Appendix E

DOMINION ENERGY VIRGINIA

Idylwood-Tysons 230 kV Single Circuit Underground Transmission Line Tysons Substation Rebuild And Related Transmission Facilities

Environmental Routing Study

Appendix E Historic and Architectural Sites



DOMINION ENERGY VIRGINIA

Idylwood-Tysons 230 kV Single Circuit Underground Transmission Line Tysons Substation Rebuild And Related Transmission Facilities

Pre-Application Analysis Report

DRAFT REPORT

Prepared by



DOMINION ENERGY VIRGINIA

Idylwood-Tysons 230 kV Single Circuit Underground Transmission Line

Tysons Substation Rebuild

And Related Transmission Facilities

Pre-Application Analysis Report

Prepared for

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November 2017

EXECUTIVE SUMMARY

This report presents the findings of the pre-application analysis conducted for Virginia Electric Power Company (Dominion Energy Virginia or the Company) for the proposed Idylwood to Tysons 230 kV Transmission Line Project (Project). For this Project, Dominion Energy Virginia reviewed routes that could potentially address reliability and accommodate increased future demand in the Tysons area of Fairfax County, Virginia. The Company considered the facilities required to construct and operate the new feeds, the length of new rights-of-way that would be required, the amount of existing development in each area, the potential for impacts on the environment and on the communities, issues and concerns associated with each route, and the relative cost of each option.

After identifying the potential options, the Company decided to review six underground alternatives, each of which involves the construction and operation of a new 230 kilovolt (kV) electric transmission line between its existing Idylwood Substation and its Tysons Substation, both located in Fairfax County, Virginia. The pre-application analysis assesses potential impacts on historic and archaeological resources relative to each Project alternative. Environmental Resources Management (ERM) conducted the pre-application analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts to historic resources.

Four known archaeological sites are located in the right-of-way of the proposed transmission line alternatives. All have been impacted in some way by modern development, although some may have intact portions. Conditions observed at each recorded site location are summarized in the table below.

Idylwood-Tysons 230 kV Underground Transmission Line Project							
Execut	Executive Summary of Status of Archaeological Resources in the Study Area of the Proposed Alternatives						
Considered	Proposed Alternative						
Resource	Underground Alternative 01	Underground Alternative 02	Underground Alternative 03	Underground Alternative 04	Underground Alternative 05	Underground . Alternative 06	
44FX0043 Fairfax County Courthouse historic/ prehistoric site	Destroyed by office complex and parking garage	Destroyed by office complex and parking garage	Destroyed by office complex and parking garage	Destroyed by office complex and parking garage	-	-	
44FX0045 historic house site	-	Curtis Memorial Bridge built over part of site; remainder in Idylwood Park	Curtis Memorial Bridge built over part of site; remainder in Idylwood Park		-	-	
44FX0540 prehistoric lithic workshop	-	-	-	-	-	Office complex, sidewalk, and roadway built over site	
44FX2364 early 20 th century streetcar line	-		Asphalt paving for pedestrian trail covers site	-	-	-	

Two above ground historic resources fall within the Virginia Department of Historic Resources (DHR) tiers for the six alternatives under consideration. One of those resources is only relevant to Underground Alternative 06; the resource, 029-0035 (Spring Hill Farm), is no longer extant. The other considered resource, 053-0276, the Alexandria, Loudoun and Hampshire Railroad / Washington & Old Dominion Railroad Historic District, currently maintained as Washington & Old Dominion Railroad Regional Park, would be subject to potential impacts from each alternative under consideration. In each case, those impacts are considered to be minimal. A summary of resource impacts under each alternative is presented in the table below.

Idylwood-Tysons 230 kV Underground Transmission Line Project						
Proposed Alternative						
Considered Resource	Underground Alternative 01	Underground Alternative 02	Underground Alternative 03	Underground Alternative 04	Underground Alternative 05	Underground Alternative 06
029-0035 Spring Hill Farm	-	-	. –	-	-	None
053-0276 Washington & Old Dominion Railroad Historic District	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

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1.0 INTRODUCTION

This report presents the findings of the pre-application analysis conducted for Virginia Electric Power Company (Dominion Energy Virginia or the Company) for the proposed Idylwood to Tysons 230 kV Transmission Line Project (Project). The pre-application analysis assesses potential impacts on historic and archaeological resources relative to each Project alternative, in accordance with the guidelines specified by the Virginia Department of Historic Resources (DHR). ERM conducted the pre-application analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts to historic resources. An application is concurrently being submitted with the Virginia State Corporation Commission (SCC) for the Project on behalf of Dominion Energy Virginia. That application reviews all six underground alternatives considered in the pre-application analysis and presented in this report.

1.1 **PROJECT OVERVIEW**

For this Project, Dominion Energy Virginia reviewed routes that could potentially address reliability and accommodate increased future demand in the Tysons area of Fairfax County, Virginia. Alternatives initially considered included new build, wreck and rebuild, or a combination of new build and wreck and rebuild. Alternatives also included both overhead and underground options. In addition, hybrid variations that included both overhead and underground routes were considered; however, each hybrid option would require a minimum of one transition station that would occupy between two and three acres of land. The Project Team performed reconnaissance in the areas where transition stations would be required and was unable to identify parcel/parcels of adequate size; therefore, no further development of potential hybrid routes was conducted. The Company considered the facilities required to construct and operate the new feeds, the length of new rights-of-way that would be required, the amount of existing development in each area, the potential for impacts on the environment and on the communities, issues and concerns associated with each route, and the relative cost of each option. After an initial review of the options, Dominion Energy Virginia decided to more closely investigate six individual alternatives: Underground Alternatives 01 through 06 (Figure 1.1-1). Underground Alternative 05 is currently the preferred alternative.

