

Application, Appendix, DEQ Supplement, Routing Study, Direct Testimony and Exhibits of Virginia Electric and Power Company

Before the State Corporation Commission of Virginia

230 kV Duval-Midlothian Lines and Duval Substation

Application No. 351

Case No. PUR-2025-00073

Filed: April 24, 2025

Volume 3 of 3



Environmental Routing Study Western Chesterfield Electric

Western Chesterfield Electric Transmission Project



Dominion Energy Virginia

DATE April 2025

REFERENCE 0662361



DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.

DOCUMENT TITLE	Environmental Routing Study	
DOCUMENT SUBTITLE	Western Chesterfield Electric Transmission Project	
PROJECT NUMBER	0662361	
Date	April 2025	
Author	ERM	
Client name	Dominion Energy Virginia	



ERM CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025 VERSION: 1.0

SIGNATURE PAGE

Environmental Routing Study

Western Chesterfield Electric Transmission Project 0662361

Jon Berkin

Partner

Roya Smith

VERSION: 1.0

Principal Consultant

RaysSnuth

Environmental Resources Management, Inc. 919 East Main Street Suite 1701 Richmond, Virginia 23219 T +1 804 253 1090

© Copyright 2025 by The ERM International Group Limited and/or its affiliates ('ERM'). All Rights Reserved.

No part of this work may be reproduced or transmitted in any form or by any means, without prior written permission of ERM.

CONTENTS

1	INTRODUCTION AND BACKGROUND	7
1.1	PROJECT DESCRIPTION	7
1.2	ROUTE LENGTH AND CONSTRUCTION FOOTPRINT	8
1.3	STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS	8
1.4	CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES	8
1.5	OBJECTIVES OF THE STUDY	10
2	ROUTING PROCESS	11
2.1	DEFINING THE STUDY AREA	11
2.2	INVENTORY OF ROUTING CONSTRAINTS AND OPPORTUNITIES	11
2.3	IDENTIFYING POTENTIAL ROUTE CORRIDORS	12
2.4	FIELD RECONNAISSANCE AND PUBLIC ENGAGEMENT	12
2.5	ROUTE ALTERNATIVE ANALYSIS AND ROUTE RECOMMENDATION	12
3	STUDY AREA	13
3.1	STUDY AREA DESCRIPTION	13
3.2	MAJOR ROUTING CONSTRAINTS AND OPPORTUNITIES	13
3.3	LAND USE AND DEVELOPMENT TRENDS	15
3.4	STAKEHOLDER ENGAGEMENT	16
4	ROUTE ALTERNATIVES	17
4.1	DUVAL SUBSTATION	17
4.2	OVERHEAD ROUTE ALTERNATIVES	17
	4.2.1 Route 2B	17
4.3	4.2.2 Route 3A ROUTES REJECTED FROM FURTHER CONSIDERATION	18 18
	4.3.1 Overhead Routes	18
4 4	4.3.2 Underground and Hybrid Routes	21
4.4	COLLOCATION OPPORTUNITIES	23
	4.4.1 Electric Transmission and Distribution Lines4.4.2 Railroad	24 24
	4.4.3 Roadways4.4.4 Other Utility Infrastructure	24 25
5	RESOURCES AND IMPACTS	27
5.1	LAND USE	29
	 5.1.1 Land Ownership and Public Lands 5.1.2 Land Use and Land Cover 5.1.3 Land Use Planning and Zoning 5.1.4 Residential Areas and Residences 5.1.5 Commercial and Industrial Areas and Buildings 	29 30 32 36 40



5.2	5.1.6 5.1.7 5.1.8 5.1.9 5.1.10 5.1.11 NATURA	Planned Developments Conservation Easements and Lands Recreational Resources Cemeteries, Schools, and Places of Worship Transportation Infrastructure Airports and Heliports AL RESOURCES	42 52 54 61 62 70 76
5.3	5.2.1 5.2.2 5.2.3 5.2.4 VISUAL	Surface Waters Natural Heritage Resources Protected Species Vegetation RESOURCES	76 84 88 92 95
	5.3.1 5.3.2 5.3.3 5.3.4 5.3.5	Methodology Existing Conditions Viewer Groups Key Observation Points Visual Impact Assessment	95 95 99 100 103
5.4	CULTUR	AL RESOURCES	113
	5.4.1 5.4.2 5.4.3	Archaeological Sites and Findings Aboveground Historic Resources and Findings Summary of Existing Data Collected under Section 106 or 110 of the National Historic	115 115
		Preservation Act	117
5.5	ENVIRO	NMENTAL JUSTICE	117
	5.5.1 5.5.2	Environmental Justice Methodology Existing Conditions	117 118
	5.5.3	Impact Assessment	118
5.6	GEOLO	GIC RESOURCES	123
	5.6.1 5.6.2 5.6.3	Geologic Setting Mineral Resources Impact Assessment	123 123 123
C	CONCL		124
6	CONCL	JSIONS AND RECOMMENDATIONS	124
REFE	RENCES		126
APPF	NDIX A	FIGURES	
	NDIX B	STRUCTURAL DRAWINGS	
APPE	NDIX C	FEATURES CROSSING TABLE	
	NDIX D	WETLAND AND WATERBODY DESKTOP STUDY	
APPE	NDIX E	AGENCY CORRESPONDENCE	
APPE	NDIX F	VISUAL SIMULATIONS	
APPE	NDIX G	STAGE 1 PRE-APPLICATION ANALYSIS OF CULTURAL RESOURCES	
LIS	T OF T	ABLES	
TABL	E 1.2-1	ROUTE LENGTH, CONSTRUCTION FOOTPRINT, AND STRUCTURE COUNT	8
TABL	E 4.4-1	ROUTE COLLOCATION ALONG EXISTING AND PLANNED FACILITIES	23
TABL	.E 5-1	FEATURES CONSIDERED FOR ROUTING	27



TABLE 5.1-1	LAND USE AND LAND COVER CROSSED BY THE PROJECT	32
TABLE 5.1-2	CHESTERFIELD COUNTY ZONING DISTRICTS CROSSED BY ROUTE ALTERNATIVES	35
TABLE 5.1-3	EXISTING RESIDENCES NEAR THE PROJECT	38
TABLE 5.1-4	PLANNED DEVELOPMENTS WITHIN 0.25 MILE OF THE ROUTES	43
TABLE 5.1-5	PLANNED DEVELOPMENT CROSSINGS BY EACH ROUTE ALTERNATIVE	47
TABLE 5.1-6	PLANNED DEVELOPMENT IMPACTS BY EACH ROUTE ALTERNATIVE	52
TABLE 5.1-7	PLANNED RECREATIONAL RESOURCES WITHIN 0.25 MILE OF THE PROJECT	56
TABLE 5.1-8	CEMETERIES AND PLACES OF WORSHIP WITHIN 0.25 MILE OF THE ROUTES	61
TABLE 5.1-9	PLANNED ROADWAY PROJECTS WITHIN 0.25 MILE OF THE PROJECT	65
TABLE 5.1-10	ROAD INFRASTRUCTURE IMPACTS BY ROUTES	68
TABLE 5.1-11	EXISTING AND PLANNED ROAD CROSSINGS	68
TABLE 5.1-12	AIRPORTS AND HELIPORTS WITHIN 10 NAUTICAL MILES OF THE PROJECT	70
TABLE 5.1-13	RUNWAY IMAGINARY SURFACE CLASSIFICATIONS FOR PUBLIC AIRPORTS WITHIN 10 NAUTICAL MILES OF ALL PROJECT COMPONENTS	72
TABLE 5.2-1	HIGH, MEDIUM-HIGH, AND MEDIUM PROBABILITY WETLANDS AND WATERBODIES WITHIN THE PROJECT FOOTPRINT	78
TABLE 5.2-2	WATERBODIES CROSSED BY THE ROUTE ALTERNATIVES	81
TABLE 5.2-3	VDCR-MAPPED ECOLOGICAL CORES CROSSED BY ROUTE ALTERNATIVES	86
TABLE 5.2-4	VDCR-MAPPED ECOLOGICAL CORE ACREAGE CROSSED BY PROJECT	87
TABLE 5.2-5	FEDERAL- AND STATE-LISTED SPECIES POTENTIALLY OCCURRING IN THE STUDY AR 90	EA
TABLE 5.2-6	VEGETATION TYPES CROSSED BY THE PROJECT	93
TABLE 5.2-7	FOREST CONSERVATION VALUE ALONG ROUTE ALTERNATIVES	94
TABLE 5.3-1	VISUALLY SENSITIVE RESOURCES AND USER GROUPS	97
TABLE 5.3-2	KEY OBSERVATION POINTS	101
TABLE 5.3-3	SUMMARY OF ANTICIPATED IMPACTS BY VISUALLY SENSITIVE RESOURCE AND KOP	104
TABLE 5.3-4 V	ISUAL RESOURCE IMPACT SUMMARY	112
TABLE 5.4-1	ABOVEGROUND HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2B	116
TABLE 5.4-2	ABOVEGROUND HISTORIC RESOURCES IN VDHR TIERS FOR ROUTES 3A AND 3B	116
TABLE 5.5-1	:DEMOGRAPHIC AND SOCIOECONOMIC INDICATORS IN THE 1-MILE ENVIRONMETAL JUSTICE ANALYSIS AREA	120
TABLE 5.6-1	COMPARISON SUMMARY OF ROUTE ALTERNATIVES	124



ACRONYMS AND ABBREVIATIONS

A(V) visual approach AGL above ground level AMSL above mean sea level BG Block Group CBG Census Block Group CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally proposed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure IPaC Information for Planning and Consultation	Acronyms	Description
AMSL above mean sea level BG Block Group CBG Census Block Group CCB Center for Conservation Biology CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as threatened FT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	A(V)	visual approach
BG Block Group CBG Census Block Group CCB Center for Conservation Biology CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	AGL	above ground level
CBG Census Block Group CCB Center for Conservation Biology CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	AMSL	above mean sea level
CCB Center for Conservation Biology CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as threatened FT federally proposed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	BG	Block Group
CFR Code of Federal Regulations CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	CBG	Census Block Group
CIP Capital Improvement Program CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	ССВ	Center for Conservation Biology
CWA Clean Water Act DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	CFR	Code of Federal Regulations
DKey TCB Range-Wide Determination Key DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally listed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	CIP	Capital Improvement Program
DNH Division of Natural Heritage EDA Economic Development Authority EIS environmental impact statement E3 environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	CWA	Clean Water Act
EDA Economic Development Authority EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	DKey	TCB Range-Wide Determination Key
EIS environmental impact statement EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally proposed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	DNH	Division of Natural Heritage
EJ environmental justice EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	EDA	Economic Development Authority
EMF electromagnetic field ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	EIS	environmental impact statement
ERM Environmental Resources Management, Inc. ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	EJ	environmental justice
ESA Endangered Species Act ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FTT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	EMF	electromagnetic field
ESRI Environmental Systems Research Institute, Inc. FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FTT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	ERM	Environmental Resources Management, Inc.
FAA Federal Aviation Administration FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	ESA	Endangered Species Act
FAA ID Federal Aviation Administration airport identification number FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	ESRI	Environmental Systems Research Institute, Inc.
FCI Richmond Executive / Chesterfield County Airport FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FAA	Federal Aviation Administration
FCV Forest Conservation Value FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FAA ID	Federal Aviation Administration airport identification number
FE federally listed as endangered FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FCI	Richmond Executive / Chesterfield County Airport
FHWA Federal Highway Administration FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FCV	Forest Conservation Value
FPE federally proposed as endangered FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FE	federally listed as endangered
FPT federally proposed as threatened FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FHWA	Federal Highway Administration
FT federally listed as threatened GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FPE	federally proposed as endangered
GIS geographic information system HUC hydrologic unit code IFP instrument flight procedure	FPT	federally proposed as threatened
HUC hydrologic unit code IFP instrument flight procedure	FT	federally listed as threatened
IFP instrument flight procedure	GIS	geographic information system
	HUC	hydrologic unit code
IPaC Information for Planning and Consultation	IFP	instrument flight procedure
	IPaC	Information for Planning and Consultation



Acronyms	Description
IVMP	Integrated Vegetation Management Plan
КОР	key observation point
kV	kilovolt
LRTP	long-range transportation plan
MP	milepost
MW	megawatt
NA	not applicable
NALT	North American Land Trust
NHD	National Hydrography Dataset
NHL	National Historic Landmark
NHP	Natural Heritage Program
NHR	natural heritage resource
NLEB	Northern long-eared bat
nm	nautical mile
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PEM	palustrine emergent
PFO	palustrine forested
PIR	precision instrument runway
PUB	palustrine unconsolidated bottom
RRTPO	Richmond Regional Transportation Planning Organization
Rte.	Virginia State Route
SCC	State Corporation Commission
SE	state listed as endangered
ST	state listed as threatened
ТСВ	Tri-colored bat
TERP	terminal instrument procedure
T&E	Threatened and Endangered
US	U.S. Route
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VAC	Virginia Administrative Code



Acronyms	Description
VaFWIS	Virginia Fish and Wildlife Information Service
VCRIS	Virginia Cultural Resources Information System
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation
VDWR	Virginia Department of Wildlife Resources
VEDP	Virginia Economic Development Partnership
VEJA	Virginia Environmental Justice Act
VGIN	Virginia Geographic Information Network
VOF	Virginia Outdoors Foundation
WERMS	Wildlife Environmental Review Map Service
ZOMod	Zoning Ordinance Modernization

CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025 VERSION: 1.0

INTRODUCTION AND BACKGROUND

This report presents an environmental constraint identification and routing study prepared by Environmental Resources Management, Inc. (ERM) on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company) for the proposed "Western Chesterfield Electric Transmission Project" in Chesterfield County, Virginia ("Project").

1.1 PROJECT DESCRIPTION

Dominion proposes to construct and operate the Project in Chesterfield County to serve significant projected residential and commercial load growth identified by the Company's Distribution Planning group; maintain and ensure reliable service for the overall growth in the load area, thereby supporting economic development in Chesterfield County and Virginia; and comply with mandatory North American Electric Reliability Corporation Reliability Standards. For purposes of this study, the load area is defined generally as the area south of Genito and Otterdale Roads, west of the Swift Creek Reservoir and the Woodlake area, north of the Appomattox River and Winterpock area, and east of the Amelia and Powhatan County borders located in western Chesterfield County, Virginia (Western Chesterfield Load Area).

The Project consists of two components:

- Construct two new 230 kilovolt (kV) double circuit overhead transmission lines (for a total of four circuits), extending from the Company's existing Midlothian Substation to the proposed Duval Substation, resulting in: (i) Duval-Midlothian Line #2448, (ii) Duval-Midlothian Line #2449, (iii) Duval-Midlothian Line #2453, and (iv) Duval-Midlothian Line #2454 (the "Duval-Midlothian Lines"). The Duval-Midlothian Lines will be constructed on a new primarily 160-footwide right-of-way.
- Construct a new 230-34.5 kV substation in Chesterfield County, Virginia, within property rights to be obtained by the Company ("Duval Substation") and perform substation-related work at the Midlothian Substation.

These facilities are collectively referred to as the Project.¹

The Company's targeted in-service date for the Project is June 2028. Figure 1.1-1 depicts the general location of the Project. All figures referred to in this document are provided in Appendix A. All mileposts (MPs) associated with the Project facilities listed above are rounded to the nearest 0.1 mile. All references to those MPs in this document are assumed to be approximate (e.g., a reference to MP 1.2 means "approximately at" MP 1.2).

In developing the routes for the Duval-Midlothian Lines, ERM and the Company considered the following:

- The facilities needed to construct and operate the new feeds;
- The required location of the proposed Duval Substation;
- The width of new right-of-way that would be required;

¹ For outreach purposes, the Company also has referred to the Project as the "Western Chesterfield 230 kV Electric Transmission Improvement Project."



- The amount of existing and proposed development in the area;
- The potential for impacts on environmental resources and communities; and
- The cost.

As discussed in more detail below, ERM identified three viable overhead route alternatives and five route variations for the Duval-Midlothian Lines.

1.2 ROUTE LENGTH AND CONSTRUCTION FOOTPRINT

Table 1.2-1 shows the length, footprint acreage, and number of structures for each Project route alternative. The acreage of the Duval Substation (5.1 acres) is included in the total construction footprint of each route.

TABLE 1.2-1 ROUTE LENGTH, CONSTRUCTION FOOTPRINT, AND STRUCTURE COUNT

Feature	Unit	Route 2B	Route 3A	Route 3B
Centerline Length	miles	8.6	7.5	7.1
Construction Footprint	acres	168.1	147.9	139.4
Transmission Structures ^a	count	72 (144 total)	68 (136 total)	59 (118 total)

NA = not available

1.3 STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS

The transmission lines would be installed within a new right-of-way, typically measuring 160 feet wide, ² to accommodate four total circuits. The Company proposes to primarily use double circuit, weathering steel monopoles with a minimum structure height of 80 feet, a maximum structure height of 125 feet, and an average structure height of 110 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design. Appendix B provides section views depicting typical right-of-way widths and structure configurations.

1.4 CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES

Construction of new overhead transmission lines may involve some or all of the steps listed below:

- Detailed surveying of the route alignment;
- Right-of-way acquisition and clearing;
- Construction of access roads, where necessary;
- Installation of tower foundations;
- Assembly and erection of new structures;
- Stringing and tensioning of conductors; and
- Final cleanup and land restoration.

² See n.4.



CLIENT: Dominion Energy Virginia

^a Represents the number of transmission structures for each new 230 kV double circuit line (two circuits) of the Duval-Midlothian Lines. As such, the total number of structures would be doubled for each route alternative.

All materials for the Project's 230 kV structures will be delivered to and assembled at each structure location within the proposed (or existing) right-of-way. Detailed foundation design will not be completed until prior to construction; however, the foundation design could include poured concrete requiring excavation of steel piles or caissons that might be vibrated, drilled, or driven into place depending on soil conditions. Dominion will erect structures with a crane and anchor structures to the foundation during final assembly. In upland areas, Dominion would distribute excess soil from foundation construction (if any) evenly at each structure, replant vegetation, and stabilize exposed soils. In wetland areas, Dominion will remove and will evenly distribute excess soil on an upland site within the Project's right-of-way. Typical construction equipment may include hole diggers or drilling equipment, cranes, wire stringing rigs, tensioners, backhoes, and trucks.

Dominion will string all conductors and shield wires under tension. This system involves stringing a "lead line" between structures for the conductors and ground wires. The line 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 them from possible damage should they touch the ground, fences, or other objects.

Once the Project is in-service, maintenance of the right-of-way under the transmission lines will be essential for the reliable operation of the lines, as well as for public safety. Operation and maintenance of the Project will include periodic inspections of the lines and the right-of-way; occasional replacement of hardware, as necessary; periodic clearing of vegetation, either mechanically or by selective, low-volume application of approved herbicides within the corridor; and the cutting of danger trees outside of the right-of-way. Danger trees are trees outside of the cleared corridor that are sufficiently tall enough to possibly impact the transmission line should the trees fall into the right-of-way. Periodic inspections will use both aerial and walking patrols. Normal operation and maintenance will require only infrequent visits by Dominion Energy Virginia or its contractors.

Most maintenance activities will consist of selective, low-volume herbicide applications targeting only tree species on the right-of-way every 3 to 5 years and the cutting of danger trees every 3 years. Dominion uses only herbicides approved by the U.S. Environmental Protection Agency on power line rights-of-way.

Based on a discussion between the Company and representatives of the Virginia Department of Conservation and Recreation (VDCR) Division of Natural Heritage (DNH), the Company reviewed its Integrated Vegetation Management Plan (IVMP) for application to both woody and herbaceous species based on the species list available on the VDCR website. The Company continues to coordinate with VDCR-DNH on an addendum to the IVMP to further explain how the Company's operations and maintenance forestry program addresses invasive species. On January 21, 2025, the Company met with VDCR to continue ongoing coordination. At that time, the Company committed to providing DCR with the most recent working draft of the IVMP addendum and a list of the recommended shrub species for planting within the Company's electric transmission right-of-way for review. The Company's recommended planting list is for customers to reference when planting shrub species within its transmission rights-of-way on private property. Those documents



were shared with DCR on February 7, 2025. The Company is continuing to coordinate with DCR to identify ways to collaborate that are consistent with the Company's IVMP.

1.5 OBJECTIVES OF THE STUDY

The Company requested ERM's services to define a study area for the routing of the Project, collect information on routing constraints and opportunities within the study area, identify and compare alternative transmission routes, and document the routing efforts in this report. More specifically, ERM's scope of work consisted of the following activities:

- Defining and describing a study area for routing the transmission lines proposed for the Project;
- Gathering and assessing information about routing constraints and opportunities to be considered as part of the study;
- Identifying and mapping routing constraints and opportunities within the study area;
- Participating in public outreach efforts for the Project (e.g., public open house and agency meetings) to gather information from stakeholders, agency staff, and the public regarding constraints in the study area;
- Identifying a buildable route alternative for the proposed transmission lines by meeting the siting criteria provided in the Code of Virginia (Va. Code) and including the State Corporation Commission (SCC) minimum filing guidelines (the Guidelines for Transmission Line Application Filed Under Title 56 of the Code of Virginia, referred to as "SCC Guidelines") for transmission projects;
- Comparing the route alternatives based on an analysis of environmental impacts and the use of routing opportunities; and
- Recommending preferred routes.



ENVIRONMENTAL ROUTING STUDY ROUTING PROCESS

2 ROUTING PROCESS

Dominion's process for routing new electric transmission lines follows a sequence that includes developing potential route corridors and potential routes that are further refined into viable route alternatives. Although the details may differ regardless of the project or location, the fundamental objectives of the process are the same and are as follows:

- Maximize collocation with compatible linear features or land uses;
- Avoid, minimize, or mitigate impacts on the human and natural environment; and
- Provide regulators with viable route alternatives that are both efficient and equitable to meet the purpose and need of the project.

The Company assesses viability through consideration of permitting risk, constructability, right-ofway acquisition, and cost after the least impactful alternatives are identified.

As outlined below, the routing process provides a framework for understanding how the Project progresses, how routes are identified and screened, and how a preferred alternative is selected.

2.1 DEFINING THE STUDY AREA

The first step in the routing process is to define a geographic study area based on the Company's electric transmission needs and service obligations specific to a project. ERM defined the study area for the Project to encompass its beginning and endpoints (i.e., the existing Midlothian Substation and the proposed Duval Substation site) and an area broad enough in between to allow for the identification of a reasonable alternative. Additionally, and to the extent practicable, ERM defines the limits of the study area in reference to recognizable landmarks, such as roads or other features. Doing so helps Dominion and ERM describe the boundaries to stakeholders (e.g., potentially affected landowners or county and agency staff). Section 3 of this document describes the characteristics of the Project study area in detail.

2.2 INVENTORY OF ROUTING CONSTRAINTS AND OPPORTUNITIES

The second step in the routing process involves the identification and mapping of environmental and built features within the study area. Based on extensive data collection, this step results in an inventory of routing constraints and opportunities in the study area, including, but not limited to the following:

- Locations of delivery points;
- Electric transmission and other utility rights-of-way;
- Residences and residential areas;
- Planned developments and roadways;
- Commonwealth, county, and private road rights-of-way;
- Public lands;
- Conservation and open space easements;
- Parks and trails;
- Wetlands and waterbodies;
- Forested land;



ENVIRONMENTAL ROUTING STUDY ROUTING PROCESS

 Hospitals, schools, cemeteries, and places of worship or places where there are other public gatherings;

- Natural heritage resources (NHRs; e.g., conservation sites and habitat for rare, threatened, and endangered [T&E] species);
- Visually sensitive resources—locations where views are protected by regulation or where higher quality views are an expected condition, regardless or regulatory status; and
- Archaeological and historic sites and other nationally or locally significant cultural resources.

2.3 IDENTIFYING POTENTIAL ROUTE CORRIDORS

The third step in the routing process is the identification of potential route corridors—swaths of the study area feasible for routing new transmission infrastructure—and the exclusion of areas where transmission line routing is impracticable due to land use or other constraints. This step is critical in larger, heavily developed or developing areas where planned developments or protected lands such as parks may limit potential routes. This step can also aid in the refinement of the study area. The Company engages agencies such as the Virginia Department of Transportation (VDOT) and county staff at this stage to provide insight on current and future developments and land use planning. The Project team (i.e., Dominion and its consultants, including ERM) assesses the viability of a potential route corridor by evaluating environmental impacts, compatibility with existing and future land uses, permitting risk, community input, ability to acquire a new right-of-way, constructability, and cost.

The Company develops potential route alternatives and/or variations using geographic information system (GIS) software. To the extent practicable, routes are identified that avoid constraints and utilize opportunities. Throughout this step, the Project team continues to collect and assess data on constraints obtained through desktop sources, field reconnaissance, and stakeholder/public engagement activities. The Project team uses this information to qualify and better understand resources that could be affected and to refine routes, where feasible, to avoid or reduce potential impacts. Section 4.2 describes the route alternatives developed for the Project. Section 4.3 describes other routes considered but rejected for the Project.

2.4 FIELD RECONNAISSANCE AND PUBLIC ENGAGEMENT

The Project team uses field reconnaissance and stakeholder/public engagement activities (e.g., the Project website, open houses, targeted mailings, and virtual and/or in-person meetings) to gather information, identify resources, and help inform routing and route selection. Section 3.4 describes public engagement activities for the Project.

2.5 ROUTE ALTERNATIVE ANALYSIS AND ROUTE RECOMMENDATION

The Project team analyzes and compares route alternatives quantitatively and qualitatively using constraint data and community/stakeholder input. After completing this analysis, Dominion selects a preferred route based on a comparison of the advantages and disadvantages of each route alternative relative to SCC Guidelines. The Company then provides a proposed route and alternative routes, if applicable, for SCC consideration and for public notice of the Project. Conversely, routes deemed too impactful and/or infeasible or impracticable are not carried forward for notice.



ENVIRONMENTAL ROUTING STUDY STUDY AREA

3 STUDY AREA

3.1 STUDY AREA DESCRIPTION

Approximately 90% of the study area lies within western Chesterfield County, with a small portion in eastern Powhatan County (approximately 10%). The Project study area encompasses approximately 18,000 acres (28 square miles).

Figure 3.1-1 depicts the limits of the study area, which is generally defined by the following boundaries:

- U.S. Route (US) 60 (Midlothian Turnpike or Anderson Highway) and existing Dominion Lines #219, #282, and #576, connecting the Company's Midlothian Substation to the north;
- Route 667 (Otterdale Road) to the east;
- Route 605 (Moseley Road) to the west; and
- Route 668 (Duval Road) and the proposed Duval Substation to the south.

3.2 MAJOR ROUTING CONSTRAINTS AND OPPORTUNITIES

ERM assessed the major constraints and opportunities for routing the Project in accordance with the SCC Guidelines. Sources used to identify constraints and opportunities within the study area include the following:

- Chesterfield County GIS datasets (Chesterfield County 2025a);
- Chesterfield County Enterprise Land Management case record, Planning Cases Mapper, and Active Development and Zoning Cases Mapper (Chesterfield County 2025b; 2025d; 2025e);
- Powhatan County GIS datasets (Powhatan County 2025);
- VDOT Projects and Studies Database (VDOT 2025);
- National Conservation Easement Database (NCED 2024);
- VDCR Conservation Lands Database (VDCR 2024a);
- Virginia Geographic Information Network (VGIN) statewide land cover dataset (VGIN 2024);
- U.S. Census Bureau American Community Survey, 5-Year Estimates (2019-2023) (U.S. Census Bureau 2023a, 2023b, 2023c, 2023d, and 2023e);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS 2024a);
- Virginia Department of Historic Resources (VDHR) Virginia Cultural Resources Information System (VCRIS) (VDHR 2025);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);
- Digital Aerial Photography taken in February 2025 (Planet Labs Imagery 2025);
- ESRI (Environmental Systems Research Institute, Inc.) World Imagery from 2024 (ESRI et al. 2024a, 2024b);
- Google Earth aerial imagery (Google Earth 2025); and
- Existing utility transmission and distribution lines (Rextag 2024).



ENVIRONMENTAL ROUTING STUDY STUDY STUDY

Routing opportunities include existing transmission lines, utility rights-of-way, a railroad, Company-owned land, and roadways. Routing constraints include existing and planned developments, public lands, and sensitive natural resources (e.g., streams, floodplains, and wetlands). Often, features in the study area are both constraints and opportunities. For example, paralleling or collocating along highways and roads could limit forest fragmentation, but transmission lines may not be compatible with adjacent land uses. Planned road projects, including new roads and improvements, can provide collocation opportunities, but impact available space for a transmission right-of-way on adjacent land uses. ERM also identified routing constraints and opportunities through review of local land use plans and stakeholder engagement (Section 3.3). Figure 3.2-1 depicts major routing constraints and opportunities in the study area.

- Existing Linear Infrastructure: An existing transmission line corridor running west out of Midlothian Substation includes Lines #2009 and #2027 (230 kV) and existing Line #576 (500 kV). An existing transmission line corridor running east out of the Midlothian Substation includes Lines #219, #282, and #2066 (230 kV) and Line #563 (500 kV). A Norfolk Southern Railway line crosses the northern portion of the study area, running southwest to northeast. An oil/refined products pipeline operated by Colonial Pipeline Company (Colonial Pipeline) bisects the northern portion of the study area, running southeast to northwest. Section 4.4 provides more information regarding collocation opportunities with existing linear infrastructure.
- Planned Developments: Multiple planned developments, including residential subdivisions, community resources, industrial and commercial uses, and roadways, are present in the study area. Additionally, the Chesterfield County Economic Development Authority (EDA) purchased approximately 2,000 acres in December 2020 to allow for the future development of schools, residential areas, and an industrial park in an area named the Upper Magnolia Green development. The Chesterfield County Board of Supervisors approved rezoning of the property in May 2022. In early 2023, the development received a \$25 million state grant from the Virginia Business Ready Sites Program, administered by the Virginia Economic Development Partnership (VEDP), to help accelerate the development's progress. In January 2025, the EDA submitted two rezoning applications to allow for industrial uses, including data center development, public schools, and additional environmental preservation areas. All route alternatives cross the Upper Magnolia Green development properties. Section 5.1.6 provides more information on planned developments in the study area.
- **Public Lands:** Chesterfield County and its EDA own multiple properties throughout the study area. Chesterfield County owns Irvin G. Horner Park (Horner Park) and Old Hundred Elementary School. The EDA owns properties associated with the Upper Magnolia Green development (see Section 5.1.1).
- **Residential Areas:** Existing residential communities and residences are located throughout the study area along roadways such as County Line Road, Mount Hermon Road, Genito Road, Otterdale Road, and Duval Road in Chesterfield County and County Line Road and Andean Lane in Powhatan County (see Section 5.1.4).



ENVIRONMENTAL ROUTING STUDY STUDY AREA

Powhite Parkway Project: VDOT is in coordination with the Federal Highway Administration (FHWA) and Chesterfield County to conduct an environmental impact statement (EIS), which consists of extending the Powhite Parkway from Woolridge Road to US 360 (Hull Street), crossing through the study area. West of Wooldridge Road and south of Genito Road, VDOT is evaluating two conceptual alignments for the highway extension (see Section 5.1.10).

- Conservation Easements and Lands: One North American Land Trust conservation easement is located on approximately 89 acres west of the intersection of County Line Road and the Norfolk Southern Railway. No route alternatives cross this easement. Four additional parcels west of Otterdale Road in the eastern portion of the study area were identified as Chesterfield County conservation easements (see Section 5.1.7).
- Wetlands and Waterbodies: Multiple streams, wetlands, and resource protection areas are within the study area. Swift Creek, Otterdale Branch, Horsepen Creek, and Turkey Creek and its connecting tributaries cross the study area (see Section 5.2.1).

3.3 LAND USE AND DEVELOPMENT TRENDS

Western Chesterfield County has experienced a dramatic increase in residential, commercial, and other development since 2002. Development accelerated in the 2000s as large residential subdivisions, commercial offices, light industrial uses, and major road extensions were constructed due to the growing demand for residences and businesses in the County. In 2020, the Chesterfield County EDA purchased the Upper Magnolia Green property to pursue economic development opportunities and market the property to companies in advanced manufacturing, research and development, and other technology-rich sectors. In 2023, the Upper Magnolia Green development site was awarded a \$25 million grant under the Virginia Business Ready Sites Program by the VEDP. The funds from this grant would be used for all on-site engineering work to design an initial pad site; detailed design of off-site infrastructure, including VDOT's Powhite Parkway Project; and water, sewer, and gas improvements to the site (Chesterfield Business News 2023). As shown on Figure 3.3-1, the 2002 and 2025 aerial photography of the study area depicts the changes in land use during this time period.

ERM reviewed Chesterfield County's Strategic Information Sharing data program, which provides a selection of trends for community demands, such as population growth, housing, and public school enrollment. The County's population grew from 261,031 in 2000 to 316,236 in 2010 and to 364,548 in 2020. Chesterfield County predicts that its population will increase to 504,814 in 2050, accounting for a nearly 40% increase over its 2020 population and nearly doubling its population since 2000 (Chesterfield County 2025c).

The study area largely encompasses portions of western Chesterfield County and lies within the County's Matoaca and Midlothian magisterial districts. Since 2000, the Matoaca district accounts for nearly half of residential units built countywide, 3 more than any other magisterial district in the County (Chesterfield County 2025c). In the next 15 years, the Midlothian district expects more than three times as many new residential units than the current number of units (Chesterfield County 2025c).

³ Units built represents the number of completed housing units that originated from a case plan approved as of April 1, 2025 (Chesterfield County 2025c).



ENVIRONMENTAL ROUTING STUDY STUDY STUDY

The majority of Chesterfield County is a part of the Emerging Growth Design District that is intended to guide the development of well-designed office, business, and industrial environments and encourage land assembly and land use in accordance with Chesterfield County's *Moving Forward: The Comprehensive Plan for Chesterfield County* (Chesterfield County 2019; 2024a). The Emerging Growth Design District highlights the significant development occurring across the entire County. Section 5.1.3 provides a further discussion on existing and future land uses.

As a result of the developments in the Western Chesterfield Load Area, additional transmission and distribution infrastructure is needed to serve the growing residential and commercial load. The Company examined distribution-only electrical solutions to support the need of the Project; however, the Company's primary sources of distribution power in the Western Chesterfield Load Area are constrained. The Western Chesterfield Load Area constraints are further described in the Company's application.

As of April 2025, 18 plans of development were identified within 0.25 mile of the Project, which includes 10 single-family residential developments that, if built, would impact the primary land use and cover in the study area. Section 5.1.2 and Section 5.1.6 provide additional information on existing and planned development.

ERM and Dominion considered "planned" development (i.e., development of any type for which a plan has been submitted to the County for review, has been recently approved, or under construction) as formal routing constraints and/or opportunities, as described in Section 3.2. Dominion also met with owners and land developers who discussed other potential future land development concepts. Where appropriate and feasible, Dominion considered these "potential" developments (i.e., land development projects for which a formal plan has not yet been filed with the County) during routing but did not consider potential development to be a formal constraint or opportunity. This routing study does not identify specific potential development due to confidentiality and because these projects have not been formally proposed for public review.

3.4 STAKEHOLDER ENGAGEMENT

ERM conducted field reviews of the Project and supported Dominion's outreach to agencies and stakeholders as part of route development and evaluation. As of April 2025, the Company has held dozens of individual meetings seeking stakeholder input, including with landowners and homeowner associations, businesses, and agencies (e.g., Chesterfield County, Chesterfield County EDA, and VDOT). Dominion held two in-person community meetings in October 2024 and January 2025 to present information on the Project and to gather feedback. The Company's application describes the stakeholder engagement process in further detail.



4 ROUTE ALTERNATIVES

4.1 DUVAL SUBSTATION

Dominion will obtain property rights for and construct the proposed 230–34.5 kV Duval Substation north of Duval Road on 5.1 acres of land within Chesterfield County EDA's planned Upper Magnolia Green–East development. As discussed in Section 5.1.6, the substation site is shown on plans submitted for the Upper Magnolia Green–East concept plan submitted to the County on February 5, 2025 (Chesterfield County 2025b). The substation will be designed to accommodate multiple network connections to allow for increased reliability and to serve the projected load.

The proposed Duval Substation is included in the EDA's plans for the Upper Magnolia Green–East development. Because Dominion would acquire the property rights necessary for the substation from the EDA, preliminary alternative substation locations that were identified early in the Project were not carried forward for full analysis.

4.2 OVERHEAD ROUTE ALTERNATIVES

Through extensive public outreach, agency consultation, desktop study, and field investigation, ERM identified three route alternatives for the Project, as discussed below. On Figures 1.1-1 and 1.1-2, Project routes are shown on aerial and topographic maps. For outreach purposes, all route alternatives carried forward slight modifications to a route variation referred to as the Railroad Collocation Variation, which was depicted in mapping and simulations provided at the Project's open house in January 2025. The Railroad Collocation Variation considered collocating along the south side of the Norfolk Southern Railway for the greatest length practicable generally in the area between Old Hundred Road and Hallsboro Road. After receipt of landowner and community feedback, two slight modifications (less than 100 feet shifts) were made to the route variation to minimize impacts on existing residences, planned and potential development, a road extension, and the Hallsboro Store (a listed historic resource).

4.2.1 ROUTE 2B

Route 2B is approximately 8.6 miles long. From the existing Midlothian Substation, the route heads southeast, collocating with Dry Bridge Road and the Norfolk Southern Railway for about 1.6 miles. Route 2B then turns south and southwest, crossing parcels south of Mount Hermon Road for about 1.7 miles. It again collocates with the railroad and a Colonial Pipeline natural gas pipeline for about 0.6 mile before turning south and generally following parcel boundaries for about 2.5 miles. This portion of Route 2B crosses large, forested parcels associated with two planned residential developments along Genito Road. The route turns southeast for approximately 0.9 mile, crossing large, forested parcels that are associated with planned industrial development before turning south to collocate with the west side of VDOT's planned Powhite Parkway Project for about 1.2 miles across large, undeveloped, and forested parcels within Chesterfield County EDA's planned Upper Magnolia Green development. Route 2B then crosses the planned Powhite Parkway Project and continues for about 0.1 mile to enter the proposed Duval Substation site from the east.



4.2.2 ROUTE 3A

For outreach purposes, Route 3A was referred to as "Route 3" during the Project's open houses in October 2024 and January 2025.

Route 3A is approximately 7.5 miles long. From the Midlothian Substation, it follows the same alignment as Route 2B for about 2.0 miles. Route 3A then runs south and southeast across large, forested parcels, following parcel boundaries to the extent practicable for approximately 2.0 miles to avoid existing and planned residential subdivisions along Old Hundred Road and Mount Hermon Road. Route 3A then turns southwest and collocates with VDOT's planned Powhite Parkway Project Conceptual Alignment 1A for about 2.3 miles (including one angled crossing of the Powhite Parkway alignment). Approximately 1.2 miles of the remaining Route 3A to the proposed Duval Substation site follows the same alignment as Route 2B.

4.2.3 ROUTE 3B

For outreach purposes, Route 3B was referred to as "Powhite Parkway Variation," which was depicted in mapping and simulations provided at the Project's second open house in January 2025.4

Route 3B is approximately 7.1 miles long. It follows the same alignment as Route 3A for about 3.2 miles, then turns southwest to collocate with the west side of VDOT's planned Powhite Parkway Project Conceptual Alignment 1B for about 2.4 miles (except for a 0.7-mile segment near Genito Road that is not collocated to avoid an existing residence). Approximately 1.5 miles of the remaining Route 3B to the proposed Duval Substation site follows the same alignment as Route 2B.

4.3 ROUTES REJECTED FROM FURTHER CONSIDERATION

In developing routes for the Project, ERM identified and assessed six overhead route alternatives that were subsequently eliminated from further consideration. ERM also considered but eliminated further consideration of conceptual underground and hybrid (i.e., combined overhead and underground) routes. The remainder of this section provides descriptions of these route alternatives and the rationale for eliminating them from additional review. Figures 4.3-1 (overhead) and 4.3-2 (underground and hybrid) depict these rejected routes.

4.3.1 OVERHEAD ROUTES

Rejected route alternatives 1A, 1B, and 2A terminate at a preliminary substation site approximately 0.4 mile east of the currently proposed site for the Duval Substation, which was identified after these routes were eliminated from further consideration. As a result, these route alternatives are approximately 0.4 mile shorter than they would have been if they terminated at the currently proposed substation location.

⁴ Route 3B was developed following VDOT's announcement of their Powhite Parkway project's Conceptual Alignments 1A and 1B in November 2024 and was therefore not presented at the first Project open house in October 2024.



CLIENT: Dominion Energy Virginia PROJECT NO: 0662361 DATE: April 2025

4.3.1.1 ROUTE 1

Route 1A

Route 1A is approximately 9.4 miles long. The route exits the Midlothian Substation heading northwest, collocated with existing Line #2027 for approximately 0.3 mile. Route 1A turns southwest and west for 2.5 miles across forested and rural residential parcels. This segment of Route 1A crosses Old Hundred Road and County Line Road and enters Powhatan County. Route 1A turns south and crosses large, forested parcels for 1.8 miles, reentering Chesterfield County and crossing the Norfolk Southern Railway. At this point, Route 1A follows Route 2A for 0.7 mile, turns southwest and south through forested and rural residential parcels for 2.2 miles before rejoining Route 2A for the remaining 2.4 miles to the Duval Substation.

Route 1B

Route 1B is approximately 8.8 miles long. It follows the same alignment as Route 1A, except for a 1.7-mile segment that differs from both Route 1A and Route 2A. This segment begins 0.5 mile north of Genito Road, crosses Genito Road in the same location as Route 2A, and continues south and then southwest for 1.2 miles before rejoining Route 1A for the remaining 2.8 miles.

Summary

Routes 1A and 1B were presented to the public at an open house in October 2024. Residential landowners, especially those along the northern portion of the routes in Powhatan County, objected to the proximity of these routes to and the potential visual impacts of these routes on existing residences. The Project team's preliminary analysis also indicated Routes 1A and 1B would be the longest routes, impact the largest number of parcels and landowners, and have the most residences within 100 feet of the right-of-way, specifically compared to the northern portion of Routes 2A and 2B. Additionally, Routes 1A and 1B did not maximize collocation opportunities with existing or planned linear facilities (i.e., railroad or roads) like other route alternatives. As a result, Routes 1A and 1B were rejected from further consideration after the first open house for the Project.

4.3.1.2 MOUNT HERMON ROUTE VARIATIONS

ERM developed the Mount Hermon Route variations, which consider three additional routing options exiting the Midlothian Substation. The Mount Hermon Route variations were specifically intended to minimize impacts on the planned North Hallsley residential development, which includes planned residential lots within the Project's proposed right-of-way (Routes 2B, 3A, and 3B). The Mount Hermon Route variations were presented during the Project's open houses in October 2024 and January 2025.

Mount Hermon Route 1

Mount Hermon Route 1 is approximately 1.7 miles long. It follows the same alignment as rejected Routes 1A and 1B for 1.1 miles after exiting the Midlothian Substation. Mount Hermon Route 1 then turns south for approximately 0.6 mile across forested parcels before rejoining the common alignment of Routes 2B, 3A, and 3B after crossing Mount Hermon Road and the Norfolk Southern Railway.



Compared to the other Mount Hermon route variations, Route 1 is the longest variation, crosses the most parcels, and crosses the most unique landowners. For these reasons and because other routing options existed, Mount Hermon Route 1 was dismissed following the first open house.

Mount Hermon Route 2

Mount Hermon Route 2 is approximately 1.4 miles long. It follows the same alignment as rejected Routes 1A and 1B for 0.6 mile. After crossing Old Hundred Road, Mount Hermon Route 2 continues southwest for approximately 0.8 mile, collocating with the west side of Mount Hermon Road for 0.1 mile. After crossing Mount Hermon Road and the Norfolk Southern Railway, Mount Hermon Route 2 follows the common alignment of Routes 2B, 3A, and 3B.

Mount Hermon Route 2 was carried forward to the second open house as an alternative routing option exiting the Midlothian Substation after Mount Hermon Routes 1 and 3 were dismissed after the first open house (Route 3 is discussed below). As such, the Company analyzed Mount Hermon Route 2 against the common alignment of Routes 2A (see Section 4.3.1.3), 2B, 3A, and 3B (see Section 4.1) between the Midlothian Substation and the Norfolk Southern Railway. Compared against the common alignments of Routes 2A, 2B, 3A, and 3B, Mount Hermon Route 2 crosses a larger number of unique landowners and has substantially less collocation with existing linear facilities (15% compared to 100% for Routes 2A, 2B, 3A, and 3B) from the Midlothian Substation to MP 1.4. Additionally, Mount Hermon Route 2 does not utilize a crossing of existing Company property rights when compared to Routes 2A, 2B, 3A, and 3B, which follow the western Midlothian Substation property line for 0.3 mile. Residential landowners, especially those along the Mount Hermon Route 2, objected to the proximity of this route to and the potential visual impacts on existing residences when other routes (Routes 2A, 2B, 3A, and 3B) provided collocation opportunities to minimize those impacts. Mount Hermon Route 2 would also pass within 400 feet of Mt. Sinai Baptist Church (DHR ID: 020-0405), a locally significant historic resource (see Section 5.4) along Old Hundred Road. For these reasons and because other routing options existed, Mount Hermon Route 2 was dismissed following the second open house.

Mount Hermon Route 3

Mount Hermon Route 3 is approximately 1.5 miles long. It follows the shared alignment of Routes 2A, 2B, 3A, and 3B for 0.9 mile. From this point (where Routes 2A, 2B, 3A, and 3B cross the railroad to the south), Mount Hermon Route 3 turns northwest to cross Mount Hermon Road, collocates with the road from the north for 0.4 mile, crosses Mount Hermon Road a second time, and crosses the Norfolk Southern Railway to rejoin the common alignment of Routes 2A, 2B, 3A, and 3B.

Compared to the other Mount Hermon Variations, Route 3 is the second longest route, crosses the second most parcels and unique landowners, and has the most residences within 100 feet of its right-of-way. Residents along Mount Hermon Road indicated concerns for visual impacts at the open house in response to Mount Hermon Route 3. Due to its proximity to existing residences, the number of parcels crossed, number of landowners crossed, and the ability to route through the area with other alignments, Mount Hermon Route 3 was dismissed after the first open house.



4.3.1.3 ROUTE 2A

Route 2A is approximately 8.7 miles long. It follows the same alignment as Route 2B, except for a 1.9-mile segment near Genito Road. This segment generally follows the same alignment as rejected Route 1A, as described above.

Following the rejection of Routes 1A and 1B, Route 2A was carried forward to the second open house for public input. Compared to Routes 2B, 3A, and 3B, Route 2A was the longest route by at least 0.6 mile and had the largest construction footprint by at least 10 acres. Routes 2A and 2B crossed more parcels than Routes 3A and 3B. Route 2A has less collocation and crosses less existing and future County-owned land than Route 2B. Due to the additional length, increased construction footprint, greater number of parcels and landowners crossed, less collocation, and shorter routing across County-owned land, Route 2A was dismissed after the second open house.

4.3.2 UNDERGROUND AND HYBRID ROUTES

The Company and ERM evaluated utilizing entirely underground construction or overhead-underground (i.e., hybrid) construction for the Duval-Midlothian Lines. These routes generally follow the overhead corridors identified for the Project early in the routing process, in addition to the potential location for a transition station that would be required for a hybrid route. The underground and hybrid routes studied early in the routing process are depicted on Figure 4.3-2. A discussion of the routing constraints and approximate timing of construction, all of which present challenges when compared to the overhead route alternatives, is provided below.

