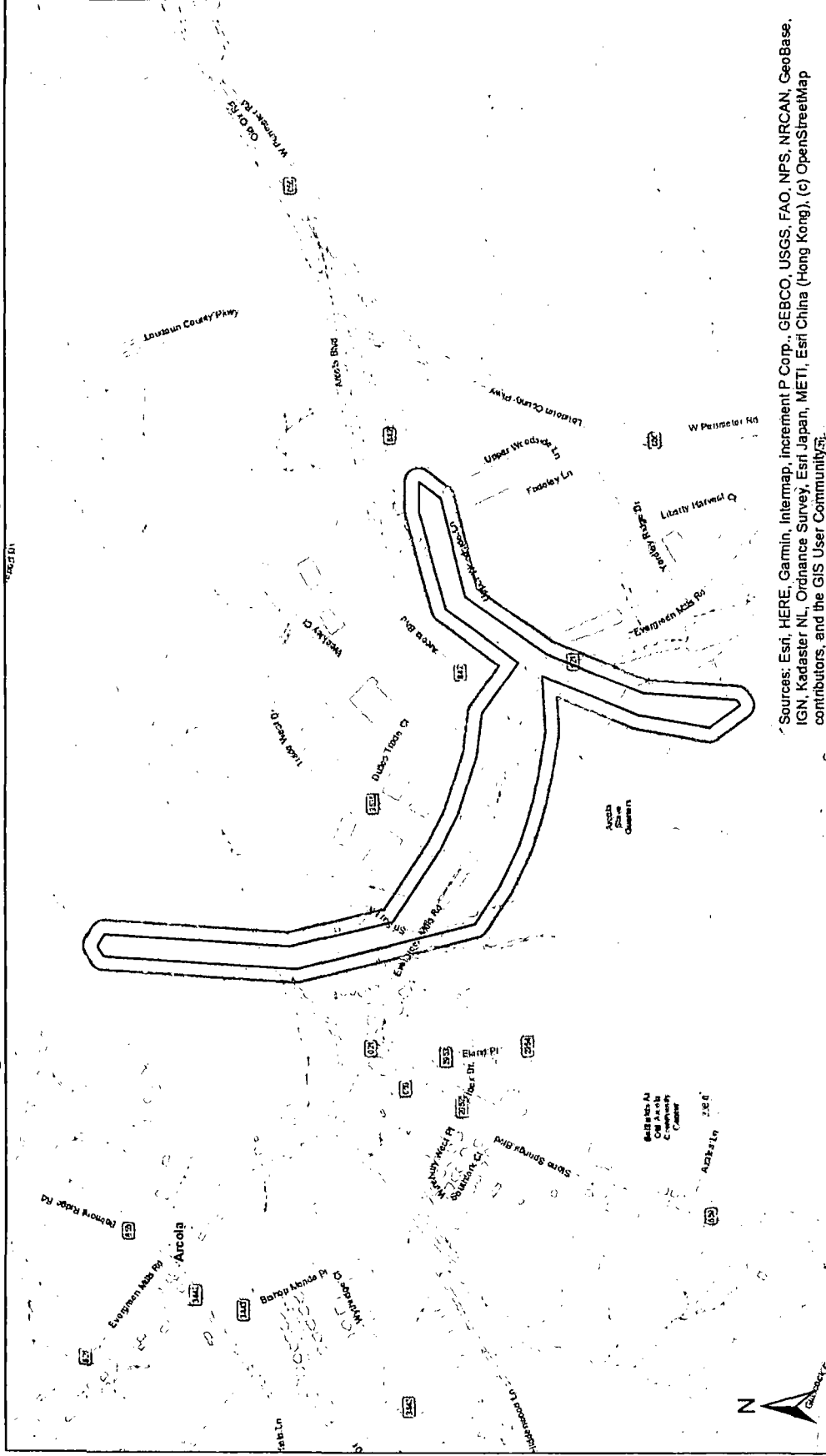
Fax: 8045158308

Email: catherine.lavagnino@aecom.com

Conservation Site	Site Type	Branch	Acreage	Listed Species Presence
Natural Heritage Screening Features Intersecting Project Boundary				

Intersecting Predictive Models				
Predictive Model Results				

Modification to "Evergreen Mills 230kV Line Loop and Evergreen Mills Switching Station"



- ☐ Project Boundary
- ☐ Buffered Project Boundary

1:11,407
0 0.075 0.15 0.3 0.6 km

Quads: Arcola

Counties: Loudoun

Company: AECOM

Lat/Long: 385659 / -773144



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

The project mapped as part of this report has been searched against the Department of Conservation and Recreation's Biotics Data System for occurrences of natural heritage resources in the vicinity of the area indicated for this project. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100 foot buffer. In addition, the project area does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

Any absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks additional natural heritage resources. New and updated information is continually added to Biotics. Please revisit this website or contact DCR for an update on this natural heritage information if a significant amount of time passes (DCR recommends no more than six months) before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in the Natural Heritage Data Explorer. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach (804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov).

Thank you for submitting your project to the Virginia Department of Conservation and Recreation's Natural Heritage Data Explorer Web Service. Should you have any questions or concerns about this report, the Data Explorer, or other Virginia Natural Heritage Program services, please contact the Natural Heritage Project Review Unit at 804-371-2708.

APPENDIX 2 – Phase IA Cultural Resources Assessment and Pre-Application Analysis

**PRELIMINARY CULTURAL RESOURCE ASSESSMENT
AND PRE-APPLICATION ANALYSIS
EVERGREEN MILLS 230kV LINE LOOP AND SWITCHING STATION**

LOUDOUN COUNTY, VIRGINIA

PREPARED FOR:
DOMINION ENERGY VIRGINIA
10900 NUCKOLS ROAD
GLEN ALLEN, VA 23060

PREPARED BY:
SCOTT SEIBEL, MSC, RPA
PATRICK THOMPSON, MPA, MHP

AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876

September 2019

AECOM

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