Each alternative involves construction of a new 230 kV underground transmission line between the existing ldylwood and Tysons Substations. Each alternative under consideration also would require that the Tysons Substation be rebuilt to accommodate the new 230 kV transmission line along with terminals for the existing transmission lines (Reston-Tysons Line #2010 and Tysons-Swinks Mill Line #2108); other changes would be necessary to bring the substation into compliance with the Company's North American Electric Reliability Corporation-compliant Facility Interconnection Requirements document. The Tysons Substation will be rebuilt using Gas Insulated Substation (GIS) equipment to accommodate a six-breaker 230 kV ring bus. All changes would occur within the existing property boundary. At the Idylwood Substation, new 230 kV Gas Insulated Line (GIL) terminal equipment will be installed within the existing facility for the installation of the new Line #2175. Minor relay work will be required at the existing Idylwood Substation.



1.2 DESCRIPTION OF PROPOSED ROUTES FOR UNDERGROUND ALTERNATIVES 01 THROUGH 06

1.2.1 Underground Alternative 01 Route Description

Underground Alternative 01 is 5.0 miles long. A portion of it would follow Dominion Energy Virginia's existing overhead Lines #2035 and #202. The route would be constructed primarily within the roadbed of existing roads and within the Company's existing transmission line right-of-way that follows the Washington and Old Dominion Railroad Regional Park (053-0276), a historic district that has been determined eligible for the National Register of Historic Places (NRHP).

The route for Underground Alternative 01 would follow Dominion Energy Virginia's existing Line #2035 for about 0.2 mile out of the Idylwood Substation, through means of open trenching, heading north across Shreve Road. At the Washington and Old Dominion Railroad Regional Park, the route turns west to follow Line# 202 parallel with the park for 0.1 mile before crossing under Interstate 66 (I-66) and the Washington Metro Area Transit Authority (WMATA) Orange Line. The route then follows the Washington and Old Dominion Railroad Regional Park trail for about 1.7 miles, crossing Interstate 495 (I-495), Nottingham Drive, Sandburg Street, Gallows Road, and Cedar Lane. Along this portion of the route, horizontal directional drill (HDD) (two parallel drill paths) would be used for approximately 0.6 mile, following the Washington and Old Dominion Railroad Regional Park trail and crossing under I-66 (and the WMATA Orange Line), and I-495, with temporary workspace located near approximate mileposts (MP) 0.2 and 0.9. About 0.4 mile west of the Cedar Lane crossing, the route heads north behind residences on the west side of Malraux Road for 0.2 mile. At Electric Avenue, the route turns northeast and follows Electric Avenue for about 0.2 mile until it reaches Woodford Road. The route heads north following Woodford Road for about 1.0 mile, crossing Connierae Lane, Falcone Pointe Way, Wolftrap Creek, Tysons Court, Bethany Court, Quaint Lane, Wolftrap Road, Woodford Court, Rainbow Road, Black Stallion Place (2 crossings), and Old Courthouse Road. After the crossing under Old Courthouse Road, the route veers northwest to follow Old Courthouse Road for about 0.4 mile, crossing Howard Avenue and Chain Bridge Road. Where Old Courthouse Road turns west, the route continues north along Gosnell for about 0.4 mile, crossing Wall Street, Raglan Road, Tyspring Street, Leesburg Pike, and the WMATA Silver Line. After crossing the rail line, the route continues onto West Park Drive for about 0.2 mile before turning northwest onto Greensboro Drive for about 0.3 mile. At Spring Hill Road, the route veers northeast following Spring Hill Road for about 0.2 mile. The route then turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

The route would cross through a treeline that separates a residential neighborhood from office buildings. Where the route follows roads and segments of the trail within the park (MP 0.2 to 2.0), pavement would be replaced. There are sections of the line within the park where trees and other vegetation would be removed as part of the open-trench construction of the line running parallel to the paved pedestrian path. Tree clearing could be required along three segments of Underground Alternative 01 within Washington and Old Dominion Railroad Regional Park west of Gallows Road; these segments (from MP 1.06–1.57, 1.64–1.80, and 1.80–2.02) total approximately 0.89 mile, but vegetation may not need to be removed along that entire length. Tree clearing also may be required within the park immediately east of Gallows Road within a temporary HDD workspace. Visible evidence of the route from the removal of trees also would exist between MPs 2.0 and 2.3. This change would be directly visible to approximately 14 houses on Malraux Drive and pedestrians on the Washington and Old

Dominion Railroad Regional Park trail, but would otherwise not be noticeable. The wooded buffer between these houses and the office buildings would be thinned, but not entirely removed. As a result, visual impacts from Underground Alternative 01 would be minor and limited in geographic scope. Furthermore, this route traverses an area containing many major modern facilities (interstate highways, the Metrorail, and existing overhead transmission lines, for example); compared to these visual intrusions, the cleared trees associated with the Project if Underground Alternative 01 were constructed would be a small change in visual conditions.

1.2.2 Underground Alternative 02 Route Description

Underground Alternative 02 is 5.0 miles long. About 0.2 mile of it would follow Dominion Energy Virginia's existing overhead Line #2035 out of the Idylwood Station. The route would be constructed primarily within the roadbed of existing roads.