- The preferred method, open-cut trench, would be used for the majority of the underground route. At that time, ERM and the Company estimated that the open-cut trench method potentially would require a 125-foot-wide right-of-way for the four cables per phase design for four circuits.⁵
- Trenchless installations would be necessary to cross under the Norfolk Southern Railway and Horsepen Creek and require wider widths of right-of-way. Trenchless installations would consist of the jack and bore method; however, other installation methods (e.g., horizontal directional drilling) could be required due to the future construction of any planned developments in the Project area, such as VDOT's Powhite Parkway Project (see Section 5.1.10).
- An underground solution would require the placement of permanent fill (circuits, conduit, splicing vaults, and engineered fill) within wetlands, potentially impacting hydrology. The engineered fill, which protects the buried cables and distributes heat, is impervious, meaning it can block the movement of subsurface water across the right-of-way.
- An underground solution would increase the construction cost and timeline for the Project.⁶



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

⁵ The Company later determined that the open-cut trench method potentially would require a 105-foot-wide right-of-way for the four cables per phase design for four circuits.

⁶ The construction cost for an entirely underground solution was estimated to be approximately eight times more than overhead construction cost and would require an additional five years for completion (2033), meaning it could not meet the need date for the Project (June 1, 2028). For all the reasons discussed above

In addition to a longer construction schedule, the time necessary to secure permits for wetland and waterbody impacts due to increased impacts/wetland conversion and transition stations, if necessary, would be longer than for an overhead solution.

- With an underground solution, additional coordination and engineering review would be required to determine constructible crossings of VDOT's planned Powhite Parkway Project. For example, an underground route would require a crossing of Genito Road where VDOT currently plans for an interchange (see Section 5.1.10); however, interchange configurations at a final location (i.e., Conceptual Alignments 1A or 1B) have not been determined and could impact the Company's ability to meet the Project in-service date. Like the overhead route alternatives, an underground solution would require at least one crossing of the Powhite Parkway Project alignment near the Duval Substation, located on Upper Magnolia Green-East. Additional space to accommodate a trenchless crossing of the planned limited access road would require coordination and approval from VDOT and Chesterfield County EDA.
- An underground route would require a crossing of a Colonial Pipeline natural gas pipeline, which cannot be avoided by the Project due to its east-west orientation. Based on correspondence with Colonial Pipeline in December 2024 (see Section 4.4.4), the construction of an underground line beneath the pipeline would require an airbridge installation. Additional cathodic protection and corrosion studies would be necessary to determine any additional design requirements.
- An underground solution would require transition to an overhead conductor at both the existing Midlothian Substation and the proposed Duval Substation. If the existing Midlothian Substation and proposed Duval Substation sites cannot accommodate the necessary transition equipment, an underground solution would require one or more new transition stations and associated work areas.
- An entirely underground solution would limit future tie-in and interconnection opportunities relative to an overhead solution because additional transition station(s) would be required for any future interconnections. As such, an approximately 5-acre transition station site was identified on a currently undeveloped, forested parcel associated with the Upper Magnolia Green-West development (see Section 5.1.6) and on the west side of the Powhite Parkway Project, as depicted in Figure 4.3-2.
- As of April 2025, a planned residential development (The Townes at Mount Hermon Section 1) is under construction where the underground route depicted in Figure 4.3-2 crosses Genito Road. This underground route crosses the subdivision's entrance south of Genito Road and could impact residential lots that appear to be under construction (Planet Labs Imagery 2025), which ultimately could lead to this route being unviable.

and herein, the Company and ERM rejected underground or overhead-underground hybrid construction of the Duval-Midlothian Lines along the route discussed in this Routing Study and depicted in Figure 4.3-2. Subsequently, the Company's Underground Engineering group reviewed underground construction of the Duval-Midlothian Lines along a different route (Route 3B) and determined that an underground solution along that route is permittable and technically feasible. However, the Company's Underground Engineering group determined that, similar to the underground route depicted in Figure 4.3-2, an entirely underground solution along Route 3B would result in increased construction costs (more than nine times the transmission-related costs associated with overhead construction) and an additional five years for completion (2033), meaning it also could not meet the need date for the Project (June 1, 2028). For these reasons, the Company rejected an underground solution along Route 3B.



CLIENT: Dominion Energy Virginia PROJECT NO: 0662361 DATE: April 2025

For these reasons, a conceptual underground route and a conceptual hybrid route along the route depicted in Figure 4.3-2 were rejected from further consideration.

4.4 COLLOCATION OPPORTUNITIES

The foremost priority in developing route alternatives is the identification of collocation opportunities along existing and planned linear facilities. ERM identified existing and planned corridors within the study area through review of digital aerial photography (Planet Labs Imagery 2025); data from Dominion about its existing transmission system, mapping and GIS for the energy industry (Rextag 2024); and various publicly available data layers (Chesterfield County 2025a).

Existing linear facilities within the study area include electric transmission and distribution lines, a railroad, a natural gas pipeline, and road corridors, each of which were assessed as a potential routing opportunity for the transmission line routes. If built, planned linear facilities within the study area include highway and road corridors, which were also assessed as potential routing opportunities for the Project. Collocation opportunities are discussed throughout Section 5. Table 4.4-1 summarizes the collocation lengths along existing and planned features for the route alternatives.

TABLE 4.4-1 ROUTE COLLOCATION ALONG EXISTING AND PLANNED FACILITIES

Feature ^a	Unit	Route 2B	Route 3A	Route 3B
Collocation with existing facilities	miles	3.4	1.6	2.1
Collocation with planned facilities	miles	1.4	3.8	3.1
Total Collocation (existing and planned)	miles	3.7	5.4	5.2
Total Collocation (existing and planned)	% of total length	43%	71%	73%

^a The totals may not match the sum of the addends due to rounding.

Overall, Route 3A has the greatest mileage of collocation with existing and planned corridors, while Route 3B has the greatest collocation percentage of its total length. Route 2B has the longest collocation along existing corridors and the smallest collocation percentage. The final collocation lengths for these route alternatives depend on the final alignments and/or approval for planned linear corridors in the study area, which includes planned roadways and the Powhite Parkway Project (see Section 5.1.10). As such, Route 3B is the shortest route and collocates with corridors in the study area to the greatest extent feasible.

As described in more detail in Section 5.1.6, the Project would cross or run near multiple planned residential and nonresidential developments. Substantial segments of all route alternatives generally follow the edges of planned developments. Although not necessarily considered collocation (and thus not included in Table 4.4-1), following the edges of development parcels also reduces impacts by concentrating development and avoiding habitat fragmentation (see Section 5.2.4).



4.4.1 EXISTING ELECTRIC TRANSMISSION AND DISTRIBUTION LINES

The only electric transmission corridor in the study area is the shared corridor that runs southeast-northwest through the Midlothian Substation, forming the study area's northeastern boundary. This corridor includes existing Lines #2009 and #2027 (230 kV) and #576 (500 kV), which run northwest from the substation, and existing Lines #219, #282, and #2066 (230 kV) and #563 (500 kV), which run southeast from the substation.

These existing lines do not provide a feasible collocation opportunity to reach the Duval Substation due to their northwest-southeast orientation. Existing residences and businesses abut the existing transmission line corridors, making it infeasible to accommodate an additional 160-foot-wide right-of-way. Similarly, there are no existing electrical distribution corridors between the existing Midlothian Substation and proposed Duval Substation that provide a feasible collocation opportunity.

4.4.2 RAILROAD

The Norfolk Southern Railway railroad bisects the northern portion of the study area for approximately 5.0 miles. The Project considers routes collocated with the railroad corridor to the extent practicable. During the routing process, the Project team gathered information on resources identified along the railroad, which include existing residences as close as 100 feet from the railroad south of Mount Hermon Road, a conservation easement, a historic building (the Hallsboro Store), and a planned residential development. Section 5 discusses the information on future land use and planned developments around the railroad that could impact the feasibility of the Duval-Midlothian Lines. For example, planned residences near the railroad would limit the space available to construct a 160-foot-wide right-of-way. As a result, no collocation opportunities along the railroad exist generally between Hallsboro Road and County Line Road.

4.4.3 ROADWAYS

4.4.3.1 LIMITED ACCESS

State Highway 288 is the only existing limited access road in the study area, which crosses in the northeast approximately 0.9 mile from the Midlothian Substation. Given the distance and development constraints, State Highway 288 was not considered a practical collocation opportunity.

VDOT, in coordination with the FHWA and Chesterfield County, is preparing an EIS to evaluate the impacts of extending State Route 76 (Powhite Parkway) as a limited access road from its current terminus at Woolridge Road to US 360 (Hull Street Road), which includes portions of the study area (VDOT 2025). During the routing process, the Project team reviewed feasible locations to collocate with the alignments under consideration for the Powhite Parkway Project. Each of the Project's route alternatives collocate with the planned limited access road for at least 1.0 mile on Chesterfield County EDA's Upper Magnolia Green–West development. All routes will need to cross the planned road at least once. Section 5 discusses the information on future land use and planned developments around the planned limited access road that could impact the feasibility of the Duval-Midlothian Lines.



4.4.3.2 MAJOR ARTERIAL/COLLECTOR/LOCAL ROADS

US 60 (Midlothian Turnpike in Chesterfield County and Anderson Highway in Powhatan County) forms the northern boundary of the study area. US 60 is a highly traveled major arterial roadway with direct access to regional highways such as State Highway 288 and Powhite Parkway. Collocation with US 60 is not practical for the Project due to the existing development and the road's east-west orientation. A segment of Watermill Parkway along the eastern study area boundary is the only other existing major arterial in the study area, which is at least 2 miles away.

The Project team reviewed collocation opportunities with existing collector roads in the study area, including, but not limited to, Dry Bridge Road, Mount Hermon Road, Old Hundred Road, Genito Road, County Line Road, and Otterdale Road. Most existing collector roads in the study area do not provide a collocation opportunity for the Duval-Midlothian Lines due to the presence of existing homes, making it infeasible to accommodate an additional 160-foot-wide right-of-way.

As discussed in Section 4.3.1.2, the Project team evaluated a route (Mount Hermon Route 3) that collocates along Mount Hermon Road between Old Hundred Road and Hallsboro Road for 0.4 mile of the 0.9-mile road section. When compared to the common alignments of Routes 2A, 2B, 3A, and 3B (which do not collocate along Mount Hermon Road), Mount Hermon Route 2 crosses a larger number of unique landowners and has substantially less collocation with existing linear facilities (15% compared to 100% for Routes 2A, 2B, 3A, and 3B which collocate entirely along Dry Bridge Road and Norfolk Southern Railway). For these reasons and because other routing options existed, Mount Hermon Route 2 and a collocation opportunity along Mount Hermon Road was dismissed. The Project team also reviewed collocation opportunities along collector roads such as County Line Road, Genito Road, and other sections of Mount Hermon Road (south of the railroad); however, insufficient space is available to accommodate the right-of-way due to the presence of existing residences, a conservation easement, planned developments, and a public park.

Local roads, which accommodate low traffic volumes within and between neighborhoods, were not considered practical for collocation opportunities given the residential impacts.

4.4.4 OTHER UTILITY INFRASTRUCTURE

A Colonial Pipeline natural gas pipeline runs east-west through the northern portion of the study area. In email correspondence received in December 2024, Colonial Pipeline indicated no objections to a crossing of the pipeline and its 50-foot right-of-way. Colonial Pipeline provided the Company with guidance for both overhead and underground crossings, including the required vertical and horizontal clearances between the pipeline and a potential underground route, as well as the requirement to have no structures or guy wires within the pipeline right-of-way. Colonial Pipeline further stated that collocation or crossing may require a cathodic protection study, along with an encroachment agreement.

Due to the west-east orientation of the pipeline, collocation along the right-of-way is not a practical solution for the Project. More importantly, collocating alongside natural gas pipelines requires installation of cathodic protection to prevent corrosion of the pipeline due to potential electrical current discharges from nearby transmission lines. As a result, Dominion considers collocation with pipelines to be less preferred and avoids overlapping with rights-of-way for



existing utilities, particularly natural gas pipelines, to minimize operational and future maintenance impacts on the other utility infrastructure. Accordingly, the existing pipeline is not considered to be a preferred corridor for substantial collocation.



5 RESOURCES AND IMPACTS

After defining the study area, ERM developed a list of features to consider and assess as part of the routing process and provide a basis for comparing routes (see Table 5-1). These include constraints (e.g., land uses, planned developments, and biological resources) and opportunities (e.g., existing transmission lines, roads, and other linear features). ERM inventoried existing conditions, constraints, and opportunities using information from publicly available GIS and other databases; agency websites; published documents, such as county or municipal land use plans; communication with agency and county staff, stakeholders, and elected officials; and field reconnaissance. In cases where GIS data were not available for a particular environmental resource or other feature, ERM obtained the best available hard-copy or online version and hand digitized the information needed to complete the study. In addition to the identification and discussion of the resources within the Project area, Appendix C provides a features crossing table of the resources discussed throughout Section 5.

Although the study area includes portions of Powhatan County, the Project would not affect resources outside of Chesterfield County; therefore, Powhatan County is not further discussed.

TABLE 5-11 FEATURES CONSIDERED FOR ROUTING

Feature Type	Description				
Existing and/or Planned Corridors					
Existing electric facilities	Transmission or distribution lines and substations				
Other utilities	Pipelines				
Transportation infrastructure	Highways, roads, railroads, and related corridors				
Land Uses					
Land ownership	Federal, state, and local landsPrivate lands				
Land uses and cover types	 Cover types (e.g., forested, agricultural, developed, open) Subdivisions, residential areas, and residences Residential areas and residences Cemeteries, schools, and places of worship 				
Recreational areas	 Federal, state, county, or municipal parks or other managed recreation areas Golf courses Interpreted historic sites Trails (e.g., for biking, hiking, birding, or wildlife viewing) 				
Land use planning and zoning	 Zoning districts County Comprehensive Plans and related planning documents 				
Planned developments	Planned, proposed, or conceptual residential, commercial, or industrial developments				
Conservation lands and easements	 VDCR conservation lands and easements VOF easements Chesterfield and Powhatan Counties conservation easements Wetland mitigation banks Other conservation lands 				

CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

VERSION: 1.0

Feature Type	Description	
Transportation	 Existing and planned roads Railroads Public and private airport facilities 	
Natural Resources		
Surface waters	WetlandsWaterbodies	
Protected or managed areas	 Resource protection areas Conservation sites Wildlife management areas Ecological cores 	
Protected species	 Natural heritage resources Threatened and endangered species Bald eagles 	
Vegetation	Vegetation characteristicsForested land	
Visual Resources		
Visual resources	Viewsheds to and from visually sensitive areasScenic rivers and byways	
Cultural Resources		
Cultural resources	 Archaeological sites Historical or architectural sites and districts NRHP listed and eligible properties Battlefields VDHR easements Locally significant resources 	
Geological Resources		
Mineral resources	Mines or quarries	
Contamination Sites	BrownfieldsSolid and Hazardous Waste Sites	
Environmental Justice	 Low-income populations Minority populations Age groups (under age 5 and over age 64) Linguistically isolated communities 	

NRHP = National Register of Historic Places; VDCR = Virginia Department of Conservation and Recreation; VDHR = Virginia Department of Historic Resources; VOF = Virginia Outdoors Foundation



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025 VERSION: 1.0

5.1 LAND USE

5.1.1 LAND OWNERSHIP AND PUBLIC LANDS

ERM reviewed land ownership information in the study area using publicly available GIS databases and digital parcel data obtained from Chesterfield County (Chesterfield County 2025a) and Powhatan County (Powhatan County 2025). These data sources indicate that most parcels within the study area are privately owned. Approximately 90% of the study area is in Chesterfield County. Private lands in the Chesterfield County portion of the study area primarily include residential and commercial uses, with some industrial and community resources (e.g., a public park and a school). Land uses in the Powhatan County portion of the study area primarily include residential and commercial uses surrounding US-60. There are no Powhatan County-owned parcels in the study area; however, Chesterfield County and its EDA own multiple parcels. No federal- or state-owned lands were identified within 0.25 mile of the route alternatives.

This section identifies and discusses impacts on public lands within 0.25 mile of the route alternatives. Routes 2B, 3A, and 3B each cross public (EDA-owned) lands; therefore, these route alternatives are only viable if the applicable agency grants crossing rights. The Project team met with the Chesterfield County EDA throughout the route development process. The EDA has expressed support for the Duval-Midlothian Lines to cross its Upper Magnolia Green development, primarily Upper Magnolia Green-West. As discussed in Section 5.1.6, the proposed Duval Substation is depicted on the Chesterfield County EDA's current rezoning amendment application (Chesterfield County 2025b). For Route 3B, Dominion would require permission from Chesterfield County to cross approximately 0.4 mile of Chesterfield County-owned land associated with Horner Park. However, the Company met with County staff throughout the Project who indicated no opposition for its crossing as Route 3B avoids existing park facilities and areas for planned improvements.

Figure 5.1.1-1 depicts the location of public lands within 0.25 mile of the routes.

5.1.1.1 LOCAL LANDS

Chesterfield County EDA

Two parcels currently owned by the Chesterfield County EDA are within 0.25 mile of the routes in the southern portion of the study area (Chesterfield County 2025d). One parcel (7046824454) includes the future site of Deep Creek Middle School, which is under construction, but is at least 0.2 mile from the Project. The Project crosses the approximately 1,400-acre parcel (6986800602), encompassing the greatest portion of the entire Upper Magnolia Green developments (including Upper Magnolia Green–West and Upper Magnolia Green–East). The Chesterfield County EDA purchased these parcels in 2020 to pursue economic development opportunities and submitted rezoning applications to develop industrial and data center uses (Upper Magnolia Green-West) and three public schools and an environmental preservation area (Upper Magnolia Green-East). All routes primarily cross the Upper Magnolia Green–West development. The proposed Duval Substation will be located within the Upper Magnolia Green–East development, north of Duval Road and about 1.4 miles west of the intersection with Otterdale Road.



Chesterfield County

Three parcels owned by Chesterfield County (not the EDA) are within 0.25 mile of the routes (Chesterfield County 2025d). These parcels encompass Horner Park, an approximately 319-acre public park and sports complex located south of Genito Road. The park complex includes seven rectangular multi-use fields and four baseball/softball fields (see Section 5.1.8). Planned future facilities are envisioned for the southern portion of the park and include an additional picnic area, shelter, playground, walking trails, dog park, restroom, disc golf course, field archery course, and fitness stations (Chesterfield County 2018). Section 5.1.8 provides additional information on recreational resources.

In addition, Old Hundred Elementary School is located on an approximately 82-acre parcel off Old Hundred Road. The school site includes parking lots, sports fields, and other recreation areas surrounding the school building, which was opened in 2019. Old Hundred Elementary School is at least 1.2 miles from the nearest portion of all routes.

5.1.1.2 IMPACT ASSESSMENT

All routes cross public land owned by Chesterfield County and/or its EDA and therefore, the feasibility of any route alternative (Routes 2B, 3A, or 3B) depends on obtaining right-of-way from these public entities. Section 5.3 discusses the potential impacts on viewsheds from public lands.

Route 2B crosses approximately 1.3 miles of the Chesterfield County EDA's Upper Magnolia Green property, primarily Upper Magnolia Green–West, while Routes 3A and 3B cross approximately 1.2 miles. Additionally, Route 3B crosses approximately 0.4 mile of Chesterfield County-owned parcels associated with Horner Park between MPs 4.5 and 5.2; however, the right-of-way for this segment would be on the east side of Mount Hermon Road (the park is on the west side of the road) and west of the Powhite Parkway Project (see Section 5.1.10). Visual impacts are discussed in Section 5.3.

In total, Route 3B crosses 1.6 miles of publicly owned land, compared to 1.2 miles for Routes 3A and 1.3 miles for Route 2B. Across these publicly owned parcels, Route 3B collocates along Mount Hermon Road and a potential alignment for the Powhite Parkway Project. During routing discussions with Dominion, the Chesterfield County EDA indicated that locating the Duval-Midlothian Lines on the west side of the planned Powhite Parkway Project (on Upper Magnolia Green-West) was preferable due to the industrial and data center uses intended for that portion of the development. The EDA also was receptive to this location because it could provide future interconnection opportunities to the Upper Magnolia Green-West development.

Project construction could result in temporary noise and traffic impacts on public lands crossed by or near the routes. Construction could require temporary closures or detours of trails within the affected parks. These construction impacts would be short-term and temporary and would not affect the continued ownership or operation of the lands by the managing agency or the use of these lands by the public.

5.1.2 LAND USE AND LAND COVER

ERM identified land use and land cover within the study area using a combination of local and statewide datasets, along with aerial photo interpretation to identify the most current uses for a



given area (Google Earth 2025; Planet Labs Imagery 2025; VGIN 2024). Figure 5.1.2-1 depicts land use/land cover within 0.25 mile of the route alternatives.

Land use and land cover in the study area can be broken down into the five main categories described below (corresponding VGIN categories are included in parentheses):7

- Agricultural (Harvested/Disturbed, Pasture, Cropland): Land used for commercial farming (e.g., commercial row crops or specialized agricultural activities) or grazing.
- **Developed Lands (Impervious):** Land characterized by medium to high density constructed buildings, including industrial areas, commercial areas, residential subdivisions, and impervious surfaces. Sections 5.1.4 and 5.1.5 provide additional information on these uses.
- Forest (Forest, Tree): Land cover consisting of natural or semi-natural woody vegetation. Section 5.2.4 provides additional information on forests in the study area.
- Open Space (Turf Grass, Shrub/Scrub): Land primarily covered by planted grasses, including vegetation planted in developed settings for erosion control or aesthetic purposes, as well as natural herbaceous vegetation and undeveloped land, parks, and open space recreational facilities. Sections 5.1.7 and 5.1.8 provide additional information on these types of open space.
- Open Water (Hydro): Open-water features, including rivers, streams, and natural and artificial ponds. Section 5.2.1 provides additional information on waterbodies.

Western Chesterfield County has experienced a significant change in land uses over the last 20 years, from forested and agricultural to growing developed land uses (see Section 3.3). The study area predominantly consists of forested land and open space, with some developed lands. Developed lands are generally associated with residences and residential neighborhoods, such as those along Hallsboro Road, Mount Hermon Road, Genito Road, and Duval Road. Forested and open space lands generally cover the remainder of the study area. Horner Park is within the study area and is largely open space land.

As discussed in Section 3.3, ERM reviewed publicly available development plans in the study area and discussed other potential development with landowners and developers. Most proposed development in the study area is located on forested lands. If approved and constructed, such development would alter the land cover as currently depicted in publicly available datasets and imagery from forested and open space to developed land. Section 5.1.6 discusses planned developments in more detail.

⁷ For purposes of land use/land cover, wetland areas have been classified as open space, forested land, or open water depending on wetland type. Wetlands near the routes are discussed separately in Section 5.2.



5.1.2.1 IMPACT ASSESSMENT

Table 5.1-1 summarizes the acreage of each land use/land cover type present within the right-of-way for each route.

TABLE 5.1-1 LAND USE AND LAND COVER CROSSED BY THE ROUTE ALTERNATIVES

Land Use and Land Cover ^a	Unit	Route 2B	Route 3A	Route 3B
Total Right-of-way ^b	acres	168.1	147.9	139.4
Agricultural	acres	2.0	1.3	1.3
Developed	acres	1.6	1.3	1.6
Forested	acres	160.7	142.0	131.4
Open Space	acres	3.7	3.3	5.1
Open Water	acres	0.0	0.0	0.0

Source: VGIN 2024

The primary impact of each route alternative on land use and cover would be the conversion of forested land to herbaceous open space within the maintained right-of-way. Except for land directly beneath transmission structures, operation of the Project would not impact current uses of open space, developed land, and open water. Route 2B is the longest route and would affect the largest acreage of forested land, while Route 3B would affect the smallest acreage of forested land. The areas of forested land shown in Table 5.1-1 may change if planned developments constructed prior to the Project's planned construction convert existing forested land to open space or another use. As such, the actual extent of forest affected by either of the route alternatives may differ from the amounts shown in Table 5.1-1.

The proposed Duval Substation would convert 5.1 acres of forested land to developed land, regardless of which route alternative is selected. The substation is located within property rights to be obtained by Dominion within Chesterfield County EDA's Upper Magnolia Green-East development, between Duval Road and the right-of-way set aside for the Powhite Parkway Project (see Sections 5.1.6 and 5.1.10).

5.1.3 LAND USE PLANNING AND ZONING

Section 15.2-2223 of the Va. Code requires localities to adopt a comprehensive plan that provides guidance for physical development within its jurisdiction. Comprehensive plans assess existing and future land uses, anticipate development trends, and make recommendations for guiding the long-term development decisions of a local jurisdiction. Virginia also requires localities to review and update their comprehensive plans at least once every five years to adjust to actual or projected changes in land use conditions or needs (Va. Code Section 15.2-2230). This section provides an overview of Chesterfield County's local planning and zoning documents as they relate to the Project.



^a Based on local and state-wide data sets and recent aerial photo interpretation (Planet Labs 2025)

^b Land use/land cover acreage totals may not match the sum of the addends due to rounding.

5.1.3.1 CHESTERFIELD COUNTY'S COMPREHENSIVE PLAN

Chesterfield County's *Moving Forward: The Comprehensive Plan for Chesterfield County* ("Plan") was adopted in May 2019 (Chesterfield County 2019). The Plan provides a vision for growth, redevelopment, preservation, and revitalization in the County. The Plan does not contain goals or policies specific to electric transmission lines; however, one of the Project's purposes is to serve the Plan's vision for growth in western Chesterfield County. The predominant future land uses within the study area are described below (Chesterfield County 2019):

- Corporate Office/Research & Development/Light Industrial: Surrounding US 60, this
 designation includes corporate offices, research laboratories, and light manufacturing and
 assembly uses.
- **Neighborhood Business:** Located at the intersection of Hallsboro Road and Mount Hermon Road, this designation includes commercial uses that serve neighborhood areas.
- **Conservation/Recreation:** Surrounding Horner Park, this designation includes uses compatible to federal, state, and county park lands and privately owned properties with development restrictions intended to preserve the natural functions of the land.
- Phased Suburban Residential: This designation includes land west of the planned Powhite Parkway Project; the land use plan includes compatible uses as intended for single-family dwellings on lots with a minimum size of 5 acres fronting an existing public road.
- **Suburban Residential I:** This designation includes land east of the planned Powhite Parkway Project intended for single-family dwellings and condominiums with a maximum density of two dwellings per acre.

The majority of the Project crosses the Phased Suburban Residential and Suburban Residential I designations.

5.1.3.2 ZONING ORDINANCE

Local governments use zoning to formally designate land use districts, identify intended and compatible land uses in those districts, establish standards to guide orderly and efficient land use and development, and implement the objectives of the comprehensive plan. A zoning ordinance can be modified by the local Board of Supervisors and governing bodies or through requests from residents or businesses to change the zoning designations or approve new uses.

Under Virginia law, public utilities planning to construct a transmission line of 138 kV or higher are required to obtain a Certificate of Public Convenience and Necessity from the SCC, which, if granted, preempts local zoning ordinance approvals (Va. Code § 56-265.2). Substations and other facilities may be subject to local land use approvals and screening standards, including buffers and landscaping.

Article III of Chesterfield County's Zoning Ordinance (Chapter 19.1 of the Chesterfield County Code) establishes zoning design and overlay districts, which provide additional resource and design-specific land use regulations applicable to defined areas (Chesterfield County 2024b).



Ten zoning districts are within 0.25 mile of the Project. Figure 5.1.3-1 shows the current zoning districts.

- **Agricultural District (A):** Most land in Chesterfield County is within this district, which includes single-family residential uses on minimum 5-acre lots, as well as other compatible uses, such as farming, forestry, and open space.
- **Residential District (R-9):** This district is intended for single-family residences with a minimum lot area of 9,000 square feet.
- **Residential District (R-12):** This district is intended for single-family residences with a minimum lot area of 12,000 square feet.
- **Residential District (R-15):** This district is intended for single-family residences with a minimum lot area of 15,000 square feet.
- **Residential District (R-40):** This district is intended for low-density single-family residences with minimum lot areas of 40,000 square feet.
- **Residential District (R-TH):** This district is intended for single-family residences with a minimum subdivision size of 10 acres and density of 8 units per acre.
- **Neighborhood Business District (C-2):** This district promotes neighborhood-oriented retail services, including small shopping centers and similar development.
- **Community Business District (C-3):** This district is intended for commercial developments, such as shopping centers and mixed-use areas.
- **Light Industrial District (I-1):** This district encourages the grouping of administrative and research offices, laboratories, and light manufacturing uses.
- **General Industrial District (I-2):** This district provides adequate areas in appropriate locations for manufacturing and other related activities.

Chesterfield County's zoning overlay districts add requirements to or identify additional permitted uses in the underlying base zoning district. Three overlay districts are within 0.25 mile of the Project, as described below (Chesterfield County 2024a).

- **Emerging Growth Design District:** The Emerging Growth Design District encompasses the entire study area, except the area surrounding US 60. The purpose of the district is to provide a well-designed office, business, and industrial environment; maintain the long-term functioning and adequacy of the major arterial road system; and encourage designs that produce a compatible relationship between individual buildings, the circulation system, and adjacent areas.
- Roseland Zoning Overlay District: The Roseland Zoning Overlay District includes an area south of Norfolk Southern Railway around Old Hundred Road and Otterdale Road. The Roseland Zoning Overlay District designates an area for a high-quality, master-planned, mixed-use (i.e., residential, commercial, and public facilities) development, consistent with the concepts envisioned by the approved Roseland rezoning (Case 07SN0223).
- **Employment Center Design District:** This district encourages and enhances the development of high-quality office and industrial parks. The route alternatives cross portions of this overlay district near the existing Midlothian Substation off Dry Bridge Road and in areas north of Norfolk Southern Railway and Old Hundred Road.



Since 2019, Chesterfield County has pursued its Zoning Ordinance Modernization (ZOMod) Project, which is intended to modernize the zoning ordinances' land use categories and better align with the comprehensive plan. As such, the current zoning designations in the study area are subject to change based on ZOMod. As of April 2025, the ZOMod process is accepting public comment, with the public hearing/adoption and training/implementation phases remaining. Based on the most recent draft publicly available, ZOMod will consolidate the County's 24 zoning districts into 14 districts.8

5.1.3.3 IMPACT ASSESSMENT

Project construction would not alter any planning designations or zoning districts, and the construction and operation of transmission lines is exempt from compliance with local comprehensive plans and zoning ordinances (Title 9, Section 25-830-150 of the Virginia Administrative Code [VAC] 25-830-150). As shown on Figure 5.1.3-1 and as listed in Table 5.1-2, the Project crosses seven existing zoning districts. Adoption of Chesterfield County's ZOMod Project or approval of rezonings within the study area prior to the start of Project construction could impact the number and/or type of zoning districts affected by the Project.

TABLE 5.1-2 CHESTERFIELD COUNTY ZONING DISTRICTS CROSSED BY THE ROUTE **ALTERNATIVES**

Zoning District ^a	Unit	Route 2B	Route 3A	Route 3B
Agricultural (A)	miles	5.4	3.8	3.9
Residential (R-12)	miles	0.0	0.5	0.0
Residential (R-15)	miles	0.2	0.4	0.2
Residential (R-TH)	miles	0.6	0.9	0.9
Regional Business (C-3)	miles	0.5	0.5	0.5
Light Industrial (I-1)	miles	0.2	0.0	0.0
General Industrial (I-2)	miles	1.7	1.5	1.8

Source: Chesterfield County 2019

Approximately 50 to 60% of the total length of each route alternatives crosses Agricultural (A) zoning districts, while approximately 20 to 25% of the total length of each route alternative crosses General Industrial (I-2) zoning districts. Most of the I-2 crossings are lands associated with Upper Magnolia Green-West, owned in part by the Chesterfield County EDA. Industrial districts are considered compatible with transmission infrastructure because these zoning districts encourage the development of industrial parks and manufacturing facilities, all of which require infrastructure upgrades. As discussed in Section 5.1.6, planned rezoning and redevelopment in the study area would increase the amount of industrial lands crossed, particularly for parcels crossed by Route 2B within the Upper Magnolia Green-West development. All route alternatives

⁸ As of April 2025, the ZOMod draft is accessible online at https://online.encodeplus.com/regs/chesterfieldcounty-va-zomod/index.aspx.



a Zoning district mileage may not match the sum of the addends due to rounding.

cross a portion of each overlay district between the Midlothian Substation and MP 2.2; however, these route alternative segments are collocated with the Norfolk Southern Railway to minimize impacts on the intended development within these overlay districts.

The Duval Substation site is located within an R-15 district that lies within the County EDA's Upper Magnolia Green – East development (Case 25SN1039, see Section 5.1.6). The zoning amendment case refines the County's vision for Upper Magnolia Green-East by removing residential units from a previously approved zoning case (Case 21SN0675) in conjunction with a request for conditional use development to permit specific uses (including communications tower facility; contractor's office, shop and storage yard; electric power transforming station and other utility uses requiring a structure) (Chesterfield County 2025b).

5.1.4 RESIDENTIAL AREAS AND RESIDENCES

5.1.4.1 EXISTING RESIDENTIAL AREAS AND RESIDENCES

ERM identified residences within 100 feet, 250 feet, and 500 feet of each route centerline through review of various digital datasets, maps, and 2025 recent digital aerial photography. Table 5.1-3 lists the number of residences within these tiers for each route. There are no existing dwellings within 100 feet of any route alternative. Figure 5.1.4-1 shows the locations of residential areas and residences within 0.25 mile of the routes.

All residences within the study area are single-family dwellings on agriculturally zoned properties or within residentially zoned subdivisions. Residential subdivisions are in the eastern portion of the study area along Old Hundred Road and Otterdale Road, while other residences are found along County Line Road, Hallsboro Road, Mount Hermon Road, Genito Road, and Duval Road. Existing residential subdivisions within 0.25 mile of the Duval-Midlothian Line routes are described below. The Project does not cross any existing residential subdivisions.

- **Hallsley** includes 600 homes in the Westhaven, Glenhaven, Forest Creek, Creekside, and Saville Park neighborhoods. The Hallsley subdivision also includes a pool, community center, and other amenities. Homes range from 2,600 to 3,600 square feet of floor area (Hallsley 2025).
- **Summer Lake** includes 5,001 homes, a community pool, tennis and pickleball courts, a clubhouse, golf course, playgrounds, and other amenities. The community is still under development with available lots for sale on Lake Summer Loop, Tuscany Drive, and Singing Bird Drive (Summer Lake 2025).

5.1.4.2 PLANNED RESIDENTIAL AREAS

ERM identified ten publicly announced planned residential developments (as defined in Section 3.3) within 0.25 mile of the Project (Chesterfield County 2025b; 2025d; 2025e). ERM also reviewed "family subdivision" applications that propose subdivisions of large, individual private properties into multiple parcels. As of April 2025, one parcel associated with an active family



subdivision request was identified within 0.25 mile of the Project (Chesterfield County 2025b). Figure 5.1.4-1 depicts the following planned residential developments:9

- **Dogwood Creek** (Case No. 23SN0119; 23SN0119-01; 23SN0119-02; 24PP1210)
- **East Estates at Mount Hermon** (Case No. 24FP0026)
- Hammock Creek at Magnolia Green Section 2 (Case No. 21FP0180; 21TS0180; 21CP0022; 22CP0038)
- Lattice Hall Section 1 (Case No. 24CP1126; 24PR1017)
- Mount Hermon Road Rezoning and Exceptions (Case No. 25SN1046), or "Mount Hermon Road Residential"
- North Hallsley (Case No. 23SN0041; 23SN0041-01; 23SN0041-02; 25PP1099)
- **Nunnally Family Subdivision** (Case No. 24PA1250)
- The Townes at Mount Hermon Section 1 (Case No. 24CP1225)
- **Tuckmar Farm** (Case No. 05TS0230; 24CP1027)
- Unser Woods LLC (Case No. 07SN0374)¹⁰
- West Estates at Mount Hermon (Case No. 24CP1119)

These planned residential developments are described further in Section 5.1.6.

5.1.4.3 IMPACT ASSESSMENT

Dominion considered the Project's impact on planned residential developments for which applications have been submitted, are under review, and/or approved by Chesterfield County. Dominion also received various unsubmitted plans for "potential" residential developments from landowners during the outreach process. As stated in Section 3.3, Dominion considered planned developments as routing constraints and opportunities. Where appropriate and feasible, Dominion considered impacts on potential developments during routing but did not consider potential development to be a formal constraint or opportunity. The route alternatives follow parcel boundaries and use other collocation opportunities to the extent practical when crossing planned residential development. Section 5.1.6 provides a further discussion of planned developments.

Because all route alternatives would cross planned residential developments and would, in some cases, be near existing residences and residential developments, Dominion met with landowners and stakeholders to understand and minimize conflicts between the Project and existing and planned residential land uses (where feasible). Table 5.1-3 summarizes the number of existing residences near the route alternatives.

¹⁰ Based on Chesterfield County's Pending Cases Map (2025d), this planned development is on hold.



⁹ The boundaries of properties and names associated with planned residential developments are derived from publicly available Chesterfield County plans or applications as of April 2025 and are subject to change.

TABLE 5.1-3 EXISTING RESIDENCES NEAR THE PROJECT

Feature	Route 2B	Route 3A	Route 3B	Duval Substation
Residences within 100 feet of centerline	0	0	0	0
Residences within 250 feet of centerline	4	6	5	0
Residences within 500 feet of centerline	18	19	17	0

As shown in Table 5.1-3, Route 3A would be within 250 and 500 feet of more existing residences than the other route alternatives; however, the differences between route alternatives are minimal. Most existing residences within 500 feet of the route alternatives are located along the shared alignment of all three routes between the Midlothian Substation and MP 1.9, primarily along Mount Hermon Road. In this section, the shared alignment also follows the existing Norfolk Southern Railway and northern edge of the planned North Hallsley residential development. Between MPs 0.9 and 1.9, the route alternatives follow the southern side of the Norfolk Southern Railway to avoid residences on the north side of the railroad. On the North Hallsley development, most of the proposed right-of-way would be within a 100-foot-wide buffer area, depicted as a linear park and adjacent to the Norfolk Southern Railway (see Section 5.1.8). To that end, all route alternatives cross up to 17 planned single-family residential lots (impacting about 5% of the planned single-family residential lots) based on the current publicly available plan (Chesterfield County 2025b; 2025d; 2025e).

The remainder of this section discusses impacts specific to each route alternative, excluding the shared segment from MPs 0.0 to 1.9.

Route 2B

Route 2B is near several residences between MPs 1.9 and 2.6 (around Mount Hermon Road and the Norfolk Southern Railway corridor). In this section, Route 2B does not directly collocate along the Norfolk Southern Railway due to the location of existing residences, a commercial building, a conservation easement, and a listed architectural resource (the Dinwiddie County Pullman Car). Route 2B crosses forested and open areas of the residential parcels. Members of the Project team met with the landowners crossed by Route 2B on the south side of Mount Hermon Road in December 2024 and January 2025. Between MPs 2.2 and 2.3, Route 2B would cross multiple familial tracts of land, including one parcel associated with the Nunnally Family Subdivision (Case No. 24PA1250). While no plans for a homesite are publicly available for Case No. 24PA1250, 2025 recent aerial imagery suggests construction is occurring near Route 2B. As such, a proposed single-family residence could be within 500 feet of Route 2B at MP 2.1. While no existing residences are within 100 feet of Route 2B, the route would cross a shared residential driveway in an open area and in proximity to various nonresidential buildings (a log cabin and private transportation museum).

Between MPs 3.2 and 6.3, Route 2B follows the Norfolk Southern Railway and western property boundaries of two planned residential developments (Dogwood Creek and Unser Woods, LLC), not



crossed by either Routes 3A or 3B. The parcels are currently undeveloped and forested. On the Unser Woods, LLC parcel, no plan of development is publicly available; however, the Project team met with the landowner in October 2024 and January 2025 to discuss the Project and review routes. The Project team also met with Dogwood Creek developers to discuss Route 2B and routing considerations. No residential lots would be crossed by Route 2B between MPs 5.6 and 5.7; however, Route 2B would cross a planned cul-de-sac between MPs 6.1 and 6.3, which is adjacent to the proposed Upper Magnolia Green–West development. Route 2B follows the western property boundary of Dogwood Creek in forested areas to avoid existing residences to the west on Bailey Farm Road and Genito Road. Based on the current plan of development, Route 2B would impact less than 5% of the total planned single-family lots in Dogwood Creek.

About 34% of the entire length of Route 2B crosses a proposed residential development (North Hallsley, Unser Woods, LLC, and Dogwood Creek) and a family subdivision (Nunnally), the largest share among the route alternatives.

Route 3A

As with all route alternatives, Route 3A does not cross an existing residential subdivision; however, the route is located closest to Hallsley and Summer Lake. Between MPs 2.6 and 2.7, Route 3A is within 500 feet of two residences in Hallsley (in a shared alignment with Route 3B) but crosses forested areas and a Colonial Pipeline natural gas pipeline to the west. Between MPs 5.0 and 5.2, Route 3A is collocated with the west side of the Powhite Parkway Project's Conceptual Alignment 1A, with the planned highway in closer proximity to Summer Lake. Members of the Project team met with Summer Lake Homeowner's Association in February 2025. Between MPs 5.1 and 5.6, Route 3A is the closest route to the existing residential subdivision but is at least 500 feet from the nearest residence. At this meeting, residents asked questions about the collocation with the Powhite Parkway Project, visual impacts, and SCC process. Residents preferred routes that were located farther from the neighborhood but that utilized collocation opportunities. Section 5.3 discusses visual impacts and simulations developed from locations within the Hallsley and Summer Lake residential subdivisions.

Route 3A is the only route to cross the West Estates at Mount Hermon, a planned residential development south of Genito Road, for about 0.5 mile. Between MPs 5.1 and 5.6, Route 3A collocates along the west side of the Powhite Parkway Project's Conceptual Alignment 1A where it crosses the development property, but it does not cross any single-family lots based on publicly available plans.

Between MPs 2.2 and 2.4, Route 3A follows a shared alignment with Route 3B through forested, residential parcels. The Project team met with landowners in December 2024 and January 2025 to determine route options that minimize impacts to these residences, forested areas, and a Swift Creek tributary. As such, Route 3A follows a parcel boundary to the greatest extent practical, while maintaining at least 180 to 200 feet from the nearest existing residence.

At MP 4.6, Route 3A crosses Genito Road within 500 feet of two residences, although this segment of the route collocates along the west side of the Powhite Parkway Project's Conceptual Alignment 1A, which is located adjacent to the residences.



About 12% of the entire length of Route 3A crosses a proposed residential development (including the under-construction The Townes at Mount Hermon, Section 1).

Route 3B

As with all route alternatives, Route 3B does not cross an existing residential subdivision; however, the route is located closest to Hallsley (in a shared alignment with Route 3A). Route 3B is collocated with the Powhite Parkway Project's Conceptual Alignment 1B and is at least 0.5 mile west of Summer Lake. Section 5.3 discusses visual impacts and simulations developed from locations within the Hallsley and Summer Lake residential subdivisions.

Route 3B is the only route to cross Mount Hermon Road Residential, a planned residential development east of Mount Hermon Road and west of Powhite Parkway Project's Conceptual Alignment 1B. Route 3B collocates along the west side of the conceptual highway alignment between MPs 3.8 and 4.1. Route 3B crosses about 25 planned single-family residential lots (impacting about 15% of the total planned single-family residential lots) based on the current publicly available plan (Chesterfield County 2025b; 2025d; 2025e). Section 5.1.6 provides further discussion on the planned residential development. The Project team coordinated with the developer for Mount Hermon Road Residential and evaluated a route that would collocate on the east side of the conceptual highway; however, if built, this route would impact forested parcels on the Swift Creek Berry Farm and require additional crossings of the highway.

Between MPs 4.1 and 4.7, Route 3B deviates west from the Powhite Parkway Project Conceptual Alignment 1B to avoid a residence on the north side of Genito Road, which is located 500 feet from the route.

About 10% of the entire length of Route 3B crosses a proposed residential development—the smallest share among the route alternatives—and does not cross any developments actively under construction.

5.1.5 COMMERCIAL AND INDUSTRIAL AREAS AND BUILDINGS

5.1.5.1 EXISTING COMMERCIAL AND INDUSTRIAL AREAS

Commercial and industrial areas and buildings are present throughout the study area and include office buildings, retail/mixed use areas, and commercial businesses. Chesterfield County's commercial and industrial zoning districts, such as Neighborhood Business (C-2), Community Business (C-3), Light Industrial (I-1), and General Industrial (I-2), allow commercial or industrial land use by-right (see Section 5.1.3). Within the study area, these zoning districts are largely located along US 60 and Otterdale Road and encompass the west parcel of Upper Magnolia Green.

In accordance with SCC Guidelines, crossing these commercial and industrial areas is preferred to crossing residential areas because it minimizes potential conflicts with less compatible existing and planned land uses. Figure 5.1.5-1 shows the locations of commercial and industrial areas within 0.25 mile of the routes.



5.1.5.2 PLANNED COMMERCIAL AND INDUSTRIAL AREAS

ERM identified publicly announced planned commercial and industrial developments in the study area. As shown on Figure 5.1.5-1, four commercial and/or industrial planned developments are within 0.25 mile of the route alternatives (Chesterfield County 2025b).

- FC Richmond Complex (Case No. 22SN0021; 22SN0021-02; 22SN0021-03; 22SN0021-03; 22SN0021-04; 22PR0037)
- Hallsboro Event Venue (Case No. 20PR0205)¹¹
- Upper Magnolia Green West Tract A & Tract B Rezoning (Case No. 21SN0676; 25SN1038), or "Upper Magnolia Green-West"
- Watkins Centre South (Case No. 25SN1040)

These planned industrial and commercial developments are described further in Section 5.1.6.

5.1.5.3 IMPACT ASSESSMENT

No existing commercial or industrial buildings are within 250 feet of any route. Two commercial buildings were identified within 500 feet of Routes 2B and 3B, while one is within 500 feet of Route 3A. The shared alignment of all three routes is within 500 feet of the Gather Store (the historic Hallsboro Store building) near MP 1.7. The Gather Store currently operates as a commercial business. The shared alignment is collocated with the south side of the Norfolk Southern Railway, whereas the store is on the north side. The County has been reviewing a major site plan for a commercial event venue at the store since April 2020 (Chesterfield County 2025e).

Route 2B passes a construction business office building south of Norfolk Southern Railway and west of Mount Hermon Road, near MP 2.9. This building is located about 250 feet from Route 2B in an area where the route cannot feasibly collocate with the railroad due to the presence of existing residences. Route 3B passes near the Horner Park office building around MP 5.1, although the route is across Mount Hermon Road from the park.

Route 3A (MPs 4.7 to 5.1) crosses the parcel for the FC Richmond Complex, the planned site for a soccer facility on Genito Road. As discussed in Section 5.1.6, Dominion met with FC Richmond to discuss the route crossing. In this meeting, Dominion learned that Phase 1 of the FC Richmond project would include grass fields, parking, and preliminary work for future phases. As of April 2025, the FC Richmond project has obtained zoning approvals, but construction has not begun. No planned buildings associated with FC Richmond would be within the Route 3A right-ofway; however, installation of the route could reduce the space available for future stages of the FC Richmond development.

Project construction could result in temporary noise, dust, and traffic impacts on commercial and industrial uses. Project operation could also affect visual conditions in commercial and industrial areas, due to the addition of transmission infrastructure to the landscape, although such visual impacts would be less substantial than in residential areas, due to the general compatibility of

¹¹ Based on Chesterfield County's Pending Cases Map (Chesterfield County 2025e), this planned development has been under review since April 2020.



transmission lines with commercial and especially industrial uses. Section 5.3 discusses the Project's visual impacts in detail.