The route for Underground Alternative 02 would follow Dominion Energy Virginia's existing Line #2035 for about 0.2 mile out of the Idylwood Substation through means of open trenching, heading north across Shreve Road. The route would diverge from Line 2035 and cross under the Washington and Old Dominion Railroad Regional Park before crossing under I-66 (and the WMATA Orange Line), and entering Idylwood Park. The I-66 crossing requires a HDD (two parallel drill paths) crossing about 0.1 mile in length with temporary workspace located in in Idylwood Park to the north and within the Washington and Old Dominion Railroad Regional Park to the south. The route turns northeast for about 0.1 mile before leaving the park and crossing Virginia Lane. After crossing Virginia Lane the route follows Hurst Street for about 0.3 mile before turning west on Idvlwood Road and crossing under Senseney Lane. The route veers northwest onto Helena Drive for about 0.2 mile, crossing Providence Street. The route crosses I-495 via a liner plate tunnel installation about 0.1 mile in length extending onto Railroad Street crossing Coal Train Drive and Morgan Lane while turning west. Another HDD, about 0.3 mile long would be used to construct the route as it continues west along an unpaved Fairfax County right-of-way before rejoining Railroad Street where the construction method returns to conventional trenching approximately 0.2 mile, crossing 4th Place, Arden Street, Journey Drive, and Gallows Road. After crossing Gallows Road, the route continues west onto Electric Avenue for about 0.9 mile, crossing McGregor Court, Wheystone Court (2 crossings), Cedar Lane, Central Avenue, Williams Avenue, and Frank Street. At Woodford Road the route heads north following Woodford Road for about 1.0 mile, crossing Connierae Lane, Falcone Pointe Way, Wolftrap Creek, Tysons Court, Bethany Court, Quaint Lane, Wolftrap Road, Woodford Court, Rainbow Road, Black Stallion Place (2 crossings), and Old Courthouse Road. After the crossing under Old Courthouse Road, the route veers northwest to follow Old Courthouse Road for about 0.4 mile, crossing Howard Avenue, and Chain Bridge Road. Where Old Courthouse Road turns west, the route continues north along Gosnell for about 0.4 mile, crossing Wall Street, Raglan Road, Tyspring Street, Leesburg Pike and the WMATA Silver Line. After crossing the rail line, the route continues onto West Park Drive for about 0.2 mile before turning northwest onto Greensboro Drive for about 0.3 mile. At Spring Hill Road, the route veers northeast following Spring Hill Road for about 0.2 mile. The route then turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

This route would cross through Idylwood Park between MP 0.3 and 0.5. Pavement in affected roads would be replaced, as would turf grass in Idylwood Park. Following construction, the only visible evidence of the route would be where the transmission line right-of-way crosses an existing treeline at the north end of Idylwood Park; a 30-foot-wide corridor encompassing the transmission line would remain vegetated, but permanently cleared of trees. This route traverses an area containing many major modern facilities (interstate highways, the Metrorail,

and existing overhead transmission lines, for example); compared to these visual intrusions, the cleared trees associated with the Project if Underground Alternative 02 were constructed would be a small change in visual conditions.

1.2.3 Underground Alternative 03 Route Description

Underground Alternative 03 is 4.6 miles long. About 0.2 mile of it would follow Dominion Energy Virginia's existing overhead Line #2035 out of the Idylwood Station. The route would be constructed primarily within the roadbed of existing roads.

The route for Underground Alternative 03 would follow Dominion Energy Virginia's existing Line #2035 for about 0.2 mile out of the Idylwood Substation through means of open trenching, heading north across Shreve Road. The route would diverge from Line #2035 and cross the Washington and Old Dominion Railroad Regional Park before crossing under I-66 (and the WMATA Orange Line), and entering Idylwood Park. The I-66 crossing requires a HDD (two parallel drill paths) crossing about 0.1 mile in length with temporary workspaces located in in Idylwood Park to the north and within the Washington and Old Dominion Railroad Regional Park to the south. The route turns northeast for about 0.1 mile before leaving the park and crossing Virginia Lane. After crossing Virginia Lane the route follows Hurst Street for about 0.3 mile before turning west on Idylwood Road and crossing Senseney Lane. The route veers northwest onto Helena Drive for about 0.2 mile, crossing Providence Street. The route crosses under I-495 via a liner plate tunnel installation about 0.1 mile in length extending onto Railroad Street, crossing Coal Train Drive and Morgan Lane while turning west. Another HDD, about 0.3 mile long would be used to construct the route as it continues west along an unpaved Fairfax County right-of-way before rejoining Railroad Street where the construction method returns to conventional trenching for approximately 0.2 mile crossing 4th Place, Arden Street, and Journey Drive. The route turns to follow Gallows Road north and northwest for about 1.1 miles, crossing Cedar Lane/Oak Street, Wolftrap Road, Madron Lane, Tyson Oaks Drive (2 crossings), Science Applications Court, and Gallows Branch Road. The route then veers west to follow Old Courthouse Road for about 0.8 mile, crossing Lord Fairfax Road, Byrd Road, Hull Road, Woodford Road and Chain Bridge Road. Where Old Courthouse Road turns west, the route continues north along Gosnell for about 0.4 mile crossing Wall Street, Raglan Road, Tyspring Street, Leesburg Pike and the WMATA Silver Line. After crossing the rail line, the route continues onto West Park Drive for about 0.2 mile before turning northwest onto Greensboro Drive for about 0.3 mile. At Spring Hill Road, the route veers northeast following Spring Hill Road for about 0.2 mile. The route then turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

This route would cross through Idylwood Park between MP 0.3 and 0.5. Pavement in affected roads would be replaced, as would turf grass in Idylwood Park. Following construction, the only visual evidence of the route would be where the transmission line right-of-way crosses an existing treeline at the north end of Idylwood Park; a 30-foot-wide corridor encompassing the transmission line would remain vegetated, but permanently cleared of trees. This route traverses an area containing many major modern facilities (interstate highways, the Metrorail, and existing overhead transmission lines, for example); compared to these visual intrusions, the cleared trees associated with the Project if Underground Alternative 03 were constructed would be a small change in visual conditions.

1.2.4 Underground Alternative 04 Route Description

Underground Alternative 04 is 4.5 miles long. About 1 mile would follow Dominion Energy Virginia's existing overhead Lines #2035 and #202. The route would be constructed primarily within existing roadbeds. Pavement in affected roads and segments of the Washington and Old Dominion Railroad Regional Park trail (MP 0.2 to 1.0) would be replaced.

The route for Underground Alternative 04 would follow Dominion Energy Virginia's existing Line #2035 for about 0.2 mile out of the Idylwood Substation, through means of open trenching heading north across Shreve Road. At the Washington and Old Dominion Railroad Regional Park, the route turns west to follow Line #202 parallel with the park for about 0.1 mile, crossing under I-66, and the WMATA Orange Line, and then along the Washington and Old Dominion Railroad Regional Park trail through means of a HDD (two parallel drill paths) for about 0.6 mile, crossing under I-495, Nottingham Drive, and Sandburg Street, with additional temporary workspaces (ATWS) located near about MP 0.2 and 0.9. The route continues for about 1.6 miles, turning north, following Gallows Road for about 1.5 miles crossing ldylwood Road, Elm Place, Electric Avenue, Cedar Lane/Oak Street, Wolftrap Road, Madron Lane, Tyson Oaks Drive (2 crossings), Science Applications Court, and Gallows Branch Road. The route then veers west to follow Old Courthouse Road for about 0.8 mile, crossing Lord Fairfax Road, Byrd Road, Hull Road, Woodford Road and Chain Bridge Road. Where Old Courthouse Road turns west, the route continues north along Gosnell for about 0.4 mile crossing Wall Street, Raglan Road, Tyspring Street, Leesburg Pike and the WMATA Silver Line. After crossing the rail line, the route continues onto West Park Drive for about 0.2 mile before turning northwest onto Greensboro Drive for about 0.3 mile. At Spring Hill Road, the route veers northeast following Spring Hill Road for about 0.2 mile. The route then turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

Tree clearing may be required within Washington and Old Dominion Railroad Regional Park immediately east of Gallows Road within a temporary HDD workspace. Following construction, there would be minimal visible evidence of Underground Alternative 04.

1.2.5 Underground Alternative 05 Route Description

Underground Alternative 05, currently the preferred alternative, is 4.3 miles long. A portion of it would follow Dominion Energy Virginia's existing overhead Lines #2035 and #202. The route would be constructed primarily within existing roadbeds. Pavement in affected roads and segments of the Washington and Old Dominion Railroad Regional Park trail (MP 0.2 to 1.0) would be replaced.

The route for Underground Alternative 05 would follow Dominion Energy Virginia's existing Line #2035 out of the Idylwood Substation for about 0.2 mile through means of open trenching, heading north across Shreve Road. At the Washington and Old Dominion Railroad Regional Park, the route turns west to follow Line #202 parallel with the park for about 0.1 mile, under I-66 and the WMATA Orange Line, and then parallel with the park trail through means of an HDD (two parallel drill paths) for about 0.6 mile, crossing I-495, Nottingham Drive, and Sandburg Street with ATWSs located near about MP 0.2 and 0.9. The route continues for about 1.9 miles, turning north following Gallows Road, crossing Idylwood Road, Elm Place, Electric Avenue, Cedar Lane/Oak Street, Wolftrap Road, Madron Lane, Tyson Oaks Drive (2 crossings), Science Applications Court, Gallows Branch Road Road/Aline, and Boone Boulevard. The route crosses Leesburg Pike and continues in a northeast direction along International Drive for about 1.3 miles, crossing Fletcher Street, Tysons Corner Center, Chain Bridge Road, the WMATA

Silver Line, Galleria Drive, Greensboro Drive, Tysons Boulevard, Westpark Drive, Lincoln Circle (2 crossings), and Lincoln Lane. Just prior to reaching Jones Branch Drive, the route turns west and southwest following Spring Hill Road for 0.1 mile. The route then turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

Tree clearing may be required within Washington and Old Dominion Railroad Regional Park immediately east of Gallows Road within a temporary HDD workspace. Following construction, there would be minimal visible evidence of Underground Alternative 05.

1.2.6 Underground Alternative 06 Route Description

Underground Alternative 06 is 4.7 miles long. A portion of it would follow Dominion' Energy Virginia's existing overhead Lines #2035 and #202. The route would be constructed primarily within existing roadbeds. For about 0.2 mile of its length, Underground Alternative 06 would be located within Tysons Corner Court, a private road owned and maintained by Tysons Corner Center. Pavement in affected roads and segments of the Washington and Old Dominion Railroad Regional Park trail (MP 0.2 to 1.0) would be replaced.

The route for Underground Alternative 06 would follow Dominion Energy Virginia's existing Line #2035 out of the Idylwood Substation for about 0.2 mile through means of open trenching, heading north across Shreve Road. At the Washington and Old Dominion Railroad Regional Park, the route turns west to follow Line #202 parallel with the park for about 0.1 mile, under I-66 and the WMATA Orange Line, and then parallel with the park trail through means of an HDD (two parallel drill paths) for about 0.6 mile, crossing I-495, Nottingham Drive, and Sandburg Street with ATWS located near about MP 0.2 and 0.9. The route continues for 1.9 miles, turning north following Gallows Road, crossing Idylwood Road, Elm Place, Electric Avenue, Cedar Lane/Oak Street, Wolftrap Road, Madron Lane, Tyson Oaks Drive (2 crossings), Science Applications Court, Gallows Branch Road Road/Aline Avenue, and Boone Boulevard. The route crosses Leesburg Pike and continues in a northeast direction along International Drive for about 0.2 mile, crossing Fletcher Street. The route veers northeast and east along Tysons Corner Center for about 0.2 mile, after which it diverges from the road heading northeast crossing Chain Bridge Road and the WMATA Silver Line before veering north then northwest, following Tysons Boulevard for 0.7 mile crossing Galleria Drive, and Westbranch Drive. The route turns north along Park Run Drive for about 0.3 mile, crossing Westpark Drive and Crestwood Heights Drive before turning west on Jones Branch Drive for about 0.3 mile, crossing Lincoln Way (2 crossings), Lincoln Center Court, International Drive, then continues west and southwest on Spring Hill Road for 0.1 mile. The route turns west to follow Tyco Road for about 0.1 mile before entering the Tysons Substation.

Tree clearing may be required within Washington and Old Dominion Railroad Regional Park immediately east of Gallows Road within a temporary HDD workspace. Following construction, there would be minimal visible evidence of Underground Alternative 06.

1.3 MANAGEMENT RECOMMENDATIONS

Four known archaeological sites are located in the right-of-way of the proposed transmission line alternatives. All have been impacted in some way by modern development, although some may have intact portions. Two above ground historic resources fall within the DHR tiers for the six alternatives under consideration. Minimal impact on historic resources is anticipated regardless of alternative. But among the proposed alternatives, Underground Alternative 01 would involve the greatest visual impacts.