As discussed in Section 5.1.3, each route cross existing General Industrial (I-2) zoning districts for nearly 25% of its entire length. All routes, particularly Route 2B, cross lands proposed for rezoning to I-2, which would be more compatible with transmission lines than residential uses. Most industrial-zoned lands crossed by the Project are undeveloped and forested. Most notably, all route alternatives cross about 1.7 to 2.1 miles of the planned industrial portions of the Upper Magnolia Green–West development, which includes a proposed 445-acre pad site for a semiconductor chip manufacturing plant and operations campus on lands currently zoned I-2 (USACE 2025). Dominion coordinated with the Chesterfield County EDA on this expected industrial development and the location for the Duval-Midlothian Lines (including the proposed Duval Substation). As discussed in Section 5.1.6, the EDA preferred an alignment on its west parcel to minimize overall viewshed impacts and to preserve the east parcel for residential development and a conservation area (the Swift Creek Preserve).

Overall, all routes cross existing and future commercial and industrial areas to the extent practical and minimize impacts on planned industrial areas by collocating with the Powhite Parkway Project or other linear facilities. As a result, the Project right-of-way would cause minimal direct disruption during construction and would minimize the possible loss of land area available for future use.

5.1.6 PLANNED DEVELOPMENTS

ERM obtained information on planned developments through publicly available data on Chesterfield County websites and through consultations with Chesterfield County, its EDA, landowners, and other stakeholders. In most cases, information on planned developments was found on Chesterfield County's websites (Chesterfield County 2025b, 2025d, 2025e).

As defined in Section 3.3, ERM and Dominion considered "planned" development—development of any type for which a plan has been submitted to the County for review, has been recently approved, or under construction—as formal routing constraints and/or opportunities. Dominion also met with owners and land developers who discussed other potential future land development concepts. Where appropriate and feasible, Dominion considered these "potential" developments—land development projects for which a formal plan has not yet been filed with the County—during routing but did not consider potential development to be a formal constraint or opportunity.

Table 5.1-4 summarizes and Figure 5.1.6-1 depicts planned developments within 0.25 mile of the Project as of April 2025.

TABLE 5.1-4 PLANNED DEVELOPMENTS WITHIN 0.25 MILE OF THE ROUTES

Project Name	Chesterfield County Case Number	Development Type	Description	Status ^a	Proximity to Route Alternatives
Dogwood Creek	23SN0119; 23SN0119-01; 23SN0119-02; 24PP1210	Residential	Planned residential development with up to 292 single-family residential lots. The 178-acre parcel is located south of Genito Road and east of Bailey Farm Road and connects to the adjoining Tuckmar Farm residential development under construction.	Zoning approved (June 2024)	Route 2B (MPs 5.6–5.7 and 6.1–6.3) crosses the western portion of the property
East Estates at Mount Hermon	24FP0026	Residential	Planned residential development with up to 34 single-family residential lots connecting the existing Summer Lake (Section 11) subdivision.	Under construction	Route 3A (MPs 5.3–5.6) is 500 feet northwest of the nearest residential lots
FC Richmond Complex	22SN0021; 22SN0021-02; 22SN0021-03; 22SN0021-03; 22SN0021-04; 22PR0037	Commercial	A new soccer facilities complex approved in March 2023 on an approximately 84-acre parcel on the south side of Genito Road. Phase One of the project includes three grass fields, lighted parking, Genito Road improvements, and groundwork for future phases (additional fields, athletic training area, clubhouse, and other buildings).	Under construction	Route 3A (MPs 4.7–5.1) crosses the property
Hallsboro Event Venue	20PR0205	Commercial	A major site plan application was submitted in 2020 for the Hallsboro Store (see Section 5.4.2) parcel. No plans have been identified on Chesterfield County's website.	Unknown	Shared alignment of all routes (MP 1.7) is 300 feet southeast of property
Hermon West Solar LLC	23SN0128; 23SN0128-01	Utility/ Renewable Energy	A conditional use permit to allow a solar facility on a 154-acre parcel zoned A, off Mount Hermon Road. The solar facility (up to 5 MW) would encompass a 37-acre lease area. The property is currently forested and includes a residence.	Under review	Route 2B (MPs 4.0–4.4) is 0.2 mile west of the parcel

Project Name	Chesterfield County Case Number	Development Type	Description	Status ^a	Proximity to Route Alternatives
Lattice Hall Section 1	24CP1126; 24PR1017	Residential	Planned residential development located south of Genito Road. The subdivision plan under review includes 51 single-family residential lots with improvements to Genito Road (see Section 5.1.10). Section 1 adjoins a planned neighborhood (the Retreat at Lattice Hall Section 1; Case No. 24CP1318) east of and more than 0.25 mile from the Project.	Under construction	Route 3A (MP 4.8) is 300 feet northwest of the closest residential lot
Moseley Hermon Solar	21SN0655; 22PR0097	Utility/ Renewable Energy	Solar facility (up to 5 MW) under construction on a 125-acre parcel east of Mount Hermon Road. The solar facility will encompass about 32 acres.	Under construction	Route 3B (MPs 3.5–3.6) crosses the southeast corner of the parcel
Mount Hermon Road Residential	25SN1046	Residential	Rezoning of a 73-acre parcel east of Mount Hermon Road, 0.5 mile north of Genito Road for proposed residential development. The development includes up to 171 single-family residential lots. Proffers for the planned development include improvements for Mount Hermon Road and a pedestrian trail (see Section 5.1.8).	Under review	Route 3B (MPs 3.8–4.1) crosses the southeast portion of the property
North Hallsley	23SN0041; 23SN0041-01; 23SN0041-02; 25PP1099	Residential	Rezoning of an approximately 302-acre parcel for up to 340 single-family residential lots. The plans include a second entrance off Old Hundred Road and connect the existing Hallsley subdivision. Proffers for the planned development include a proposed roundabout on Old Hundred Road, common areas like a clubhouse, and shared-use paths (see Main Line Trail in Section 5.1.8).	Zoning approved (January 2025)	Shared alignment of all routes (MPs 0.9– 1.3) crosses the northern edge of the property
The Townes at Mount Hermon Section 1	24CP1225	Residential	Residential subdivision located south of Genito Road. Section 1, northeast of the planned West Estates at Mount Hermon development, is currently under construction, with 50 lots for single-family dwellings.	Under construction	Distance and direction to closest residential lot: Route 3A (MP 4.8)—0.3 mile southeast Route 3B (MP 4.6)—0.3 mile west



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

Project Name	Chesterfield County Case Number	Development Type	Description	Status ^a	Proximity to Route Alternatives
Upper Magnolia Green West Tract A & Tract B Rezoning (Upper Magnolia Green –West)	21SN0676; 25SN1038	Industrial	In January 2025, the Chesterfield County EDA filed a request to rezone 980 acres to I-2 to allow industrial uses, including data centers. Upper Magnolia Green–West includes Tract A (690 acres) and Tract B (99 acres), which will be developed in part by Chesterfield County EDA. Collectively, the parcels have frontage on Moseley Road, Mount Hermon Road, and two locations on Genito Road. Within Upper Magnolia Green–West, a semiconductor chip manufacturing plant is proposed (USACE 2025).	Under review	Distance across Upper Magnolia Green-West: Route 2B (MPs 6.3-8.5) Route 3A (MPs 5.6-7.4) Route 3B (MPs 5.2-7.0)
Upper Magnolia Green East Amendment (Upper Magnolia Green –East)	21SN0675; 25SN1039	Conservation and Community Resources	In January 2025, the Chesterfield County EDA filed a modification to its 2022 rezoning (Case No. 21SN0675) prohibiting residential uses on Parcels 698-680-Part of 0602; 703-678-9275; 704-682-4454; 705-680-3057; 706-678-6386. The proposal includes approximately 744 acres fronting two locations on Duval Road, two locations off Otterdale Road, and a location off Westerleigh Parkway. Three public schools are proposed – one is under construction (see Section 5.1.9) – in two areas, approximately 195 acres. In other areas, specific uses including a communications tower facility, contractor's office, shop and storage yard (about 13 acres), and an electric power transforming station (i.e., the Duval Substation) in a 20-acre area are proposed. The development also includes an environmental preservation area (the Swift Creek Preserve, see Section 5.1.7.) in several areas totaling 400 acres. Major arterial and collector roads are proposed within the development (see Section 5.1.10).	Under review	Distance across Upper Magnolia Green-East: Route 2B (MP 8.6) Route 3A (MP 7.5) Route 3B (MP 7.1) The Duval Substation is located on Upper Magnolia Green-East.



Project Name	Chesterfield County Case Number	Development Type	Description	Status ^a	Proximity to Route Alternatives
Unser Woods, LLC	07SN0374	Residential	Rezoning of an 835-acre parcel from A to R-15 to allow single-family residential development. The rezoning case was submitted in 2007 and is "on hold" per Chesterfield County's website. There are no plans or number of proposed single-family lots made publicly available.	On hold	Route 2B (MPs 3.1–5.3) crosses the parcel
Tuckmar Farm	05TS0230; 24CP1027	Residential	Residential subdivision south of Genito Road, on the west side of Horner Park with up to 212 single- family lots.	Under construction	Route 2B (MPs 5.3–5.9) is 0.2 mile west
Watkins Centre South	25SN1040	Industrial	Proposed rezoning by Chesterfield County EDA of approximately 345 acres to I-2 to allow data center uses. The proposed development includes eight parcels bound by Rt. 288 and Otterdale Road.	Under review	Shared alignment of all routes (MP 0.3) is 0.3 mile northwest
West Estates at Mount Hermon	24CP1119	Residential	West Estates at Mount Hermon is a residential subdivision located south of Genito Road, with 50 lots for single-family dwellings. Section 1 is northeast of the planned West Estates at Mount Hermon neighborhood.	Under review	Route 3A (MPs 5.1– 5.6) crosses the parcel, 100 feet from the closest residential lot

Sources: Chesterfield County 2025b, 2025d, 2025e; FC Richmond 2025; Planet Labs Imagery 2025; USACE 2025

A = Agricultural zoning; EDA = Economic Development Authority; I-2 = General Industrial zoning; MW = megawatt; R-15 = Residential District zoning; Rt. = Virginia State Route; VEDP = Virginia Economic Development Partnership; VDOT = Virginia Department of Transportation

VERSION: 1.0

5.1.6.1 IMPACT ASSESSMENT

Table 5.1-5 lists planned developments crossed by the Project facilities and documents the extent of those crossings.

TABLE 5.1-5 PLANNED DEVELOPMENT CROSSINGS BY EACH ROUTE ALTERNATIVE

Development Name ^a	Unit	Route 2B	Route 3A	Route 3B
Dogwood Creek	miles	0.3	NA	NA
FC Richmond	miles	NA	0.4	NA
Moseley Hermon Solar LLC	miles	NA	NA	<0.1
Mount Hermon Road Residential ^b	miles	NA	NA	0.3
North Hallsley	miles	0.4	0.4	0.4
Nunnally Family Subdivision	miles	0.1	NA	NA
Unser Woods LLC	miles	2.2	NA	NA
Upper Magnolia Green-East	miles	0.1	0.1	0.1
Upper Magnolia Green-West	miles	2.0	1.6	1.6
West Estates at Mount Hermon	miles	NA	0.5	NA
Total	miles	5.1	3.0	2.4

Sources: Chesterfield County 2025b, 2025d, 2025e

NA = not applicable

During the stakeholder engagement process (Section 3.4), the Company evaluated potential rights-of-way on properties with the purpose of minimizing conflict with present and prospective uses of the land on which they are to be located. Because no Dominion rights-of-way currently exist to meet the needs of the Project, other existing rights-of-way were given priority to maximize collocation opportunities. Often, maximizing collocation opportunities for the Project resulted in impacts on planned and potential developments. The discussion describes the impacts on planned developments crossed by the Project as of April 2025.

Dogwood Creek

The right-of-way for Route 2B would affect approximately 4.9 acres within the planned Dogwood Creek subdivision. Route 2B would abut the proposed residential lots along almost the entire western edge of the development between MPs 5.3 and 6.1. No residential lots would be crossed between MPs 5.6 and 5.7 where Route 2B crosses the northwestern corner of the development, but it would cross a proposed walking trail (Section 5.1.8). The Project would not affect use of the walking trail but would have visual impacts on trail users. Between MPs 6.1 and 6.3, Route 2B would cross approximately 10 residential lots shown on conceptual development plans, thus affecting less than 5% of the total planned single-family lots in Dogwood Creek. Route 2B would



^a Based on publicly available planned developments as of April 2025

b Mount Hermon Road Rezoning and Exceptions (Case No. 25SN1046)

have visual impacts on the Dogwood Creek development. Section 5.3 discusses the Project's visual impacts in more detail. Routes 3A and 3B do not cross the planned development parcel.

As discussed in Section 5.1.4, the Project team met with developers and stakeholders representing Dogwood Creek in September and November 2024. Dogwood Creek stakeholders expressed concerns that this route could impact future developable parcels to the west, which are currently forested (Planet Labs Imagery 2025). At these meetings, the Company reviewed alternate crossing locations for Route 2B on the Dogwood Creek development, including an alignment that would follow the entire eastern extents of the parcel. Other potential routes, identified to avoid Dogwood Creek (including rejected Route 2A as discussed in Section 4.3.1) would add length and angle structures and impact existing residences to the west off Bailey Farm Road and Genito Road. As a result of these meetings, Route 2B is aligned generally adjacent to, but outside of, the western property boundary of Dogwood Creek.

FC Richmond Complex

The right-of-way for Route 3A would affect approximately 8.7 acres within the FC Richmond Complex property off Genito Road. Route 3A crosses the approved FC Richmond Complex parcel for about 0.5 mile, collocated with Powhite Parkway Project's Conceptual Alignment 1A. Route 2B collocates on the east side of the conceptual highway alignment then crosses to the west side in order to avoid existing residences on Genito Road. Route 2B would not affect the use of the planned facilities but would have visual impacts on recreational users. Routes 2B and 3B do not cross the property.

ERM and the Company met with FC Richmond to discuss the Project in September 2024 to introduce and review the Project and to discuss Route 3A across the proposed recreational development. FC Richmond asked about electromagnetic fields (EMFs), the feasibility of underground routing options, and the timeline of the Project. As of April 2025, pre-construction site work is ongoing (FC Richmond 2025).

Moseley Hermon Solar LLC

The solar development is under construction based on 2025 recent aerial imagery. The right-of-way for Route 3B would affect less than one acre of the southeast corner of the development. Route 3B collocates along the western side of the Powhite Parkway Project's Conceptual Alignment 1B. The route is not anticipated to impact the planned solar development parcel because no transmission facilities are within 0.2 mile of proposed solar facilities. Routes 2B and 3A do not cross the parcel.

Mount Hermon Road Residential

The right-of-way for Route 3B would affect approximately 5.5 acres within the planned Mount Hermon Road residential development. Route 3B is collocated with the west side of the Powhite Parkway Project Conceptual Alignment 1B. Route 3B would overlap about 25 single-family lots (impacting about 15% of the total planned lots) within the development based on conceptual site plans (Chesterfield County 2025b, 2025d).

The rezoning case was submitted to Chesterfield County in February 2025 after Route 3B (formerly the Powhite Parkway Variation; see Section 4.2.3) was introduced at the Company's



second community meeting in January 2025. As discussed in Section 5.1.4, the Company received email correspondence in January 2025 from an attorney representing the landowner and applicant for the planned residential development. The Project team evaluated a route that would collocate on the east side of the conceptual highway to avoid the planned residential development; however, if built, this route would have additional impacts on existing residences on Genito Road, forested parcels on the Swift Creek Berry Farm, and require additional crossings of the highway. As a result of these discussions, Route 3B collocates along the west side of the Powhite Parkway Project's Conceptual Alignment 1B to avoid existing residences on Genito Road and reduce the number of potential highway crossings.

North Hallsley

The shared right-of-way for all route alternatives would affect approximately 8.8 acres of the approximately 305-acre planned North Hallsley subdivision. Between MPs 0.9 and 1.4, the routes are collocated with the Norfolk Southern Railway, which bounds the North Hallsley property to the north. Based on the rezoning plan approved in January 2025, the Project's right-of-way would largely encompass the area identified as a 100-foot-wide linear park adjacent to the railroad, which includes a proposed neighborhood trail (see Section 5.1.8). The shared alignment of the route alternatives would encroach about 60 feet into 17 proposed residential lots.

The Project team met with Riverstone Properties, LLC, the developer of North Hallsley, in September 2024 and January 2025. The Company introduced the Project and reviewed routes that cross the development parcel. The route alternatives minimize the length of crossing of the North Hallsley parcel by following the north side of the railroad for about 0.5 mile before crossing to the south and onto the planned residential development property. As part of discussions with Riverstone Properties, LLC, the Project team reviewed options to minimize impacts and crossings to the North Hallsley development, including the Mount Hermon Route Variations. As described in Section 4.3.1, these routes would be longer and would impact existing residences on Mount Hermon Road. The 160-foot-wide right-of-way for all route alternatives would encroach into 5% of the planned residential lots on the North Hallsley plan. The proposed routes reduce the length of crossing on the North Hallsley property to the extent feasible while also collocating with an existing railroad to minimize overall impacts.

Nunnally Family Subdivision

The right-of-way for Route 2B would affect approximately 1.7 acres in the southeastern corner of the Nunnally Family Subdivision parcel. Routes 3A and 3B do not cross the proposed family subdivision parcel.

The Project team met with members of the Nunnally family in December 2024 to review Route 2B. Publicly available plans for the family subdivision do not indicate where a future homesite would be located on the planned subdivided parcel; however, 2025 recent aerial imagery suggests tree clearing has occurred south of Route 2B. Route 2B would cross the proposed subdivision line at an angle for about 500 feet. While this alignment is not anticipated to affect the likely location of a new homes site within the family subdivision, it would have potential visual impacts on any future homesites.



Unser Woods LLC

The right-of-way for Route 2B would affect approximately 36.9 acres within the portion of the 835-acre parcel, south of the Norfolk Southern Railway. The parcel is associated with a rezoning case to allow residential development. Approximately 0.6 mile of the 2.2 miles of total crossing would be collocated with the Norfolk Southern Railway, and the remaining portion of the route (about 1.4 miles) would follow the western parcel boundary. Routes 3A and 3B do not cross the planned development.

The Project team met with Unser Woods, LLC, in October 2024 and January 2025. Unser Woods, LLC shared its plans to develop the parcel for single-family residential from its rezoning case submitted in 2007, which has since been on hold. The developers also indicated that they intend to continue pursuing the zoning application after Chesterfield County completes updates to its future land use planning documents for western Chesterfield County. During the January 2025 meeting, the Company reviewed route alignments, including Route 2B, which is intended to minimize potential impacts on developable areas by following parcel boundaries, per request by Unser Woods, LLC.

Upper Magnolia Green (West and East)

In January 2020, the Chesterfield County EDA purchased properties in western Chesterfield County to pursue economic development opportunities. The Upper Magnolia Green development is a planned mixed-use development encompassing approximately 1,700 acres owned in part by the Chesterfield County EDA. The development properties were initially rezoned in 2022. In 2023, the development received a \$25 million state grant from the Virginia Business Ready Sites Program, administered by the VEDP, to help attract economic development opportunities.

In February 2025, the Chesterfield County EDA filed two rezoning applications for its Upper Magnolia Green development, which includes parcels owned in part by the EDA. The largest parcel associated with the Upper Magnolia Green development, Parcel 6986800602, is owned by the EDA. The Powhite Parkway Project (see Section 5.1.10) separates the 1,400-acre parcel, into a western and eastern development. The rezoning applications include proposed industrial uses in Upper Magnolia Green-West and public schools, environmental preservation areas, and utility infrastructure in Upper Magnolia Green-East. For Upper Magnolia Green-West, the Chesterfield County EDA filed an amendment to its 2021 rezoning application (21SN0676) identifying two additional areas of private lands ("Tract A" and "Tract B") to be developed as Upper Magnolia Green. Tract A includes a 690-acre development area encompassing 10 private parcels located south of Horner Park. Tract B consists of up to 99 acres of development on three private parcels between Tract A and the EDA property. Upper Magnolia Green-East includes only EDA-owned parcels (about 735 acres total). All route alternatives generally cross Upper Magnolia Green-West.

The Project team met with the EDA throughout the route development process to discuss the prospective land uses in the Upper Magnolia Green development, which included proposed residential, industrial, municipal, and utility uses. In May and June 2024 and February 2025 meetings, the Project team reviewed possible routing of the Duval-Midlothian Lines across the development. The EDA did not indicate concerns for Project routes across the Upper Magnolia Green development because the Duval-Midlothian Lines would serve these proposed developments. The EDA expressed a preference to route the Duval-Midlothian Lines on Upper



Magnolia Green–West and adjacent to the Powhite Parkway Project. The EDA also informed the Company that residential development originally proposed in Upper Magnolia Green–East (the location of the proposed Duval Substation) was no longer proposed. Instead, the EDA intended to propose a future environmental preservation area (the Swift Creek Preserve) that would restore forested areas and coexist with utility infrastructure (including a water tower) and planned public schools (Chesterfield County 2025b).

All route alternatives share a common alignment primarily through Upper Magnolia Green–West, collocated with the proposed 200-foot-wide right-of-way for the VDOT's Powhite Parkway Project (where no other alternate alignment exists). Based on discussions with the EDA, the Duval-Midlothian Lines would be within a 200-foot-wide buffer adjacent to the Powhite Parkway Project's right-of-way. As such, the 160-foot-wide right-of-way for the Duval-Midlothian Lines would be within this buffer and would avoid the lands set aside for future industrial uses, as preferred by the EDA. A portion of all of the Project's route alternatives cross Tract A parcels, which are not currently owned by the EDA (Chesterfield County 2025a). Routes 3A and 3B cross approximately 0.5 mile of the Tract A parcels and are collocated with a conceptual alignment for the Powhite Parkway Project, whereas Route 2B crosses about 0.8 mile of Tract A parcels. As of April 2025, development layouts for Tract A are not publicly available. The right-of-way for Routes 3A and 3B would affect approximately 22.5 acres, and Route 2B would affect approximately 24.4 acres of the eastern extents of the Upper Magnolia Green–West development, primarily collocated with the Powhite Parkway Project.

About 0.1 mile of all route alternatives cross Upper Magnolia Green–East to reach the proposed Duval Substation site from the east (see Section 4.1). The right-of-way for all route alternatives, inclusive of the proposed Duval Substation site, would affect approximately 5.8 acres in the southwestern extents of the Upper Magnolia Green–East development.

Nearly one-quarter of the total length of each route alternative crosses the Upper Magnolia Green development. Dominion will continue to coordinate with the EDA on the Project.

West Estates at Mount Hermon

The right-of-way for Route 3A would affect approximately 9.7 acres of the West Estates at Mount Hermon development parcel. This portion of the Route 3A right-of-way is collocated with the Powhite Parkway Project's Conceptual Alignment 1A and would be closer to the residential development than the highway. Based on the conceptual plans for the subdivision, the right-of-way would be within 60 feet of five planned residential lots and would cross an area identified as a proposed dog park. Routes 2B and 3B do not cross the parcel.

Impact Summary

As shown on Table 5.1-6, each of the Project's route alternatives would affect planned development in the study area. When crossing planned developments, all routes collocate with linear facilities, including the existing Norfolk Southern Railway or planned Powhite Parkway Project, or follow parcel boundaries, where practical.

Route 2B crosses 6 of the 18 planned developments identified within 0.25 mile of the Project. The approximately 5.1 miles of crossings are nearly 60% of the route's total length; however, the



planned development with the longest crossing length (Unser Woods, LLC; about 2.2 miles) is on hold. Routes 3A and 3B cross one fewer planned development than Route 2B; however, Route 3B has the least miles of crossings overall (about 2.4 miles versus about 3.0 miles for Route 3A). Route 3A crosses a larger extent of planned developments that have received approval or are under construction, including FC Richmond.

TABLE 5.1-6 PLANNED DEVELOPMENT IMPACTS BY EACH ROUTE ALTERNATIVE

Resource a	Unit	Route 2B	Route 3A	Route 3B
Planned developments crossed (total)	number	6	5	5
Planned developments crossed (total)	% of total length	59%	40%	34%
Planned developments crossed (total)	acres	77.4	50.4	38.3
Planned industrial/commercial developments crossed	% of total length	23%	21%	23%
Planned residential developments crossed	% of total length	34%	12%	10%

^a As of April 2025 (Chesterfield County 2025b; 2025d; 2025e)

5.1.7 CONSERVATION EASEMENTS AND LANDS

Land conservation easements help preserve Virginia's heritage, provide recreational opportunities, and improve water and habitat quality and overall quality of life. In addition to managing lands under its jurisdiction, the VDCR helps landowners, land trusts, and localities by serving as a clearinghouse, keeping an inventory of protected lands, and providing grants and information on easements and land protection. The agency also helps by identifying important open space and lands rich with plant and animal diversity.

Using the VDCR's Managed Conservation Lands Database (VDCR 2024a), ERM identified easement types, individual easements, and conservation lands within the study area. No easements held by the Virginia Outdoors Foundation, Agricultural and Forestal Districts, or Virginia Natural Area Preserves are present in the study area. Figure 5.1.7-1 depicts conservation easements in the study area.

5.1.7.1 NORTH AMERICAN LAND TRUST EASEMENT

North American Land Trust (NALT) is a 501(c)(3) conservation charity whose mission is to permanently conserve and steward natural and cultural resources through innovative land preservation partnerships. NALT is in its thirty-third year of operation and has permanently preserved more than 139,000 acres of natural land in 24 states, mostly through permanent conservation easements (NALT 2025).

NALT holds one 89-acre easement in the study area. The easement encompasses two parcels (7027017227 and 7027003517) located west of County Line Road where it intersects the Norfolk Southern Railway. The easement parcels are largely forested residential parcels and contain two residences. Surrounding lands are also largely forested and also include the railroad and a few



commercial buildings along County Line Road and Mount Hermon Road. The NALT easement is within 600 feet of Route 2B (MPs 2.8 to 3.3), although no Project rights-of-way would cross the easement.

5.1.7.2 VDHR CONSERVATION EASEMENT

VDHR administers more than 680 easements on 77,000 acres of land throughout the Commonwealth through its Historic Preservation Easement Program. This easement program is designed to protect historic properties that are listed in the Virginia Landmarks Register; Virginia battlefields associated with the Revolutionary War, War of 1812, or Civil War; and other properties of historic significance (VDHR 2025).

One VDHR easement for the Hallsboro Store, a listed historic resource (see Section 5.4), is in the study area. The easement encompasses the store's 3-acre parcel (7077022355) located east of Hallsboro Road at the intersection with Mount Hermon Road and the railroad. The property was placed under easement with VDHR in 2005. The easement is largely surrounded by residences on Hallsboro Road, the Norfolk Southern Railway, and planned residential development to the east. All three route alternatives (in a shared alignment) are approximately 300 feet east of the easement.

5.1.7.3 CHESTERFIELD COUNTY CONSERVATION EASEMENTS

Chesterfield County's Parks and Recreation Department manages conservation easements in the County. Three County conservation easements were identified on private parcels in the eastern extents of the study area. Of these, two easements are on parcels owned by a private developer and within an existing residential subdivision off Otterdale Road (Newmarket). Of these two easements, one is entirely forested and provides a vegetative buffer for the planned Powhite Parkway Project alignment, while the other easement is forested except for a clubhouse facility and pool for Newmarket residents. The closest Project features are at least 0.9 mile from both easements in Newmarket; therefore, these easements are not further discussed.

The third easement is located on an approximately 150-acre private property northwest of the Swift Creek Reservoir, with frontage on Otterdale Road. This County easement is largely forested and consists of a County resource protection area around Swift Creek. The Route 3A right-of-way is adjacent to the northwest corner of—but does not cross—the easement at MP 3.7.

As part of the proposed Upper Magnolia Green–East development (see Section 5.1.6), the Chesterfield County EDA is proposing a County-managed Swift Creek Preserve—an environmental preservation area—around Horsepen Creek and associated tributaries. The Swift Creek Preserve would be a designated preservation area on at least 350 acres east of the Powhite Parkway Project right-of-way that were previously planned for residential development with conservation. Lands surrounding the Swift Creek Preserve include sites within the Upper Magnolia Green development that are under development or proposed for new public schools. The Project's route alternatives would be west of the Powhite Parkway Project right-of-way and thus would not cross the Swift Creek Preserve parcels.



5.1.7.4 IMPACT ASSESSMENT

No route alternative crosses an existing conservation easement. All routes would be within 300 feet of the VDHR easement for Hallsboro Store between MPs 1.6 and 1.8. The shared alignment of the route alternatives in this area would be south of and collocated with the Norfolk Southern Railway to minimize impacts on existing residences, the Hallsboro Store, forested areas, and planned residential development. The Hallsboro Store parcel is further discussed in Sections 5.3 (Visual Resources) and 5.4 (Cultural Resources).

Route 2B is approximately 600 feet from the NALT easement. The Norfolk Southern Railway and commercial properties on Mount Hermon Road are between the easement and Route 2B. Route 3A runs adjacent to a County easement near Swift Creek Reservoir but does not cross the parcel. All route alternatives would be near the proposed Swift Creek Preserve but would be collocated with and on the other side of the Powhite Parkway Project from the preservation area and thus would not cross the preservation area.

Dominion understands that properties are placed under easements throughout the year, and additional easements could be identified in the study area as the Project moves forward. Dominion will continue to consult with the various land managing entities and conservation agencies for the study area regarding potential new easements along the routes.

5.1.8 RECREATIONAL RESOURCES

ERM collected information on recreational resources through digital datasets and maps, recent (2025) digital aerial photography, publicly available information on County websites, and consultation with County officials and other stakeholders. Unless otherwise noted, the information on recreational resources provided below is from Chesterfield County's Parks and Recreation webpage and geospatial data (Chesterfield County 2025i;2024c). There are no state or federal recreation resources in the study area. The existing and planned recreational resources within 0.25 mile of the route alternatives are depicted in Figure 5.1.8-1. In Section 5.3, visual impacts are discussed for these recreational resources.

5.1.8.1 EXISTING RECREATIONAL RESOURCES

Horner Park

Horner Park (formerly Clover Hill Athletic Complex) is an existing County park located south of Genito Road and west of the Otterdale Road intersection. Of the park property's 316 total acres, approximately 100 acres in the northern part of the property are developed. Facilities include seven multi-use fields, four baseball/softball fields, restrooms and concessions, and a community recycling center. The property includes less than one mile of paved and/or unpaved walking trails along the west side of Mount Hermon Road, which leads into the park from Genito Road. Horner Park is owned and maintained by Chesterfield County's Parks and Recreation Department. The 5-year Facilities Plan in Chapter 15 of Chesterfield County's Plan (2019) includes Horner Park enhancements for the southern portion of the parcel (see Section 5.1.8.2). Route 3B crosses portions of eastern Horner Park parcels along Mount Hermon Road between MP 4.5 and 5.2, while Routes 2B and 3A are about 0.6 west and 0.4 mile east, respectively, of the nearest existing park facilities.



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

Swift Creek Berry Farm & Greenhouse

The Swift Creek Berry Farm & Greenhouse (Swift Creek Berry Farm) is a family-owned and operated farm located at 17210 Genito Road, about one mile west of the Otterdale Road intersection. Established for agricultural purposes in the late 1800s and revived by current owners in 1978, the farm offers self-pick blueberries, pumpkins, firewood, and a greenhouse with a variety of plants for sale (Swift Creek Berry Farm & Greenhouse 2025). Route 3A crosses forested areas of the Swift Creek Berry Farm parcels away from the operating farm between MPs 3.7 and 4.6. Route 2B and 3B are about 1.7 miles west and 0.7 mile west, respectively, away from the active portions of the farm.

U.S. Bicycle Route 1

U.S. Bicycle Route 1 is an existing trail from Florida to Maine, including segments officially recognized by American Association of State Highway and Transportation Officials in various states, including Virginia (VDOT 2010). Within the study area, U.S. Bicycle Route 1 is collocated with Genito Road, which is a narrow road bordered by dense woodland and rural residences and subdivisions. All route alternatives cross the bicycle route (Genito Road). Routes 2B and 3B would cross the bicycle route perpendicularly at MP 5.3 and MP 4.5, respectively. Route 3A would cross the bicycle route at a slight angle at MP 4.7 to avoid a residence.

Visual impacts are referenced in Section 5.3.

5.1.8.2 PLANNED RECREATIONAL RESOURCES

Planned recreational resources were identified through publicly available information on Chesterfield County's website, as well as individual site plans for planned developments. Planned recreational features include sports complexes, parks, and multi-use bike and walking paths or trails as proposed by Chesterfield County or planned developments (see Section 5.1.6). Table 5.1-7 lists planned recreational resources within 0.25 mile of the routes.



TABLE 5.1-7 PLANNED RECREATIONAL RESOURCES WITHIN 0.25 MILE OF THE PROJECT

Recreational Resource	Recreational Type	Status	Distance to Project
Dogwood Creek Walking Trail	A neighborhood trail for the planned Dogwood Creek residential development (see Section 5.1.6).	Included in the zoning approval for the Dogwood Creek residential development.	Crossed by Route 2B at MP 5.6.
FC Richmond Complex	New commercial sports complex, including indoor/outdoor recreational facility with several outdoor recreation fields, an office, concessions, sports-related retail, and parking (see Section 5.1.6).	Pre-construction site work is ongoing.	Crossed by Route 3A between MPs 4.7 and 5.1.
US Bicycle Route 1 Improvements	A 6.6-mile segment along Genito Road from Woolridge Road to the Powhatan County line.	Improvements to the existing trail are recommended in County's 2019 Bikeways and Trails Plan.	Crossed by Route 2B (MP 5.3); Route 3A (MP 4.5); and Route 3B (MP 4.7).
Horner Park Enhancements	Construction of new facilities within the southern portion of the Horner Park property, including a picnic area, playground, walking trails, dog park, restrooms, disc golf course, field archery course, and fitness stations.	Phase 1 of the park expansion is planned to be completed by summer 2027.	Not crossed by any route.
Mount Hermon Road Bike and Trail Path	Located on or along Mount Hermon Road between County Line Road and Duval Road.	Included in Chesterfield County's 2019 Bikeways and Trails Plan.	Crossed by Route 2B (MPs 2.8 and 6.7); Collocated with Route 3B (MPs 4.4 and 5.2).
North Hallsley Main Line Trail and Linear Park	A 1.1-miles shared use trail within a 100-foot-wide buffer (a linear park) runs along the Norfolk Southern railroad connecting Old Hundred Road to the future Brightwalton Extension (see Section 5.1.10).	Included in the zoning approval for the North Hallsley residential development (see Section 5.1.6).	Crossed by the shared alignment of all routes (MPs 0.9 and 1.0).
North Hallsley Neighborhood Trail	A neighborhood trail for the planned North Hallsley residential development (see Section 5.1.6).	Included in the zoning approval for the North Hallsley residential development.	The neighborhood trail is approximately 0.2 mile southeast of the shared alignment of all route alternatives (MP 1.6).



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

Recreational Resource	Recreational Type	Status	Distance to Project
Swift Creek Linear Park	A 32-mile shared use trail from the Summer Lake neighborhood to eastern Chesterfield County, including about 1.5 miles within the study area.	Planned.	Crossed by Route 3A (MP 5.1) and Route 3B (MP 4.9).
Westerleigh Parkway Bike and Trail Path	A 2.2-mile path on or along Westerleigh Parkway through a residential neighborhood to Otterdale Road.	Included in Chesterfield County's 2019 Bikeways and Trails Plan.	Crossed by the shared alignment of all routes (Route 2B at MP 7.3 and equivalent locations for Route 3A and Route 3B).
Western Connector Trail	A 20-mile shared use trail would be located along the western side of the Powhite Parkway Project, including 6 to 7 miles within the study area (depending on which Parkway alignment is selected).	Planned.	Multiple crossing locations for all routes. See discussion below.

Source: Chesterfield County 2018, 2019, 2024c, 2025b, 2025d, 2025e; FC Richmond 2025

MP = milepost

VERSION: 1.0

5.1.8.3 IMPACT ASSESSMENT

Construction impacts on recreational resources would include potential noise and traffic. These impacts would be temporary, limited to the period of active construction, and would typically only affect recreational resources crossed by or adjacent to Project facilities. Dominion would coordinate with the County or developers as needed to mitigate access issues.

Perpendicular crossings of planned trails or paths are preferred to minimize potential impacts on these linear features. Most Project crossings of recreational trails and paths are angled due to constraints, such as existing or planned development or in attempts to follow parcel boundaries or planned and existing linear facilities. Permanent impacts would be limited to tree clearing within the selected route right-of-way and visual impacts from the presence of new transmission line infrastructure. No structures would be placed within recreational path footprints. These impacts would not prevent or otherwise affect the ability to use recreational resources.

All route alternatives cross existing recreational areas. As described in Section 4.4, the routes are collocated with linear facilities or parcel boundaries where possible to minimize impacts. All route alternatives cross four of the ten planned recreational resources listed in Table 5.1-7 (either at a shared or alternate location). These include the U.S. Bike Route 1, North Hallsley Main Line Trail and Linear Park, Westerleigh Parkway Bike and Trail Path, and Western Connector Trail. Section 5.1.6 provides a further discussion of planned developments (including, but not limited to, Dogwood Creek and North Hallsley), and Section 5.3 provides a further discussion on visual impacts for recreational resources.

Horner Park

Approximately 0.4 mile of Route 3B crosses parcels associated with Horner Park between MPs 4.5 and 5.2. This crossing is collocated with Powhite Parkway Project Conceptual Alignment 1B and follows Mount Hermon Road to cross the eastern extents of the park. The Project team met with Chesterfield County staff to discuss the crossing of County-owned parcels and indicated no concern as the route avoids existing park facilities and areas for future improvements. From existing facilities, Route 3B is not visible (see Section 5.3). The Project does not cross the southern parcel of Horner Park, which is identified for future improvements (Chesterfield County 2019). Routes 2B and 3A are about 0.6 and 0.4 mile, respectively, away from the nearest existing park facilities.

Swift Creek Berry Farm & Greenhouse

Approximately 1.1 miles of Route 3A crosses parcels associated with Swift Creek Berry Farm between MPs 3.6 and 4.7. The route crosses the northeastern forested areas of the property away from the active farms and fields. Dominion met with the owners of Swift Creek Berry Farm to discuss the Project and review route crossings on the property. The farm owners raised concerns about visual and operational impacts resulting from the Project, which would be collocated with Powhite Parkway Project Conceptual Alignment 1A across the property. Based on these discussions, Dominion adjusted Route 3A to follow the northeastern property boundary to the degree possible, while also avoiding an adjoining County conservation easement (see



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

Section 5.1.7). Route 3A would affect approximately 20.2 acres within the Swift Creek Berry Farm property.

U.S. Bicycle Route 1

Chesterfield County's 2019 Bikeways and Trails Plan recommends improving portions of U.S. Bicycle Route 1 along Robious Road, Charter Colony Parkway and Genito Road; however, specific plans of improvement are not included in the plan. All route alternatives cross U.S. Bicycle Route 1 along Genito Road. As discussed above, these routes are collocated with parcel boundaries and potential Powhite Parkway Project alignments to minimize impacts on Genito Road users. Section 5.3 provides a discussion of visual impacts.

FC Richmond Complex (Planned)

0.4 mile of Route 3A crosses the FC Richmond Complex parcel, collocated with a Powhite Parkway Project Conceptual Alignment 1A. As discussed in Section 5.1.6, Dominion met with FC Richmond to discuss the Project, which would not affect any of the planned recreational improvements within the FC Richmond property.

Planned Bike and Trail Paths

All route alternatives cross the Genito Road Bike and Trail Path, North Hallsley Main Line Trail and Linear Park, Westerleigh Parkway Bike and Trail Path, and Western Connector Trail. The impacts of Project operations on planned trails and bike paths would be limited to potential visual impacts for recreational users. Route 3A requires eight crossings of existing and planned recreational areas. while Routes 2B and 3B require seven crossings. Trail and path crossings are described below.

- The planned bike and trail path on or along Genito Road follows U.S. Bicycle Route 1 (Chesterfield County 2019). Routes 3A (MP 4.7) and 3B (MP 4.5) cross Genito Road collocated with Powhite Parkway Project alignments to minimize impacts on Genito Road users, whereas Route 2B (MP 5.3) follows parcel boundaries.
- All routes cross the planned bike and trail path extending from Westerleigh Parkway at a common, angled crossing location (Route 2B at MP 7.3, Route 3A at MP 6.2, and Route 3B at MP 5.8).
- Routes 2B and 3B cross Mount Hermon Road in locations identified for a proposed bike and trail path. Route 2B crosses Mount Hermon Road twice at MPs 2.8 and 6.7 through existing or proposed industrial-zoned properties. Route 3B is collocated with the eastern side of Mount Hermon Road (and thus the Bike and Trail Path) for about 1.0 mile adjacent to Horner Park.
- Route 3A crosses Swift Creek Linear Park at an angle at MP 5.1 as part of its crossing of the FC Richmond Complex parcel. The centerline does not cross the Swift Creek Linear Park trail, but the right-of-way overlaps the trail where it meets the Western Connector Trail.

All three route alternatives cross the Western Connector Trail, as follows:

- Route 2B requires one perpendicular crossing of the trail at MP 7.3.
- Route 3A requires three crossings at MPs 3.8 (perpendicular), 5.0 (angled), and 5.1 (angled; near the intersection of the Western Connector Trail and Swift Creek Linear Park trail).



 Route 3B requires one angled crossing of the trail at MP 5.0, collocated with Powhite Parkway Project Conceptual Alternative 1B.

- The shared alignment of all routes are collocated with the Western Connector Trail for 0.6 mile (MPs 7.3 to 7.8 for Route 2B and equivalent MPs for Routes 3A and 3B). This segment is also collocated with the western side of the Powhite Parkway Project through the County EDA's Upper Magnolia Green property. The shared Project alignment departs from the trail route before a perpendicular trail crossing between Route 2B MPs 8.4 and 8.5 (and equivalent locations on Routes 3A and 3B).
- The shared alignment of all routes of the Duval-Midlothian Lines reflects discussions between Dominion and the County EDA about crossing the Upper Magnolia Green development (see Section 5.1). Based on these discussions, the route alternatives through Upper Magnolia Green would be within the 200-foot-wide buffer area adjacent to the Powhite Parkway Project alignment, which has also been set aside for the Western Connector Trail.
- Two planned residential developments include trails for residents and/or public access. Between MP 0.9 and 1.0, the shared alignment of all route alternatives cross the planned North Hallsley Mainline Trail and Linear Park, which would be part of the planned North Hallsley subdivision (see Section 5.1.6). This right-of-way is collocated with the Norfolk Southern Railway and the trail (and associated linear park) for approximately 300 feet.
- The planned Dogwood Creek residential development (see Section 5.1.6) includes a walking trail that would be crossed by Route 2B at an angle (MP 5.6).

Impact Summary

All route alternatives cross existing and planned recreational trails or properties. Impacts on these areas would include noise, traffic, and temporary trail closures during construction and maintenance activities and potential visual impacts during operation. Vegetation clearing has the greatest potential to result in visual impacts. Project construction and operation would not require closures of entire parks.

Route 3B crosses the fewest number of existing (four) and planned (four) trails, whereas Route 3A crosses two additional existing trails, and Route 2B crosses two additional planned trails. All route alternatives cross Genito Road and thus the U.S. Bicycle Route 1; however, Routes 3A and 3B collocate along a conceptual alignment for the Powhite Parkway Project at the planned trail crossing. Route 2B primarily crosses existing and planned trails where other linear facilities do not exist. While Route 3B is the only route to cross Horner Park, it utilizes a collocation opportunity along an existing (Mount Hermon Road) and planned (Powhite Parkway Project Conceptual Alignment 1B) road to minimize impacts. As discussed in Section 5.3, Route 3B would have no visual impact on Horner Park. Route 3A is the only route to cross the FC Richmond development property and Swift Creek Berry Farm properties.



5.1.9 CEMETERIES, SCHOOLS, AND PLACES OF WORSHIP

ERM reviewed the following sources to identify cemeteries, schools, and places of worship along and near the right-of-way for the Duval-Midlothian Lines:

- U.S. Geological Survey topographic quadrangles (USGS 2025);
- Recent digital aerial photography from Chesterfield County (Chesterfield County 2025a);
- Historic and recent digital aerial photography from Google Earth (Google Earth 2025) and Planet Labs Imagery (Planet Labs Imagery 2025);
- Site plan submissions for planned developments (Chesterfield County 2025d);
- County GIS data (Chesterfield County 2025a);
- Information from Chesterfield County Public Schools (CCPS 2025);
- Information from the VCRIS (VDHR 2025); and
- Websites such as findagrave.com (Find a Grave 2025).

ERM identified cemeteries, schools, and places of worship within 0.25 mile of the Project's route alternatives. ERM's review of schools considered public and private pre-kindergarten through secondary schools, religious schools, daycare centers (excluding in-home daycares), technical schools, after-school enrichment and tutoring programs, and college/university campuses. Resources identified include two cemeteries and one place of worship.

While four public schools (one existing and three planned) are in the study area, all are at least 0.4 mile away from the Project. These schools include Old Hundred Elementary School (existing) and three public schools planned within the Upper Magnolia Green-East development (West Area Elementary School, Deep Creek Middle School, and Western Area High School). Due to the distance from the Project facilities, schools are not further discussed.

Table 5.1-8 provides descriptions of cemeteries and places of worship, which are shown on Figure 5.1.9-1.

TABLE 5.1-8 CEMETERIES AND PLACES OF WORSHIP WITHIN 0.25 MILE OF THE ROUTES

Name	Description	Approximate Distance and Direction from Routes ^a
Private Cemetery (Mount Hermon Road)	A cemetery within a forested 5-acre parcel (Parcel 7087021722) south of Mount Hermon Road. The parcel is surrounded by forested parcels abutting the Norfolk Southern Railway to the north.	400 feet southeast of all routes at MP 1.7 (shared alignment).
Private Cemetery (Mount Hermon Road)	A cemetery within a residential 112-acre parcel (Parcel 7046983077) south of Mount Hermon Road. The parcel encompasses residences, ponds, and multiple outbuildings/barns.	800 feet south of Route 2B at MP 2.3.
Mount Hermon Baptist Cemetery	An active cemetery within a 4-acre parcel at the northwest corner of the intersection of Mount Hermon Road and Genito Road. The cemetery is surrounded by forest, dwellings, and Horner Park. Find a Grave (2025) notes that the earliest headstone dates back to 1777. The cemetery is	0.3 mile west of Route 3B at MP 4.5.



CLIENT: Dominion Energy Virginia PROJECT NO: 0662361 DATE: April 2025

Name	Description	Approximate Distance and Direction from Routes ^a
	fenced in and maintained by Mount Hermon Baptist Church.	
Mount Hermon Baptist Church	A church on an 11-acre parcel south of Genito Road. The surrounding area consists of forest, dwellings, and Horner Park.	500 feet west of Route 3B near MP 4.5.

^a For cemeteries, the distances measured are from the route centerline to the approximate edge of the cemetery boundary based on publicly available information.

5.1.9.1 IMPACT ASSESSMENT

Impacts on land uses at cemeteries, schools, and places of worship may be physical due to direct crossings or nonphysical due to impacts on the resource's setting, such as changes in viewsheds. Because the magnitude of nonphysical impacts declines as the distance from a transmission line increases, the discussions below address potential land use effects on resources within 500 feet of the Duval-Midlothian Lines. The private cemetery identified near Mount Hermon Road meets this criterion. No further discussion is provided for cemeteries, schools, and places of worship more than 500 feet from a route alternative. Section 5.3 discusses the Project's visual impacts. There are no cemeteries, schools (existing and planned), or places of worship within 0.25 mile of the Duval Substation.