One of the two considered historic resources defined in accordance with DHR guidelines is associated with all of the proposed alternatives. It is the Washington and Old Dominion Railroad Historic District (053-0276), currently maintained as Washington and Old Dominion Railroad Regional Park. It is a linear resource determined eligible for the NRHP, which is intersected by all of the proposed alternatives. All of the Underground Alternatives would be installed adjacent to the Company's existing overhead transmission line, which extends along the district. Underground Alternative 01 would intersect the resource for the greatest distance among the alternatives, running through the park for approximately 1.86 miles; Underground Alternatives 04, 05, and 06 would all exit the park further east from Underground Alternative 01 (at Gallows Road/Route 650), and would extend through the district for approximately 0.83 mile. Each of these proposed alternatives would originate at the Idylwood Substation and enter the park south of I-66. Underground Alternatives 02 and 03 would cross the resource perpendicularly south of I-66, and follow the same route from the Idylwood Substation. No trees would be removed within the boundary of the historic district itself in the case of Underground Alternatives 02 and 03. However, some vegetation would be removed within the historic district immediately east of Gallows Road within a temporary HDD workspace in the case of Underground Alternatives 01, 04, 05 and 06. In the case of Underground Alternative 01, there also could be removal of vegetation along three segments within the historic district west of Gallows Road, for total distance of up to 0.89 miles. Finally, there is a location adjacent to Underground Alternative 01 where trees would be removed adjacent to the district, creating visual impacts where the proposed route proceeds north from the park; in this location, some tree clearing would likely occur at the eastern edge of an office complex and to the west of a subdivision with houses along Malraux Drive, with possible tree clearing extending from 053-0276 north to Electric Avenue.

All of the alternatives would involve direct effects to Washington and Old Dominion Railroad Historic District through installation of the buried line. Only construction plans for Underground Alternatives 01, 04, 05 and 06 would entail visual impacts to 053-0276, but they would not compromise the qualities that make 053-0276 eligible for the NRHP. The vegetation currently found within the park is not consistent with the historic landscape of the district, when the active rail corridor was maintained as a cleared right-of-way. Thus, the potential change to the landscape along a small part of the 45-mile-long historic district would not degrade the historic setting of the resource. Furthermore, the viewshed change to the adjacent area north of the district in the case of Underground Alternative 01 would be minor in the context of the overall length of the resource, which is lined by many more obtrusive modern landscape features and buildings; the current setting in that location is not significant to the historic character of the resource. For these reasons, the impacts from each proposed alternative on 053-0276 are considered to be minimal.

In the case Underground Alternative 06, in addition to 053-0276, a second considered resource is located within one mile of the proposed route: Spring Hill Farm (029-0035) a National Register listed property that is also on the Virginia Landmarks Register (VLR). The field investigations for this study confirmed that Spring Hill Farm is no longer extant, and thus would not be affected by construction of Underground Alternative 06.

More information can be found in the sections that follow about the considered resources and the nature of potential impacts from each proposed alternative.

2.0 RECORDS REVIEW

2.1 DATA COLLECTION APPROACH

ERM conducted an analysis of potential cultural resource impacts for the alternatives under consideration in accordance with the DHR's 2008 Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (Guidelines). For the pre-application analysis, ERM considered National Historic Landmark (NHL) properties located within a 1.5-mile radius of the centerline; NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of the centerline; NRHP-eligible and -listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of the centerline; and all of the above qualifying architectural resources as well as archaeological sites located within the right-of-way for each alternative route. Information on the resources in each tier was collected from the Virginia Cultural Resource Information System (V-CRIS). ERM also researched information on battlefields surveyed and assessed by the NPS's American Battlefield Protection Program (ABPP). In their focus on nationally significant Civil War battlefields, the ABPP identifies the historic extent of the battle (study area), the areas of fighting on the battlefield (core area located within the study area), and potential National Register boundaries. Mapping of those ABPP boundaries in the form of ArcGIS shape files was reviewed as part of the analysis of potential cultural resource impacts. In addition to those resources, Dominion Energy Virginia considered potential effects to DHR easements.

Many cultural resources in the vicinity of the Project have not been assessed for NRHP eligibility, and therefore are not included in the pre-application analysis, per DHR Guidelines. Until they have been assessed and a determination made by DHR, they should be considered potentially eligible for listing in the NRHP. Likewise, there may be as-yet unreported historic and archaeological resources that may ultimately be affected by the Project. Any such resources will be addressed during the full cultural resource survey to be conducted following SCC approval of a Project alternative.

Along with the records review carried out for the four tiers defined by DHR, ERM conducted field assessments of considered resources for each Project alternative in accordance with the DHR Guidelines. Digital photographs of each architectural resource and views to the transmission line were taken. For previously recorded archaeological sites under consideration, a windshield survey was carried out to observe the current land use in the recorded site location, in concert with a review of contemporary aerial photographs.

2.2 ARCHAEOLOGICAL RESOURCES

Crossings of archaeological sites were considered a constraint in this study due to the potential for an electric transmission line to impact archaeological deposits in these areas (for example, due to transmission structure placement, tree clearing or heavy equipment usage within a site). The known archaeological sites in the right-of-way for each Project alternative are depicted in Figure 2.2-1 and summarized in Table 2.2-1. None have been evaluated as to NRHP eligibility. Based on a review of contemporary aerial photographs and ground-level photography conducted during field investigations, some of these sites, or portions of them, have been disturbed or destroyed by modern development. In the case of 44FX0043, a modern office complex and parking garage have been built over site, destroying the entire site. In the case of 44FX0045, Custis Memorial Parkway was built over part of the site, while the northern and eastern portion may be intact within Idylwood Park. In the case of 44FX0540, an office complex,

sidewalk, and street have been constructed, likely destroying the entirety of the site. In the case of 44FX2364, the streetcar line has been paved over with asphalt for a pedestrian trail, but it may be sealed intact below fill. A confident and complete assessment of the integrity of each site would require archaeological field investigations. Until archaeological field investigations are conducted to determine the status of recorded archaeological sites, a definitive comparison of potential impacts to archaeological sites for each alternative would be speculative.