The shared right-of-way alignment of Routes 2B, 3A, and 3B could be within 250 feet of a private cemetery identified on Parcel 708702172200000, which is currently owned by Borden Land Company, LLC (Chesterfield County 2025c; Timmons Group 2024b). The cemetery is located in the southwestern corner of the parcel; however, the right-of-way encompasses less than 0.1 acre of the northwestern corner of the parcel. Recent 2025 aerial photography provides no indication of this cemetery being maintained, nor is there a public record of headstones. The cemetery location could not be verified on Find a Grave (2025) or other sources listed above. Visual impacts (if any) would be limited due to the existing forested buffer between the shared right-of-way for all routes and the parcel. As discussed in Section 5.1.3, potential planned residential development associated with the Roseland Zoning Overlay District could also provide screening.

Route 2B could be within 800 feet of another private cemetery identified on Parcel 7046983077, which is currently owned by Edward and Carole Nunnally. As discussed in Section 5.1.4, the Project team met with the family to discuss the Route 2B alignment on their properties south of Mount Hermon Road. The cemetery is in the southern portion of the parcel near an existing home, pond, and barn. The cemetery could not be verified on Find a Grave (2025) or any of the other sources listed above.

5.1.10 TRANSPORTATION INFRASTRUCTURE

5.1.10.1 MAJOR EXISTING TRANSPORTATION INFRASTRUCTURE

The road network in the study area includes a variety of functional classifications identified by Chesterfield County's Transportation Department. The functional classifications identify the purposes and intended characteristics of roads and the right-of-way necessary to accommodate traffic volumes and trip types (Chesterfield County 2019).



Figure 5.1.10-1 shows the existing and planned transportation infrastructure in the study area. Although the study area includes portions of Powhatan County, the Project would not affect any roads outside of Chesterfield County; therefore, transportation infrastructure in Powhatan County is not further discussed.

The Chesterfield County Thoroughfare Plan (Chapter 13) identifies four functional road classifications, as described below:

- **Limited Access:** These roads accommodate high-speed traffic with limited or no access to adjacent properties, have at least some degree of separation of opposing traffic flow, and are generally accessed by interchanges. These roads typically have a right-of-way width of 200 feet, generally accommodating six travel lanes.
- Major Arterial: These roads accommodate high traffic volumes and provide primary connections between neighborhoods and employment or retail centers and to limited access roads. The Plan identifies two major arterial classifications based on right-of-way width. The 90-foot-wide major arterial classification accommodates four travel lanes, while the 120- or 200-foot-wide major arterial classification accommodates six to eight travel lanes.
- **Collector:** These roads carry traffic to and from major arterials and accommodate traffic within and between neighborhoods and commercial/industrial developments. The Plan identifies two collector classifications based on right-of-way width. The 60-foot-wide collector classification accommodates two travel lanes, while the 70-foot-wide collector classification accommodates two to four travel lanes.
- Local: These roads accommodate low traffic volumes within and between neighborhoods and commercial/industrial developments. These roads typically have a right-of-way width of 50 to 60 feet and generally accommodate two travel lanes.

The only existing limited access road in the study area is State Route 288, which crosses the northeastern corner of the study area, approximately 0.9 mile east of the Midlothian Substation. US 60, which forms the northern study area boundary, is a major arterial. As discussed in Section 3.4.3, the Company evaluated US 60 as a potential collocation corridor for the Duval-Midlothian Lines; however, the road and surrounding uses do not have sufficient space for the new 160-foot-wide right-of-way necessary for the Project. A segment of Watermill Parkway along the eastern study area boundary is the only other existing major arterial in the study area.

Collector roads in the study area include segments of Mount Hermon Road, Hallsboro Road, County Line Road, Old Hundred Road, Otterdale Road, Genito Road, and Duval Road. Other roads in the study area, including privately maintained roads in residential areas, are local roads. VDOT owns and maintains most public road rights-of-way in the study area.

One railroad, the Norfolk Southern Railway, runs east-west for about 5.2 miles in the northern portion of the study area. The railroad generally parallels portions of Mount Hermon Road and crosses forested and scattered residential areas. As discussed in Section 3.4, the railroad was identified as a potential collocation opportunity for the Duval-Midlothian Lines.

5.1.10.2 PLANNED ROAD PROJECTS

This section describes planned road construction and transportation improvement projects within 0.25 mile of the Project, as listed in VDOT's Six-Year Improvement Program (VDOT 2025); the



Western Area Capital Improvement Projects included in the County's overall Capital Improvements Program (CIP) (Chesterfield County 2025f); the Plan (Chesterfield County 2019); and on Chesterfield County's Transportation website (Chesterfield County 2025g). ERM also reviewed road layouts within planned developments, as described in Section 5.1.6. Table 5.1-9 lists the publicly available planned road improvement projects within 0.25 mile of the route alternatives.

Richmond Regional Planning District Commission Long-term Transportation Plan

The Richmond Regional Transportation Planning Organization (RRTPO) is the designated Metropolitan Planning Organization for the Richmond area. The RRTPO and the Richmond Regional Planning District Commission (now known as PlanRVA), which includes representatives of Chesterfield County, are developing an updated long-range transportation plan (LRTP) for the Richmond region, known as *Pathways to the Future: Transportation 2050* (PlanRVA 2025). This plan is expected to be adopted in 2026. The new LRTP will replace *ConnectRVA: 2045* (RRTPO 2021), the current LRTP adopted by RRTPO in 2021, and will outline the PlanRVA region's transportation needs, proposed transportation improvements, and financial strategies for implementing those improvements. The Company considered the general provisions and specific recommended transportation improvements in existing and draft future LRTPs as part of the routing process for the Project.



TABLE 5.1-9 PLANNED ROADWAY PROJECTS WITHIN 0.25 MILE OF THE PROJECT

Project Name	Public or Private Entity	Description ^a	Status ^b	Functional Classification (Right-of- way width)	Proximity to Route Alternatives
Brightwalton Road Extension	Private Planned Development	Extend Brightwalton Road from the existing Hallsley neighborhood to Hallsboro Road.	Planned	Local (unknown)	Crossed by all route alternatives (shared alignment) at MP 1.7.
Duval Road Realignment	Chesterfield County	Includes multiple improvements to Duval Road, west of the intersection with Otterdale Road. These improvements include Western Area Capital Improvements and EDA improvements. Realign Duval Road west of the proposed North-South Collector Road, between the proposed Upper Magnolia Green and Hammock Creek at Magnolia Green—Section 2 developments. Construct a new connector road to the planned Powhite Parkway project through the Upper Magnolia Green—East development. Improve Duval Road east of the proposed North-South Collector Road and between Otterdale Road.	In design	Major Arterial (90 feet)	Duval Substation will require access from the realigned Duval Road. The road is 0.1 mile south of all route alternatives at MP 8.5 (2B), 7.5 (3A), and 7.0 (3B). The proposed major arterial road is less than 0.1 mile east of the proposed Duval Substation.
Genito Road Improvements	Private Planned Development	Road improvements along Genito Road, included in the approved rezoning case for the Lattice Hall residential development.	Planned	Major Arterial (90 feet)	Less than 200 feet east of Route 3A at MP 4.6.
Mount Hermon Road Extension	Chesterfield County	Extend Mount Hermon Road from Horner Park to future Westerleigh Parkway and Magnolia Green Parkway.	Planned	Major Arterial (90 feet)	Crossed by Route 2A at MP 6.7. Less than 200 feet west of Route 3B at MP 5.2.
New North- South Collector Road	Chesterfield County	Construct a new collector road between Mount Hermon Road and Duval Road.	Under construction	Collector (70 feet)	0.2 mile southeast of Route 3A at MP 5.9; 0.3 mile east of Route 3B at MP 5.7.
Old Hundred Road Improvements	Private Planned Development	Road improvements, including a roundabout, are proposed for the approved rezoning case for the North Hallsley residential development.	Planned	Major Arterial (90 feet)	Less than 400 feet south of all routes at MP 0.5.



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

Project Name	Public or Private Entity	Description ^a	Status ^b	Functional Classification (Right-of- way width)	Proximity to Route Alternatives
Powhite Parkway Project	VDOT	Extend Powhite Parkway from Woolridge Road to US 360 (Hull Street). Two conceptual alignments are under review (Conceptual Alignments 1A and 1B) between an area west of Otterdale Road and north of Chesterfield County EDA's Upper Magnolia Green development property. Interchanges are planned at Wooldridge Road, Genito Road, and Hull Street, with an overpass at Otterdale Road.	EIS in progress	Limited Access Road (200 feet)	Crossed by all route alternatives: Route 2B: MP 8.4 Route 3A: MPs 3.4, 3.8, 4.9, and 7.3 Route 3B: MP 6.9 All routes collocate with a proposed alignment (where no other conceptual alignment exists), and Routes 3A and 3B collocate with Conceptual Alignments 1A and 1B, respectively. See below.
Westerleigh Parkway Extension	Chesterfield County	Extend Westerleigh Parkway from Otterdale Road to the planned North-South Collector and eventually to Mount Hermon Road within Upper Magnolia Green-West.	Under construction	Major Arterial (90 feet)	Crossed by all routes at MP 7.0 (2A), MP 6.1 (3A), and MP 5.7 (3B)

Sources: Chesterfield County 2019, 2025b, 2025c, 2025d; VDOT 2025; Planet Labs Imagery (2025); Timmons Group 2023

VERSION: 1.0

EIS = environmental impact statement

^a Planned developments are discussed in more detail in Section 5.1.6.

^b Indicates status as of April 2025

Powhite Parkway Project

VDOT, in coordination with the FHWA and Chesterfield County, is preparing an EIS to evaluate the impacts of extending Powhite Parkway as a limited access road from its current terminus at Woolridge Road to US 360 (Hull Street) near Beaver Bridge Road (VDOT 2025). The Powhite Parkway Project crosses the study area for about 6.0 to 6.5 miles from Woolridge Road to Duval Road (Figure 5.1.10). As of April 2025, VDOT is evaluating two Conceptual Alignments (Conceptual Alignments 1A and 1B) for the Powhite Parkway Project between an area west of Otterdale Road and Chesterfield County EDA's Upper Magnolia Green–West development. A proposed alignment for the highway (where no other conceptual alignment exists) bisects the County EDA's property (6986800602) and is within the Upper Magnolia Green–West development.

Chesterfield County Proposed Thoroughfare Plan

The County's Thoroughfare Plan, a component of the Plan (Chesterfield County 2019) identifies the future road improvements and new facilities necessary to accommodate anticipated growth and development within the County. In the study area, the Thoroughfare Plan recommends upgrading numerous existing collector roads to major arterial (90-foot-wide right-of-way) roads. The Thoroughfare Plan also includes the Powhite Parkway Project and an upgrade of a segment of Woolridge Road to a major collector road (120- to 200-foot-wide right-of-way) (Chesterfield County 2019). Except for the Powhite Parkway Project, most of these recommended upgrades have not been funded or designed.

Western Area Capital Improvements Projects

Pursuant to Va. Code §15.2-2239, Chesterfield County maintains and annually updates a five-year CIP, which serves as a long-term planning tool to guide the design, financing, construction and maintenance of roads and other public infrastructure (Chesterfield County 2025h). The County's western area CIP includes infrastructure projects in the western part of the County, inclusive of the Project study area (Chesterfield County 2025f). As of April 2025, the County's CIP includes 112 total projects, of which 6 are road projects within the study area. Two of those projects are improvement projects along Otterdale Road. The Project would not cross or otherwise affect Otterdale Road; therefore, these two projects are excluded from further analysis. Table 5.1-9 describes the remaining four projects: reconstruction of a segment of Duval Road, improvements to a separate segment of Duval Road, construction of a North-South Connector, and construction of a western area road extension.

5.1.10.3 IMPACT ASSESSMENT

Project construction would result in temporary road closures and possible increased traffic. These impacts would end after construction is complete. Section 5.3 discusses the Project's visual impacts on road users. Dominion would coordinate with the County and VDOT in cases where construction activities require temporary road closures. Table 5.1-10 and Table 5.1-11 summarize the number and details of the existing and future road crossings and road collocation for each route alternative.



TABLE 5.1-10 ROAD INFRASTRUCTURE IMPACTS BY THE ROUTE ALTERNATIVES

	Unit	Route 2B	Route 3A	Route 3B
Existing road crossings	number	3	2	2
Future road crossings a, b	number	4	9 ^c	3
Existing road collocation	miles	0.3	0.3	0.8
Future road collocation a, d	miles	1.4	3.8	3.1

^a Based on publicly available information described in Section 5.1.10.2 as of April 2025

TABLE 5.1-11 EXISTING AND PLANNED ROAD CROSSINGS BY THE ROUTE ALTERNATIVES

Road Name	Route Alternative	Crossing Type	
Existing Roads			
Old Hundred Road	2B, 3A, 3B (shared alignment, MP 0.5)	Perpendicular	
Mount Hermon Road	2B (2.7)	Perpendicular	
Genito Road	2B (MP 5.3)	Perpendicular	
	3A (MP 4.7)	Perpendicular	
	3B (MP 4.5)	Perpendicular	
Planned Roads			
Brightwalton Road Extension	2B, 3A, 3B (shared alignment, MP 1.7)	Perpendicular	
Powhite Parkway Project (where	2B (MP 8.3)	Perpendicular	
no other conceptual alignment exists)	3A (MP 7.3)	Perpendicular	
	3B (MP 6.9)	Perpendicular	
Powhite Parkway Project— Conceptual Alignment 1A	3A (MP 3.8, MP 4.9)	Perpendicular, Angled	
Powhite Parkway Project— Conceptual Alignment 1B	3A (MP 3.4, MP 6.0)	Angled, Angled	
Westerleigh Parkway Extension	2B (MP 7.1)	Angled	
	3A (MP 6.1)	Angled	



^b Includes VDOT's Powhite Parkway Project. All routes require at least one crossing of the planned alignment (where no other conceptual alignment exists) on the Upper Magnolia Green development. The preferred alignment of Powhite Parkway Project Conceptual Alignments 1A or 1B would affect the crossing locations for Route 3A. Routes 2B and 3B do not cross Conceptual Alignment 1A or 1B.

^c Assumes one alignment (Conceptual Alignment 1A or 1B) would be constructed for the Powhite Parkway Project. For Route 3A, at least three crossings of the Powhite Parkway project could be required regardless of which conceptual alignment is selected—the most for any route.

^d All routes collocate with the Powhite Parkway Project alignment for at least 1.0 mile; however, the preferred alignment for Powhite Parkway Project Conceptual Alignments 1A or 1B would affect the potential length of future collocation for Routes 3A and 3B.

Road Name	Route Alternative	Crossing Type
	3B (MP 5.7)	Angled
Mount Hermon Road Extension	2B (MP 6.7)	Angled

MP = milepost

VDOT guidelines indicate a preference for perpendicular road crossings, which reduce the span distance and the visual impacts of a crossing. VDOT also prefers that transmission structures are placed outside of their rights-of-way to avoid conflicts with future road improvements. The route alternatives include perpendicular crossings where possible; however, most road crossings are not perpendicular due to constraints associated with planned developments and existing residences and in consideration of the preference of landowners to follow parcel boundaries where feasible. Dominion would install the Project's transmission structures outside of existing and planned VDOT rights-of-way.

The shared alignment of all route alternatives collocates along Dry Bridge Road for approximately 0.2 mile (MPs 0.1 to 0.3) after exiting the Midlothian Substation. As described in Section 4.4.3, substantial portions of the Project's route alternatives collocate with either Alignment 1A or 1B. The National Environmental Policy Act process for the Powhite Parkway Project is expected to be complete by early 2026 (nearly one year after Dominion's Project will file with the SCC); therefore, the actual extent of the Project's collocation with the Powhite Parkway Project would depend on the Project route alternative certificated by the SCC and the road alignment approved by FHWA.

The shared alignment of all route alternatives is collocated with the Norfolk Southern Railway railroad for 1.3 miles between Hallsboro Road and Old Hundred Road (MP 0.3 to 1.6). The shared alignment crosses the railroad near MP 0.8 to minimize impacts on a planned residential development, the North Hallsley Rezoning (see Section 5.1.6). Dominion solicited preliminary feedback from Norfolk Southern Railway on the route alternative crossings and did not receive any objections to the proposed crossing at MP 0.8. The Company will coordinate with Norfolk Southern Railway to avoid impacts on the railroad and to ensure that proper clearances and specifications are met.

As shown in Table 5.1-10 and Table 5.1-11, Route 3A crosses more total roads (existing and planned) than other routes and also has the largest extent of collocation with existing and future roads. Route 3B crosses the fewest total roads, has the fewest angled crossings (one), and has more collocation length than Route 2B.

Because all route alternatives would cross planned road projects, Dominion will continue to coordinate with the County and VDOT to minimize potential impacts to construction, operations, and daily traffic.



5.1.11 AIRPORTS AND HELIPORTS

5.1.11.1 AIRPORT FACILITIES

Transmission structures have the potential to affect airspace in and around airports. The following sections describe the airports in the vicinity of the study area, the airspace regulations that could impact the Project, and potential impacts on airports and airspace.

5.1.11.2 AIRPORTS NEAR THE PROJECT AREA

ERM reviewed the Federal Aviation Administration's (FAA) website to identify public use airports, airports operated by a federal agency or the U.S. Department of Defense, airports or heliports with at least one FAA-approved instrument approach procedure, and public use or military airports under construction (FAA no date [n.d].-a, FAA n.d.-b). Based on this review, 10 airports, private airstrips, or heliports are within 10 nautical miles (nm) of the three route alternatives. Table 5.1-12 provides information about these airports, heliports, and private airstrips. The locations of these facilities are shown on Figure 5.1.11-1.

TABLE 5.1-12 AIRPORTS AND HELIPORTS WITHIN 10 NAUTICAL MILES OF THE PROJECT

Airport/Heliport Name	FAA ID	Approximate Distance and Direction from Nearest Project Facility ^a	Use	Maximum Runway Length (feet)	Runway, Part 77 Obstruction Category ^b
Private Airstrip ^c (Planned)	NA	0.3 nm north of Route 2B	Private	2,054 ^d	NA
Johnston Willis Heliport	VG41	2.7 nm east of Midlothian Substation	Private	NA	NA
Bon Secours St Francis Medical Center Heliport	VG68	3.2 nm east of Route 3A	Private	NA	NA
Plainview Airport	VA94	7.3 nm northwest of Route 2B	Private	1,600	NA
Sabot Airport	1VA0	7.7 nm north of Midlothian Substation	Private	2,400	NA
Merlin Aerodrome Airport	2VA3	8.2 nm southwest of Duval Substation	Private	3,200	14/32: A(V)
Chippenham Hospital Heliport	6VA3	8.6 nm east of Midlothian Substation	Private	NA	NA
Richmond Executive Airport (Chesterfield County)	FCI	9.3 nm southeast of Route 3A	Public	5,500	15: C 33: PIR
Saunders Field Airport	9VA6	9.8 nm northwest of Route 2B	Private	2,200	18/36: A(V)
H D T Heliport	60VA	9.9 nm north of Midlothian Substation	Private	NA	NA

FAA ID = Federal Aviation Administration airport identification number; FCI = Richmond Executive / Chesterfield County Airport; NA = not applicable; nm = nautical mile

^a Shows distance from the end or edge of the nearest runway to the nearest Project feature.



CLIENT: Dominion Energy Virginia PROJECT NO: 0662361 DATE: April 2025

^b Obstruction categories: A(V) = visual approach (utility runway); C = non-precision approach with visibility minimums greater than $\frac{3}{4}$ statute mile; PIR = precision instrument runway

^c A conditional use permit (21SN0623) was approved in 2022 to operate a private landing strip at 1401 County Line Road; however, the airstrip has not been constructed based on recent (2025) imagery.

^d Proposed runway length

5.1.11.3 FAA REGULATIONS

The FAA oversees air transportation in the United States, focusing on air transportation safety, including the enforcement of safety standards for aircraft manufacturing, operation, and maintenance. The FAA also manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of an FAA obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The regulations that govern objects that may affect navigable airspace are codified in the Code of Federal Regulations (CFR), Title 14, Part 77 (14 CFR Part 77). A summary of the rule¹² as it relates to the Project is provided below.

The FAA only regulates public use and federally-operated (military use) airports and heliports. Of the airports identified in Table 5.1-12, the only public use airport within 10 nm of any route alternative is Richmond Executive / Chesterfield County Airport. Private use airports without at least one instrument approach procedure do not require evaluation under 14 CFR Part 77.

5.1.11.4 CIVIL AIRPORT IMAGINARY SURFACES

The FAA establishes civil airport imaginary surfaces (described below) for each airport and each runway, pursuant to 14 CFR Part 77. Imaginary surfaces are intended to prevent existing or proposed objects from extending from the ground into navigable airspace.

- **Horizontal surface:** This surface is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of the arc is 5,000 feet for all runways designated as utility or visual, and 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway.
- **Conical surface:** This surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1, for a horizontal distance of 4,000 feet.
- **Primary surface:** This surface is longitudinally centered on a runway and extends 200 feet beyond the end of each runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. This surface is 250-feet-wide for visual approach (A[V]) runways, 500-feet-wide for runways with non-precision instrument approaches, and 1,000-feet-wide for precision instrument runways.
- **Approach surface:** This surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. An approach surface

¹² The rule in its entirety is publicly available at: https://www.ecfr.gov/current/title-14/chapter-I/subchapter-E/part-77.



_

is applied to each end of each runway based upon the type of approach available or planned for that runway end, such as precision instrument approach, non-precision approach, or A(V).

• Transitional surface: These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface that project through and beyond the limits of the conical surface extend 5,000 feet, measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Table 5.1-13 summarizes the imaginary surfaces that apply to Richmond Executive / Chesterfield County Airport, the only public use airport within 10 nm of the Project facilities. None of the route alternatives discussed in this report would overlap with any civil airport imaginary surfaces.

TABLE 5.1-13 RUNWAY IMAGINARY SURFACE CLASSIFICATIONS FOR PUBLIC AIRPORTS WITHIN 10 NAUTICAL MILES OF THE PROJECT

	Richmond Executive / 0	Chesterfield County Airport				
Airport code		FCI				
Runway ID	1	15/33				
Horizontal Surface						
Established airport elevation ^a 236.1						
Surface elevation ^a	3	386.1				
Radius (feet)	1	0,000				
Conical Surface						
Slope ratio, distance (feet)	20:	20:1, 4,000				
Elevation range ^a	386	.1-586.1				
Primary Surface and Approach Sur	faces					
Runway end, heading	15: 141°	33: 321°				
Obstruction category ^b	С	PIR				
Runway elevation ^a	236.1	198.8				
Primary surface width	1,000 ^C	1,000				
Approach distance (feet)	10,000	10,000 then 40,000 ^d				
Surface end width (feet)	3,500	16,000				
Slope ratio	34:1	50:1 then 40:1 ^d				
Maximum elevation ^a	530.2	398.8 then 1,398.8				

AMSL = above mean sea level; CFR = Code of Federal Regulations; FCI = Richmond Executive / Chesterfield County Airport; nm = nautical mile(s).

^b Obstruction categories (14 CFR 77): C = Non-precision Approach with visibility minimums greater than ¾ statute mile; PIR = precision instrument approach



^a All elevations are in feet AMSL.

^c The width of the primary surface of a runway is that of the most precise approach existing or planned for either end of that runway. Runway 15 is an Obstruction Category C runway that would typically have a 500-foot-wide primary surface; however, because its reciprocal end—Runway 33—has a 1,000-foot-wide PIR primary surface, the primary surface for Runway 15 is also 1,000 feet wide.

^d The approach surface for PIR runways have two sections. The first extends at a slope of 50:1 for 10,000 feet, and the second extends from the end of the first at a slope of 40:1 for an additional 40,000 feet.

5.1.11.5 TERMINAL INSTRUMENT PROCEDURES

In addition to the civil and military airport imaginary surfaces, FAA Order 8260.3G establishes imaginary surfaces associated with terminal instrument procedures (TERPs). TERPs are FAA guidelines that prescribe standardized methods for designing and evaluating airport-specific instrument flight procedures (IFPs), including approach and departure procedures, for civil and military airports. IFPs detail required flight paths, altitude restrictions, and maximum descent and takeoff gradients that guide aircraft through approach airspace and provide protocols for missed approaches. IFPs consider obstructions around the airport, including natural topography and manmade structures, to establish Minimum and Required Obstacle Clearance Surfaces. This facet of TERPs allows safe aeronautical navigation in poor visibility conditions.

Civil Airport Imaginary Surfaces are typically more restrictive than surfaces associated with TERPs, to ensure that developers seek FAA consultation prior to constructing structures within controlled airspace. If a structure were to penetrate imaginary surfaces and/or FAA imaginary "Notice" surfaces (described in the following section) of an airport, the IFP for that airport may be required to include that obstruction on navigation charts. If the FAA identifies a structure as an obstruction to air navigation, the FAA will issue determinations regarding options for design requirements, such as prescribed maximum height thresholds. In some cases, the FAA may prohibit the construction of a structure at the proposed location.

Pursuant to 14 CFR Part 77, an existing object (including a mobile object) is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

- 499 feet above ground level (AGL) at the site of the object;
- 200 feet AGL or above the established airport elevation, whichever is higher, within 3 nm of the established reference point of an airport (excluding heliports) where the longest runway is more than 3,200 feet in actual length. That height increases in the proportion of 100 feet for each additional nm from the airport up to a maximum of 499 feet;
- A height within a terminal obstacle clearance area, including an initial approach segment, a
 departure area, and a circling approach area, which would result in the vertical distance
 between any point on the object and an established minimum instrument flight altitude within
 that area or segment to be less than the required obstacle clearance;
- A height within an enroute obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, which would increase the minimum obstacle clearance altitude; or
- The surface of a takeoff and landing area of an airport or any imaginary surface established under 14 CFR §§ 77.19, 77.21, or 77.23.



None of the route alternatives discussed in this report would exceed surfaces or TERPs obstruction standards.

5.1.11.6 FAA NOTICE REQUIREMENTS AND TIMING

Construction of any structure that exceeds any of the surfaces or heights identified in the previous sections requires notice to the FAA. In addition, pursuant to 14 CFR Part 77.9, a notice must be filed with the FAA for any of the following:

- Any construction or alteration that is more than 200 feet AGL at its site;
- Any construction or alteration exceeding an imaginary "Notice" surface as defined in
 14 CFR Part 77, including surfaces extending outward and upward at the following slopes:
 - 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport;
 - 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway that is no more than 3,200 feet in actual length; or
 - 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway that is more than 3,200 feet in actual length; or
- If requested by the FAA.

Construction or alteration of any structure that meets the notification requirements set forth above requires submittal of an FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA regional office with jurisdiction over the area or submitted electronically via the FAA website. The information that needs to be provided with the notice includes the coordinates, site elevation, and structure height AGL for each pole/structure and the height of construction equipment (e.g., cranes).

5.1.11.7 STATE AND LOCAL AVIATION REGULATIONS

Va. Code § 5.1-25.1 prohibits erection of any structure that penetrates into or through any licensed airport's clear zone, approach zone, imaginary surface, obstruction clearance surface, obstruction clearance zone, or surface or zone (as defined by the FAA or the regulations of the Virginia Department of Aviation) without first securing a permit from the Board of Aviation. This requirement does not apply to structures erected in a jurisdiction that has an ordinance regulating the height of such structures to prevent the penetration of zones and surfaces established in 14 CFR Part 77 and Rule 19 of the Virginia Department of Aviation.

State law (Va. Code §§ 15.2-2280, 15.2-2282, 15.2-2293, and 15.2-2294) gives local jurisdictions the power to establish and regulate zoning districts, make airspace subject to their zoning ordinance, and establish airport safety zoning. The Chesterfield County Code of Ordinances does not contain any zoning regulations or other standards related to airports or the use of property within close proximity to airports that may be applicable to the Project. As such, FAA obstruction standards apply to the Project.



5.1.11.8 IMPACT ASSESSMENT

Public Airports

ERM conducted an airport analysis to review the height limitations associated with the FAA-defined imaginary surfaces for all runways at the public airports identified in Table 5.1-13. As part of a typical airport analysis, ERM conducts preliminary evaluations of transmission infrastructure heights and locations using the FAA-defined civil and U.S. Department of Defense airport imaginary surfaces and applies standard GIS tools (including ESRI's ArcGIS Pro software with Spatial Analyst, 3D Analyst, and Aviation Airports Extensions) to create and georeference imaginary surfaces in space and in relationship to transmission structures.

All Project components are outside the horizontal extent of the civil airport imaginary surfaces associated with Richmond Executive / Chesterfield County Airport. As such, no penetration of regulated airspace is anticipated. In addition, the proposed transmission line structures for the Project would not exceed 200 feet AGL. Dominion would likely use cranes to install the Project's transmission structures. Based on the typical maximum crane height needed for construction (approximately 35 feet above the structure height), these cranes would not exceed the FAA notification thresholds.

Unless specifically requested by the FAA, notification to the FAA would not be required for any component. If the FAA were to request additional information regarding the proposed project for any reason, Dominion may be required to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, pursuant to 14 CFR Part 77 for FAA notification. Any such submittal would occur after a route is selected by the SCC during the permitting phase of the Project.

Private Airports

The FAA does not regulate the airspace of any private airports or heliports listed in Table 5.1-13. As a safety precaution, Dominion considers the impact proposed structures may have on private facilities within proximity to the routes.

In 2022, the County approved a conditional use permit to construct a private airstrip at 1401 County Line Road. As proposed in the permit application, the airstrip would be a 2,054 footlong (maximum approved length of 2,750 feet) private-use turf airstrip. As of April 2025, the private airstrip is not registered with the FAA. The proposed runway would be oriented northnortheast to south-southwest, with its southern end facing toward Route 2B near the County Line Road and Mount Hermon Road intersection. The planned runway is located approximately 3,350 feet west of Routes 3A and 3B. The southern end of the runway is located approximately 1,900 feet northwest of Route 2B at its nearest point, and approximately 2,200 feet separates the end of runway from Route 2B when measured along the runway centerline.

As previously stated, the runway is not registered with the FAA, and private airports are not required to have runway obstruction categories assigned to them or to be evaluated as such. As a conservative measure, this review considered the imaginary surface geometry of an A(V) utility runway in evaluating potential structure height risk for the proposed airstrip. FAA-defined A(V) runway approach surfaces extend for 5,000 feet at a 20:1 slope from the end of the runway. The elevation at the end of the runway is approximately 280 feet above mean sea level. The ground elevation along the section of Route 2B within the approach path ranges between 200 and



225 feet above mean sea level. Based on this analysis, structure heights along Route 2B would need to be restricted to approximately 165 to 185 feet AGL in the vicinity of the County Line Road and Mount Hermon Road intersection. As such, structures along Route 2B would not pose a risk to the runway's air navigation. Transmission structures for Routes 3A and 3B would be farther from and thus would not impact the proposed airstrip. Dominion has been in contact with the property owner that plans to construct the private runway. No additional actions are required based on FAA regulations.

5.2 NATURAL RESOURCES

5.2.1 SURFACE WATERS

ERM identified and mapped watersheds, wetlands, and waterbodies (e.g., lakes, streams, ponds, and stormwater features) in the study area using publicly available desktop sources, including:

- Digital Aerial Photography taken in January 2025 (Planet Labs Imagery 2025);
- ESRI World Imagery from 2024 (ESRI et al. 2024b);
- Google Earth aerial imagery (Google Earth 2025);
- ESRI World Elevation Terrain 2-foot contours (ESRI et al. 2024a);
- NWI maps from the USFWS online data mapping portal (USFWS 2024a);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);
- VGIN statewide land cover dataset (VGIN 2024); and
- Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2024).

5.2.1.1 WATERSHEDS

Watersheds are used to define the geographic area within the boundaries of drainage divides throughout the country. For purposes of classifying watersheds, the U.S. is divided into hydrologic units in four levels—regions, subregions, accounting units, and cataloging units—which may each contain all or part of a watershed. Each level is identified by a hydrologic unit code (HUC), beginning with major geographic areas or regions. The first level of the code, the 2-digit HUCs, identifies a major geographic area or region containing either several rivers or the drainage area of a major river. Subsequent levels encompass progressively smaller areas based on the drainage divides of lower order waterbodies.

The study area is within the following HUC areas:

- The Mid-Atlantic HUC 2-digit (02) region, which discharges into the Atlantic Ocean, Long Island Sound, and the Riviere Richelieu, a tributary of the St. Lawrence River.
- The Lower Chesapeake HUC 4-digit (0208) subregion, which drains about 18,500 square miles in Virginia (including most of Virginia's portion of the Delmarva Peninsula) into the Chesapeake Bay, south of the Maryland-Virginia state line.
- The James HUC 6-digit (020802) watershed, which drains 10,200 square miles in Virginia into the James River Basin.



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

• The Appomattox HUC 8-digit (02080207) watershed, which drains 1,590 square miles into the into the Swift Creek Reservoir (USGS 2023).

The study area is further split into two smaller HUC 10-digit watersheds: the Swift Creek (0208020709) watershed and the Rocky Ford Creek-Appomattox River (0208020706) watershed. These watersheds divide approximately along Genito Road and east of Moseley Road in the southwestern corner of the study area.

The southwestern corner (approximately 1,565 acres or 9%) of the study area is within the Rocky Ford Creek-Appomattox River watershed and does not include proposed project infrastructure. Surface waters within this portion of the study area generally flow south and west into perennial Skinquarter Creek to the west of the study area.

The majority of the study area, including all the proposed route alternatives and the Duval Substation (approximately 16,392 acres or 91%), is within the Swift Creek watershed. Surface waters within this portion of the study area generally flow south and east ultimately into the Swift Creek Reservoir, located just outside the study area to the southeast. Major tributaries are the perennial Tomahawk Creek, Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek, as well as associated, unnamed tributaries and open waterbodies.

Figure 5.2.1-1 shows the locations of watershed boundaries, NWI-mapped wetlands, and NHD-mapped waterbodies in the study area.

5.2.1.2 WETLANDS

Existing Conditions

ERM identified wetlands within the Project footprint based on a desktop wetland and waterbody probability analysis, as described in Appendix D. ERM did not conduct an on-site delineation of wetlands or waterbodies along the route alternatives; however, two separate field delineations were completed in January 2022 and February 2024 on parcels containing the western Chesterfield route alternatives and the proposed Duval Substation. These delineations identified aquatic resources along the route alternatives between Mount Herman Road and the proposed Duval Substation footprint (Timmons Group 2024a). ERM used the boundaries of these field-delineated aquatic resources in the desktop wetland delineation and included that data in the wetland and waterbody calculations provided in this report. Wetlands and waterbodies were classified based on the Cowardin classification system as described below (Cowardin et al. 1979).

- Palustrine emergent (PEM) wetlands: characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3 feet in height, excluding mosses and lichens;
- Palustrine scrub-shrub (PSS) wetlands: characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine forested (PFO) wetlands: characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger diameter at breast height;



Palustrine unconsolidated bottom (PUB) open waters: characterized by bottom substrate
particles smaller than stones (less than 10 inches in diameter) covering greater than 25% of
the area, with plants covering less than 30% of the area; and

 Riverine streams: channels containing periodically or continuously moving water (USFWS 2013).

Wetlands provide a wide range of ecological functions, including flood storage and groundwater recharge, nutrient and sediment capture, erosion control, filtration of pollutants from adjacent waterbodies, and diverse fish and wildlife habitat. PFO wetlands are of especially high value due to their habitat biodiversity and carbon sequestration functions, as well as their increased filtration capabilities.

Most wetlands in the study area are adjacent to or contiguous with streams and associated tributaries that may be regulated by the U.S. Army Corps of Engineers (USACE) and Virginia Department of Environmental Quality (VDEQ) under Sections 404 and 401 of the Clean Water Act (CWA), respectively. Wetlands within the study area and the proposed project infrastructure are predominantly forested. The PFO wetlands are associated with major tributaries, with large areas of PFO associated with Swift Creek and Turkey Creek in the central portion of the study area and Horsepen Creek in the southern portion of the study area.

Impact Assessment

ERM calculated acreages within the study area that have a high, medium-high, or medium probability of containing wetlands or waterbodies, based on the probability analysis described in Appendix D. Table 5.2-1 summarizes the acres of wetlands identified within the right-of-way of each route alternative. Maps depicting the identified aquatic resources and their probabilities are provided in Attachments 2 and 3 of Appendix D. Section 5.2.1.3 describes riverine (stream) and PUB (open water) features.

TABLE 5.2-1 HIGH, MEDIUM-HIGH, AND MEDIUM PROBABILITY WETLANDS AND WATERBODIES WITHIN THE PROJECT FOOTPRINT

Surface Waters	Unit ^a	Route 2B	Route 3A	Route 3B	Duval Substation
Palustrine Forested	acres	12.4	19.3	16.9	<0.1
Palustrine Scrub-shrub	acres	NA	NA	NA	NA
Palustrine Emergent	acres	0.2	0.2	0.2	NA
Palustrine Unconsolidated Bottom	acres	0.1	<0.1	<0.1	NA
Riverine	acres	1.4	1.9	2.0	NA
Total	acres	14.1	21.4	19.1	<0.1

NA = not applicable (due to absence of a wetland type within the Project footprint)



^a Values have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of <0.1 indicates that less than 0.05 acre of a wetland type is present.

To minimize impacts on wetland areas, the Project has been designed to span or avoid wetlands, keeping transmission structures outside of wetland boundaries to the extent practicable. As described in Section 3.2, the route alternatives have been routed to collocate with the Norfolk Southern Railway and with proposed Powhite Parkway Project conceptual alignments to reduce fragmentation of wetland complexes. Most direct impacts on wetlands from Project construction would be temporary in nature. The Company would use temporary timber matting for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way, some new access roads may be necessary along the route. If a section of line cannot be accessed from existing roads, Dominion may need to install a culvert, ford, or temporary bridge along the right-of-way to cross small streams. In such cases, some temporary fill material in wetlands adjacent to such crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to preexisting conditions.

Permanent direct impacts to wetlands would be limited to placement of structures within wetlands, if unavoidable, and the permanent conversion of PSS/PFO wetlands within the right-of-way to PEM type wetlands due to the necessity of removing trees and shrubby vegetation from the right-of-way. Forested wetlands and riparian buffers provide functions such as peak flood flow reduction, nutrient and sediment capture, filtration of pollutants to adjacent waterbodies, and habitat diversity. The conversion of forested wetlands would reduce or eliminate some of these functions.

Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion would use the least intrusive method reasonably possible to clear the corridor. Hand cutting of vegetation would be conducted within 100 feet of streams, to avoid and minimize impacts on streams and/or wetlands.

No change in contours of wetlands and waterbodies or redirection of water flow is anticipated, and the amount of spoil from foundation and structure placement would be minimal. Excess spoil in wetlands generated through foundation construction would be controlled through construction best management practices (e.g., the implementation erosion and sediment controls).

Upon SCC approval of a route and final line engineering, the Company will delineate jurisdictional waters, to include wetlands, to further minimize potential impacts on aquatic resources within the approved transmission line corridor and obtain the appropriate permits from the USACE and VDEQ for work within wetlands and waterbodies.

All route alternatives share an alignment between MPs 0.0 (the existing Midlothian Substation) and MP 1.9. Along this segment, the routes are collocated with the Norfolk Southern Railway for 1.6 miles and cross areas of PFO wetlands associated with unnamed, intermittent tributaries to Tomahawk Creek and Swift Creek at approximate MPs 0.1, 0.7, 1.3, and 1.6.

Routes 3A and 3B share an alignment from MPs 1.9 to 3.2. Along this segment, the routes cross areas of PFO wetlands associated with Swift Creek and its tributaries between MPs 2.2 and 3.0.

The three route alternatives reconverge 0.1 mile east of the intersection of Mount Hermon Road and share an alignment for approximately 1.4 miles to the proposed Duval Substation, collocated with the Powhite Parkway Project's Conceptual Alignment Routes 1A and 1B. Along this segment,



the route alternatives cross smaller PFO fragments and one larger area of PFO wetland associated with Horsepen Creek.

The discussion below addresses the impacts on wetlands between MP 1.9 and the proposed Duval Substation site, where the route alternatives no longer share a common alignment.

Route 2B

In total, Route 2B encompasses approximately 14.1 acres of wetlands and waterbodies. Between MPs 1.9 and 7.2, larger areas of wetlands along each route are described below.

- PFO wetlands associated with Swift Creek and tributaries to Swift Creek between MPs 2.6 and
 3.2;
- PFO wetlands associated Turkey Creek and tributaries to Turkey Creek between MPs 4.2 and 4.6 and 5.1 and 5.2; and
- PFO wetlands associated Otterdale Branch and tributaries to Otterdale Branch between MPs 5.3 and 5.7, 6.0 and 6.3, and 7.1 and 7.3.

Construction and operation of this route would convert approximately 12.4 acres of PFO wetlands to PEM-type wetlands.

Route 3A

In total, Route 3A encompasses approximately 21.4 acres of wetlands. Between MPs 3.2 and 6.2, larger areas of wetlands along each route are described below.

- PFO wetlands associated with Turkey Creek and tributaries to Turkey Creek between MPs 3.5 and 3.8 and at MPs 4.2 and 4.5;
- PFO wetlands associated with Otterdale Branch and tributaries to Otterdale Branch between
 MPs 4.9 and 5.2 and 5.5 and 5.9; and
- PFO wetlands associated with Horsepen Creek and tributaries to Horsepen Creek between MPs 6.1 and 6.3.

This route would collocate with the Powhite Parkway Project Conceptual Alignment Route 1A for approximately 3.3 miles between MPs 3.9 and 7.2. If the 1A parkway alignment is selected, this route would minimize fragmentation of PFO wetland complexes in the watershed. Construction and operation of this route would convert approximately 19.3 acres of PFO wetlands to PEM-type wetlands.

Route 3B

In total, Route 3B encompasses approximately 19.1 acres of wetlands and waterbodies. Between MPs 3.2 and 5.8, locations of larger areas of wetlands along the route are described below.

- PFO wetlands associated with Turkey Creek between MPs 3.5 and 3.7;
- PFO wetlands associated with Palm Lake between MPs 4.2 and 4.4;
- PFO wetlands associated with Otterdale Branch and tributaries to Otterdale Branch between
 MPs 4.9 and 5.0 and at MP 5.3; and
- PFO wetlands associated with Horsepen Run and tributaries to Horsepen Run between MPs 5.7 and 5.8.



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

This route would collocate with the Powhite Parkway Project Conceptual Alignment Route 1B for approximately 2.7 miles between MPs 3.4 and 6.7. If the 1B parkway alignment is selected, this route would minimize fragmentation of PFO wetland complexes in the watershed. Construction and operation of the transmission lines would convert approximately 16.9 acres of PFO wetlands to PEM-type wetlands.

Duval Substation

Based on the wetland desktop methodology, there is less than 0.1 acre of PFO wetlands within the proposed Duval Substation footprint.

5.2.1.3 WATERBODIES

ERM identified and mapped waterbodies, including streams, rivers, and other open waterbody features (e.g., reservoirs, lakes, impoundments, ponds, and stormwater features) within the study area using the publicly available GIS databases identified above. Waterbody crossings may be regulated by the USACE and VDEQ under Sections 404 and 401 of the CWA and the Virginia Water Protection permit program. The Project does not cross any navigable waters; therefore, the Project would not require a Rivers and Harbors Act Section 10 authorization from the USACE.

Existing Conditions

As described in Section 5.3.1.1, waterbodies within the study area include perennial and intermittent tributaries to the Swift Creek Reservoir and open waterbody features (most of which appear to be natural ponds). Table 5.2-2 lists the number of waterbody crossings for each route alternative. Attachments 2 and 3 in Appendix D depict waterbody crossing locations for each route.

TABLE 5.2-2 WATERBODIES CROSSED BY THE ROUTE ALTERNATIVES

Waterbodies Crossed	Unit	Route 2B	Route 3A	Route 3B
NHD-mapped perennial streams	number	4	6	6
NHD-mapped intermittent streams	number	12	10	8
Non-NHD mapped waterbodies ^a	number	13	8	8
Total	number	29	24	22

Source: USGS 2024

Impact Assessment

Regardless of the route selected, waterbodies crossed by the routes selected for the Project would be spanned with permanent impacts to waterbodies limited to the conversion of riparian buffer from tree cover to herbaceous vegetation within the maintained rights-of-way. Tree removal adjacent to waterbodies would reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature changes due to loss of shading. Tree removal in the floodplains of the



^a Identified via aerial imagery during desktop analysis using 2025 recent aerial imagery (Planet Labs Imagery 2025).

perennial waterbodies could reduce water absorption capacity, which could increase total waterflow in the area. Increased waterflow would generally have a negative impact on vegetation within the floodplain. Where existing vegetation does not conflict with intended land uses, the right-of-way would be maintained with a cover of herbaceous vegetation during operations, which would provide some filtration and stabilization to protect waterbodies from runoff. Perpendicular stream crossings, where feasible, would minimize riparian stream buffer impacts by reducing the vegetation cleared adjacent to the waterbodies.

As discussed in more detail below, segments of the Project are collocated with the Norfolk Southern Railway and with the proposed alignments of the Powhite Parkway Project. Collocation with these corridors would widen the clearing of riparian buffers at waterbody crossings; however, existing railroad crossings and future road crossings would likely use culverts or bridges. These structures would provide shade and prevent cumulative increases in exposure to sunlight. The cumulative reduction in vegetated riparian buffers at these waterbody crossings would reduce protection from railroad and parkway stormwater runoff.

Where removal of trees and/or woody shrubs is required, clearing within 100 feet of a stream would be conducted by hand. Vegetation would be cut at or slightly above ground level and there would be no grubbing of stumps. Dominion would use sediment barriers along waterways and steep slopes during construction to protect waterways from soil erosion and sedimentation.

Temporary and minor impacts on water quality could occur during construction from disturbed soils transported by stormwater into adjacent surface waters during rain events. Increased turbidity and localized sedimentation of stream bottoms may occur because of runoff. Potential impacts would be mitigated by the implementation of erosion control measures.

Waterways crossed by the Project would be maintained for proper drainage using culverts or other crossing devices, in accordance with Dominion's standard policies. If a section of line cannot be accessed from existing roads, Dominion may need to install a culvert or temporary bridge to cross small streams. In such cases, temporary fill may be required. Fill would be placed on erosion control fabric and removed when work is completed, returning the surface to its original contours.

Because waterbodies generally flow west to east through the study area, all of the route alternatives cross approximately the same waterbodies, including perennial Swift Creek, , Turkey Creek, Otterdale Branch, and Horsepen Creek, as well as associated unnamed tributaries and wetlands contiguous to these waterbodies and Tomahawk Creek. These waterbody crossings all have forested riparian buffers that would be cleared as part of the route construction.

All route alternatives share an alignment between MPs 0.0 (the existing Midlothian Substation) and MP 1.9. Along this segment, the routes are collocated with the Norfolk Southern Railway for 1.6 miles and cross six waterbodies. Waterbody crossing locations include an unnamed, intermittent tributary to Tomahawk Creek between MPs 0.0 and 0.1, and unnamed, intermittent or non-NHD-mapped, unclassified tributaries to Swift Creek between MPs 0.9 and 1.0, 1.3 and 1.4, and at MPs 1.6 and 1.8.

Routes 3A and 3B share an alignment from MPs 1.9 to 3.2. Along this segment, the routes cross two waterbodies, including the perennial Swift Creek and a non-NHD-mapped, unclassified tributary to Swift Creek between MPs 2.4 and 2.8.



The three route alternatives reconverge 0.1 mile east of the intersection of Mount Hermon Road and share an alignment for approximately 1.4 miles to the proposed Duval Substation, collocated with the Powhite Parkway Project's Conceptual Alignment Routes 1A and 1B. Along this segment, the route alternatives cross five waterbodies, including two field delineated, non-NHD-mapped waterbodies, two unnamed, intermittent streams, and perennial Horsepen Creek. Selection of the 1A or 1B parkway alignment would reduce the riparian buffer protection from the parkway's stormwater runoff.

Where the routes diverge, each route alternative crosses the same major perennial waterbodies, including Otterdale Branch, Turkey Creek, and Swift Creek. Although the crossings occur at different locations and angles along these waterbodies, all occur in forested areas and would require riparian buffer clearing at these waterbody crossings, with the impacts differing slightly for each route based on location and angle of each crossing.

In total, the shared alignment for all three route alternatives crosses 14 waterbodies. These crossings would occur regardless of the route selected.

The discussion below addresses the impacts on waterbodies between MP 1.9 and the proposed Duval Substation site, where the route alternatives no longer share a common alignment.

Route 2B

Based on ERM's desktop wetland and waterbody analysis, the Route 2B right-of-way would encompass approximately 1.4 acres of riverine features and 0.1 acre of PUB open waterbody features. Between MPs 1.9 and 7.2, Route 2B crosses 15 waterbodies (of which eight are NHD-mapped), at the locations described below:

- Perennial Swift Creek and four intermittent tributaries to Swift Creek between MPs 2.6 and 3.2;
- Perennial Turkey Creek and three intermittent tributaries to Turkey Creek between MPs 4.2 and 4.6;
- Perennial Otterdale Branch and four intermittent tributaries to Otterdale Branch between MPs
 5.6 and 6.3;
- Unnamed, non-NHD-mapped streams between MPs 3.2 and 3.8, 4.4 and 4.5, and 6.1 and 6.3;
 and
- An open water feature between MPs 5.9 and 6.0.

Route 2B collocates with the Norfolk Southern Railway for approximately 0.6 mile between MPs 3.3 and 3.9. If this route is selected, waterbodies crossed in this collocated stretch would have reduced riparian buffer protection from the railroad's stormwater runoff.

Route 3A

Based on ERM's desktop wetland and waterbody analysis, the Route 3A right-of-way would encompass approximately 1.9 acres of riverine features and less than 0.1 acres of PUB open waterbody features. Between MPs 3.2 and 6.2, Route 3A crosses eight waterbodies (of which seven are NHD-mapped), at the locations described below:



 Perennial Turkey Creek and three intermittent tributaries to Turkey Creek between MPs 3.6 and 3.7, and 4.1 and 4.5;

- Perennial Otterdale Branch and three intermittent tributaries to Otterdale Branch between MPs
 4.9 and 5.5; and
- An unnamed, non-NHD-mapped stream between MPs 5.6 and 5.7.

Route 3A would be collocated with the Powhite Parkway Expansion Conceptual Route 1A alignment for approximately 2.4 miles between MPs 3.8 and 6.2. If the 1A parkway alignment is selected, waterbodies in this collocated segment would have reduced riparian buffer protection from the parkway's stormwater runoff.

Route 3B

Based on ERM's desktop wetland and waterbody analysis, the Route 3B right-of-way would encompass approximately 2.0 acres of riverine features and less than 0.1 acres of PUB open waterbody features. Between MPs 3.2 and 5.8, Route 3B crosses 10 waterbodies (of which six are NHD-mapped), with locations described below:

- Perennial Turkey Creek and three intermittent tributaries to Turkey Creek between MPs 3.5 and 3.7 and at MP 4.2;
- Perennial Otterdale Branch and one intermittent tributary to Otterdale Branch between MPs
 4.9 and 5.4; and
- An unnamed, non-NHD-mapped stream at MP 4.3.

In addition, Route 3B would collocate with the Powhite Parkway Project Conceptual Alignment Route 1B for approximately 1.7 miles between MPs 3.4 and 4.1, and 4.8 to 5.8. If the 1B parkway alignment is selected, waterbodies in this collocated stretch would have reduced riparian buffer protection from railroad and parkway stormwater runoff.

Duval Substation

Based on ERM's desktop analysis, there are no waterbodies within the proposed Duval Substation footprint.

5.2.2 NATURAL HERITAGE RESOURCES

The Virginia Natural Area Preserves Act of 1989 defines NHRs as habitats of rare, threatened, or endangered plant and animal species; rare or state-significant natural communities or geologic sites; and similar features of scientific interest benefiting the welfare of the citizens of the Commonwealth (Va. Code § 10.1-209 through 217). VDCR assigns a state rank (an "S-ranking") to the species, natural communities, and geologic features categorized by NHRs to indicate their conservation status and rarity within the Commonwealth of Virginia. State rankings range from S1 to S5, as follows (VDCR 2021a):

- Critically imperiled (S1)
- Imperiled (S2)
- Vulnerable (S3)
- Apparently secure (S4)



Secure (S5)

ERM consulted VDCR's Natural Heritage Program (NHP) and requested an environmental review of the routes to identify NHRs in the study area and along and near each alternative. ERM reviewed and requested data from the NHP's ecological datasets for the area within 1.0 mile of the rights-of-way for each route alternative. The requested NHP review included natural area preserves, conservation sites, stream conservation sites, and ecological cores (VDCR 2024b).

The VDCR responded to ERM's request for environmental review of the routes in a letter dated March 5, 2025 (Appendix E). The VDCR letter indicates that no natural heritage resources, natural area preserves, stream conservation sites, conservation sites, or state-listed (T&E) plants or insect species have been documented along the routes; therefore, no further discussion of these resource types is provided in this study. The VDCR's review identified ecological cores within the Project study area that are discussed below.

5.2.2.1 ECOLOGICAL CORES

Existing Conditions

Ecological cores are areas comprising at least 100 acres of continuous interior, natural cover (e.g., forests or woodlands) that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists. Interior ecological core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of the ecological core. Smaller areas of continuous interior cover (i.e., 10 to 99 acres) are not classified as ecological cores, and are classified as habitat fragments. Habitat fragments support ecological cores and provide similar functions and values. Ecological cores and habitat fragments together provide the natural and economic benefits of open space, recreation, water quality (including erosion prevention and drinking water recharge and protection), and air quality (including carbon sequestration and oxygen production). VDCR ranks the integrity of ecological cores from C1 to C5 (see description below) using nine prioritization criteria, including the NHR habitats within the cores. Habitat fragments are similarly classified, although none are ranked above C3 (VDCR 2023a, 2025).

The VDCR ranking system for the integrity of ecological cores includes the following categories:

- Rank C1—Outstanding
- Rank C2—Very High
- Rank C3—High
- Rank C4—Moderate
- Rank C5—General

Generally, VDCR assigns a higher ranking (e.g., C1 or C2) to larger and more biologically diverse ecological cores. Ecological integrity can be considered enhanced if the core is part of a larger complex of natural lands, or if the core contributes to water quality enhancement. Ecological cores ranked C1 and C2 are typically connected by extended landscape corridors with forests that comprise a statewide network of natural lands; therefore, the VDCR recommends avoidance of ecological cores ranked C1 or C2 and a formal impact analysis to minimize impacts if they are unavoidable (Gustafson 2024). Lower ranked ecological cores may have smaller fragments of forested habitat (10 to 99 acres of contiguous landcover); however, VDCR notes that habitat



fragments can provide important ecological functions and values and recommends avoiding impacts to habitat fragments when feasible. Table 5.2-3 summarizes existing conditions for each core crossed by the route alternatives. Figure 5.2.2-1 depicts the ecological cores crossed by the Project.

TABLE 5.2-3 VDCR-MAPPED ECOLOGICAL CORES CROSSED BY THE ROUTE ALTERNATIVES

Ecological Core ID	Ecological Core Rank	Total Core Acreage	Existing Condition
59536	High (C3)	1,759	Predominantly unfragmented forest containing Swift Creek and Turkey Creek. Forested lands include undisturbed areas interspersed with regenerating managed timber. Development exists along the north, west, and east edges of the core.
59883	High (C3)	3,926	Predominantly unfragmented forest containing Horsepen Creek. According to aerial imagery since 1994, approximately 300 acres in the western portion of the core surrounding Horsepen Creek and its tributaries have historically been maintained as managed timber (Google Earth 2025). Development exists along the eastern edge of the core, and Mount Hermon Road bisects the core.
59168	Moderate (C4)	572	The southern portion of the core contains housing development that began construction between 2012 and 2014; the northern portion contains predominantly unfragmented forest.
59495	Moderate (C4)	786	Predominantly unfragmented forest containing Turkey Creek; approximately 42.0 acres in the eastern portion of the core are maintained as managed timber.
59110	General (C5)	40	Predominantly unfragmented forest between Mount Hermon Road and the Norfolk Southern Railway. Contains development along the western edge.
59428	General (C5)	48	Partially forested and fragmented by multiple unnamed roads.

Source: VDCR (2025)

Impact Assessment

Impacts on ecological cores occur when their natural cover is partially or completely converted to developed land uses. Habitat conversion can result in changes that reduce ecosystem processes, biodiversity, population viability, and habitat quality (VDCR 2025). The VDCR review of the Project found that the Project route alternatives intersect multiple ecological cores with rankings of C3, C4, and C5. Impacts on these cores would occur through tree clearing for the new transmission right-of-way (VDCR 2025). To avoid additional fragmentation, the route alternatives follow edges of cores or cleared areas where practicable and utilize collocation opportunities with other planned linear facilities (the Powhite Parkway Project). Based on the recommendation of VDCR, this section does not provide a formal impact analysis of the affected C3-, C4-, or C5-ranked cores (Gustafson 2024; see Appendix E). Table 5.2-4 provides the total acreage of ecological cores crossed by each route alternative.



TABLE 5.2-4 VDCR-MAPPED ECOLOGICAL CORE ACREAGE CROSSED BY PROJECT

Ecological Core Rank	Unit	Route 2B	Route 3A	Route 3B	Duval Substation
Outstanding (C1)	acres	0.0	0.0	0.0	0.0
Very High (C2)	acres	0.0	0.0	0.0	0.0
High (C3)	acres	58.3	91.9	78.9	5.1
Moderate (C4)	acres	48.1	18.5	18.5	0.0
General (C5)	acres	12.2	3.9	3.9	0.0
Total	acres	118.6	114.3	101.3	5.1

Most of the land within each route alternative is classified as an ecological core. Route 3B would impact the smallest area of ecological cores among the route alternatives, and Route 2B would impact the greatest acreage of ecological cores, but Route 2B would also cross the smallest area of C3-ranked cores. Acreage associated with the proposed Duval Substation would be impacted regardless of which route is selected for the Project.

Planned developments discussed in Section 5.1.6 are unrelated to the Project and if approved, could be developed prior to Project construction. These planned developments would alter ecological cores within the Project study area. Core ID 59536 would be altered due to the Moseley Hermon Solar and Mount Hermon Road Rezoning and exceptions planned developments and the Powhite Parkway Project. To reduce impacts to Core ID 59536, Routes 3A and 3B would collocate with the Powhite Parkway through the core.

Similarly, Core ID 59883 would be impacted by several planned developments (e.g., Upper Magnolia Green, Dogwood Creek), and all route alternatives span through areas that are planned for development that will alter the existing conditions of this core. Further, the collocation of Routes 3A and 3B along segments of the Powhite Parkway Project would reduce impacts to Core ID 59883.

All three route alternatives share a common alignment through Core ID 59168; however, the North Hallsley residential planned development and a residential zoning overlay district (see Section 5.1.3) also encompasses most of this core, so the majority of impacts on the core will likely be due to any planned development. The Unser Woods, LLC, residential and Hermon West Solar planned developments would impact Core ID 59495, so any impacts on the core due to Route 2B will likely be minimal. Section 5.1.6 provides further information on the planned developments, and Figure 5.1.6-1 depicts these planned developments.

The Company will work with the appropriate jurisdictional agencies to minimize impacts on ecological cores during implementation of the Project.



5.2.3 PROTECTED SPECIES

Protected species are generally defined as animal and plant species that are protected under state or Federal law. ERM reviewed protected species according to the following regulations:

- Federal- and state-listed T&E species protected under the federal Endangered Species Act (ESA) enacted in 1973 and administered by the USFWS and the National Oceanic and Atmospheric Administration, in cooperation with the Virginia Department of Wildlife Resources (VDWR), and state-listed T&E species protected under the Virginia Endangered Plant and Insect Species Act administered by the Virginia Department of Agriculture and Consumer Services in cooperation with the VDCR;
- Bald eagles (Haliaeetus leucocephalus) protected under the federal Bald and Golden Eagle
 Protection Act enacted in 1940 and administered by the USFWS; and
- Migratory birds protected under the Migratory Bird Treaty Act enacted in 1918 and administered by the USFWS.

ERM identified protected species along and near the Project using the following sources:

- USFWS Information for Planning and Consultation System (IPaC) online system (USFWS n.d.);
- VDCR NHP (VDCR 2024b);
- VDCR Environmental Review (VDCR 2025);
- VDWR Wildlife Environmental Review Map Service (WERMS) (VDWR 2025a);
- Virginia Fish and Wildlife Information Service (VaFWIS) (VDWR 2025b);
- Center for Conservation Biology (CCB) Eagle Nest Locator (CCB 2022);
- VDWR Little Brown Bat and Tricolored Bat Winter Habitat and Roost Tree Application (VDWR 2025c); and
- VDWR Northern Long-Eared Bat Regulatory Buffer Interactive Tool (VDWR 2025d).

ERM obtained database query results from the VDCR NHP, the VDWR VaFWIS, the VDWR WERMS, and the USFWS IPaC to identify federal- and state-listed species that may occur in the study area. ERM obtained digital data from VDCR to identify locations within potential rights-of-way of the route alternatives and proposed substation (along with an associated 100-foot buffer) that could potentially support protected species.

Query results from the VDCR include species known to occur in the area and communities known to historically or currently contain protected species (VDCR 2025). Query results from IPaC include species that may occur in the study area (USFWS n.d.). Query results from VaFWIS include species known to occur or likely to occur within a 2.0-mile radius of the Project study area (VDWR 2025b). Bald eagle nest data and migratory bird information is provided in the CCB database (CCB 2022). Data for species known to occur within the rights-of-way of the various Project route alternatives were retrieved using queries of the VDWR WERMS.

5.2.3.1 FEDERAL-AND STATE-LISTED ENDANGERED AND THREATENED SPECIES

To protect and recover imperiled species and the ecosystems they depend on, Congress passed the federal ESA in 1973, which states that T&E plant and animal species are of esthetic, ecological, educational, historic, and scientific value to the United States, and protection of these



species and their habitats is required. The ESA is administered by both the National Oceanic and Atmospheric Administration and USFWS. It protects fish, wildlife, plants, and invertebrates that are federally listed as endangered or threatened by prohibiting the "take" of these species and the interstate or international trade of the species, including their parts and products, unless federally permitted.

To take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (33 U.S.C. § 1532). A federally endangered species is any species that is in danger of extinction throughout all or a significant portion of its range, with exceptions for certain insect pests (33 U.S.C. § 1532). A federally threatened species is any species that is likely to become endangered in the near future throughout all or a significant portion of its range (33 U.S.C. § 1532).

Virginia has adopted separate codes for protecting animals and plants in the state. The Virginia ESA (Va. Code §§ 29.1-563 through -570) designates the VDWR as the state agency with jurisdiction over state-listed endangered or threatened fish and wildlife. The Virginia ESA authorizes the Board of the VDWR to adopt the federal list of endangered and threatened species and to identify and protect state-listed wildlife. The Virginia ESA prohibits the taking, transportation, processing, sale, or offer for sale of those species.

Under the Virginia Endangered Plant and Insect Species Act (2 VAC 5-320-10), the taking or possession of endangered or threatened plant and insect species is prohibited. The VDCR represents the Virginia Department of Agriculture and Consumer Services, which is responsible for state-listed plants and insects, in providing comments regarding potential impacts on these species.

ERM database queries identified multiple federal- and state-listed T&E species within and adjacent to the study area. Federal-listed and federal-proposed species include Northern long-eared bat (NLEB; *Myotis septentrionalis*), Tricolored bat (TCB; *Perimyotis subflavus*), and Monarch butterfly (*Danaus plexippus*). The Monarch butterfly was the only species identified that was not also statelisted.

Table 5.2-5 identifies the T&E species that may potentially occur within the study area and/or within a 2.0-mile radius of the study area. None of these species have been confirmed within the study area or the 2.0-mile radius. Potential summer foraging habitat for the NLEB and TCB in the study area includes multiple forested areas along each route. VDWR's online mapping of winter habitat and roost trees shows no summer habitat (i.e., maternity roosts), winter habitat (i.e., hibernacula), or roost trees for NLEB or TCB within the route alternatives (VDWR 2025c, 2025d). The study area is mainly forested, but there are open areas where milkweed species (*Asclepias* spp.) and flowering plant species that support the Monarch butterfly could potentially occur.



TABLE 5.2-5 FEDERAL- AND STATE-LISTED SPECIES POTENTIALLY OCCURRING IN THE STUDY AREA

Common Name	Scientific Name	Status ^a	Global Rank ^b	Habitat	Source	Confirmed Presence ^c
Mammals						
Northern long- eared bat	Myotis septentrionalis	FE, ST	G2	Generally associated with old growth or late successional interior forests. Uses partially dead or decaying trees for breeding, summer day roosting, and foraging. Hibernation occurs primarily in caves, mines, and tunnels.	IPaC	No
Tricolored bat	Perimyotis subflavus	FPE, SE	G3	Typically roosts in trees near forest edges during summer. Hibernates deep in caves or mines in areas with warm, stable temperatures during winter.	IPaC	No
Invertebrates						
Monarch butterfly	Danaus plexippus	FPT	G4	Habitat generalists that rely on flowering plants. Require milkweed to lay eggs and for reproduction and the caterpillar stage.	IPaC	No

Sources: USFWS n.d.; VDCR 2025; VDWR 2025b, 2025c, 2025d

IPaC = Information for Planning and Consultation; NLEB = Northern long-eared bat; VaFWIS = Virginia Fish and Wildlife Information Service; VDCR = Virginia Department of Conservation and Recreation; VDWR = Virginia Department of Wildlife Resources

^a Federal/State Status:

FE	Federally listed as endangered	SE	State listed as endangered	FPE	Federally proposed as endangered
FT	Federally listed as threatened	ST	State listed as threatened	FPT	Federally proposed as threatened

^b Global Rank:

- G1 Critically Imperiled: At very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors
- G2 Imperiled: At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors
- G3 Vulnerable: At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors
- G4 Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors
- G5 Secure: Common, widespread, and abundant

^c Indicates whether there is confirmed presence of the species within the Project's study area or within the 2.0-mile buffer from those study area.



CLIENT: Dominion Energy Virginia

JECT NO: 0662361 DATE: April 2025 VERSION: 1.0

Impact Assessment

Table 5.2-5 provides information on the three federal-listed and/or state-listed species identified as potentially occurring within the study areas and/or within a 2.0-mile radius of the study area. Potential habitat exists for all three species along the route alternatives; however, no T&E species have been confirmed within the study area or 2.0-mile radius of the study area boundary.

ERM's review accounted for regulatory changes and requirements associated with the USFWS uplisting of the NLEB from federally threatened to federally endangered. On October 15, 2024, USFWS issued the NLEB Final Guidance for development projects. The USFWS Interim Guidance for the NLEB expired on November 30, 2024, and the Final Guidance for NLEB took effect.

The review also accounted for regulatory changes and requirements associated with TCB and the proposed USFWS listing of this species as federally endangered. The Company is anticipating the TCB will be listed; therefore, it assumes any regulatory changes associated with the potential listing of the TCB will affect this Project. On September 14, 2022, the TCB was proposed to be listed as Endangered by the USFWS (USFWS 2022). The USFWS extended its Final Rule issuance target from September 2023 to the end of 2024. In October 2024 USFWS issued a final NLEB and TCB Range-wide Determination Key (DKey) to allow project proponents to assess project impacts, practicable avoidance and minimization measures, and consultation requirements under the final NLEB guidance and the eventual TCB listing ahead of the final decision. As this time, the TCB Final Rule has not been issued. The Company will utilize the DKey to further assess project impacts and determine appropriate avoidance and minimization measures to ensure compliance with state and federal regulations when the Project enters permitting.

On December 12, 2024, the Monarch butterfly was proposed to be listed as Threatened by the USFWS, and the 90-day public comment period was extended and will close on May 19, 2025. The Company is tracking actively this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects. Potential Monarch butterfly habitat exists within the study area, along the edge of development and open spaces. Permanent impacts to butterfly habitat would be limited to structure placement because the rights-of-way would be maintained to allow for flowering vegetation and milkweed plants necessary for the survival of the Monarch butterfly.

Regardless of the route alternative selected for the Project, the Company will coordinate with state and federal agencies as needed to determine if surveys, construction time-of-year restrictions, or other mitigation would be required to mitigate potential impacts on T&E species.

5.2.3.2 BALD EAGLE MANAGEMENT

Multiple large river tributary systems that flow into Chesapeake Bay host large populations of Bald eagles during winter and summer seasons. Eagles across the Atlantic Coast are attracted to habitat in the Chesapeake Bay watershed due to the temperate climate and abundance of fish and waterfowl prey. Eagles from the southeastern United States migrate north to the Chesapeake Bay every spring, and Bald eagles from the northeastern United States (and Canada) migrate south to the Bay for the winter. As a result, the Chesapeake Bay watershed supports three populations of Bald eagles, including Chesapeake Bay residents, southeast migrants, and northeast migrants.



While the Bald eagle is no longer federally listed under the ESA and was de-listed from the Virginia List of T&E Species in 2013, the species remains protected under the federal Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as well as Va. Code § 29.1-521 and VDWR regulations (4 VAC 15-30-10). The Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: A Guide for Landowners, issued by the then Virginia Department of Game and Inland Fisheries (now VDWR) identifies management practices for avoiding the take of Bald eagles and outlines restrictions on construction activities within defined management zones. Proposed activities that have the potential to affect Bald eagles are evaluated by the VDWR on a case-by-case basis (Virginia Department of Game and Inland Fisheries 2012).

ERM reviewed current eagle datasets in Virginia, including Eagle Concentration Areas and individual Bald eagle nests, available from the CCB Virginia Eagle Nest Locator website (CCB 2022) and the CCB's annual eagle nest survey. ERM also reviewed Bald eagle data provided through the VaFWIS and WERMS databases. Current CCB and VDWR data show that the study area is not within an Eagle Concentration Area. ERM identified one eagle nest within the study area (Nest ID CD0702), which was last checked and found to be occupied in 2021. At the closest point to the Project, Nest ID CD0702 is approximately 0.3 mile northeast of Route 3A at MP 3.7.

The VDWR provides activity-specific guidelines for work within 330-foot and 660-foot buffer zones surrounding a known Bald eagle nest. If eagle nests are identified within 660 feet of the right-of-way approved by the SCC, Dominion will work with VDWR and other appropriate jurisdictional agencies to minimize any impacts on the species.

5.2.3.3 OTHER SPECIES OF INTEREST

Rare plant and animal species that are not federal- or state-listed T&E species are not provided the same level or protection but are still evaluated for impacts by the project. The VDCR continually catalogues, gathers, and analyzes geographic information about Virginia's rare species to develop land conservation data, provide online mapping tools, and help resource agencies make conservation decisions.

The VDCR letter dated March 5, 2025, concluded that the project does not cross any state natural area preserves and did not identify any rare plant species with the potential to occur in the study area. Rare plant impacts will not be discussed further; however, if any rare plants are identified within the Project, Dominion will work with the VDCR and appropriate regulatory agencies to minimize any impacts.

5.2.4 VEGETATION

5.2.4.1 LOCAL VEGETATION CHARACTERISTICS

The study area is located between the Piedmont and Coastal Plain physiographic provinces (VDCR 2021b). Forested vegetation in these provinces has been extensively altered by clearing as part of ongoing agricultural and silvicultural practices, as well as residential and nonresidential development occurring since European settlement. As a result, the characteristics of plant species or community types present prior to European settlement are difficult to determine.

More recently, the effects of human development activities on the landscape have resulted in a patchwork of early and late-successional forests, pastures, agricultural fields, and developments.



The eastern portion of the study area has several subdivisions and developments, and the western portion is mainly forested with some agricultural lands. Overall, the study area is mainly forested, including large swaths of undisturbed forest.

As noted in Section 5.1.2, ERM used a combination of local and statewide datasets along with aerial photography to classify land use and land cover along the route alternatives (Planet Labs Imagery 2025; Google Earth 2025; VGIN 2024). Figure 5.1.2-1 depicts land use / land cover, including forested areas, along the Project. Table 5.2-6 summarizes the acreage of vegetation types crossed by the route alternatives. The proposed Duval Substation site encompasses 5.1 acres of forested area.

TABLE 5.2-6 VEGETATION TYPES CROSSED BY THE ROUTE ALTERNATIVES

Vegetation Cover Type	Unit	Route 2B	Route 3A	Route 3B
Forest	acres	160.7	142.0	131.4
Open Space	acres	3.7	3.3	5.1
Total ^a	acres	164.4	145.3	136.5

^a Totals may not match the sum of the addends due to rounding.

Forests within the study area are composed of species typical to the Coastal Plain and the Piedmont physiographic provinces. The upland forests of the Coastal Plain south of the James River consist of Loblolly pine (*Pinus taeda*) and secondary pine-hardwood forests with the most mature stands supporting mixed oaks (*Quercus* spp.), Tulip-poplar (*Liriodendron tulipifera*), and American beech (*Fagus grandifolia*) (VDCR 2021b). Forested communities within the Piedmont province are dominated by Shortleaf pine (*Pinus echinata*), Sweetgum (*Liquidambar styraciflua*), and oak species (*Quercus* spp.) (VDCR 2021b). Species composition varies based on the maturity of the stand, soils, and if the forest has been disturbed. Fallow farmlands in the Piedmont province undergo a successional process that results in a prevalence of early successional tree stands of pines, oaks, Sweetgum, and Red maple (*Acer rubrum*).

5.2.4.2 FOREST CONSERVATION VALUE

The Forest Conservation Value (FCV) model is a tool designed by the Virginia Department of Forestry to strategically identify the highest priority forestland for conservation in Virginia (VDCR 2023b; VDOF 2020). The intent is to maximize the efficiency of limited resources by focusing conservation efforts on the highest quality, most productive, and most vulnerable forestland statewide. The FCV model identifies five conservation values:

- 5: Outstanding
- 4: Very High
- 3: High
- 2: Moderate
- 1: Average



ERM reviewed FCV data to assess the value of forest vegetation along the route alternatives. Upon reviewing recent aerial photography, ERM found that many recently cleared areas have been ranked using the FCV model data; therefore, the model may be outdated and not reflective of current conditions. Table 5.2-7 summarizes the area of FCV along the Project.

TABLE 5.2-7 FOREST CONSERVATION VALUE ALONG THE PROJECT

FCV	Unit	Route 2B	Route 3A	Route 3B	Duval Substation
Average (1)	acres	23.2	17.7	17.8	0.0
Moderate (2)	acres	35.1	26.0	22.3	0.3
High (3)	acres	33.9	21.0	24.3	2.8
Very High (4)	acres	27.4	24.2	24.7	2.1
Outstanding (5)	acres	40.0	51.6	36.4	0.0
Total ^a	acres	159.6	140.5	125.4	5.1

FCV = Forest Conservation Value

5.2.4.3 IMPACT ASSESSMENT

The Company would clear forested vegetation from the right-of-way, which would be subsequently maintained with an herbaceous cover during Project operations. Vehicle movement associated with construction of the transmission line in open areas would temporarily impact herbaceous vegetation. Impacts on vegetation within open space would be limited to transmission structure footprints along the routes, temporary construction impacts, and intermittent mowing required for maintenance access. Disturbed areas resulting from use of temporary workspace would revert to preconstruction vegetative conditions.

As shown in Table 5.2-7, Route 3B crosses the smallest extent of forested land and land with any FCV ranking. Route 2B would impact the most forest of the three route alternatives; would cross the largest extent of land with FCV ranked as average, moderate, high, and very high; and would cross the second largest extent of land ranked as outstanding. Route 3A crosses the most land ranked as outstanding.

Fragmentation has the potential to alter species composition and presents the greatest risk to biodiversity, because biodiversity declines with fragment size (VDCR 2023a). Large, contiguous patches of land have more benefits than the same area of land among smaller fragmented pieces. Large tracts of forest support increases in habitat diversity and provide species protection, along with greater ecosystem services that benefit people (VDCR 2023a).

The Project's route alternatives would all bisect tracts of contiguous forest and thus would potentially increase fragmentation in the study area. Route collocation (Section 4.4) and routing along the edges of planned developments (Section 5.1.6) and road projects (Section 5.1.10) can decrease the number of new fragments, thereby mitigating impacts.



^a The sum of the addends may not equal the totals due to rounding.

5.3 VISUAL RESOURCES

Visual resources capture the combination of natural landforms, vegetation, water features, and human modifications that characterize and contribute to a landscape's visual quality. This section identifies important visible features (e.g., natural and/or cultural resources that contribute to scenic quality) and elements (i.e., forms, lines, colors, textures, etc.) of the surrounding landscape as the basis for determining how and to what degree the Project will affect visual resources. Appendix F provides more detailed information about existing visual conditions and visual impacts at key observation points (KOPs) throughout the Project study area.

5.3.1 METHODOLOGY

ERM conducted a visual resource assessment to characterize the existing scenic/landscape conditions and understand the potential impact of Project components on these conditions. This assessment included the following activities:

- Identification of visually sensitive resources (VSRs) through the review of 2025 recent digital aerial photography and other available mapping resources;
- Site reconnaissance and local outreach;
- Descriptions of existing conditions from KOPs along the route alternatives;
- Definition of potential viewer groups (i.e., groups of people, such as residents or tourists who
 experience views) within the study area and their anticipated sensitivity to visual changes in
 landscape conditions;
- Preparation and review of visual simulations or renderings of the proposed transmission infrastructure from KOPs in the study area; and
- Evaluation of the Project's visual impacts.

The visual impact approach in this section draws on established techniques for describing existing landscape characteristics and identifying the potential changes or contrasts created by proposed surface-disturbing activities, including, but not limited to, the Bureau of Land Management's Visual Resource Management system (BLM 1984), the U.S. Forest Service's Scenery Management System (USFS 1995), and the FHWA's Visual Impact Assessment for Highway Projects (FHWA 2015).

5.3.2 EXISTING CONDITIONS

The study area is in a rural portion of western Chesterfield County that is experiencing change as suburban growth and development expands west from the greater Richmond area (see Section 3.3). The study area located between the Piedmont and Coastal Plain physiographic provinces, which is characterized by highland and forest ecosystems (VDCR 2021b). The current visual setting of the study area includes rolling hills and forested areas with pockets of rural development. Some previously forested areas have been cleared for lower density development, including housing and sports fields. Existing forested areas and the absence of substantial topographic relief limits broad, panoramic views in the study area and generally constrains most views to the foreground (up to 0.5 mile from the viewer) and middle ground (0.5 to 2.0 miles from the viewer) along public roadways and from nearby residential areas. Appendix F provides additional detail on the existing visual resource setting in the study area.



5.3.2.1 REGULATORY SETTING

The Virginia Outdoors Plan previously included chapter and guidance on scenic resources in the state (VDCR 2018). Under this guidance, VDCR defers to local governments for the protection and management of scenic resources; however, VDCR works with local governments and other stakeholders on scenic resources with statewide importance through the Virginia Scenic Rivers Program and Virginia's Byways. While the latest Virginia Outdoors Plan does not specifically address scenic resources in the state (VDCR 2024), both the Scenic River and Byways programs continue to provide protection for the scenic and other important resource values associated with designated rives and byways. No designated Scenic Rivers or Scenic Byways are located within the study area.

Chesterfield County's Comprehensive Plan does not include a specific scenic or aesthetic resource component (Section 5.2.3.1) but does recognize the important role aesthetics plays in the overall character of the County (Chesterfield County 2019). The Chesterfield County Code of Ordinances also does not have specific scenic or aesthetic related zoning ordinances (Chesterfield County 2024b). In the absence of local guidance and regulations, ERM's assessment of the Project's impacts on visual resources reflects the commonly used federal systems and best practices described in Section 5.1.

5.3.2.2 VISUALLY SENSITIVE RESOURCES

VSRs are sites or areas where existing scenic qualities are susceptible to and could be impacted by a proposed project. Common examples of VSRs include designated scenic resources (e.g., scenic byways, rivers, overlooks, and landscapes), residential areas, parks and other recreational sites, historic sites, conservation areas and other open spaces, natural features, cultural destinations, road corridors, and areas of high public concentration. VSRs are typically identified based on designated scenic protections and/or the expectation of scenic quality based on public visibility and the level of viewer sensitivity to change.

Table 5.3-1 lists and Figure 5.3.2-1 displays the VSRs in the Project study area. These VSRs include locations or features where views contain unique scenic qualities, sensitive viewsheds, and/or areas where Project infrastructure and any associated vegetation clearing would likely contrast with the surrounding landscape. Table 5.3-1 also includes the primary viewer groups at each VSR. Section 5.3.3 defines viewer groups. In addition to the VSRs listed in Table 5.3-1, Section 5.4 also addresses cultural resources and identifies potential changes to visual conditions at these resources from the proposed Project.



RESOURCES AND IMPACTS

TABLE 5.3-1 VISUALLY SENSITIVE RESOURCES AND USER GROUPS

VSR #	VSR Name	VSR Description	Primary Viewer Group(s) ^a
Historic	Resources		
1	Gather at the Hallsboro Store ^b	Virginia Historic Landmark and operational store on the northwest side of the Hallsboro Road/Mount Hermon Road intersection.	L
Places	of Worship & Cemeteries		
2	Bethel Baptist Church	Faith gathering site located on the west side of Huguenot Springs Road, north of the intersection with US 60.	L
3	Mt Sinai Baptist Church and Cemetery	Faith gathering site and associated cemetery on the west side of Old Hundred Road, south of the intersection with US 60.	L
4	New Life United Methodist Church	Faith gathering site located on the west side Old Hundred Road, north of Scottwood Road.	L
5	Mount Hermon Baptist Church and Cemetery	Cemetery and faith gathering site located on both sides of Genito Road on the west side of the intersection with Mount Hermon Road.	L
Recreat	ional Resources		
6	Horner Park	County park featuring hiking trails, athletic fields, and a recycling center west of the intersection of Gary Buro Way Mt Hermon Road on both sides of Gary Buro Way.	L, R, W
7	Swift Creek Berry Farm	Farm with seasonal picking opportunities on the north side of Genito Road, east of the Mount Hermon Road intersection.	L, R, W
8	U.S. Bicycle Route 1	Cross-country bicycle route running from Florida to Maine. Within the study area, the route uses Genito Road.	R
9	Windy Hill Golf Course and Sports Complex	A sports complex with driving range, mini-golf, go-karts, and batting cages on the north side of US 60, northeast of the intersection with Old Hundred Road.	R, W
Areas o	f High Public Concentrat	ion	
10	Hallsley Subdivision	Subdivision of single-family homes west of Old Hundred Road, between Brightwalton Road and Beedon Drive.	L
11	Upper Magnolia Green Community	Community of multiple subdivisions containing single-family homes, age-targeted homes, and townhomes located north of Hull Street Road and west of Otterdale	L, W



CLIENT: Dominion Energy Virginia

VSR #	VSR Name	VSR Description	Primary Viewer Group(s) ^a
		Road and accessed via Woolridge Road and Magnolia Green Parkway. Includes Magnolia Green Golf Course, an 18-hole golf course surrounded by residences.	
12	Summer Lake Subdivision	Subdivision of single-family homes including a clubhouse on the west side of Otterdale Road, north of Westerleigh Parkway.	L
13	Tuckmar Subdivision	Subdivision of single-family homes currently under construction on the south side of Genito Road, west of the intersection of Mount Hermon Road.	L
14	Westerleigh Subdivision	A large subdivision of single-family homes on both sides of Westerleigh Parkway, west of Otterdale Road.	L
Road Co	orridors		
15	County Line Road	Two-lane, paved, unstriped roadway running north-south with an AADT of approximately 390 VPD north of the intersection with Mount Hermon Road.	L, M, W
16	Duval Road	Two-lane, paved, unstriped roadway running east-west with an AADT of approximately 370 VPD west of the intersection with Otterdale Road.	L, M, W
17	Genito Road	Two-lane, paved, striped roadway running east-west with an AADT of approximately 2,500 VPD.	L, M, W
18	US 60	Four-lane, paved, striped, and divided highway running east-west with an AADT of approximately 35,000 VPD.	L, M, W
19	Mount Hermon Road	Two-lane, paved, unstriped roadway running northeast-southwest with an AADT of approximately 340 to 500 VPD.	
20	Old Hundred Road	Two-lane, paved, striped roadway running north-south with an AADT of approximately 6,800 VPD.	L, M, W

Sources: VDOT 2025 (ADT data)

AADT = annual average daily traffic (includes total daily traffic volume—expressed as vehicles per day—in both directions); US = U.S. Route; VPD = vehicles per day; VSR = visually sensitive resource.

^a Viewer Groups (see Section 5.3.3): L = local area residents; M = motorists, commuters, and through travelers; R = recreationists; W = workers

^b The Hallsboro Store is also addressed in Section 5.4.2.

In addition to the existing VSRs listed in Table 5.3-1, there are 18 planned, approved, and under construction developments within 0.25 mile of the (see Section 5.1.6). Most of these developments are new residential subdivisions with associated public facilities (e.g., schools, parks). These include North Hallsley (Planned), Lattice Hall Subdivision (Planned), The Townes at Mount Hermon (Planned), West Estates at Mount Hermon (Planned), East Estates at Mount Hermon (Under Construction), Dogwood Creek (Planned), Mount Hermon Road Residential (Planned), Hammock Creek at Magnolia Green (Planned), Unser Woods, LLC, Residential (Planned), Western Area Elementary School (Under Construction), Deep Creek Middle School (Under Construction), Western Area High School (Approved), and FC Richmond Soccer Club complex (Under Construction).

The substantial amount of planned development in the Project study area will collectively change the existing visual resource setting and character of the area. Currently, the area is primarily rural with rolling hills, dense forests, and pockets of low density, rural residential development. The planned developments will cumulatively result in more of a suburban setting, with local roads, single-family homes, schools, and other related infrastructure dominating the area. While this routing study primarily considers the proposed Project within the existing visual context of the study area, the impacts discussion (Section 5.3.5) acknowledges the changing visual setting and potential increased visibility of the Project.

5.3.3 VIEWER GROUPS

People often experience their environment through visual cues and perception. Viewer groups are broad categories of people who interact with and may potentially be sensitive to changes in the visual resource setting (i.e., the natural and human-built features of a landscape that contribute to its visual quality). The way that viewer groups perceive visual resources provides additional context for assessing a project's visual impacts. Viewer groups identified for the study area (as listed in Table 5.3-1) are described below. Individuals may fall into one or more viewer group category, depending on the context of the view. For example, a local resident may also be considered a commuter when they travel to their job.

- **Local/area residents:** These viewers live in the study area. They are more likely to be highly sensitive to potential changes in landscape characteristics because they tend to value the scenic integrity of the landscape and may have more frequent and longer duration views from their residences. In addition, area residents tend to be most familiar with the area landscape and are therefore more perceptive of changes over time.
- Motorists, commuters, and other travelers: These viewers primarily travel through the study area and have multiple opportunities to view the area landscape as they travel along the primary travel corridors. This means that their potential exposure to views of a proposed project changes based on speed, direction of travel, and length of trip, as well as viewing angles and screening, among other factors. Due to this variability, these viewers (particularly along high-speed roadways) are typically less sensitive to changes in scenic conditions.
- Recreationists and tourists: These viewers select area parks, recreation areas, and other
 tourist attractions in part based on the scenic setting and quality of these areas. As such, they
 also tend to be more sensitive to changes in the landscape.



• **Workers:** These viewers work in the area and thus have a higher degree of awareness of the landscape compared to some other viewing groups (e.g., motorists). While more aware (based on time spent in the project region), the sensitivity of workers is variable depending on the type and location of work being done (e.g., office workers may be less sensitive to landscape change than employees who primarily work outdoors). Although the study area currently has relatively few places of employment, planned development in the study area would significantly increase the number of people who fall into the Worker viewer group; therefore, Workers are also represented in Table 5.3-1.

Sensitivity and potential impacts tend to vary by setting and viewer group. Many factors influence viewer sensitivity and the perception of impacts. In general, users with static, direct, frequent, or longer duration views (e.g., area residents, some workers), as well as those viewers engaged in setting-dependent activities (e.g., some types of recreation, tourism, etc.), tend to have higher levels of sensitivity to change compared to others. Anticipating viewer sensitivity is thus important in the overall evaluation of potential impacts from a proposed project to visual resources.

5.3.4 KEY OBSERVATION POINTS

In addition to considering the existing landscape characteristics across broader geographic areas through the lens of VSRs, ERM identified 12 KOPs to document location-specific existing conditions and anticipated changes due to Project construction and operation. These KOPs for the Project were selected because they:

- Illustrate visibility from specific VSRs (not every VSR has a corresponding KOP);
- Illustrate representative views that would be available to identified user groups;
- Illustrate the route alternatives and substations; and
- Provide views of Project structures and vegetative clearing.

Table 5.3-2 describes the KOPs. Appendix F provides a more detailed description of existing conditions at these KOPs, an assessment of changes in visual conditions due to the Project, photographs of existing conditions, and simulations of the proposed Project. Figure 5.3.4-1 shows KOP locations.



TABLE 5.3-2 KEY OBSERVATION POINTS

KOP#	Location	Reason for Inclusion	Viewer Groups Represented ^a	Route
102	View looking northwest from west side of Old Hundred Road	Example of proposed right-of-way through a mixed residential and wooded rural landscape. Representative of VSRs New Life United Methodist Church and Cemetery and Old Hundred Road.	L, M	2B, 3A, 3B
103	View looking northeast from the northwest side of the Hallsboro Road/Mount Hermon Road intersection	Example of proposed right-of-way through a rural residential and wooded landscape. Representative of VSRs Gather at the Hallsboro Store and Mount Hermon Road. 13	L, M	2B, 3A, 3B
104	View looking north from the east side of Mount Hermon Road	Example of proposed right-of-way through a rural residential and wooded landscape. Representative of VSR Mount Hermon Road.	L, M	2В
105	View looking west from the entrance to The Hallsley Residents Club for the Hallsley Subdivision	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision. Representative of VSR Hallsley Subdivision.	L, M, R	3A, 3B
106A	View looking southwest from the cul de sac terminus of Tulip Hill Place	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision. Representative of VSR Hallsley Subdivision.	L	3A, 3B
106B	View looking west from the southwest corner of the Baybon Road/Tulip Hill Drive intersection	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision. Representative of VSR Hallsley Subdivision.	L	3A, 3B
109	View looking southeast from Horner Park athletic fields	Example of proposed right-of-way through a wooded rural landscape. Representative of VSR Horner Park.	R, W	3В

¹³ The Company notes that the key observation point simulations and renderings, which were provided to the public during community meetings and on the Project's website (see Appendix F), were prepared separately from the simulations showing the appearance of the proposed transmission structures on identified historic resources provided, which were prepared and submitted to VDHR in the Stage I Pre-Application Analysis Report (see Appendix G).



CLIENT: Dominion Energy Virginia

KOP#	Location	Reason for Inclusion	Viewer Groups Represented ^a	Route
110	View looking west along Genito Road	Example of proposed right-of-way through a rural residential and forested landscape. Representative of VSR Genito Road.	L, M	3A
111	View looking northwest from Blue Island Place within the East Estates at Mount Hermon subdivision	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision. Representative of VSR East Estates at Mount Hermon.	L	3A
112	View looking northwest along Lake Summer Drive near the entrance to the Summer Lake Clubhouse	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision. Representative of VSR Summer Lake Subdivision.	L, R	3A
113	View looking northwest along Westerleigh Parkway near the entrance to Deep Creek Middle School and Western Area Elementary School property (currently under construction)	Example of proposed right-of-way through a wooded landscape next to a suburban subdivision and school property (under construction). Representative of VSR Westerleigh Subdivision.	L, W	3A
114	View looking east along Genito Road	Example of proposed right-of-way through a rural residential and forested landscape. Representative of VSRs Genito Road and U.S. Bicycle Route 1.	L, M	2В

KOP = key observation point; VSR = visually sensitive resource.

^a Viewer Groups: L = local/area residents viewer group; M = motorists, commuters, and through travelers; R = recreationists and tourists; W = Workers.

5.3.5 VISUAL IMPACT ASSESSMENT

The degree to which overhead transmission lines influence and are visible on a landscape depends on a number of factors, including, but not limited to structure height and color, existing landscape features (e.g., topography, vegetation, human-made development), duration of the view, and distances from the viewer. The specific combination of these factors changes from location to location, contributing to a range of potential influences and impacts across the study area. Appendix F provides photographic simulations and a description of visual changes from the proposed Project at each KOP.

5.3.5.1 IMPACT ASSESSMENT FOR KEY OBSERVATION POINTS AND VISUALLY SENSITIVE RESOURCES

Table 5.3-3 and Appendix F describe the Project's impacts on visual resource conditions and indicates the anticipated degree of visual change, viewer sensitivity to changes in visual resource conditions, and an overall impact rating for each VSR (negligible, minor, moderate, major). The degree of visual change and viewer sensitivity are based in part on the assessment of visual change and sensitivity at each KOP (see Appendix F).