TABLE 2.2-1						
Idylwood-Tysons 230 kV Underground Transmission Line Project Archaeological Resources in Right-of-Way of Underground Alternatives						
Route Alternative	Route Alternative Site Number Description NRHP Stat					
Underground Alternative 01	44FX0043	Fairfax County Courthouse (18 th century)/ multicomponent prehistoric camp (Late Archaic, Early Woodland)	Not evaluated			
Underground Alternative 02	44FX0043	Fairfax County Courthouse (18 th century)/ multicomponent Not.evaluated prehistoric camp (Late Archaic, Early Woodland)				
	44FX0045	Historic domestic site (late 18 th century, 20 th century)	Not evaluated			
Underground Alternative 03	44FX0043	Fairfax County Courthouse (18 th century)/ multicomponent prehistoric camp (Late Archaic, Early Woodland)	Not evaluated			
	44FX0045	historic domestic site (late 18 th century, 20 th century)	Not evaluated			
	44FX2364	early 20 th century streetcar line	Not evaluated			
Underground Alternative 04	44FX0043	Fairfax County Courthouse (18 th century)/ multicomponent prehistoric camp (Late Archaic, Early Woodland)	Not evaluated			
Underground Alternative 05						
Underground Alternative 06	44FX0540	prehistoric lithic workshop	Not evaluated			



Figure 2.2-1. Locations of archaeological resources within right-of-way of proposed Project alternatives.

2.3 HISTORIC RESOURCES

This section presents information on known resources in the vicinity of each Project alternative according to DHR's tiered study area model. The locations of the resources relevant to each alternative are depicted in the maps below (Figures 2.3.1-1 through 2.3.6-1). Tables 2.3.1-1 through 2.3.6-1 list the considered resources pertinent to each route alternative. Resources that extend from one tier into the next are only presented once in the tier nearest the alternative. Note that no ABPP study area, core area, or potential NRHP boundaries for battlefields are within the relevant tiers for the various options.

The one extant considered resource that lies within the DHR tiers for the proposed alternatives was subjected to field reconnaissance and a preliminary assessment of effects. The results of that assessment are summarized in Section 3.3.

None of the resources within 1.5 miles of Underground Alternatives 01–06 contain a DHR easement. In the case of Underground Alternative 01, beyond the one considered resource in the right-of-way, there are only three other historic resources within the right-of-way (029-0206, 029-5470, and 153-5014), and all have been determined not eligible for the NRHP. In the case of Underground Alternatives 02 and 03, beyond the one considered resource in the right-of-way, there are also three other historic resources within the right-of-way (029-5470, 029-5470, 029-5470-0002, and 029-5861), and all have been determined not eligible for the NRHP. In the case of Underground Alternatives 04, 05, and 06 beyond the one considered resource in the right-of-way, there are only two other historic resources within the right-of-way (029-0206 and 029-5470), both determined not eligible for the NRHP.

2.3.1 Underground Alternative 01

The one resource that lies within the DHR tiers for Underground Alternative 01 is presented in Table 2.3.1-1 and depicted in Figure 2.3.1-1. This resource (053-0276) is intersected by the transmission line right-of-way for a distance of 1.86 miles.

TABLE 2.3.1-1						
Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 01						
Buffer (miles)	Resource Number*	Considered Resource	Description			
0.0 (within right-of-way)	0.0 053-0276 National Register Eligible Washington and Old Dominion Railroad Historic District – (within right-of-way) 1.86 miles along right-of-way					



2.3.2 Underground Alternative 02

The one resource that lies within the DHR tiers for Underground Alternative 02 is presented in Table 2.3.2-1 and depicted in Figure 2.3.2-1. This resource (053-0276) is intersected by the transmission line right-of-way for a distance of 0.06 mile where an HDD entry point and temporary workspace will be located within the boundary of the district.

TABLE 2.3.2-1					
Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 02					
Buffer (miles)	Resource Number*	Considered Resource	Description		
0.0 053-0276 National Register Eligible Washington and Old Dominion Railroad Historic District – (within right-of-way) 0.06 mile along right-of-way					

2.3.3 Underground Alternative 03

The one resource that lies within the DHR tiers for Underground Alternative 03 is presented in Table 2.3.3-1 and depicted in Figure 2.3.3-1. This resource (053-0276) is intersected by the transmission line right-of-way for a distance of 0.06 mile where an HDD entry point and temporary workspace will be located within the boundary of the district.

TABLE 2.3.3-1 Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 03				
Buffer Resource Considered Resource Description (miles) Number* Description Description				
0.0 (within right-of-way)	053-0276	National Register Eligible	Washington and Old Dominion Railroad Historic District – 0.06 mile along right-of-way	

2.3.4 Underground Alternative 04

The one resource that lies within the DHR tiers for Underground Alternative 04 is presented in Table 2.3.4-1 and depicted in Figure 2.3.4-1. This resource (053-0276) is intersected by the transmission line right-of-way for a distance of 0.83 mile.

TABLE 2.3.4-1						
Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 04						
Buffer (miles)	Resource Number*	Considered Resource	Description			
0.0 (within right-of-way)	National Register Eligible Washington and Old Dominion Railroad Historic District – (within right-of-way) 0.83 mile along right-of-way					







2.3.5 Underground Alternative 05

The one resource that lies within the DHR tiers for Underground Alternative 05 is presented in Table 2.3.5-1 and depicted in Figure 2.3.5-1. This resource (053-0276) is intersected by the transmission line right-of-way for a distance of 0.83 mile.

TABLE 2.3.5-1							
Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 05							
Buffer Resource (miles) Number*		Considered Resource	Description				
[·] 0.0 (within right-of-way)	053-0276	National Register Eligible	Washington and Old Dominion Railroad Historic District – 0.83 mile along right-of-way				

2.3.6 Underground Alternative 06

The two resources that lie within the DHR tiers for Underground Alternative 06 are presented in Table 2.3.6-1 and depicted in Figure 2.3.6-1. Only one of the resources remains extant: resource 053-0276, which is intersected by the transmission line right-of-way for a distance of 0.83 mile. Field investigations confirmed that Spring Hill Farm (029-0035) is gone.