TABLE 5.3-3 SUMMARY OF ANTICIPATED IMPACTS BY VISUALLY SENSITIVE RESOURCE AND KOP

VSF	R # and Name	KOP #	Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment	
Historic Resources						
1	Gather at the Hallsboro Store	103	The shared alignment of Routes 2B, 3A, and 3Balignment is less than 0.1 mile east of this VSR (measurement taken from the east-facing entrance of Hallsboro Store).	The business sits at the northwest corner of Hallsboro Road and Mount Hermon Road on an open parcel surrounded by dense woodland that screen nearby residences. Multiple pairs of poles and conductors would be clearly visible along Mount Hermon Road, especially where trees are removed within the new right-of-way.	Degree of Visual Change Medium to High Viewer Sensitivity: Medium Overall Impact: Moderate	
Pla	ces of Worship	and Cemeter	ries			
2	Bethel Baptist Church	None	The shared alignment of Routes 2B, 3A, and 3Balignment is 0.5 mile southeast of this VSR (measurement taken from the east-facing entrance of the church).	The parcel is surrounded by trees, except the open views to the east of the open field across the road. Existing topography and vegetation would likely screen all but the upper portions of the poles as the route leaves Midlothian Substation to the south.	Degree of Visual Change Negligible Viewer Sensitivity: Medium Overall Impact: Negligible	
3	Mount Sinai Baptist Church and Cemetery	None	The shared alignment of Routes 2B, 3A, and 3B alignment is 0.5 mile east of this VSR (measurement taken from the east-facing entrance of the church).	The church and cemetery sit on an open parcel that is surrounded by forest on the west side of Old Hundred Road. Existing topography and vegetation would likely screen all but the upper portions of the poles.	Degree of Visual Change Negligible Viewer Sensitivity: Medium Overall Impact: Negligible	
4	New Life United Methodist Church	102	The shared alignment of Routes 2B, 3A, and 3B alignment is 0.3 mile north of this VSR (measurement taken from the east-facing entrance of the church).	The church and cemetery sit on an open parcel that is surrounded by woodland screening nearby residences on the west side of Old Hundred Road. Existing topography and vegetation would likely screen all but the upper portions of the poles.	Degree of Visual Change Negligible Viewer Sensitivity: Medium Overall Impact: Negligible	



CLIENT: Dominion Energy Virginia

VSF	R # and Name	KOP#	Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment
5	Mount Hermon Baptist Church and Cemetery	None	Route 2B is 0.3 mile east of this VSR (measurement taken from the north-facing entrance of the church).	The church sits on the south side of Genito Road, and the cemetery sits on the north side of Genito Road on open parcels surrounded by woodland. Existing topography and vegetation would likely screen all but the upper portions of the poles.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium Overall Impact: Negligible
Rec	reational Reso	urces			
6	Horner Park	109	 Route 3B: less than 0.1 mile east of east-facing entrance of the parking lot. Route 2B: 0.6 mile southwest of the parking lot at the end of Mount Hermon Road. 	The park and athletic complex are south of Genito Road on the west side of Mount Hermon Road on both sides of Otterdale Branch. There are no recreational trails or facilities in the southern portion of the park. - Route 3B: Existing vegetation and topography would likely screen all but the upper portion of the poles where the route parallels the east side of Mount Hermon Road. Note: Powhite Parkway Project Conceptual Alignment 1B would potentially increase visibility of the route in this area. - Route 2B: Existing topography and vegetation would likely screen all but the upper portions of the poles.	Degree of Visual Change: Negligible to Small Viewer Sensitivity: Medium to High Overall Impact: Negligible
7	Swift Creek Berry Farm	None	All measurements taken from the entrance to the property north of Genito Road. - Route 3A: 0.1 mile southeast of this VSR. - Route 3B: 0.6 mile west of this VSR.	The farm sits within an open area surrounded by woodland on all sides. Route 3A would cross forested areas of the property to the east. Existing vegetation and topography would likely screen all but the upper portion of the poles.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium Overall Impact: Negligible



VSR	# and Name	KOP #	Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment	
8	U.S. Bicycle Route 1	110, 114	 Route 2B: crosses 0.8 mile northwest of the intersection with Mount Hermon Road. Route 3A: crosses 1.0 mile east of the intersection with Mount Hermon Road. Route 3B: crosses 0.3 mile east of the intersection with Mount Hermon Road. 	The bicycle route uses Genito Road within the study area, a narrow road bordered by dense woodland and rural residences and subdivisions. The routes would be screened by the remaining dense woodland. Conductors may be visible above the road. Bicyclists would have a higher sensitivity to changes along the road, because they travel at a lower speed than vehicles.	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium to High Overall Impact: Moderate	
9	Windy Hill Golf Course and Sports Complex	None	The shared alignment of Routes 2B, 3A, and 3B alignment is 0.5 mile southwest of this VSR (measurement taken from the southeastern corner of the parking lot).	The sports complex has mixed open and wooded areas and surrounded by dense woodland. Existing vegetation and topography would likely screen views of the routes.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium Overall Impact: Negligible	
Area	as of High Publi	c Concentrati	on			
10	Hallsley Subdivision	105, 106A, 106B	Measurements taken from the intersection of Tulip Hill Place and Tulip Hill Drive. - Route 2B: 0.6 mile northwest of this VSR - Route 3A and 3B: 0.1 mile west of this VSR	The subdivision is surrounded by woodland and other smaller subdivisions. Existing vegetation and topography would likely screen all but the upper portion of the poles where vegetation does not fully screen views.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium to High Overall Impact: Negligible	
11	Magnolia Green Community	None	The shared alignment of Routes 2B, 3A, and 3B is about 0.8 mile north of this VSR (measurement taken from the intersection of	The residential community is surrounded by woodland with more open views within the community due to the golf course greens interspersed amongst the residences. Existing vegetation and topography would	Degree of Visual Change: Negligible Viewer Sensitivity: Medium to High	



VSR # and Name KOF		KOP#	Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment		
			Woolridge Road and Bay Creek Road).	likely screen views of the Project to the north.	Overall Impact: Negligible		
12	Summer Lake Subdivision	112	Measurements taken from the intersection of Flossmoore Court and Lake Summer Loop. - Route 3A: 0.2 mile east of this VSR. - Route 3B: 0.6 mile west of this VSR.	Existing dense woodland to the north and southwest and topography would likely screen all but the upper portion of the poles on the west side of the subdivision.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium to High Overall Impact: Negligible		
13	Tuckmar Farm Subdivision	None	Measurements taken from the entrance to the subdivision on Genito Road - Route 3A: 0.3 mile east of this VSR. - Route 3B: 0.4 mile west of this VSR.	Existing vegetation and topography would likely screen all but the upper portion of the poles for Route 3B. Vegetation, topography, and distance would fully screen views of Route 3A.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium to High Overall Impact: Negligible		
14	Westerleigh Subdivision	113	Route 3A is 0.9 mile northwest of this VSR (measurement taken from the intersection of Westerleigh Parkway and Easter Road).	Existing vegetation, structures, and topography, as well as the new school buildings under construction would likely screen views.	Degree of Visual Change: Negligible Viewer Sensitivity: Medium to High Overall Impact: Negligible		
Roa	d Corridors						
15	County Line Road	unty Line None Route 2B crosses the VSR		Most of the road would not have views of the Project. Route 2B would require tree clearing on both sides of the roadway but the remaining vegetation would screen views of the corridor, except at the crossing. Conductors would be visible above the roadway.	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium Overall Impact: Minor		



VSR	VSR # and Name KOP #		Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment		
16	Duval Road	None	All route alternatives terminate at the proposed Duval Substation, which is less than 0.1 mile north of Duval Road.	The road is bordered by dense woodland on both sides. A forested buffer (approximately 250 feet) on the north side of Duval Road would continue to screen most views of the proposed substation. Motorists on Duval Road would potentially have views of the substation along new access roads between Duval Road and the substation.	Degree of Visual Change: Negligible to Small Viewer Sensitivity: Low to Medium Overall Impact: Negligible to Minor		
17	Genito Road	110, 114	All proposed routes cross Genito Road in different locations: - Route 2B crosses 0.2 mile east of the intersection with Bailey Farm Road. - Route 3A crosses 0.7 mile west of the intersection with Weatherbury Place. - Route 3B crosses less than 0.1 mile east of the intersection with Mount Hermon Road.	The road is bordered primarily by existing subdivisions and woodland on both sides. Construction of any of the routes would open views to the north and south along the corridor, and conductors would be visible crossing the road. The remaining vegetation would screen more distant views of the Project.	Degree of Visual Change: Medium Viewer Sensitivity: Medium Overall Impact: Moderate		
18	US 60	None	The shared alignment of Routes 2B, 3A, and 3B is 0.4 mile south of the intersection with Dry Bridge Road.	The road is bordered by a mixture of open residential or agricultural parcels and woodland. Views of the Midlothian substation and Project corridor would be screened by existing vegetation and topography, except for the upper portions of structures, which would potentially be visible to motorists (although these views would be at a 90-degree angle from the direction of travel).	Degree of Visual Change: Negligible to Small Viewer Sensitivity: Small to Medium Overall Impact: Minor		



VSR	VSR # and Name KOP #		Approximate Distance to Relevant Project Features	Summary of Impacts	Impact Assessment	
19	Mount Hermon Road	103, 104	 All proposed routes are near Mount Hermon Road: Route 2B crosses less than 0.1 mile south of the intersection with County Line Road. The shared alignment of Routes 3A and 3B runs along the east side of Mount Hermon Road between Hallsboro Road and Troywood Road. 	The road is bordered by open residential parcels and dense woodland. The Project would require tree clearing that would open views along the east side of the road. Where remaining vegetation provides screening, the upper portions of structures would be visible.	Degree of Visual Change: Medium to Large Viewer Sensitivity: Medium Overall Impact: Moderate	
20	Old Hundred Road	102	The shared alignment of Routes 2B, 3A, and 3B crosses Old Hundred Road less than 0.1 mile south of the intersection with Dry Bridge Road.	The Project would require tree clearing on both sides of the road. Remaining vegetation and topography would screen distant views of the structures; conductors would be visible crossing the road. Collocation with the existing Norfolk Southern Railway mitigates visual impacts somewhat.	Degree of Visual Change: Medium Viewer Sensitivity: Medium Overall Impact: Moderate	

KOP = key observation point; NA = not applicable; US = U.S. Route; VSR = visually sensitive resource.



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025

5.3.5.2 IMPACT ASSESSMENT BY ROUTE ALTERNATIVE

Table 5.3-4 summarizes the anticipated impacts of each route alternative on visual conditions. This table also provides a potential impact rating (major, moderate, minor, or negligible) for each route.

As noted in Section 5.3.2.2, there are multiple planned, approved, and under construction developments throughout the study area. Most of this growth is new residential development that will transform the setting from a primarily rural, forested landscape to more of a suburban landscape with local roads, single family homes, schools, and other related infrastructure. Section 5.12 provides a further discussion on land use and Section 5.1.6 provides additional detail on planned developments.

Based on the locations of planned developments (as of April 2025), some forested areas will remain and the new residential developments are expected to have landscaping and other plantings that could help screen and soften the visual impact of the new built features on the landscape (similar to current residential development in the area). In addition to modifying the current landscape characteristics, the removal of large tracts of forest and development of new suburban residential areas may increase the visibility and prominence of the route alternatives on the landscape. While the route impact assessments below primarily address anticipated changes to existing visual resources from the Project, they acknowledge future development along each route and any corresponding visual resource considerations.

For all routes, the Duval Substation would add multiple new elements to the landscape in this area (including low, linear, geometric forms, tall vertical and repeating horizontal lines, and grey hues); however, the substation site is surrounded by forest—including along Duval Road, the closest public road in the vicinity of the substation—that provides screening of the substation site and will likely continue to screen the site after surrounding development is complete.

In addition, since the most prominent views of the route alternatives would be from area roads (as noted below), motorists would be the most common type of viewer to experience the proposed routes. Motorists on area roads would have dynamic views of the new project infrastructure. The duration of these views would be dependent on the direction and speed of travel of the motorists. The new project infrastructure would be most prominent on the landscape when it is in the foreground of motorists and other viewers.

Each route would be most visible where it crosses roads such as Genito Road, Mount Hermon Road, and Old Hundred Road. Tree removal along these road corridors and the Norfolk Southern Railway would reduce vegetated screening and create new opportunities to view the Project. Regardless of which route is selected, the Project would add tall, vertical poles and long, linear conductors to the views.

Each would look similar to existing transmission lines in the area but would contrast with the largely forested and rural residential character of the area. Grading and vegetation removal for planned residential and nonresidential developments would change the study area's visual character and may result in additional viewing opportunities of the route from new suburban residential areas.



The subsections below discuss impacts specific to each route alternative, separate from the common impacts described above.

Route 2B

Residents and motorists along Mount Hermon Road would have partial or intermittent views of Route 2 amid the vegetation along the road. Except for a crossing of Genito Road, much of the remainder of Route 2B crosses forested areas with limited opportunities for public viewing. Overall, Route 2B would have minor to moderate impacts on visual resources in the study area.

Route 3A

While Route 3A is closer than other routes to the existing Hallsley and Summer Lake subdivisions and to others under construction (East Estates at Mount Hermon), existing trees screen the route from these areas and sensitive residential viewers. Overall, Route 3A would have minor to moderate impacts on visual resources in the study area.

Route 3B

Route 3A would pass along the eastern side of Horner Park but is largely screened by tall trees and would be collocated with Mount Hermon Road and the Powhite Parkway Project Conceptual Alignment 1B (see Section 5.1.10). Overall, Route 3B would have minor to moderate impacts on visual resources in the study area.

VERSION: 1.0

TABLE 5.3-4 VISUAL RESOURCE IMPACT SUMMARY

Route Alternative	Impacted VSRs	Impacted Areas and Viewer Groups	Impacted Viewer Groups ^a	Potential Impact Rating
Route 2B	1 to 4, 6, 8, 9, 12, and 14 to 19	Existing road crossings: 3 Genito Road Mount Hermon Road Old Hundred Road Sensitive VSRs (impacts > negligible): Gather at the Hallsboro Store (VSR 1) U.S. Bicycle Route 1 (VSR 8) County Line Road (VSR 15) Duval Road (VSR 16) Genito Road (VSR 17) US 60 (VSR 18) Mount Hermon Road (VSR 19) Old Hundred Road (VSR 20)	L, M	Degree of Visual Change: Small to Medium Viewer Sensitivity: Low to High Overall Rating: Minor to Moderate
Route 3A	1 to 4, 7 to 9, 11, 13, 15, and 17 to 20	Existing road crossings: 2 Genito Road Old Hundred Road Sensitive VSRs (impacts > negligible): Gather at the Hallsboro Store (VSR 1) U.S. Bicycle Route 1 (VSR 8) Duval Road (VSR 16) Genito Road (VSR 17) US 60 (VSR 18) Mount Hermon Road (VSR 19) Old Hundred Road (VSR 20)	L, M, W	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium to High Overall Rating: Minor to Moderate
Route 3B	1 to 4, 5, 6, 8, 15, and 16 to 19	Existing road crossings:2 Genito Road Old Hundred Road Sensitive VSRs (impacts > negligible): Gather at the Hallsboro Store (VSR 1) U.S. Bicycle Route 1 (VSR 8) Duval Road (VSR 16) Genito Road (VSR 17) US 60 (VSR 18) Mount Hermon Road (VSR 19) Old Hundred Road (VSR 20)	L, M, R, W	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium to High Overall Rating: Minor to Moderate

US = U.S. Route; VSR = visually sensitive resource.

^a Viewer Groups: L = local/area residents viewer group; M = motorists, commuters, and through travelers; R = recreationists and tourists; W = Workers



5.3.5.3 VISUAL IMPACT ASSESSMENT SUMMARY

The Project would have moderate impacts in the northern portion of the study area where all route alternatives share the same alignment and negligible to minor impacts near the proposed Duval Substation due to the densely forested landscape in this area. All three routes would have overall minor to moderate impacts, with higher levels of impacts primarily along road corridors where vegetative clearing would increase the visibility of the project. All routes cross through existing forested areas and collocate with other linear facilities (including roadways and a railroad), which somewhat minimizes impacts on visual resources.

In general, the visual changes from the Project would be most perceptible to the greatest number of viewers where they cross and/or are adjacent to major road corridors or are visible from nearby residential areas.

Overall, while the Project would contrast with existing visual conditions, visual impacts would range from minor to moderate because:

- Existing topography, vegetation (especially tall trees), and structures, combined with the general sparseness of VSRs limits extended viewing opportunities of new Project infrastructure especially along the central portions of all routes;
- Human influences and built structures (modifications to the landscape), including existing utility infrastructure, are common in some areas, especially along roads;
- The portions of the study areas near (and including) Otterdale and Old Hundred Road, continue to grow with a mix of residential and commercial areas; and

As noted previously, foreground views of the route alternatives—where transmission structures are most noticeable—typically occur along major travel corridors. These areas already have a higher level of visual disturbance (i.e., human development) and lower viewer sensitivity to additional changes in visual conditions.

All route alternatives cross or are near planned residential, industrial, and/or commercial developments (Section 5.1.6). In general, these planned developments will contribute to the transition of the Project study area from a more rural, forested landscape to one that is characterized by suburban residential and industrial development, with related transportation, commercial, and utility infrastructure. These changes will also potentially increase the visibility of the Project as screening vegetation is removed to facilitate development. Such increased visibility could increase the Project's visual impacts above the levels described above; however, the Project would also be more visually compatible with industrial development than with existing rural and forested uses.

5.4 CULTURAL RESOURCES

ERM conducted a pre-application analysis (the analysis) of potential impacts on known cultural resources along and near the Project routes in accordance with VDHR *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in*



the Commonwealth of Virginia (i.e., VDHR Guidelines) (VDHR 2008). For each route, the analysis identified and assessed the potential for impacts on previously recorded resources meeting criteria within the following study tiers as specified in the VDHR Guidelines:

- National Historic Landmarks (NHLs) within a 1.5-mile radius of each route;
- Properties listed on the National Register of Historic Places (NRHP), NHLs, battlefields, and historic landscapes within a 1.0-mile radius of each route;
- NRHP-eligible and NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each route; and
- All the above qualifying resources and archaeological sites within the right-of-way for each route.

ERM obtained data on previously recorded cultural resources within each study tier from the VCRIS. ERM also reviewed information from the following additional sources to identify locally significant resources (not otherwise included in the VCRIS) within a 1.0-mile radius of each route:

- Chesterfield County Preservation Committee (2025);
- Chesterfield Historical Society of Virginia (2025);
- Experience Chesterfield (2025); and
- Preservation Virginia (2025).

Many of the previously recorded aboveground cultural resources in the vicinity of the routes have not been assessed for NRHP eligibility and therefore are not included in the analysis per the VDHR Guidelines. These resources should be considered potentially eligible for listing in the NRHP until they are assessed and a determination of their eligibility made by the VDHR. Additionally, there may be unreported historic and archaeological resources that could be affected by construction or operation of the Project. Any such resources would be addressed during an intensive cultural resources survey to be conducted along the Project routes certificated by the SCC in a subsequent phase of investigation to support permitting.

Along with the records review, ERM conducted field assessments of the architectural resources and historic districts meeting the criteria and within the applicable study tiers defined by the VDHR Guidelines. ERM captured digital photographs of each resource and views toward the applicable route alternative(s). ERM then prepared visual simulations depicting the Project infrastructure as it would appear in views from each resource (Appendix F) to assess potential visual effects on those resources. The remainder of this section presents the results of these assessments.

No previously recorded archaeological sites were identified within or adjacent to the rights-of-way for the Project's route alternatives.

Regarding aboveground historic resources, ERM identified five previously recorded resources within the study tiers described above. Of these, four are listed on the NRHP, and one has not



been evaluated to determine its eligibility for listing but is considered locally significant for purposes of this report.

5.4.1 ARCHAEOLOGICAL SITES AND FINDINGS

Crossings of archaeological sites are considered a routing constraint due to the potential for an electric transmission line to impact intact archaeological deposits, if present, due to tree clearing, transmission structure placement, or the use or movement of heavy equipment within a site. No previously recorded archaeological sites were identified within or adjacent to the rights-of-way for the Project's route alternatives. A survey would be completed in a subsequent phase of study for the Project along the route certificated by the SCC.

5.4.2 ABOVEGROUND HISTORIC RESOURCES AND FINDINGS

Each route alternative reviewed in this study has the potential to affect aboveground historic resources. This section of the report presents information on known aboveground cultural resources near each route alternative, using the VDHR tiered study area model described above. The locations of resources relevant to the routes are depicted on Figure 5.4.2-1. Individual descriptions of the resources are provided in the Pre-Application Analysis Report, which is attached as Appendix G. Some of these resources could be affected regardless of which route is certified by the SCC for the Project.

ERM identified five aboveground historic resources within the study tiers for all three route alternatives (Table 5.4-1 and Table 5.4-2). ERM conducted a field reconnaissance at each resource to assess conditions and take photographs to support the preparation of simulations. Based on the simulations, construction, and operation of new transmission infrastructure along the shared alignment for all three route alternatives would have a severe impact on one resource and no impact on four resources, as discussed below.

There would be no visibility of the Project infrastructure from the following resources due to intervening vegetation and distance:

- Hallsborough Tavern (020-0030), which is approximately 0.5 mile northwest of the shared alignment of all three route alternatives (MP 0.0);
- Mt. Sinai Baptist Church (020-0405), which is approximately 0.4 mile north-northwest of the shared alignment of all three route alternatives (MP 0.8);
- Bethel Baptist Church (020-0111), which is approximately 0.5 mile northwest of the shared alignment of all three route alternatives (MP 0.0); and
- The Dinwiddie County Pullman Car (020-0023), which is approximately 800 feet northwest of Route 2B (MP 2.5) and approximately 0.5 mile west of Routes 3A and 3B (MP 2.2).

Consequently, construction and operation of the Project would have no impact on these resources.

The Hallsboro Store (020-0407) is approximately 300 feet northwest of the right-of-way of the shared alignment of all three route alternatives (MP 1.7) in an area where the routes use a



greenfield alignment. The area between the routes and the resource includes the Norfolk Southern Railway. The Project's transmission infrastructure would be visible from the resource's southern boundary when looking to the east and northeast. In addition, Project construction would include vegetation and tree removal to the south and east, which would also be visible from the resource. The thinning in the trees in this area would make the route more prominent during off-leaf seasons. The construction of the Project would add modern elements to the resource's northeastern and eastern viewsheds where there currently are no modern elements, and it would remove trees and vegetation along the transmission line right-of-way. Thus, ERM recommends that the Project would have a severe impact on 020-0407, regardless of which route alternative is certificated by the SCC.

TABLE 5.4-1 ABOVEGROUND HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2B

Buffer (mile)	Resource Category	Resource Number	Description	Impact
		020-0023	Dinwiddie County Pullman Car	None
	NRHP Properties (Listed)	020-0030	Hallsborough Tavern	None
0.0 to 0.5		020-0111	Bethel Baptist Church	None
		020-0407	Hallsboro Store	Severe
	Locally Significant	020-0405	Mt. Sinai Baptist Church	None

NRHP = National Register of Historic Places

TABLE 5.4-2 ABOVEGROUND HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3A AND ROUTE 3B

Buffer (mile)	Resource Category	Resource Number	Description	Impact
0.5 to 1.0	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car	None
		020-0030	Hallsborough Tavern	None
	National Register	020-0111	Bethel Baptist Church	None
0.0 to 0.5	Properties (Listed)	020-0407	Hallsboro Store	Severe
	Locally Significant	020-0405	Mt. Sinai Baptist Church	None



5.4.3 SUMMARY OF EXISTING DATA COLLECTED UNDER SECTION 106 OR 110 OF THE NATIONAL HISTORIC PRESERVATION ACT

Some portions of the route alternatives were previously surveyed for cultural resources. Research indicates that 13 prior Phase I cultural resource surveys have been conducted within 1.0 mile of the routes, including three that overlap portions of individual routes. Because the route alternatives share some common segments, many of the previous surveys have covered portions of multiple routes. The previous surveys relevant to the alternative routes are identified in Appendix H, Stage 1 Pre-Application Analysis (see Section 2.4, Table 5-1, and Attachment 2).

5.5 ENVIRONMENTAL JUSTICE

5.5.1 ENVIRONMENTAL JUSTICE METHODOLOGY

The Commonwealth of Virginia's environmental justice (EJ) guidelines are established in the Virginia Environmental Justice Act (VEJA) of 2021 (Va. Code § 2.2-234 through 2.2-235). The VEJA defines "Environmental Justice" and "Environmental Justice Community" as follows (Va. Code § 2.2-234):

- "Environmental Justice" means the fair treatment and meaningful involvement of every person, regardless of race, color, national origin, income, faith, or disability, regarding the development, implementation, or enforcement of any environmental law, regulation, or policy.
- "Fair treatment" means the equitable consideration of all people whereby no group of people bears a disproportionate share of any negative environmental consequence resulting from an industrial, governmental, or commercial operation, program, or policy.
- "Meaningful involvement" means the requirements that (i) affected and vulnerable community residents have access and opportunities to participate in the full cycle of the decision-making process about a proposed activity that will affect their environment or health and (ii) decision makers will seek out and consider such participation, allowing the views and perspectives of community residents to shape and influence the decision. "Environmental Justice Community" means any low-income community, population of color, or community of color.

Based on the VEJA guidelines, EJ communities are identified in this report using the criteria described below.

Racial/Ethnic Composition:

- The percent of "population of color" in the analysis area is greater than the Commonwealth average of 41% (i.e., "community of color"); or
- The percent of any racial or ethnic group that is not "white alone" in the population for the analysis area is greater than the Commonwealth average for that racial or ethnic group (i.e., "population of color"); or
- The percentage of the population in the analysis area considered linguistically isolated is greater than the Commonwealth average of 3%.



Low-Income:

■ The share of households making less than 200% of the Federal Poverty level and less than or equal to 80% of the median household income of the analysis area is greater than 30% (Va. Code § 2.2-234).

ERM used the Census Block Group (CBG) as the primary geographic unit (i.e., the analysis area referred to in the criteria above) for this EJ analysis because it is the smallest unit for which U.S. Census Bureau demographic data are available, providing information at a sub-county level. ERM collected demographic data from the U.S. Census Bureau American Community Survey, 5 Year Estimates (2019–2023) (U.S. Census Bureau 2023d, 2023e). Demographic and socioeconomic data for CBGs in the study area are depicted on Figure 5.5-1.

While the Commonwealth of Virginia is the reference population for this analysis, ERM also considered data for Chesterfield and Powhatan counties in the review to assess regional demographic variations. ERM compared Commonwealth-wide demographic data with individual CBGs to help identify the presence of potential EJ communities. For example, if the reported percentage of population of color within an individual CBG is greater than the percentage of population of color in Virginia as a whole (41%), then ERM identified a potential EJ community in that CBG.

This EJ analysis also assesses other socioeconomic indicators to identify areas that may have higher environmental burdens and vulnerable populations, especially when considered in combination with the EJ criteria and definition under the VEJA described above. These other indicators include education attainment (the percent of people over age 25 in a CBG with less than a high school education) and age-based vulnerabilities (i.e., the percent of people in a CBG under age 5 or over age 64). There is no equivalent VEJA definition for these groups; therefore, ERM used the federal guidance of a meaningfully greater threshold to identify these communities (USEPA 2016). Specifically, a CBG is considered to contain a potential age-based vulnerable community (or community with low education attainment) when the percentage of the population either below age 5 or above age 64 (or with less than a high school education) exceeds twice the corresponding state averages.

5.5.2 EXISTING CONDITIONS

Based on the EJ criteria thresholds identified above, six of the seven CBGs within 1.0 mile of the Project components meet EJ criteria (Figure 5.5.1-1). Table 5.5-1 provides population and demographic information for each of the CBGs crossed and within 1.0 mile of the route alternatives. CBGs are a statistical division of census tracts (CTs); therefore, CBGs are identified first according to the CT that contains them, then by their unique block group within that CT.

5.5.3 IMPACT ASSESSMENT

Based on the EJ criteria thresholds for race, ethnicity, income, and limited English-speaking households described in Section 5.5.1, ERM identified potential EJ communities crossed by or



within the EJ study area for each of the Project's route alternatives. Each route alternative crosses the same CBGs, and each CBG crossed is a potential EJ community.

One CBG in the study area has a significant low-income population and is not crossed by any of the route alternatives. Two CBGs have linguistically isolated populations that meet VEJA criteria for a potential EJ community; however, the linguistic isolation in these CBGs is still low at 7% and 4%, respectively. All routes begin and terminate in these two CBGs. Only one CBG within the 1.0-mile radius is a "community of color," as defined in VEJA, but five CBGs meet the "population of color" criteria (i.e., the percent of the population that identifies as one or more racial or ethnic groups that is not "white alone" is greater than the Commonwealth average for that racial or ethnic group).

The Project routes largely cross currently undeveloped, forested land, or follow existing or proposed linear facilities (i.e., an existing railroad and proposed highway). Section 5.1 contains additional details on land use and planned developments.

To ensure that stakeholder concerns regarding the potential direct and indirect impacts of the Project are understood and considered in routing decisions, Dominion designed and implemented a comprehensive outreach program (see Section 3.4) early in the Project's development phase to identify and engage with all community stakeholders regardless of EJ community status, including federally recognized tribes. As part of the outreach program, the Company shared Project materials through written and in-person methods (e.g., letters and open houses), documented comments provided by stakeholders, and responded to feedback by seeking ways to mitigate or avoid identified impacts, including any potential disproportionate impacts on vulnerable communities. As part of outreach, Dominion held community meetings on October 24, 2024, and January 9, 2025, at Woolridge Elementary School (Dominion Energy 2025a).

In assessing whether a community would bear a disproportionate and adverse impact of the Project, ERM considered temporary construction impacts (specifically, noise and ground disturbance), visual impacts, effects on property value, and health impacts related to EMFs, as discussed below.

Overall, while all components cross EJ communities and most CBGs within the 1.0-mile radius of the Project are potential EJ communities, the Project would not have adverse or significant impacts, primarily due to the limited degree to which the Project would impact communities, regardless of EJ status.



TABLE 5.5-1 : DEMOGRAPHIC AND SOCIOECONOMIC INDICATORS IN THE 1-MILE ENVIRONMETAL JUSTICE ANALYSIS AREA

Geography	Population	Total Populations of Color (%)	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Limited English- Speaking Household (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)	Routes Crossed
Virginia	8,657,499	41	59	18	0.0	7	0.0	1	4	11	23	3	9	6	16	NA
Chesterfield County	371,610	43	57	23	0.1	4	0.1	0.7	4	11	19	2	7	6	16	NA
CT 1009.24; BG 2	2,417	13	87	3	0.2	5	0.0	0.0	1	3	4	1	1	2	27	NA
CT 1009.28; BG 1	4,133	51	49	24	0.0	12	0.0	0.4	5	10	26	4	13	12	15	1, 2, 3
CT 1009.38; BG 2	7,334	22	78	5	0.0	2	0.0	2.3	8	5	3	0	2	14	6	1, 2, 3
CT 1010.03; BG 2	5,596	29	71	11	0.0	6	0.0	0.3	3	9	9	0	3	8	4	NA
CT 1010.03; BG 3	3,002	16	84	2	0.0	1	0.0	1.6	2	9	8	7	0	6	7	1, 2, 3
CT 1010.03; BG 4	2,144	16	84	0	0.0	8	0.0	5.5	1	2	11	0	4	6	11	1, 2, 3
Powhatan County	31,074	15	85	9	0.0	0	0.0	0.5	3	3	13	0	8	4	19	NA
CT 5001.02; BG 2	1,318	15	85	0	0.0	3	0.0	0.0	7	5	30	0	7	10	23	NA

Source: U.S. Census Bureau 2023a, 2023b, 2023c, 2023d, 2023e

CT=Census Tract; BG=Block Group

Gray-shaded cells include reference population.

Blue-shaded cells indicate populations of color, including communities of color composed primarily of one of the groups listed in the VEJA definition of "population of color" or the analysis area has a greater percentage of a community of color than the state as a whole.

Green-shaded cells indicate low-income populations.

Yellow-shaded cells indicate populations with limited English-speaking households.



5.5.3.1 CONSTRUCTION ACTIVITIES

Impacts associated with Project construction would be temporary, lasting less than a year. Regardless of the route selected, Construction activity and crews would be present at a particular location during daytime hours for a few to several days at a time, on multiple occasions throughout the construction period between initial right-of-way clearing and final restoration.

Various regulations, industry standards, and best management practices would guide construction and restoration of the right-of-way. The short-term impacts of construction could include equipment noise, dust, potential changes in traffic patterns, and general ground disturbance. All of these impacts would be short term and temporary.

Noise is generally defined as unwanted sound. The primary noise receptors in the study area would be the residences that are within 500-feet of the route centerlines (see Section 5.2.4). Currently, there are 18 to 20 residences within 500-feet of the route centerlines. Section 5.2 provides additional details on distances and locations of potentially sensitive resources from route alternatives. During construction, temporary, localized noise from heavy equipment and increased vehicle traffic is expected to occur during daytime hours. Exceedances of daytime noise limits are not expected; if they occur, they would be temporary.

Dominion would minimize ground-disturbing activities to the extent practicable. Following construction, Dominion would remove construction-related equipment and debris from the right-of-way and restore the land within the right-of-way as closely as possible to preconstruction conditions. Dominion would maintain the right-of-way with herbaceous cover during operations.

5.5.3.2 VISUAL IMPACTS

Section 5.3 assesses the Project's visual impacts. The area is currently rural but experiencing change as suburban growth and development expands west from the greater Richmond area. Because the Project routes cross CBGs with potential EJ communities, most of the key observation points used in the analysis of visual impacts represent views from potential EJ communities. As part of routing, Dominion employs visual mitigation measures such as avoiding unique viewsheds, placing structures to take advantage of natural screening (e.g., tall trees), collocating with existing transmission lines and linear features, and avoiding the placement of structures directly in front of residences. Overall, the Project would have moderate impacts in the northern portion of the study area where all route alternatives share the same alignment, and negligible to minor impacts towards Duval Substation due to the densely forested landscape in this area (see Section 5.3).

5.5.3.3 PROPERTY VALUES

Affected communities and landowners often express concern that the presence of transmission lines in the viewshed of homes could adversely affect aesthetics, resulting in the reduction of property values and deterring potential buyers. Indirect impacts on property values caused by direct visual impacts from high-voltage transmission lines (i.e., lines carrying more than 69 kV)



depend on proximity, visibility, size, and type of transmission structures; easement landscaping; and surrounding topography. Based on a review of industry research published in peer-reviewed journals and trade journals, residential property values and sales prices are primarily affected by factors unrelated to the presence of a transmission line. Other factors have been shown through research to have greater influence on the value of residential property than the presence of a transmission line, such as location, type, and condition of improvements to the property; neighborhood; and local real estate market conditions (Jackson and Pitts 2010; Anderson et al. 2017).

Currently, the route alternatives cross mostly rural, wooded areas, and there are 17 to 19 residences within 500-feet of the route centerlines.

5.5.3.4 HEALTH IMPACTS

The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past three decades are the foundation of Dominion's opinion that no adverse health impacts are anticipated to result from the operation of the transmission infrastructure.

Research on EMFs and human health varies widely in approach. Some studies evaluate the impacts of high, short-term EMF exposures not typically found in people's day-to-day lives, while others evaluate the impacts on biological responses of common, lower EMF exposures found throughout communities. Studies also have evaluated the possibility of impacts of long-term exposure (e.g., cancer, neurodegenerative diseases, and reproductive impacts). Altogether, this research includes well over 100 epidemiologic studies of people in their natural environment and many more laboratory studies of animals (in vivo) and isolated cells and tissues (in vitro). Standard scientific procedures, such as weight-of-evidence methods, were used by the expert panels assembled by agencies to identify, review, and summarize the results of this large and diverse research.

The reviews of EMF-related biological and health research have been conducted by numerous scientific and health agencies, including, for example, the European Health Risk Assessment Network on Electromagnetic Fields Exposure, the International Commission on Non-Ionizing Radiation Protection, the World Health Organization, the Institute of Electrical and Electronics Engineers International Committee on Electromagnetic Safety, the Scientific Committee on Emerging and Newly Identified Health Risks of the European Commission, and the Swedish Radiation Safety Authority (i.e., SSM) (WHO 2007; SCENIHR 2015; ICNIRP 2010; SSM 2015, 2016, 2018, 2019, 2020, 2021, 2022; ICES 2019). The general scientific consensus of the agencies that have reviewed this research, relying on generally accepted scientific methods, is that the scientific evidence does not confirm that common sources of EMF in the environment,



including transmission lines and other parts of the electric system, appliances, etc., are not a cause of any adverse health impacts. 14

5.6 GEOLOGIC RESOURCES

5.6.1 GEOLOGIC SETTING

The study area is within the Piedmont geologic province, which lies between the mountainous Blue Ridge province to the west and the terraced slopes of the Coastal Plain province to the east. The Piedmont province is characterized by rolling topography, thick soils, and heavily weathered bedrock primarily caused by the region's humid climate. The Piedmont province consists of several complex geologic terranes where faults separate the rock units with variable igneous and metamorphic histories. Based on review of the Geologic Map of Virginia, the route alternatives are located approximately on the transitional boundary between the Western Piedmont-Potomac Terrane and a Mesozoic basin (William and Mary Department of Geology 2024; USGS 2005).

Each of the route alternatives start within a unit of unconsolidated deposits known as the Terrace Deposits, primarily composed of clay, gravel, and sand. The routes then encounter sedimentary bedrock (between MPs 0.7 and 1.9) belonging to the Newark Supergroup made up of sandstone, siltstone, and shale. From MP 1.9 to the proposed Duval Substation, bedrock underlying Route 3B and Route 3A is composed of Arkosic sandstone. Route 2B also encounters Arkosic sandstone from MP 5.0 to the route's terminus at the Duval Substation (Virginia Energy 2024a).

5.6.2 MINERAL RESOURCES

ERM reviewed publicly available datasets (Virginia Energy 2024a, 2024b), U.S. Geological Survey topographic quadrangles (USGS 2025), and recent imagery (Planet Labs Imagery 2025) to identify mineral resources in the study area. There are no active permitted mining sites or inactive mineral resource prospect sites located within 0.25 mile of the routes. In addition, there are no inactive mineral resource prospect sites located within 0.25 mile of the routes (Virginia Energy 2024b).

5.6.3 IMPACT ASSESSMENT

Because there are no active permitted mining sites or inactive mineral resource prospects within 0.25 mile of the routes, the Project would have no impact on mineral resources.

¹⁴ More information on Dominion's opinion can be found at https://www.dominionenergy.com/projects-and-facilities/electric-projects/emf (Dominion Energy 2025b).



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 2025 VERSION: Error

6 CONCLUSIONS AND RECOMMENDATIONS

ERM identified the route alternatives discussed in this report based on the major constraints and routing opportunities in the study area relative to the Project's purpose and need. ERM evaluated three route alternatives for the Project. Table 5.6-1 summarizes the key differences in resources affected by each route alternative. Appendix C includes a comprehensive features crossing table for the route alternatives.

TABLE 5.6-1 COMPARISON SUMMARY OF ROUTE ALTERNATIVES

Resource	Unit	Route 2B	Route 3A	Route 3B
Total length	miles	8.6	7.5	7.1
Total construction footprint	acres	168.1	147.9	139.4
Collocation with existing and planned linear facilities	miles	3.7	5.4	5.2
Collocation with existing and planned linear facilities	% of total length	43%	71%	73%
County or EDA lands crossed	miles	1.3	1.2	1.6
Industrial/commercial zoned lands crossed ^a	% of total length	31%	26%	31%
Residential zoned lands crossed ^a	% of total length	39%	24%	19%
Existing residences within 500 feet of route centerline	number	18	19	17
Planned developments crossed ^b	acres	77.4	50.4	38.3
Planned developments crossed ^b	% of total length	59%	40%	34%
Existing and future roads crossed	number	7	11	5
Forested wetland impacts	acres	12.4	19.3	16.9
Waterbodies crossed	number	29	24	22
Permanent forest impacts	acres	160.7	142.0	131.4

EDA = Chesterfield County Economic Development Authority

Based on the evaluation of each route alternative and the potential associated impacts on the human and natural environment, ERM and the Company recommend Route 3B as the preferred alternative for the Duval-Midlothian Lines.



^a Includes existing zoning districts (Chesterfield County 2019) and parcels associated with rezoning cases (Chesterfield County 2025b, 2025d, 2025e) as of April 2025.

^b As of April 2025 (Chesterfield County 2025b, 2025d, 2025e)

Route 3B is preferred for these reasons:

- It is the shortest viable route with smallest construction footprint;
- It has the greatest utilization of publicly owned parcels, which minimizes impacts on private parcels;
- It has the greatest amount (as a percentage of total length) of collocation with existing and planned linear facilities;
- It is strongly aligned with Chesterfield County land use policies and preferences;
- It crosses commercial and industrial-zoned lands to the greatest extent (as a percentage of total length) and therefore has the smallest impact on residential areas;
- It has the fewest crossings and shortest extent of crossings of planned residential and other development (as of April 2025);
- It has the fewest crossings of existing and future road crossings, including the Powhite Parkway Project;
- It has the smallest impact on forested areas; and
- It has the fewest waterbody crossings.

Overall, Route 3B best adheres to the provisions of the SCC Guideline that emphasize selection of route alternatives that minimize the conflict between the rights-of-way and present and prospective uses of affected lands. Because all route alternatives cross public land, the feasibility of any route alternative depends entirely on obtaining right-of-way from these public entities. Dominion will continue to coordinate with Chesterfield County and its EDA on the proposed crossings.

All routes cross EJ communities; however, the Project would not have adverse or significant impacts, primarily due to the limited degree to which the Project would impact communities, regardless of EJ status. As such, none of the route alternatives would result in a disproportionate, adverse, or significant impact on EJ communities. As discussed in Sections 5.3 and 5.4, all routes would have comparable visual impacts on residential areas and historic resources.

Accordingly, ERM and the Company support Route 3B as the preferred alternative for this Project, as it avoids or reasonably minimizes adverse impacts to the greatest extent reasonably practicable on the scenic assets, historical and cultural resources, and environment of the area concerned.



REFERENCES

Anderson, O.C., J. Williamson, and A. Wohl. 2017. "The Effect of High-Voltage Overhead Transmission Lines on Property Values: A Review of the Literature Since 2010." *The Appraisal Journal*, 85(3): 179–193.

- BLM (Bureau of Land Management). 1984. Manual 8400—Visual Resource Management.

 Department of the Interior. Washington, D.C. Accessed December 2024.

 https://blmwyomingvisual.anl.gov/docs/BLM_VRM_8400.pdf
- CCB (Center for Conservation Biology). 2022. Eagle Nest Locator. Accessed: February 2025. Retrieved from: https://ccbbirds.org/maps/
- Chesterfield County. 2018. 2018 Parks and Recreation Comprehensive Master Plan Chesterfield County, Virginia. Accessed: March 2025. Retrieved from: https://capitalregionland.org/wp-content/uploads/2021/11/Chesterfield-County-Parks-Master-Plan-2018.pdf
- Chesterfield County. 2019. Moving Forward The Comprehensive Plan for Chesterfield County.

 Accessed: February 2025. Retrieved from:

 https://www.chesterfield.gov/DocumentCenter/View/10647/Comprehensive-Plan-PDF
- Chesterfield County. 2022. Search Records: Record 21SN0623. Accessed: March 2025. Retrieved from: <a href="https://aca-prod.accela.com/CHESTERFIELD/Cap/CapDetail.aspx?Module=Planning&TabName=Planning&CapID1=REC21&CapID2=00000&CapID3=006G5&agencyCode=CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IsToShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IstoShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IstoShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IstoShowInspection="https://aca-prod.accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTERFIELD&IstoShowInspection="https://accela.com/CHESTE
- Chesterfield County. 2024a. Land Use Plan Geospatial Data. Accessed: March 2025. Retrieved from:

 <a href="https://chesterfieldva.maps.arcgis.com/apps/webappviewer/index.html?id=c69c953b290e-4dd4a5c1866fe1100b89https://chesterfieldva.maps.arcgis.com/apps/webappviewer/index.html?id=c69c953b290e4dd4a5c1866fe1100b89

 html?id=c69c953b290e4dd4a5c1866fe1100b89
- Chesterfield County. 2024b. Code of Ordinances. Accessed: March 2025. Retrieved from: https://library.municode.com/va/chesterfield_county/codes/code_of_ordinances
- Chesterfield County. 2024c. Trail Systems Geospatial Data. Accessed: March 2025. Retrieved from:

 https://opengeospace.chesterfield.gov/datasets/93d7b28f50854d3abf63e21117671d50_22/about
- Chesterfield County. 2025a. Chesterfield County, VA GeoSpace. Accessed: March 2025. Retrieved from: https://geospace.chesterfield.gov/
- Chesterfield County. 2025b. Chesterfield VA Enterprise Land Management Portal. Accessed: March 2025. Retrieved from: https://aca-prod.accela.com/chesterfield/Default.aspx#
- Chesterfield County. 2025c. Chesterfield VA StratIS Data Reports. Accessed: March 2025. Retrieved from: https://www.chesterfield.gov/5003/StratIS-Data-Reports
- Chesterfield County. 2025d. Chesterfield VA Active Development and Zoning Cases. Accessed:

 March 2025. Retrieved from: https://www.chesterfield.gov/982/Active-Development-and-Zoning-Cases



Chesterfield County. 2025e. Chesterfield County Planning Cases—Pending. Accessed: March 2025. Retrieved from:

https://chesterfieldva.maps.arcgis.com/apps/webappviewer/index.html?id=46d06b14af794
208bfbab61818b61e1c

- Chesterfield County. 2025f. Chesterfield VA Western Area Capital Improvement Projects.

 Accessed: March 2025. Retrieved from: https://www.chesterfield.gov/5828/Western-Area-Capital-Improvement-Project
- Chesterfield County. 2025g. Chesterfield VA Transportation. Accessed: March 2025. Retrieved from: https://www.chesterfield.gov/574/Transportation
- Chesterfield County. 2025h. Chesterfield VA Capital Improvement Program. Accessed: March 2025. Retrieved from: https://www.chesterfield.gov/1798/Capital-Improvement-Program-Chesterfield County
- Chesterfield County. 2025i. 2018 Parks and Recreation Comprehensive Master Plan Chesterfield County, Virginia. April 25, 2018. Accessed: March 2025. Retrieved from:

 https://capitalregionland.org/wp-content/uploads/2021/11/Chesterfield-County-Parks-Master-Plan-2018.pdf
- Chesterfield County Preservation Committee. 2025. Chesterfield County's Local Historic Landmark Designation Guide. Accessed: February 2025. Retrieved from: https://chesterfieldva.maps.arcgis.com/apps/Shortlist/index.html?appid=48eefd68d76d4a <a href="https://chesterfieldva.maps.arcgis.com/apps/Shortlist/index.html?appid=48eefd68d76d4a https://chesterfieldva.maps.arcgis.ar
- Chesterfield Historical Society of Virginia. About Chesterfield Historical Society of Virginia.