TABLE 2.3.6-1 Idylwood-Tysons 230 kV Underground Transmission Line Project Historic Resources in DHR Tiers for Underground Alternative 06							
0.5 to 1.0	029-0035	National Register Listed	Spring Hill Farm (no longer extant)				
0.0 (within right-of-way)	053-0276	National Register Eligible	Washington and Old Dominion Railroad Historic District – 0.83 mile along right-of-way				

2.4 PREVIOUS SURVEYS

Some portions of the proposed Project alternatives have been subject to previous cultural resource survey coverage. Because many segments of the underground alternatives are concurrent with others, these surveys have covered portions of multiple routes. The previous surveys relevant to the underground alternatives are indicated in Table 2.4-1. All of these surveys were for highway projects.

TABLE 2.4-1										
Idylwood-Tysons 230 kV Underground Transmission Line Project Cultural Resources Surveys Covering Portions of the Underground Alternatives										
Route Alternative						Survey				
UG 01	UG 02	UG 03	UG 04	UG 05	UG 06	Citation	DHR Report Number			
х	х	х	х	Х	Х	Barber et al. 2001	FX-358			
				х	Х	Chatelain n.d.	FX-111			
Х	х					Jolley 1987	FX-106			





3.0 STAGE I PRE-APPLICATION ANALYSIS FINDINGS

3.1 METHODS FOR ANALYSIS

Fieldwork for the Project was conducted by architectural historians Mary Beth Derrick and Jessica Wobig between August 1–4 and on August 28, 2017. The fieldwork for the viewshed analysis entailed photographing resources requiring visual assessment according to the Stage I Pre-Application review process and examining the potential line-of-sight views from each resource towards the proposed transmission lines. Since 053-0276 (Washington and Old Dominion Railroad Historic District) is a linear resource, photographs were taken from multiple vantage points within the resource. Photographs attempted to capture the direction with the clearest, most unobstructed view toward the Project. The location of the photograph was captured with GPS and the direction of the view was recorded.

Dominion Energy Virginia will utilize a maximum 30-foot-wide right-of-way for all of the underground alternatives. The majority of the route of each proposed alternative lies within existing roadbeds and within the right-of-way of the Company's existing transmission lines. For these reasons, there will be limited visual impacts, and the only tree-clearing within view of a historic resource would be along a section of Underground Alternative 01, on the north side of resource 053-0076.

Beyond a small amount of proposed tree clearing that would be necessary for certain alternatives, the only aboveground construction associated with the Project would take place within the footprint of the existing substations. Each alternative under consideration would require that the Tysons Substation be rebuilt to accommodate the new 230 kV transmission line along with terminals for the existing transmission lines (Reston-Tysons Line #2010 and Tysons-Swinks Mill Line #2108), as well as other changes necessary to bring it into compliance with the Company's North American Electric Reliability Corporation-compliant Facility Interconnection Requirements document. The Tysons Substation will be rebuilt using Gas Insulated Substation equipment to accommodate a six-breaker 230 kV ring bus. All changes would occur within the existing property boundary (Figure 3.1-1). The Tysons Substation rebuild is not within view of any of the resources considered in the pre-application analysis. At the Idylwood Substation, new 230 kV GIL terminal equipment will be installed for installation of the new Line #2175 (Figure 3.1-2). Minor relay work will be required at the existing Idylwood Substation and Reston Substation. Because the necessary improvements are minor and involve an existing facility, visual impacts would be limited and not within view of considered historic resources.

Assessment of potential Project impacts on individual resources made use of the visual assessment findings and categorized the level of severity of impacts according to the scale devised by DHR:

None – Project is not visible from the resource.

Minimal – Viewsheds have existing transmission lines, there will be only a minor change in height, and/or views are partially obscured by topography or vegetation.

Moderate – Viewsheds have more expansive views of the transmission line, more dramatic changes in height are proposed, and/or the overall visibility of the Project would be greater.





Severe – Existing viewshed contains no transmission line, the view to the Project would be relatively unobstructed, the new transmission line would introduce a significant change to the setting of historic properties, and/or a dramatic change in the height of an existing transmission line would take place in close proximity to historic properties.

3.2 HISTORIC RESOURCE DESCRIPTIONS

3.2.1 029-0035 Spring Hill Farm

The resource known as Spring Hill Farm was previously located at 1121 Spring Hill Road in McLean. It was approximately 0.96 mile north of Underground Route 06. The resource was previously surveyed in 1958, 2001, 2002, and 2006, and was surveyed for the purposes of this Project in August of 2017. At the time of the survey, it was found to be no longer extant, and aerial views show that it was demolished between 2012 and 2014 (Figure 3.2.1-1). According to online tax records, a modern dwelling was constructed in the same location in 2015.

Spring Hill Farm was added to the VLR in 2001 and the NRHP in 2002. It was eligible under Criterion C for Architecture, as a good example of a Federal farmhouse, and Criterion B for its association with Henry Alvord. Because the original farmhouse and two associated barns are no longer extant, 029-0035 is no longer considered historic. Therefore, potential impacts from the Project are not relevant.

3.2.2 053-0276 Washington and Old Dominion Railroad Historic District

The Washington and Old Dominion Railroad Historic District encompasses a former rail line in Fairfax County. The proposed rights-of-way for Underground Alternatives 01 through 06 overlap or intersect the resource for varying distances in the case of each route. The resource has been surveyed multiple times, between 1999 and 2017. Architectural historians have previously surveyed in the resource in the town of Vienna in Fairfax County. The resource is situated along modern and historic subdivisions, and intersects the Capital Beltway. Overhead transmission lines run parallel to the resource in the areas surveyed for the current Project. Although the original rails and ties have been removed, the rail corridor has been preserved and the resource is well-maintained and in good condition.