 Accessed: March 2025. Retrieved from: https://chesterfieldhistoricalsociety.com/visit-us/about-chesterfield-historical-society/
- CCPS (Chesterfield County Public Schools). 2025. Chesterfield County Public Schools. Accessed: March 2025. Retrieved from: https://www.oneccps.org/
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services. Washington, D.C. Accessed: March 2025. Retrieved from: https://www.nrc.gov/docs/ML1801/ML18019A904.pdf
- Dominion Energy. 2025a. Western Chesterfield Electric Transmission Improvement—Project Overview. Accessed: March 2025. Retrieved from:

 https://www.dominionenergy.com/projects-and-facilities/electric-projects/power-line-projects/western-chesterfield-electric-transmission-improvement-project
- Dominion Energy. 2025b. EMF—Electric & Magnetic Fields. Accessed: March 2025.Retrieved from: https://www.dominionenergy.com/projects-and-facilities/electric-projects/emf
- ESRI (Environmental Systems Research Institute, Inc.), Maxar, Earthstar Geographics, and the GIS User Community. 2024a. World Elevation Terrain. Accessed: March 2025. Retrieved from: https://elevation.arcgis.com/arcgis/rest/services/ WorldElevation/Terrain/ImageServer
- ESRI (Environmental Systems Research Institute, Inc.), Maxar, Earthstar Geographics, and the GIS User Community. 2024b. World Imagery. Accessed: January 2025. Retrieved from:



https://services.arcgisonline.com/ArcGIS/rest/services/ World Imagery/MapServer

- Experience Chesterfield. 2025. Black History in Chesterfield—History Happened Here. Accessed: March 2025. Retrieved from: https://experiencechesterfield.com/blog/black-history-in-chesterfield-history-happened-here/
- FAA (Federal Aviation Administration). No date-a. Circle Search for Airports. Accessed: March 2025. Retrieved from:

 https://oeaaa.faa.gov/oeaaa/external/searchAction.jsp?action=showCircleSearchAirportsForm
- FAA (Federal Aviation Administration). No date-b. Airport Data and Information Portal. Accessed: March 2025. Retrieved from: https://adip.faa.gov/agis/public/#/public
- FC Richmond. 2025. FC Richmond Complex. Accessed: March 2025. Retrieved from: https://www.fcrichmond.com/fcrcomplex
- FHWA (Federal Highway Administration). 2015. Guidelines for the Visual Impact Assessment of Highway Projects. U.S. Department of Transportation. Washington, D.C. Accessed:

 March 2025. Retrieved from:

 https://www.environment.fhwa.dot.gov/env topics/other topics/VIA Guidelines for High way Projects.aspx
- Find a Grave. 2025. World's largest gravesite collection. Accessed: March 2025. Retrieved from: https://www.findagrave.com/
- Google Earth. 2025. Google Earth Pro, Version 7.3.6. Aerial Imagery in Virginia. Accessed: March 2025.
- Gustafson, N. 2024. "0642267, Golden-Mars," VDCR email to ERM. May 23, 2024.
- Hallsley. 2025. Hallsley Chosen America's Best. Accessed: March 2025. Retrieved from: https://hallsley.com
- ICES (International Committee on Electromagnetic Safety). 2019. IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz. IEEE Std C95.1™-2019. IEEE SA Standards Board. New York, NY.
- ICNIRP (International Commission on Non-ionizing Radiation Protection). 2010. "ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz to 100 kHz)." Health Physics, 99(6): 818–836.
- Jackson, T., and J. Pitts. 2010. "The Effects of Electric Transmission Lines on Property Values: A Literature Review." *Journal of Real Estate Literature*, 18(2): 239–259.
- NALT (North American Land Trust). 2025. North American Land Trust—We Protect Beautiful Places. Accessed: March 2025. Retrieved from: https://northamericanlandtrust.org/
- NCED (National Conservation Easement Database). 2024. Advanced Easement Search. Accessed: March 2025. Retrieved from: https://www.conservationeasement.us/adv-search/
- Planet Labs Imagery. 2025. Digital Aerial Photography. Imagery purchased for the Western Chesterfield Electric Transmission Project. January 2025.
- PlanRVA. 2025. Transportation 2050 (LRTP). Accessed: March 2025. Retrieved from: https://engage.planrva.org/lrtp



Powhatan County. 2025. Download GIS Data. Accessed: March 2025. Retrieved from: https://www.powhatanva.gov/1656/Download-GIS-Data

- Preservation Virginia. 2025. Rosenwald School Architecture Survey. Accessed: March 2025. Retrieved from: https://preservationvirginia.org/our-work/architectural-rosenwald-school-survey/
- Rextag. 2024. Services. Accessed: March 2025. Retrieved from: https://rextag.com/services
- RRTPO (Richmond Regional Transportation Planning Organization). 2021. Long Range Transportation Plan. Accessed: March 2025. Retrieved from: https://planrva.org/transportation/lrtp/
- SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks). 2015. "Opinion on [p]otential health effects of exposure to electromagnetic fields (EMF)." Accessed:

 March 2025. Retrieved from: https://ec.europa.eu/health/scientific committees/emerging/docs/scenihr o 041.pdf
- SSM (Swedish Radiation Safety Authority). 2015. Research 2015:19. Recent Research on EMF and Health Risk—Tenth report from SSM's Scientific Council on Electromagnetic Fields. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2016. Research 2016:15. Recent Research on EMF and Health Risk—Eleventh report from SSM's Scientific Council on Electromagnetic Fields, 2016. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2018. Research 2018:09. Recent Research on EMF and Health Risk—Twelfth report from SSM's Scientific Council on Electromagnetic Fields, 2017. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2019. Research 2019:08. Recent Research on EMF and Health Risk—Thirteenth Report from SSM's Scientific Council on Electromagnetic Fields, 2018. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2020. Research 2020:04. Recent Research on EMF and Health Risk—Fourteenth Report from SSM's Scientific Council on Electromagnetic Fields, 2019. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2021. Research 2021:08. Recent Research on EMF and Health Risk—Fifteenth report from SSM's Scientific Council on Electromagnetic Fields, 2020. Stockholm, Sweden.
- SSM (Swedish Radiation Safety Authority). 2022. Research 2022:16. Recent Research on EMF and Health Risk—Sixteenth report from SSM's Scientific Council on Electromagnetic Fields, 2021. Stockholm, Sweden.
- Summer Lake. 2025. Life at Summer Lake in Chesterfield, Virginia. Accessed: March 2025. Retrieved from: https://summerlake.info/about
- Swift Creek Berry Farm & Greenhouse. 2025. Family Owned and Operated Since 1983. Accessed: March 2025. Retrieved from: https://swiftcreekberryfarm.com/
- Timmons Group. 2023. Westerleigh Parkway Extended Improvements. Accessed: March 2025. Retrieved from: https://westerleigh-parkway-extended.timmons.com/pages/overview



Timmons Group. 2024a. Field delineation for the Upper Magnolia Green Development, Chesterfield, Virginia completed by Timmons Group in January 2022 and February 2024. PDFs provided by Dominion Energy. Accessed March 2025.

- Timmons Group 2024b. "Quality D Utility Study Map," Timmons Group email to ERM. November 12, 2024.
- U.S. Army Corps of Engineers (USACE). NAO-2024-02076 (Upper Magnolia Site, Chesterfield, Virginia). Accessed: March 2025. Retrieved from:

 https://www.nao.usace.army.mil/Media/Public-Notices/Article/4029771/nao-2024-02076-upper-magnolia-site-chesterfield-virginia/
- U.S. Census Bureau. 2023a. *American Community Survey 5-year Estimates Census Data (2019–2023)*. File No. B03002, Hispanic or Latino Origin by Race. Accessed: March 2025. Retrieved from: <a href="https://data.census.gov/table/ACSDT5Y2023.B03002?q=B03002&g=040XX00US51_050XX_00US51041,51145_1500000US,510411009242,510411009281,510411009382,510411010_032,510411010033,510411010034,511455001011,51145500102.2
- U.S. Census Bureau. 2023b. *American Community Survey 5-year Estimates Census Data (2019–2023)*. File No. C17002, Ratio of Income to Poverty Level in the Past 12 Months. Accessed March 2025. Retrieved from:

 <a href="https://data.census.gov/table/ACSDT5Y2023.C17002?q=C17002&g=040XX00US51_050XX_00US51041,51145_1500000US,510411009242,510411009281,510411009382,510411010_032,510411010033,510411010034,511455001011,511455001022
- U.S. Census Bureau. 2023c. *American Community Survey 5-year Estimates Census Data (2019–2023)*. File No. C16002, Household Language by Household Limited English Speaking Status. Accessed: March 2025. Retrieved from:

 <a href="https://data.census.gov/table/ACSDT5Y2023.C16002?q=C16002&g=040XX00US51_050XX_00US51041,51145_1500000US,510411009242,510411009281,510411009382,510411010_032,510411010033,510411010034,511455001011,511455001022
- U.S. Census Bureau. 2023d. *American Community Survey 5-year Estimates Census Data (2019–2023)*. File No. B15002, Sex by Educational Attainment for the Population 25 Years and Over. Accessed: March 2025. Retrieved from:

 <a href="https://data.census.gov/table/ACSDT5Y2023.B15002?q=B15002&g=040XX00US51_050XX_00US51041,51145_1500000US,510411009242,510411009281,510411009382,510411010_032,510411010033,510411010034,511455001011,511455001022
- U.S. Census Bureau. 2023e. *American Community Survey 5-year Estimates Census Data (2019–2023)*. File No. B01001, Sex by Age. Accessed: March 2025. Retrieved from: <a href="https://data.census.gov/table/ACSDT5Y2023.B01001?q=B01001&g=040XX00US51_050XX_00US51041,51145_1500000US,510411009242,510411009281,510411009382,510411010_032,510411010033,510411010034,511455001011,511455001022
- USDA-NRCS (U.S. Department of Agriculture—Natural Resources Conservation Service). 2024. Soil Survey Geographic Database (SSURGO). Accessed: March 2025. Retrieved from: https://www.nrcs.usda.gov/resources/data-and-reports/soil-survey-geographic-database-ssurgo
- USFWS (U.S. Fish and Wildlife Service). No date. (IPaC) Information for Planning and Consultation. Accessed: March 2025. Retrieved from: https://ecos.fws.gov/ipac/



USFWS (U.S. Fish and Wildlife Service). 2013. Wetlands Data. Accessed March 2025. Retrieved from: https://www.fws.gov/program/national-wetlands-inventory/classification-codes

- USFWS (U.S. Fish and Wildlife Service). 2022. Tricolored Bat. Accessed: March 2025. Retrieved from: https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus
- USFWS (U.S. Fish and Wildlife Service). 2024a. National Wetlands Inventory. Accessed: March 2025. Retrieved from: https://www.fws.gov/program/national-wetlands-inventory/wetlands-data
- USFWS (U.S. Fish and Wildlife Service). 2024b. Monarch Butterfly Proposed for Endangered Species Act Protection. Accessed: March 2025. Retrieved from:

 https://www.fws.gov/press-release/2024-12/monarch-butterfly-proposed-endangered-species-act-protection
- USFS (U.S. Forest Service). 1995. Landscape Aesthetics: A Handbook for Scenery Management. Agricultural Handbook Number 701. U.S. Department of Agriculture. Washington, D.C. Accessed: March 2025. Retrieved from: https://blmwyomingvisual.anl.gov/docs/Landscape%20Aesthetics%20(AH-701).pdf
- USGS (U.S. Geological Survey). 2005. Preliminary integrated geologic map databases for the United States: Delaware, Maryland, New York, Pennsylvania, and Virginia. Accessed: March 2025. Retrieved from: https://pubs.usqs.gov/of/2005/1325/#VA
- USGS (U.S. Geological Survey). 2023. Boundary Descriptions and Names of Regions, Subregions, Accounting Units and Cataloging Units from the 1987 USGS Water-Supply Paper 2294. Accessed: March 2025. Retrieved from: https://water.usgs.gov/GIS/huc_name.html
- USGS (U.S. Geological Survey). 2024. *The National Hydrography Dataset Plus High Resolution*. Accessed: March 2025. Retrieved from: https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer
- USGS (U.S. Geological Survey). 2025. Topographic Maps. Accessed: March 2025. <u>Retrieved from:</u> https://www.usgs.gov/programs/national-geospatial-program/topographic-maps
- VDCR (Virginia Department of Conservation and Recreation). 2021a. Definitions of Abbreviations used on Natural Heritage Resource Lists. Accessed: March 2025. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/help
- VDCR (Virginia Department of Conservation and Recreation). 2021b. *Overview of the Physiography and Vegetation of Virginia*. Accessed: March 2025. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/natural-communities/document/ncoverviewphys-veg.pdf
- VDCR (Virginia Department of Conservation and Recreation). 2023a. Virginia Natural Landscape Assessment. Accessed: March 2025. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla
- VDCR (Virginia Department of Conservation and Recreation). 2023b. Forest Conservation Value. Accessed: March 2025. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/vaconvisforest
- VDCR (Virginia Department of Conservation and Recreation). 2024a. Department of Conservation and Recreation's Virginia Conservation Lands Database. Accessed: March 2025. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/clinfo



VDCR (Virginia Department of Conservation and Recreation). 2024b. Virginia Natural Heritage Database Search. Accessed: March 2025. Retrieved from: https://vanhde.org/species-search

- VDCR (Virginia Department of Conservation and Recreation). 2025. Natural Heritage Environmental Project Review. Received March 5, 2025
- VDHR (Virginia Department of Historic Resources). 2025. Preservation Easements. Accessed: March 2025. Retrieved from: https://www.dhr.virginia.gov/programs/easements/
- VDOF (Virginia Department of Forestry). Forestland Conservation. 2020. Accessed: March 2025. Retrieved from: https://dof.virginia.gov/forest-management-health/forestland-conservation/#:~:text=The%20Forest%20Conservation%20Value%20(FCV,value%20conservation%20forests%20across%20Virginia
- VDOT (Virginia Department of Transportation). 2010. Virginia Department of Transportation 2010 Virginia Bicycling Guide. Accessed: March 2025. Retrieved from:

 https://www.vdot.virginia.gov/media/vdotvirginiagov/travel-and-traffic/bike-and-pedestrian/2010VirginiaBicyclingGuide.pdf
- VDOT (Virginia Department of Transportation). 2025. Chesterfield Powhite Parkway Project Environmental Impact Statement. Accessed: March 2025. Retrieved from: https://www.vdot.virginia.gov/projects/richmond-district/chesterfield---powhite-parkway-study/
- VDWR (Virginia Department of Wildlife Resources). 2025a. Wildlife Environmental Review Map Service (WERMS). Accessed: March 2025. Retrieved from: https://dwr.virginia.gov/gis/werms/
- VDWR (Virginia Department of Wildlife Resources). 2025b. Virginia Fish and Wildlife Information Service. Accessed: March 2025. Retrieved from: https://services.dwr.virginia.gov/fwis/index.asp
- VDWR (Virginia Department of Wildlife Resources). 2025c. Little Brown Bat and Tri-colored Bat Winter Habitat & Roosts. Accessed: March 2025. Retrieved from:

 https://dwr.virginia.gov/wildlife/bats/little-brown-bat-tri-colored-bat-winter-habitat-roosts-application/
- VDWR (Virginia Department of Wildlife Resources). 2025d. Northern Long-Eared Bat Regulatory Buffer Interactive Tool. Accessed: March 2025. Retrieved from: https://dwr.virginia.gov/wildlife/bats/northern-long-eared-bat-application/
- VGIN (Virgina Geographic Information Network). 2024. Virginia GIS Clearinghouse. Accessed: March 2025. Retrieved from: https://vgin.vdem.virginia.gov/pages/clearinghouse/
- Virginia Department of Energy (Virginia Energy). 2024a. Geology Mineral Resources. Accessed:
 March 2025. Retrieved from:
 https://energy.virginia.gov/webmaps/GeologyMineralResources/
- Virginia Department of Energy (Virginia Energy). 2024b. Mineral Mining Map. Accessed:

 March 2025. Retrieved from: https://energy.virginia.gov/webmaps/MineralMining/
- Virginia Department of Game and Inland Fisheries, Center for Conservation Biology at the College of William and Mary, and Virginia Commonwealth University. 2012. *Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: A Guide for*



Landowners. Accessed: March 2025. Retrieved from: https://dwr.virginia.gov/wp-content/uploads/media/Virginia-Bald-Eagle-Guidelines-for-Landowners.pdf

- Virginia Department of Historic Resources (VDHR). 2008. Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia. Accessed June 2022. Retrieved from:

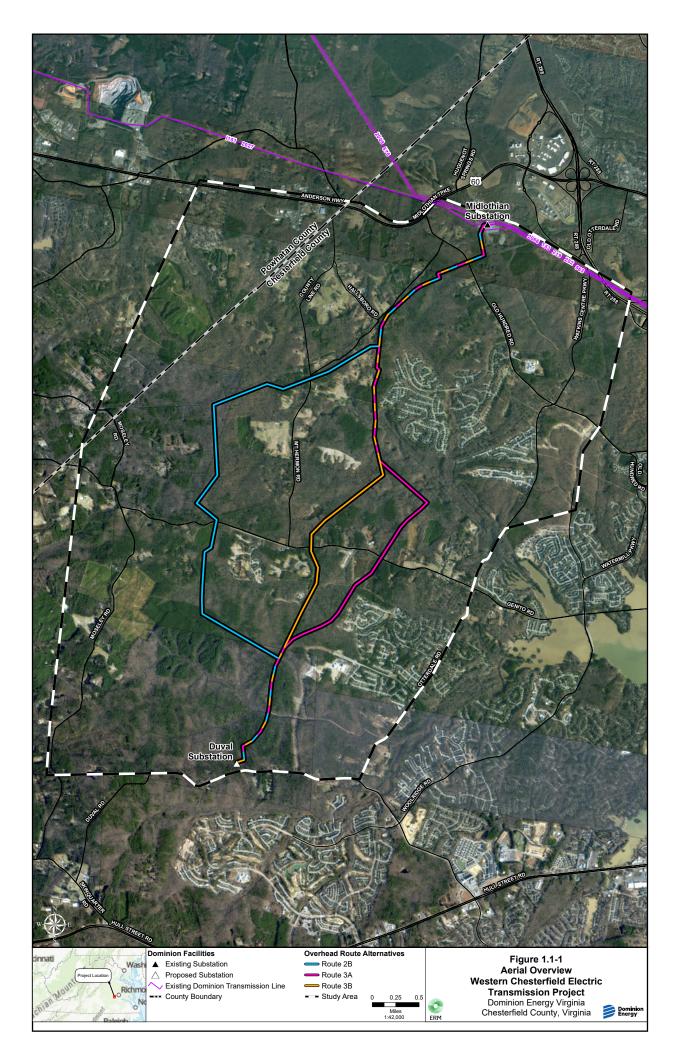
 https://www.dhr.virginia.gov/wp-content/uploads/2018/08/DHR Guidelines for Transmission Line Assessment.pdf.
- William and Mary Department of Geology. 2024. The Geology of Virginia. Accessed: March 2025. Retrieved from: http://geology.blogs.wm.edu/
- WHO (World Health Organization). 2007. 2007 WHO Research Agenda for Extremely Low Frequency Fields. Accessed: March 2025. Retrieved from:

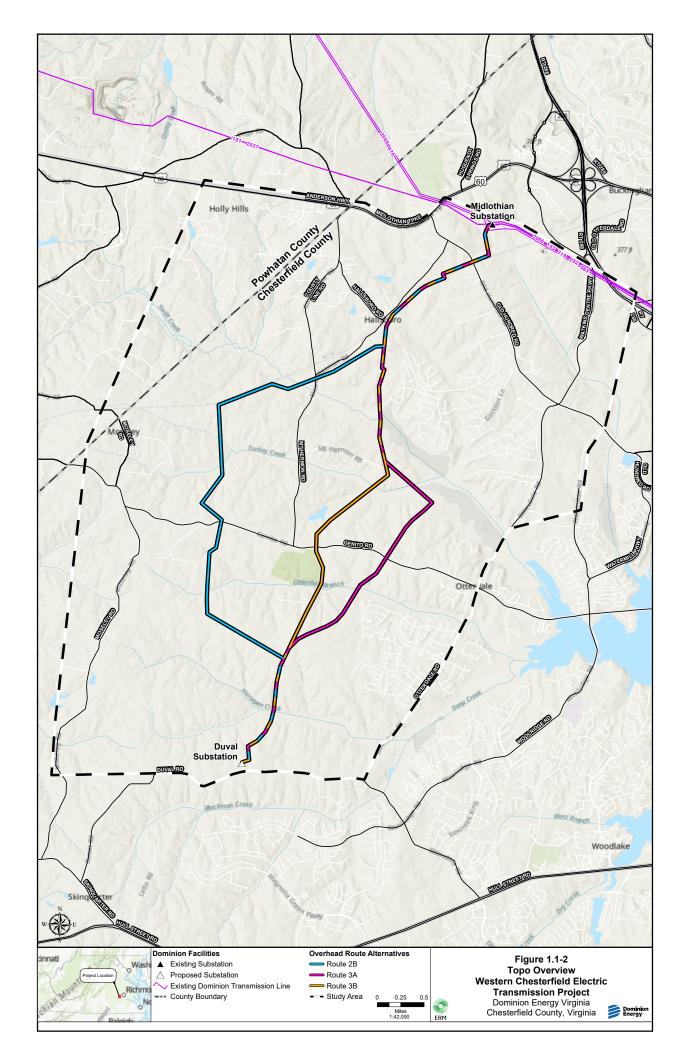
 <a href="https://cdn.who.int/media/docs/default-source/documents/radiation/research-agenda-for-extremely-low-frequency-fieldsfe251cc2-e09a-4061-bf4c-87ec599df49f.pdf?sfvrsn=1b20e2fd 1&download=true