The resource was built in 1855 as the Alexandria, Loudoun and Hampshire Railroad and was used as a local supply line for Union forces during the Civil War. The railroad had various owners until 1911 when it became the Washington and Old Dominion Railroad. Under this leadership, it changed from a steam-powered line to an electrical one. The line began to fail in the 1920s with the introduction of the automobile. It briefly prospered during the Second World War due to rationing, but passenger service ended in 1951 and the line was altogether abandoned in 1968. It was then sold to the Virginia Department of Highways, which sold the railroad's right-of-way to Virginia Electric and Power Company for its electrical transmission lines. The tracks were removed in the 1970s, and the Regional Park Authority bought the right-of-way in 1982 (VCRIS form). Dominion Energy Virginia retained its easement along the line.

Resource 053-0276 is now the location of a regional park managed by the Northern Virginia Regional Parks Authority; the Washington and Old Dominion Railroad Regional Park contains a 45-mile paved rail trail that extends from Alexandria to Purcellville. Views of the resource in the vicinity of the Project are presented in Figures 3.2.2-1 through 3.2.2-3. The Washington and Old



Figure 3.2.1-1. Aerial photograph from 2016 showing modern structures in location of 029-0035.

Dominion Railroad Historic District has been determined eligible for the NRHP by DHR. It is considered eligible under Criterion A for its contributions to the broad patterns of Northern Virginia's transportation and commerce history.



Figure 3.2.2-1. 053-0276, facing northwest.



Figure 3.2.2-2. 053-0276, facing northwest.



Figure 3.2.2-3. 053-0276, facing southeast.

3.3 HISTORIC RESOURCE FINDINGS FOR UNDERGROUND ALTERNATIVE 01

3.3.1 053-0276 - Washington and Old Dominion Railroad Historic District

The Washington and Old Dominion Railroad Historic District is intersected by Underground Alternative 01 for a distance of approximately 1.86 miles. The route of this underground alternative within the resource would be located directly adjacent to the Company's existina overhead transmission line right-of-way which currently extends through the district. Based on the preliminary conceptual design of the project, there might be some tree clearing within the open trench section of Underground Alternative 01 within the district between Gallows Road and the point where the transmission line would turn north and leave the park (Figure 3.3.1-1). Figures 3.3.1-2 through 3.3.1-10 illustrate the views from key locations where vegetation would need to be removed. However, the precise amount of tree clearing cannot be quantified until the final alignment of this route is determined pending the completion of the underground utility survey. Tree clearing could be required along three segments of Underground Alternative 01 west of Gallows Road; these segments (from MP 1.06-1.57, 1.64-1.80, and 1.80-2.02) total approximately 0.89 miles, but vegetation may not need to be removed along that entire length. Construction along portions of the line within the district would involve HDD, and those segments will leave no visible evidence post-construction. However, it is possible that a small area of trees and understory vegetation would be removed within the temporary HDD workspace located in the district immediately east of Gallows Road (see Figure 3.3.9). In addition to the vegetation changes within the district itself, some trees would be removed adjacent to the park. Some tree clearing would likely occur at the eastern edge of an office complex and to the west of a subdivision with houses along Malraux Drive, with possible tree clearing extending from 053-0276 north to Electric Avenue (see Figure 3.3.2). The visual





Figure 3.3.1-2. Photograph illustrating the route of Underground Alternative 01 along an opentrenched construction segment with potential tree removal adjacent to and within view of 053-0276 (Photo view 1).



Figure 3.3.1-3. Photograph illustrating the route of Underground Alternative 01 along an opentrenched construction segment with potential tree-removal within 053-0276 (Photo view 2).

impacts to the resource in this location would exist within a limited set of vantage points. No tree-clearing is proposed in the temporary HDD workspace east of I-66 and north of the Idylwood substation (Figure 3.3.1-11 and 3.3.1-12).

The vegetation currently found within the park is not consistent with the historic landscape of the district, when the active rail corridor was maintained as a cleared right-of-way. Thus, the potential change to the landscape along less than a mile of the 45-mile-long historic district would not degrade the historic setting of the resource. Furthermore, the viewshed change to the adjacent area north of the district would be minor in the context of the overall length of the resource, which is lined by many more obtrusive modern landscape features and buildings; the current setting in that location is not significant to the historic character of the resource. As a result, the direct construction impacts and indirect visual impacts to the resource from Underground Alternative 01 are considered to be **Minimal**.

053-0276 Photo 1 Photo 2 **Underground Alternative 01** 200 400 600 **Historic Resource**] Feet

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Figure 3.3.1-4. Aerial photograph depicting land use and photo views 1 and 2, Underground Alternative 01 for 053-0276.



Figure 3.3.1-5. Photograph illustrating the route of Underground Alternative 01 along an opentrenched construction segment with potential tree-removal within 053-0276 (Photo view 3).



Figure 3.3.1-6. Photograph illustrating the route of Underground Alternative 01 along an opentrenched construction segment with potential tree-removal within 053-0276 (Photo view 4).



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Figure 3.3.1-7. Aerial photograph depicting land use and photo views 3 and 4, Underground Alternative 01 for 053-0276.



Figure 3.3.1-8. Photograph illustrating the route of Underground Alternative 01 along an opentrenched construction segment with potential tree-removal within 053-0276 (Photo view 5).



Figure 3.3.1-9. Photograph illustrating the route of Underground Alternative 01 showing the temporary HDD workspace east of Gallows Road with minimal tree removal within 053-0276 (Photo view 6).



Figure 3.3.1-10. Aerial photograph depicting land use and photo views 5 and 6, and the temporary HDD workspace east of Gallows Road, Underground Alternative 01 for 053-0276.



Figure 3.3.1-11. Photograph illustrating the route of Underground Alternative 01 showing the temporary HDD workspace east of I-66 and north of Idylwood substation, with no tree removal within 053-0276 (Photo view 7).



Figure 3.3.1-12. Aerial photograph depicting land use and the temporary HDD workspace east of I-66, and north of Idylwood substation, photo view 7, Underground Alternative 01 for 053-0276.