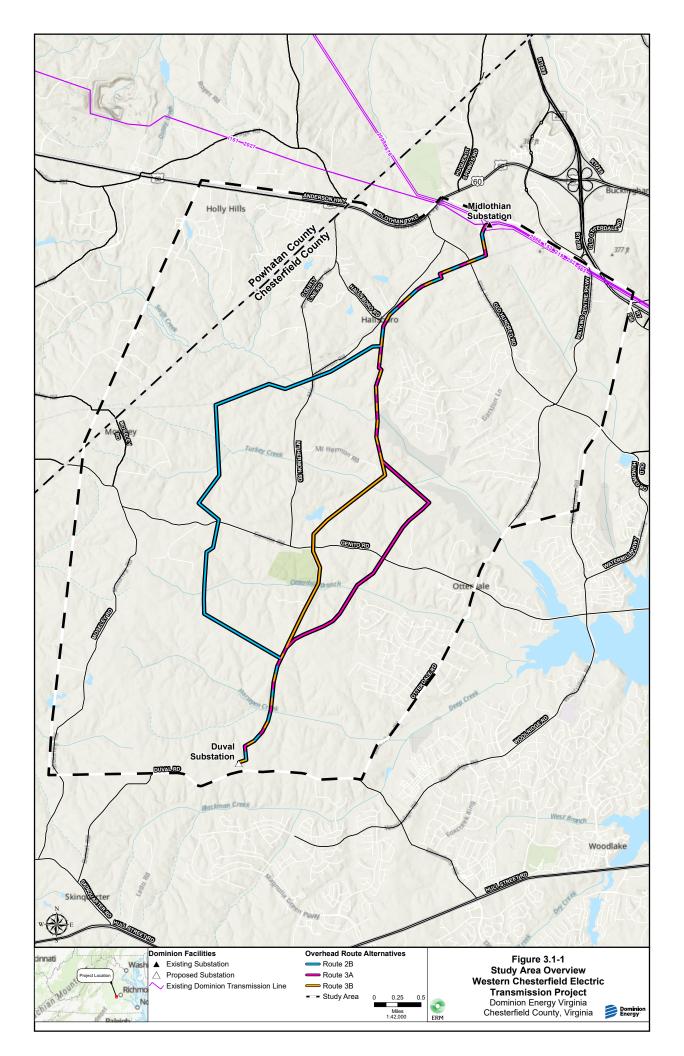


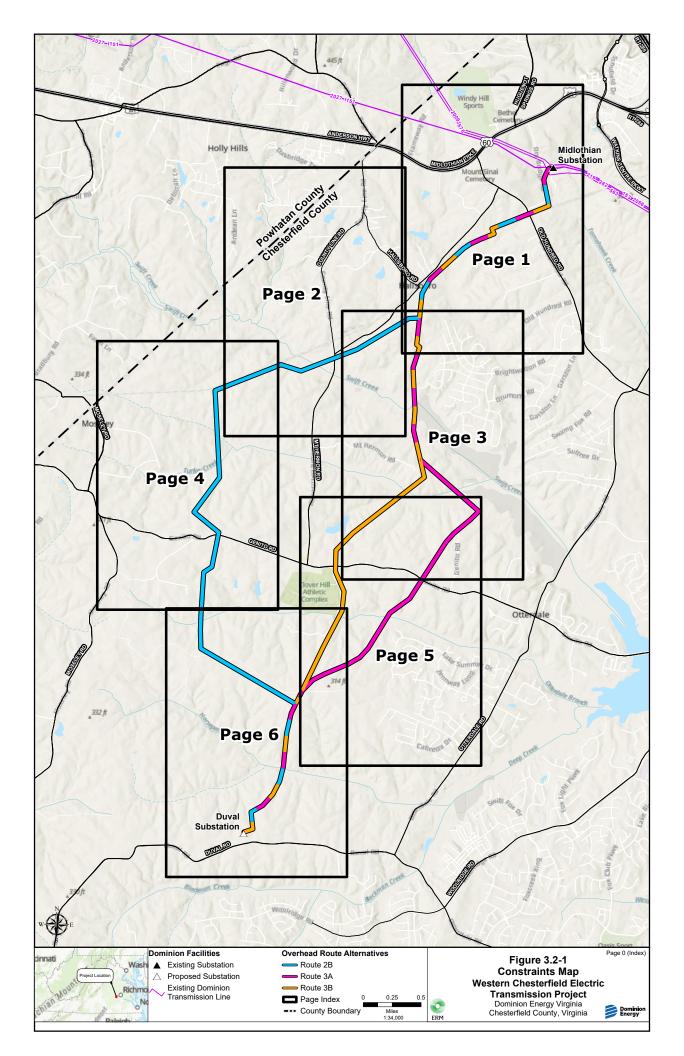


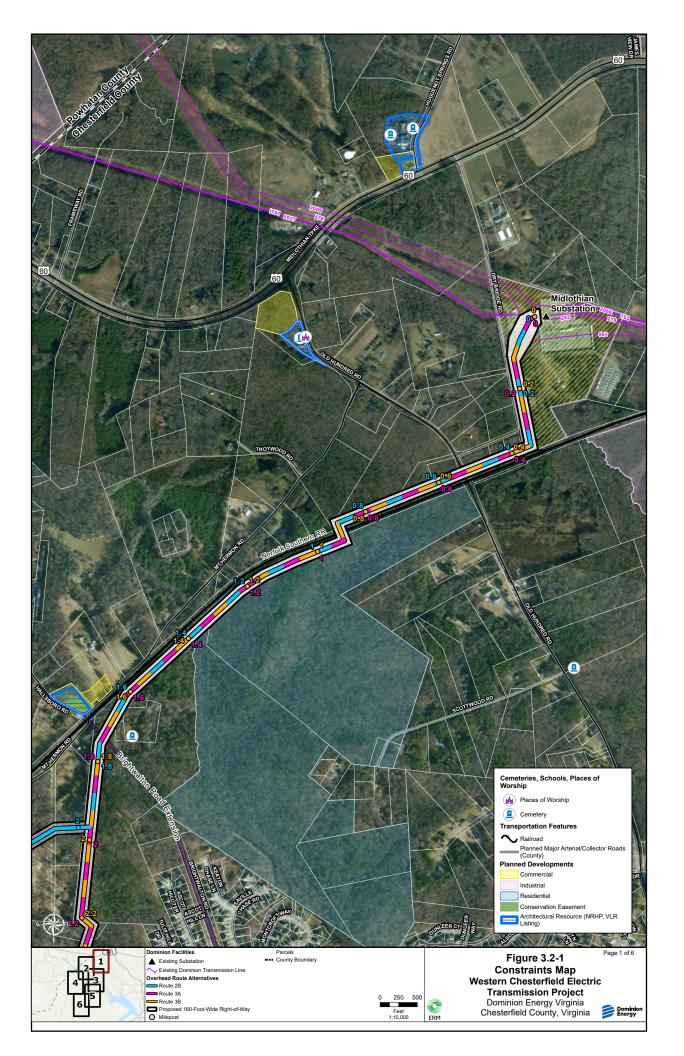
APPENDIX A FIGURES

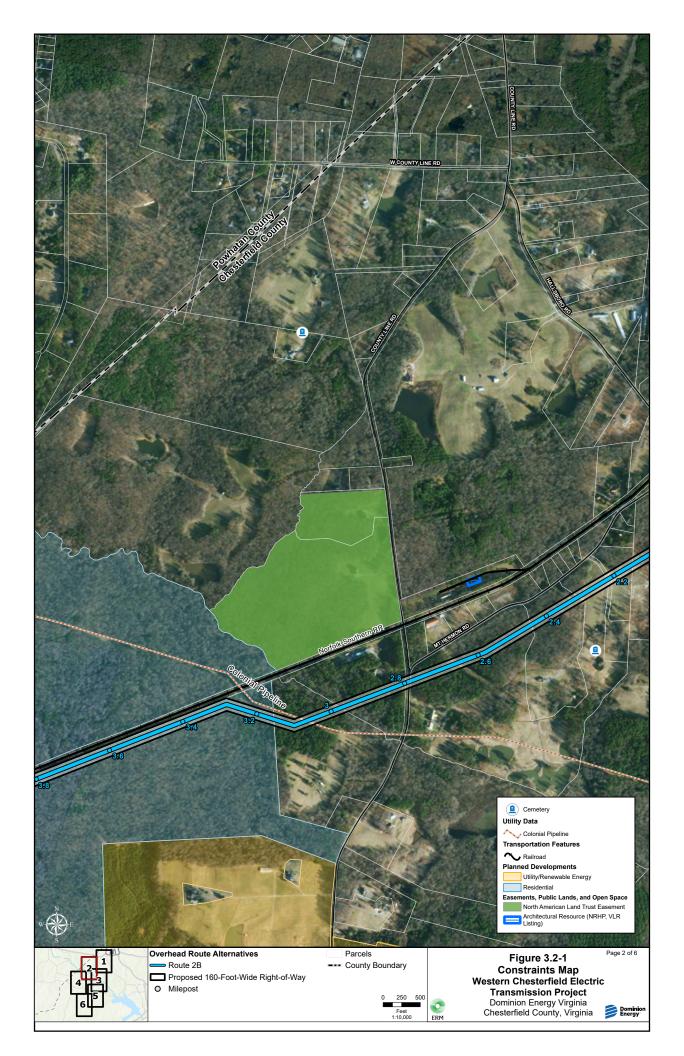




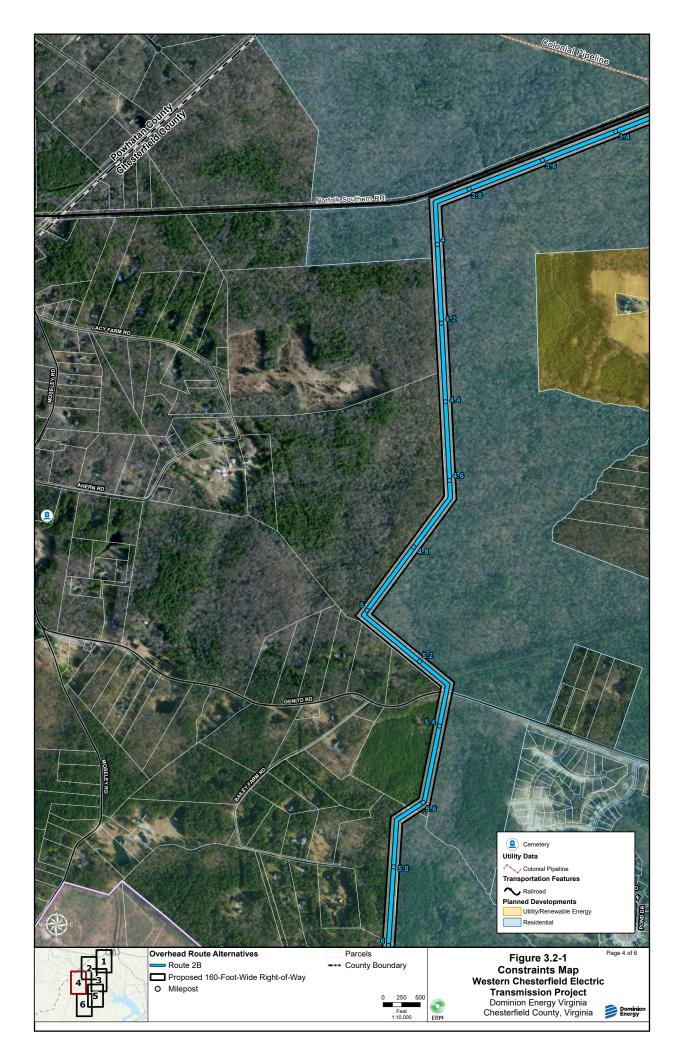


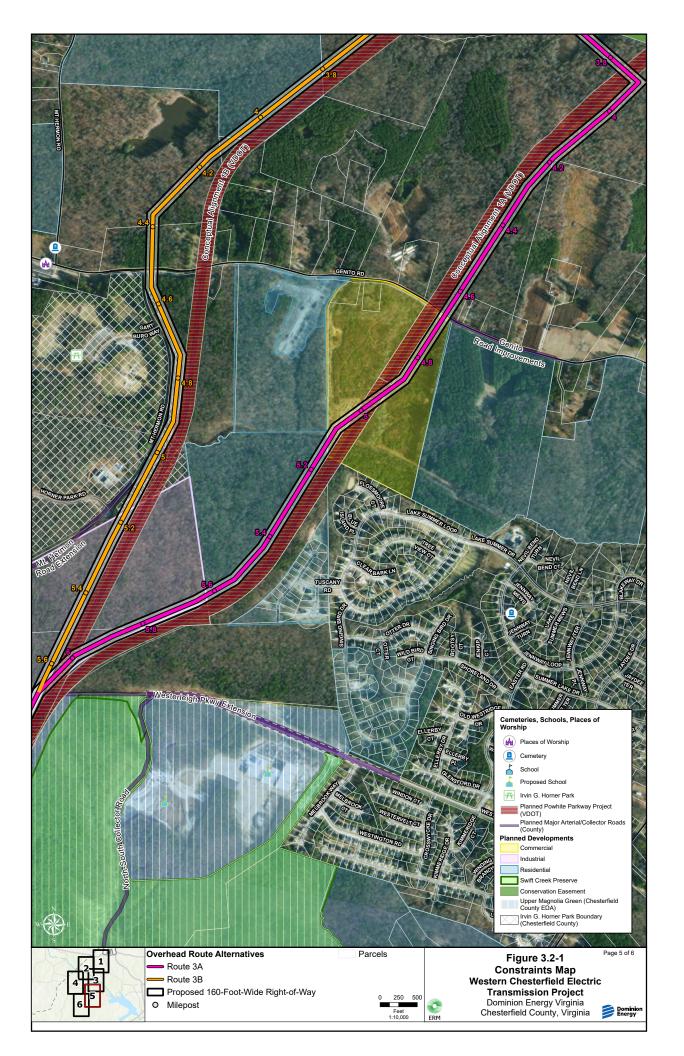


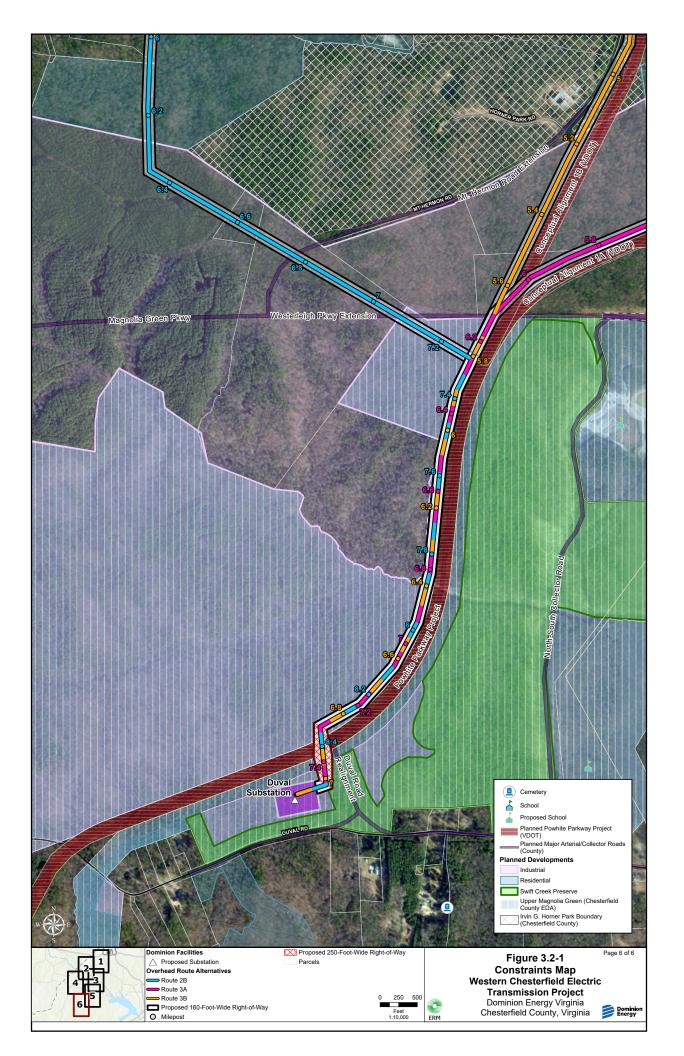




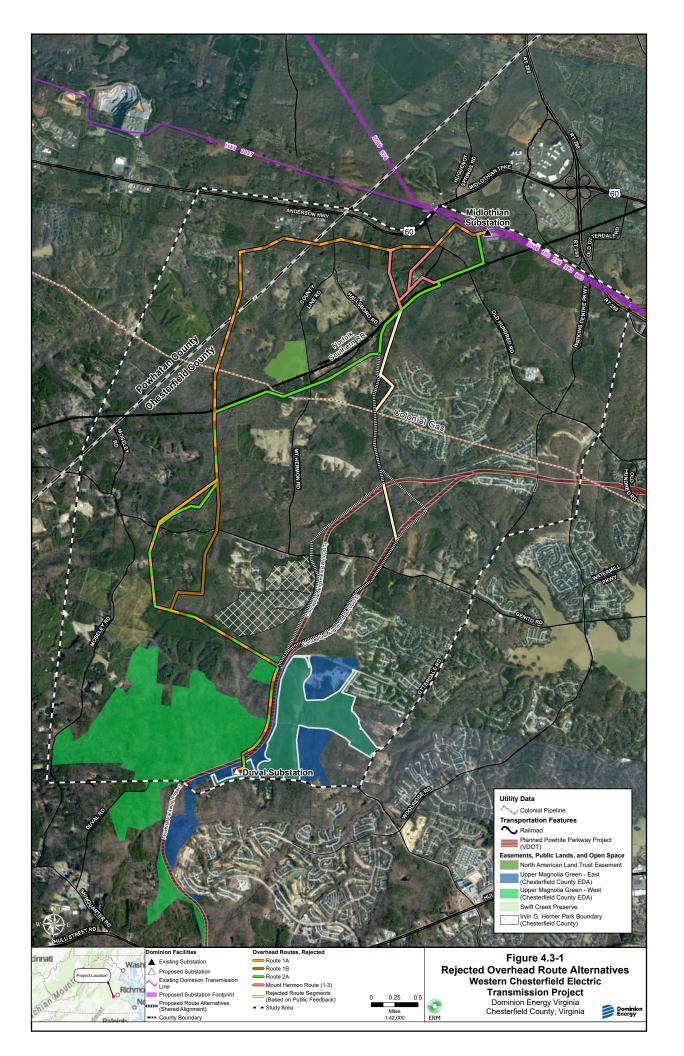


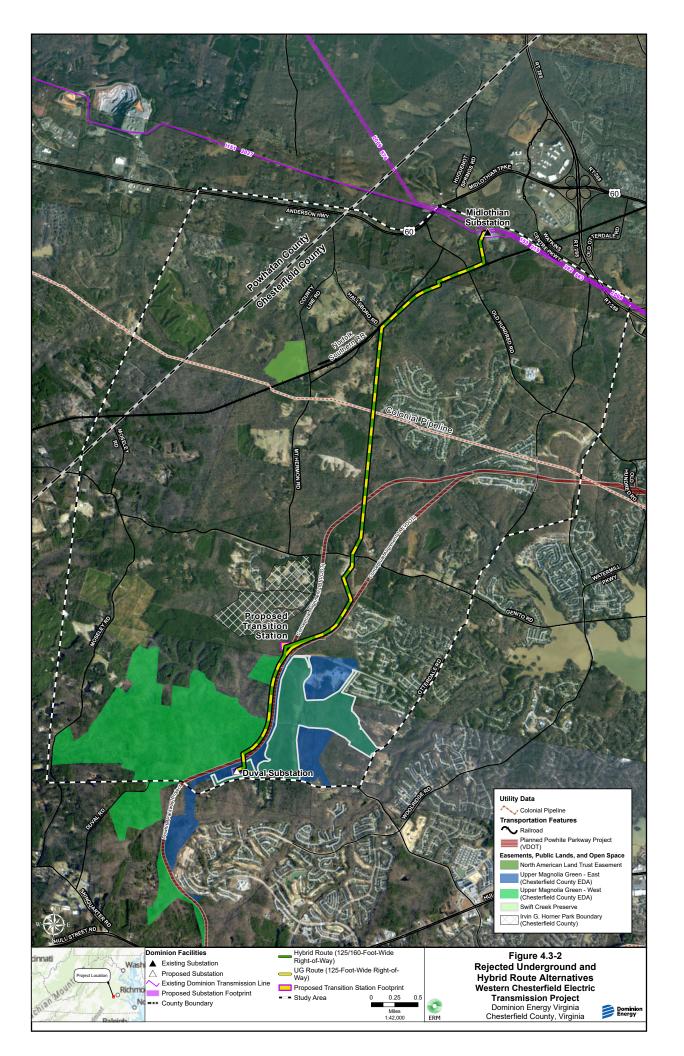


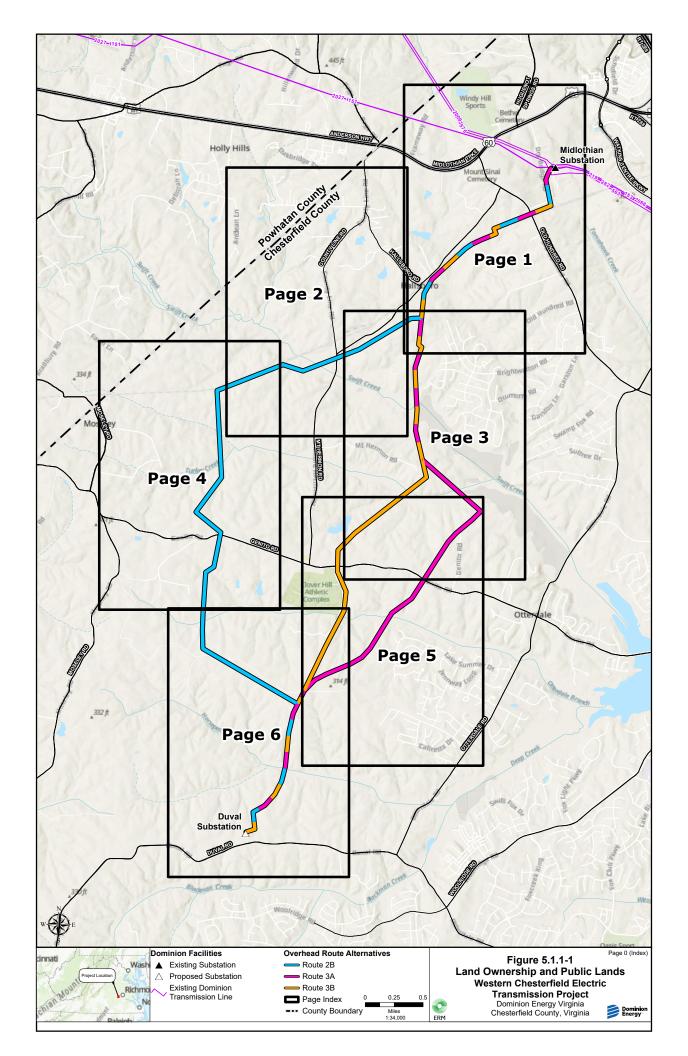


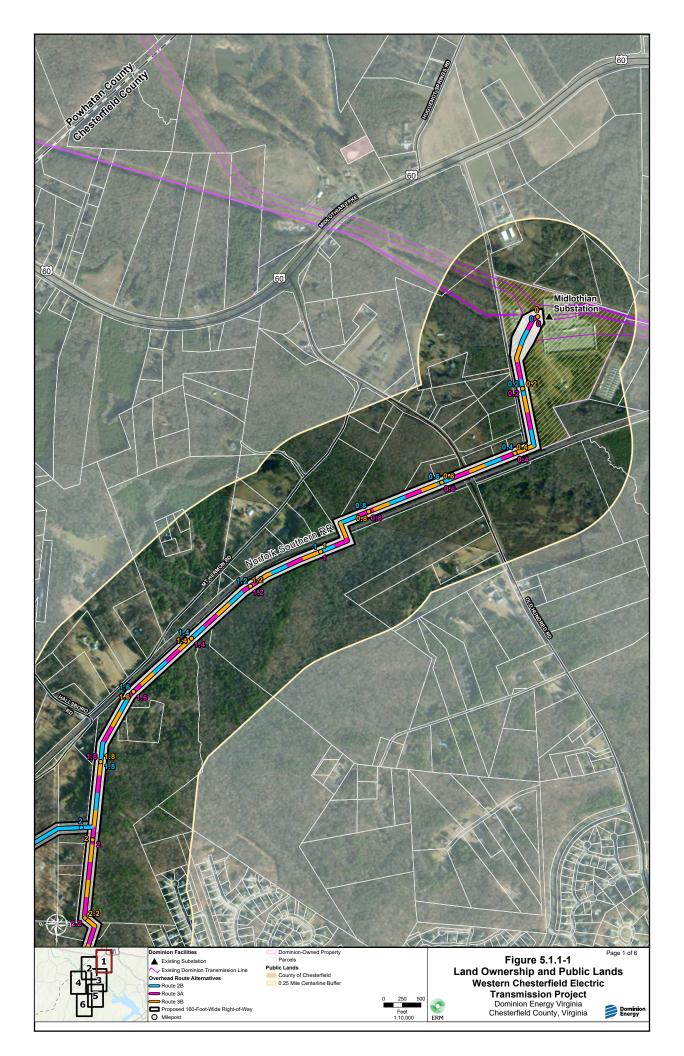




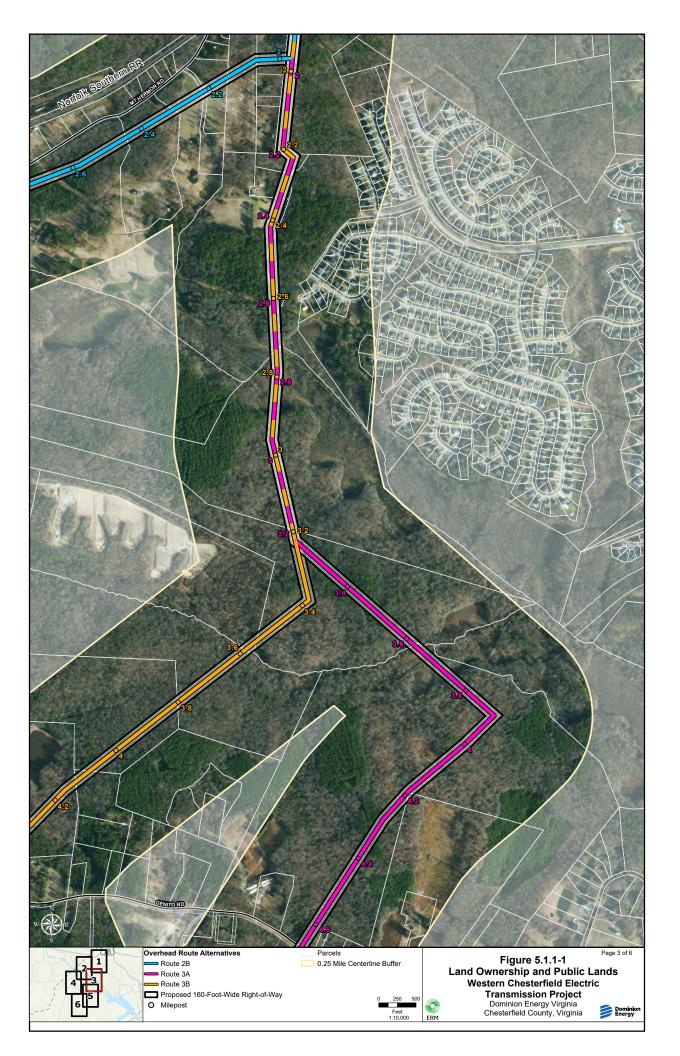


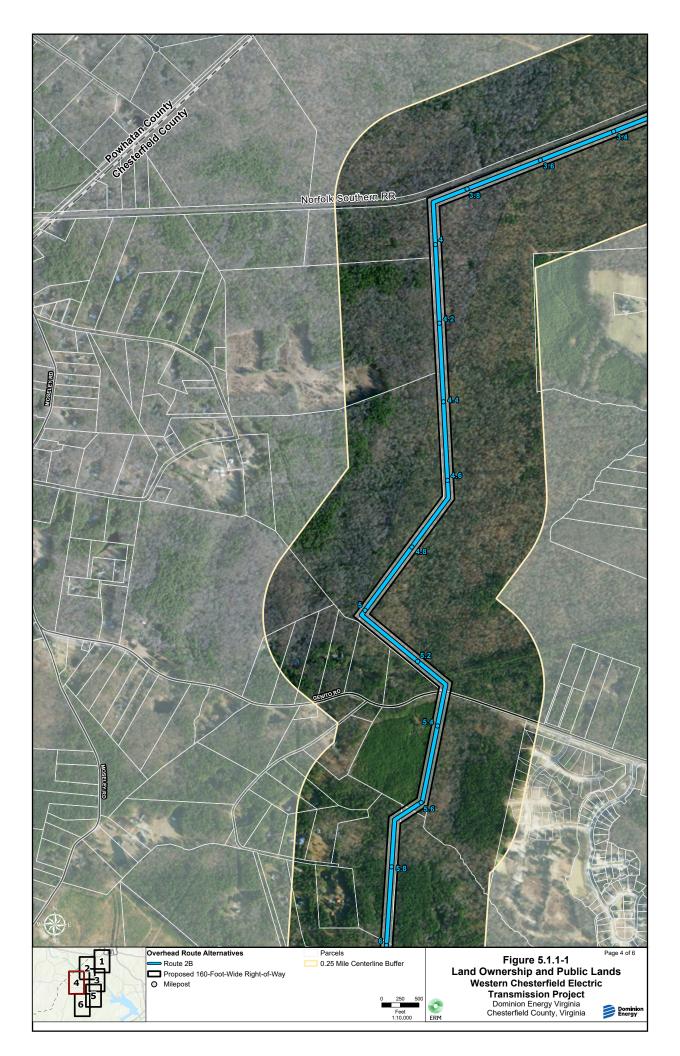


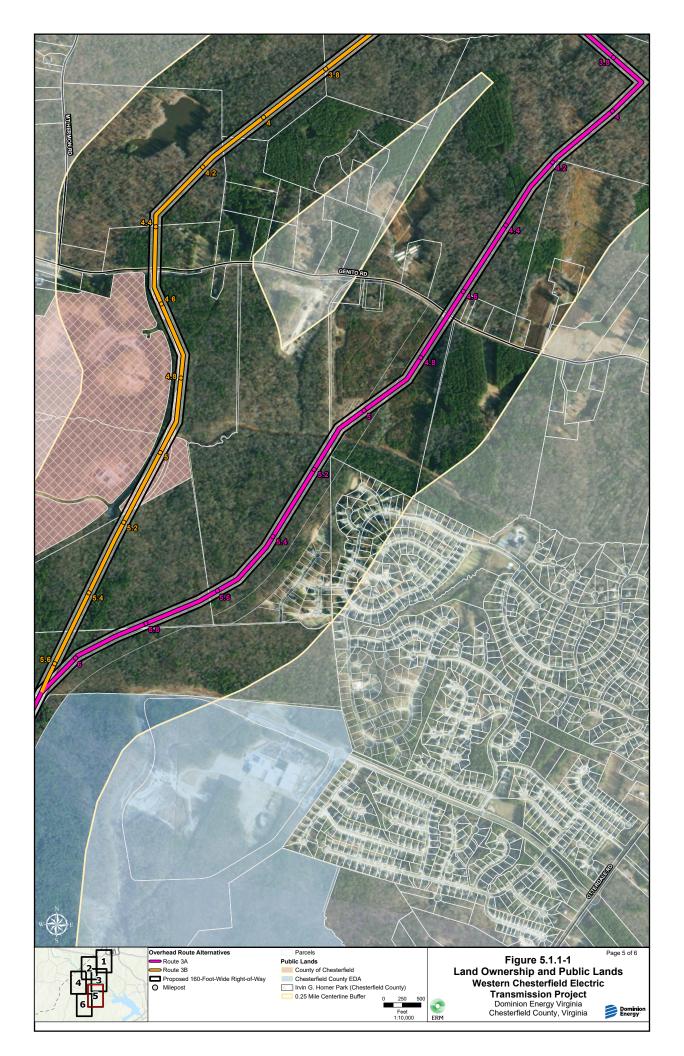


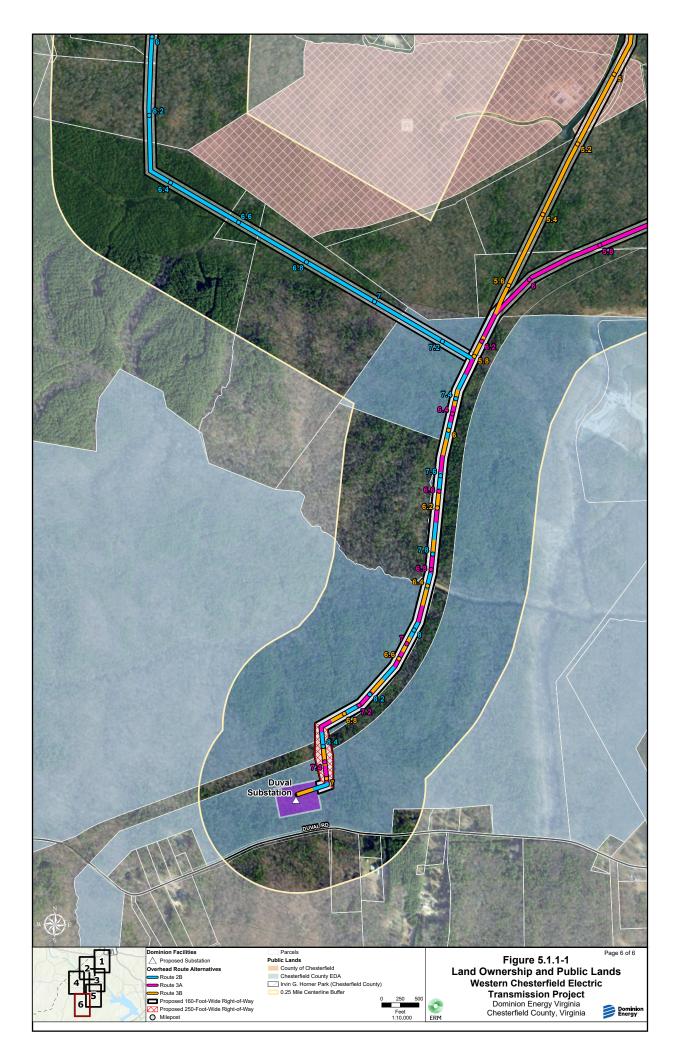


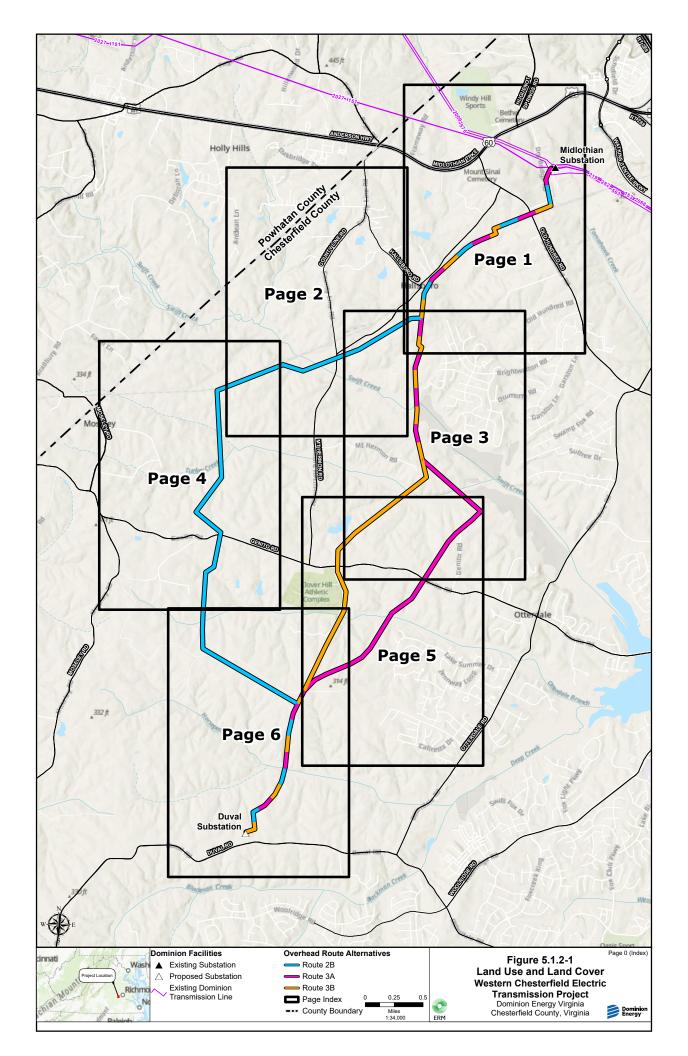


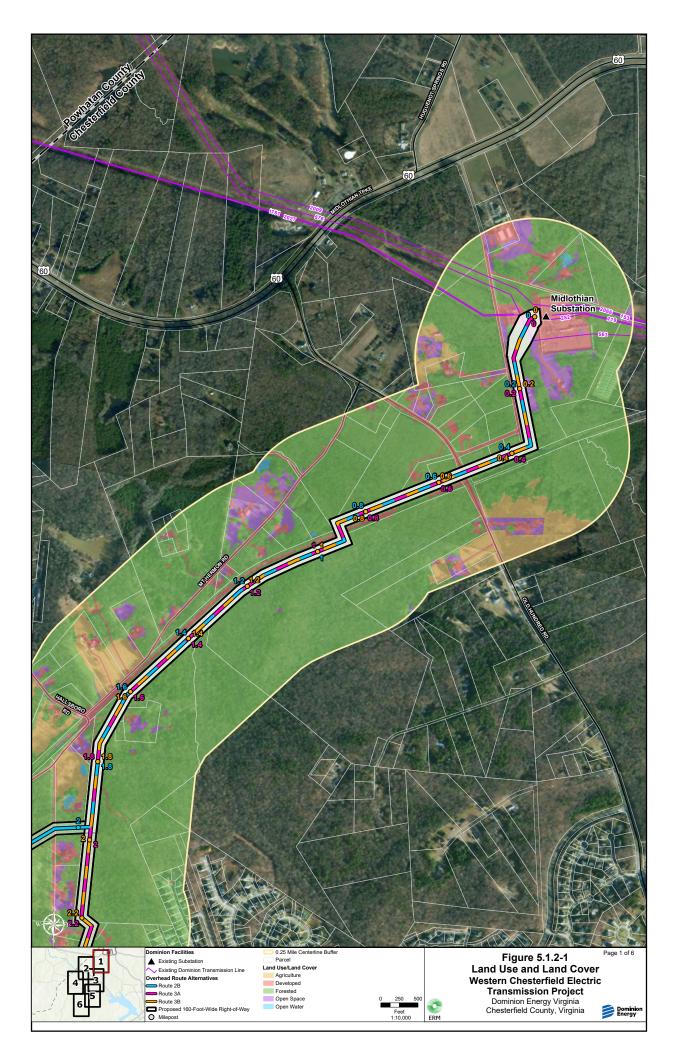












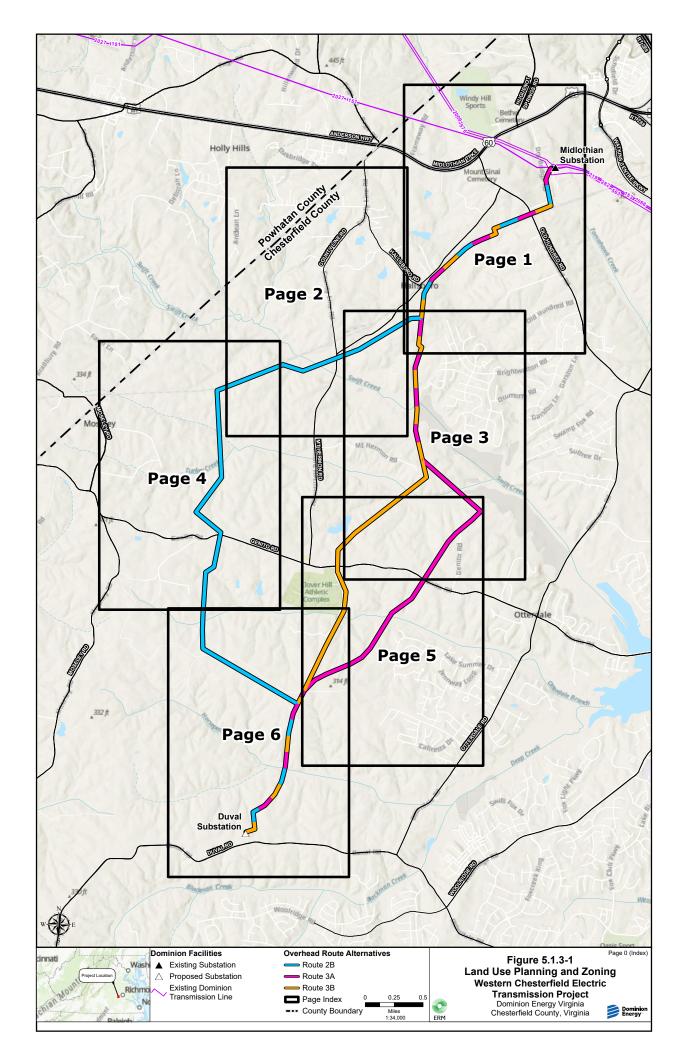








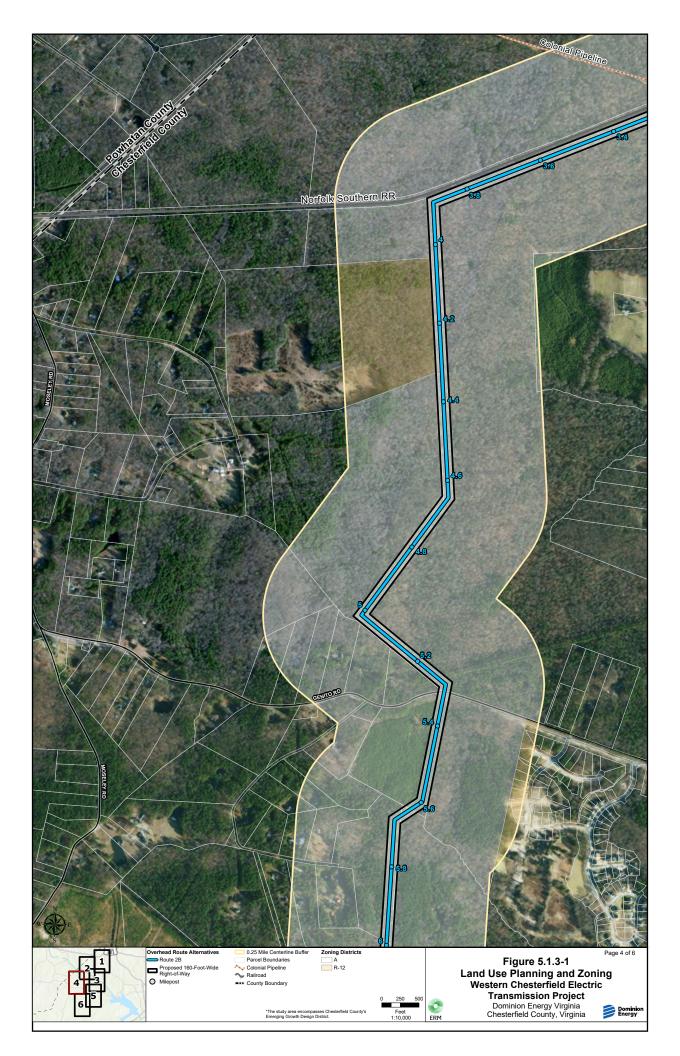






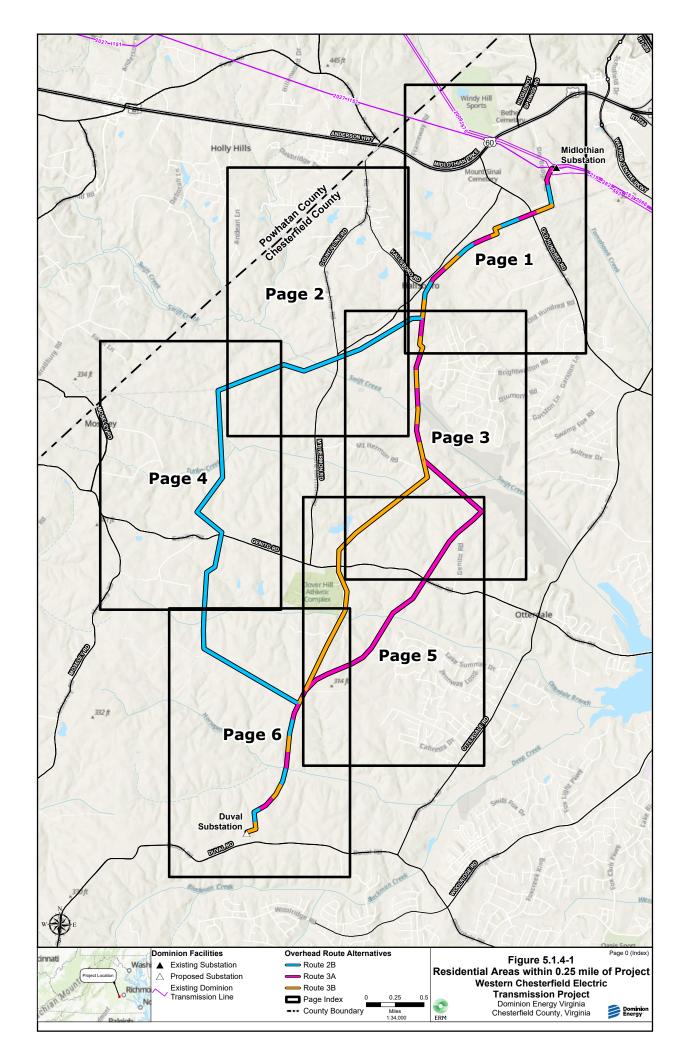


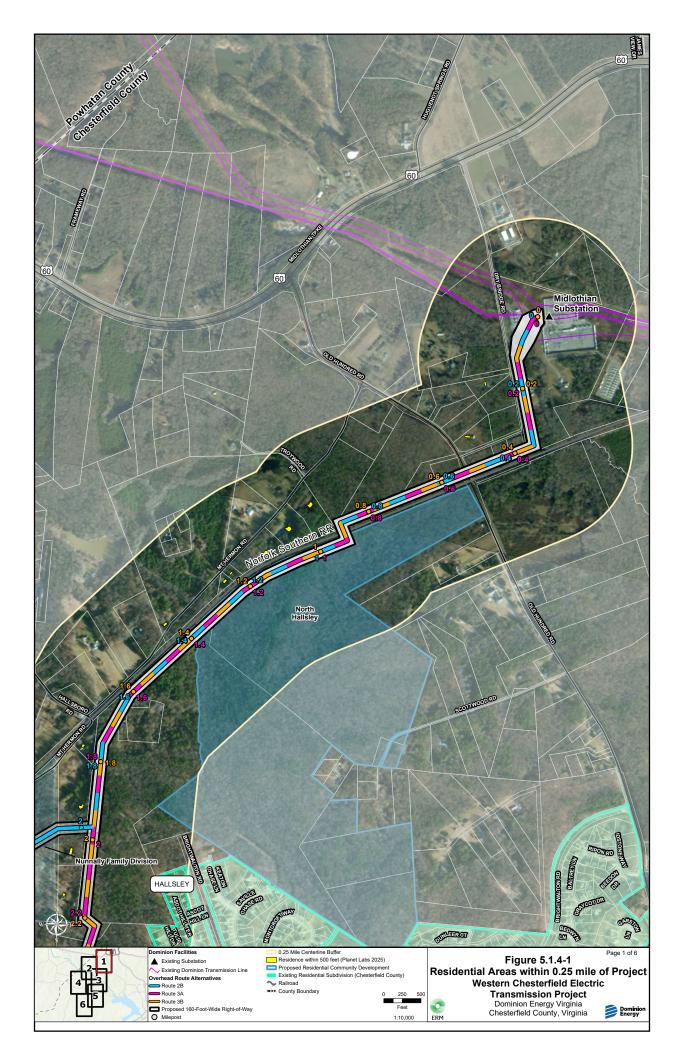


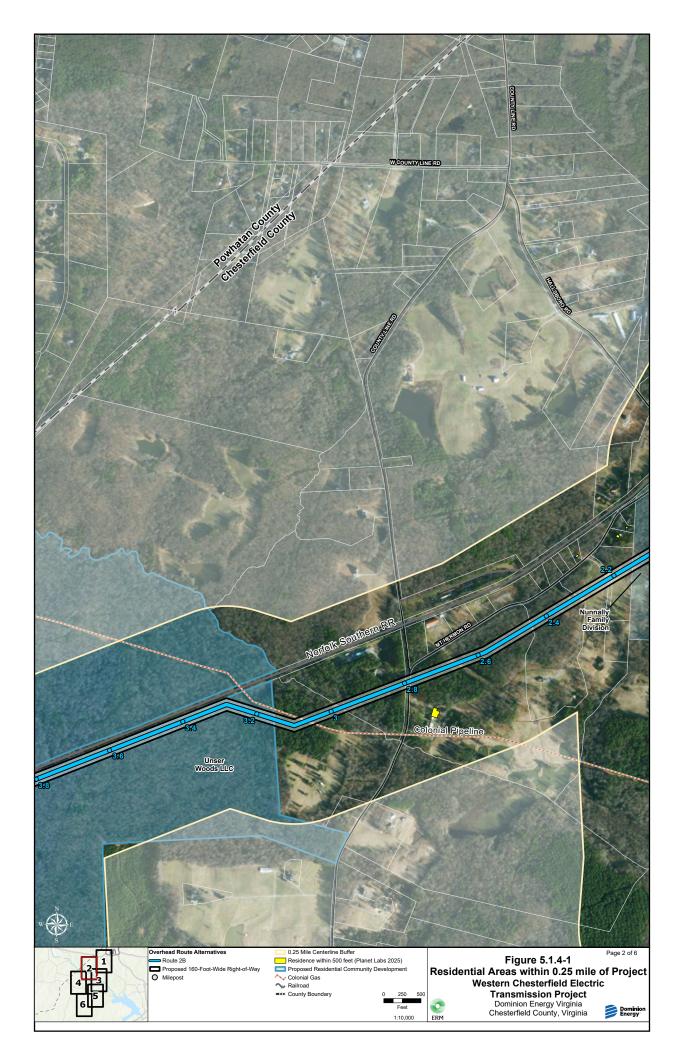


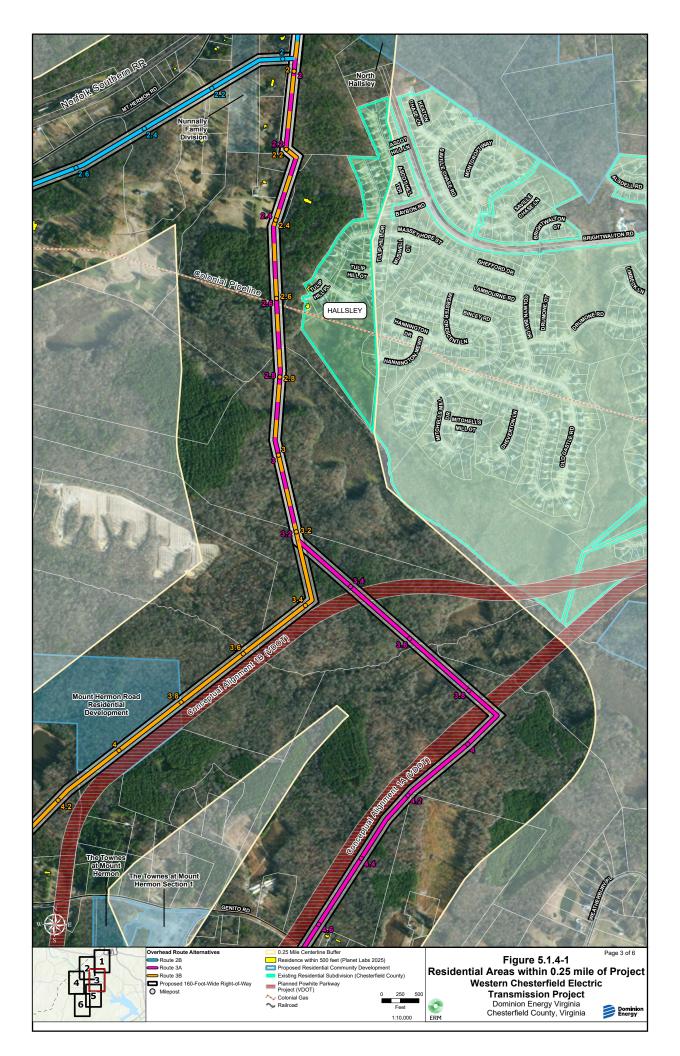


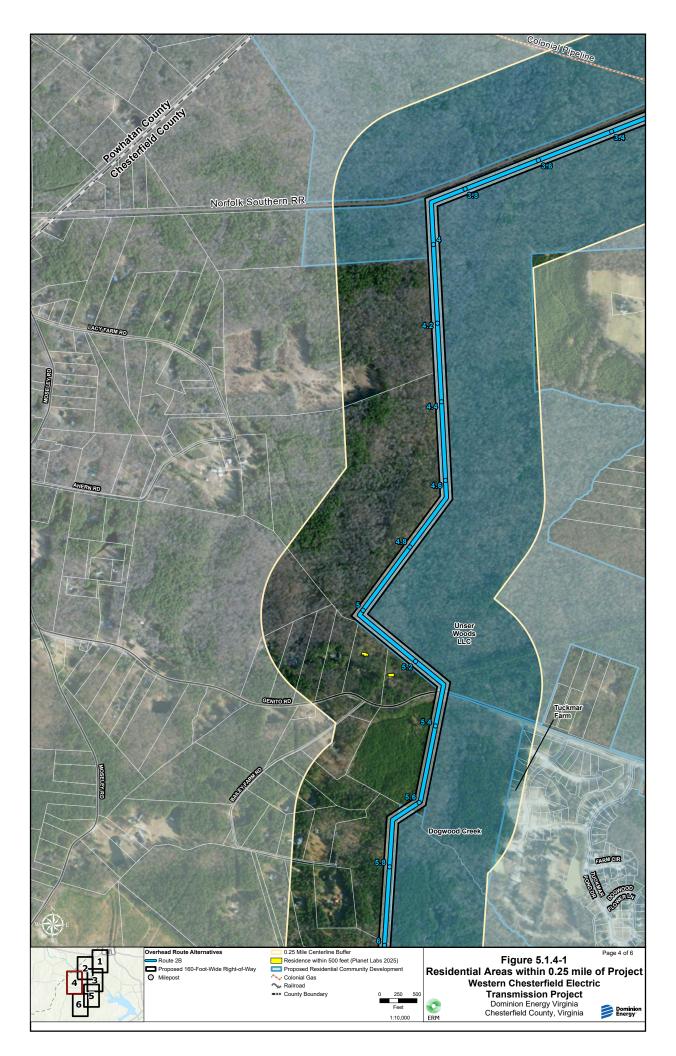




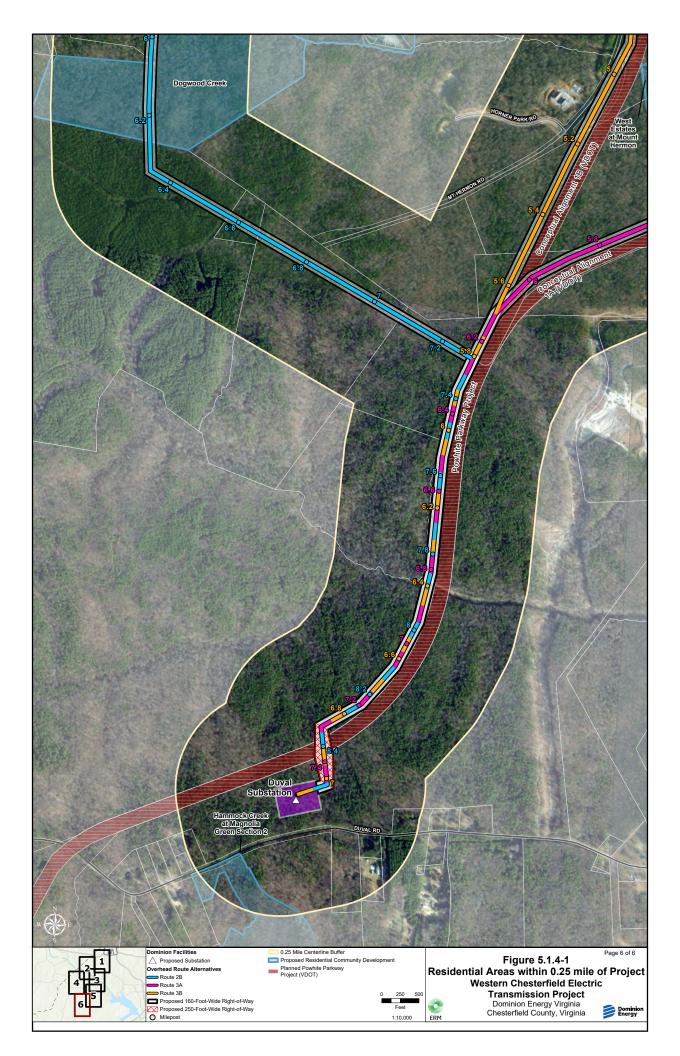


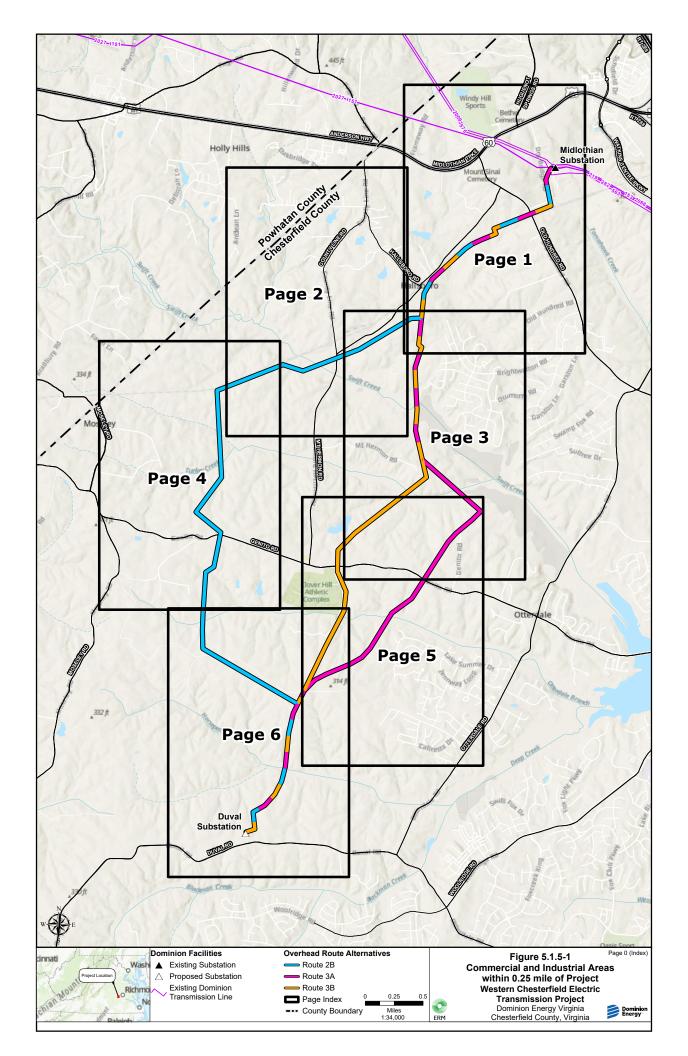


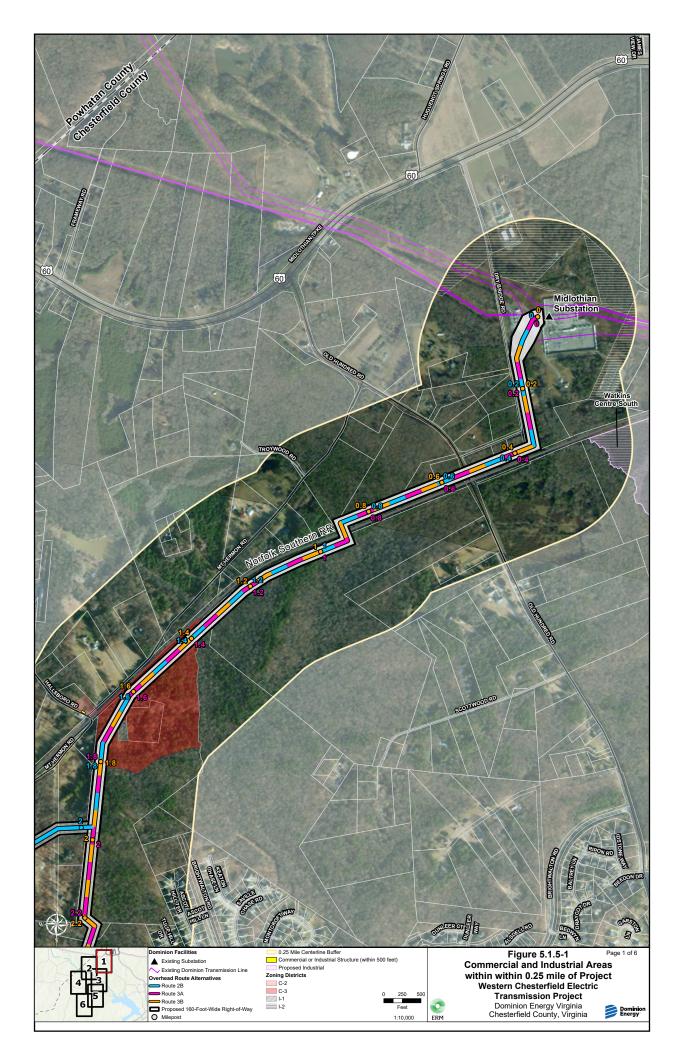


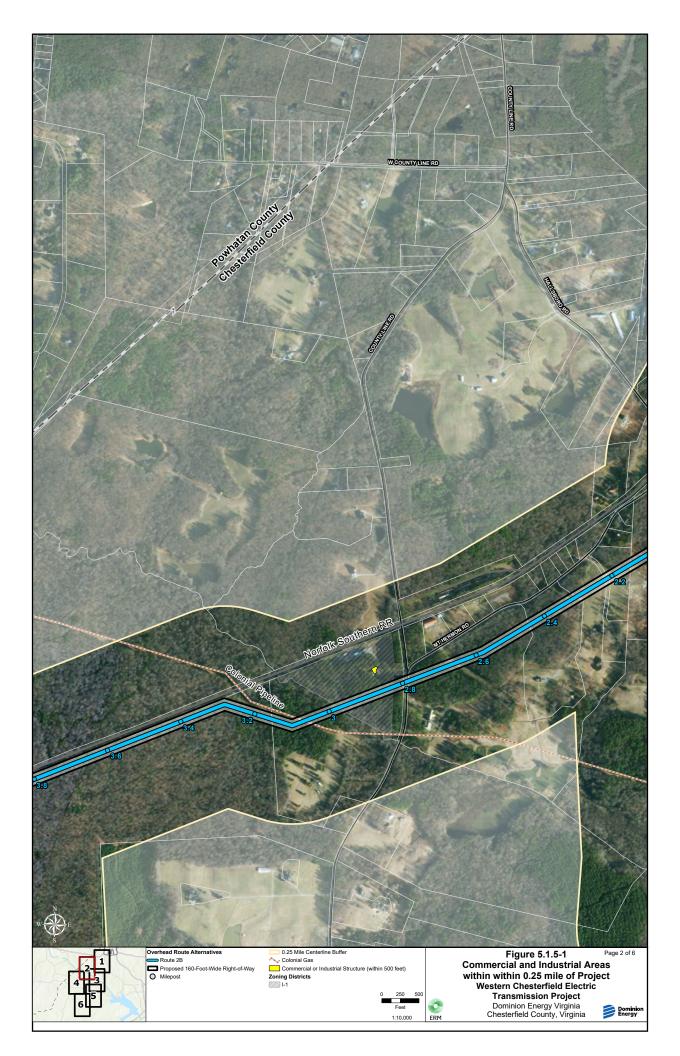




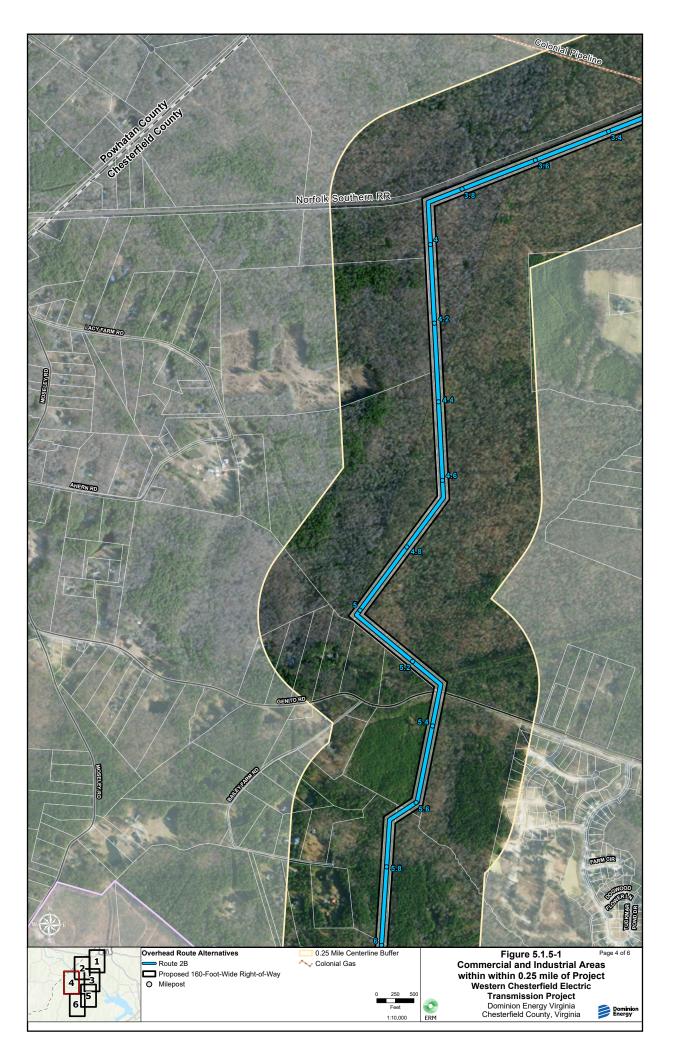




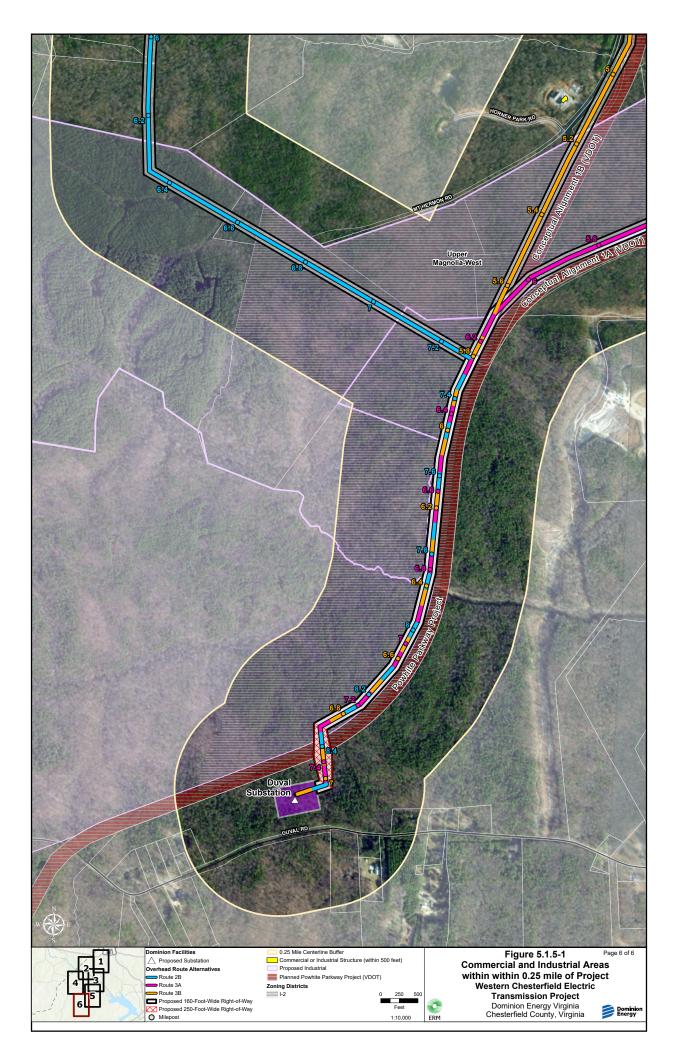


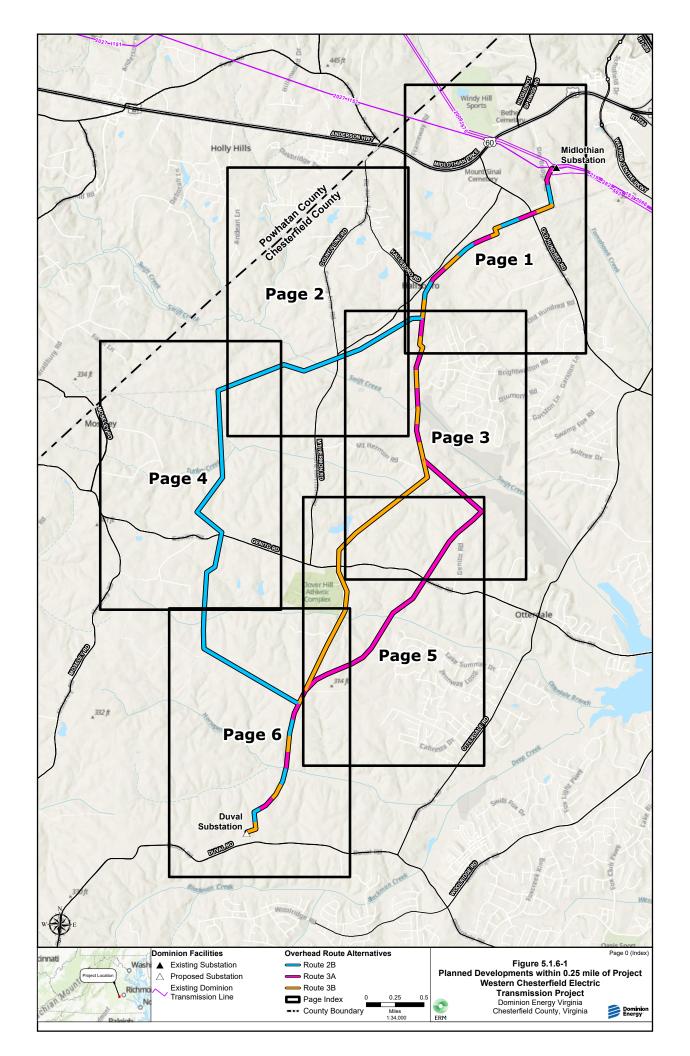


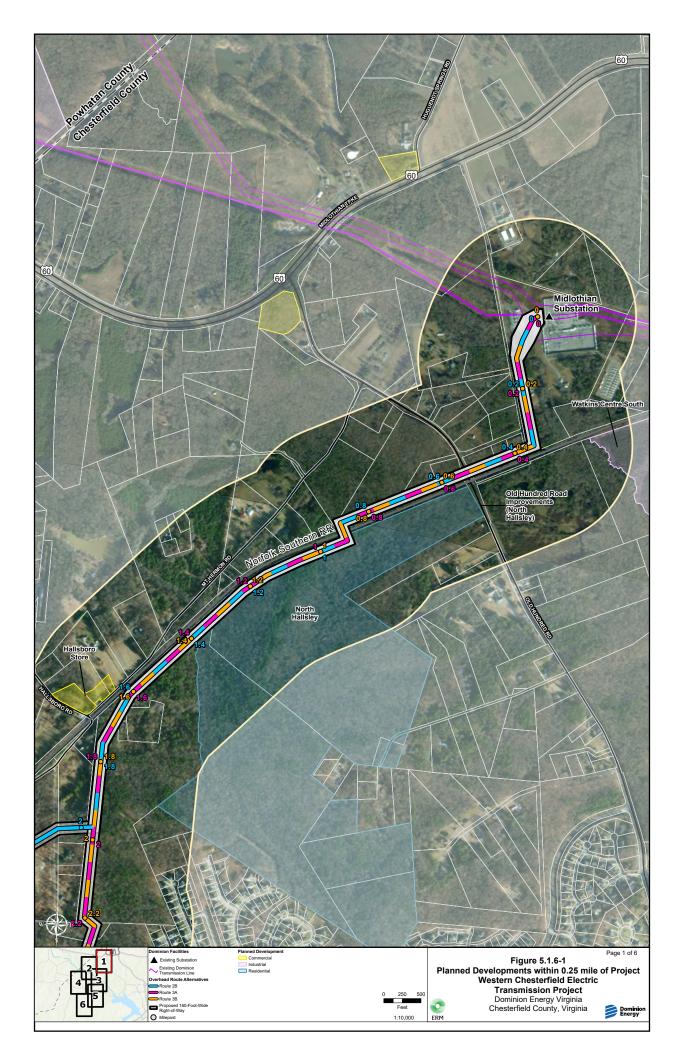




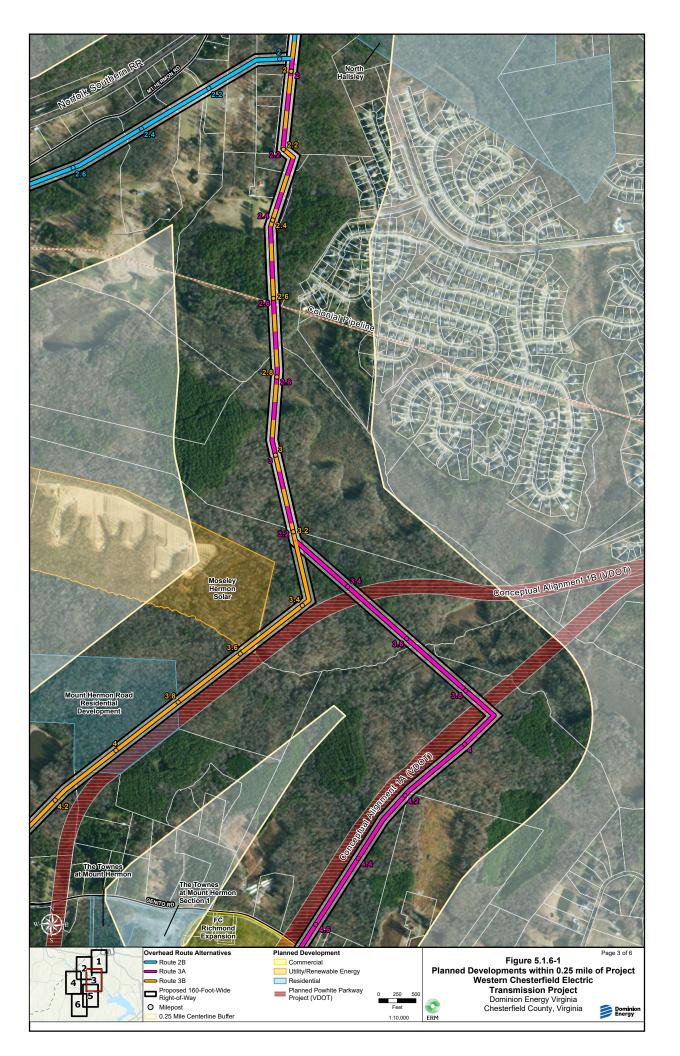


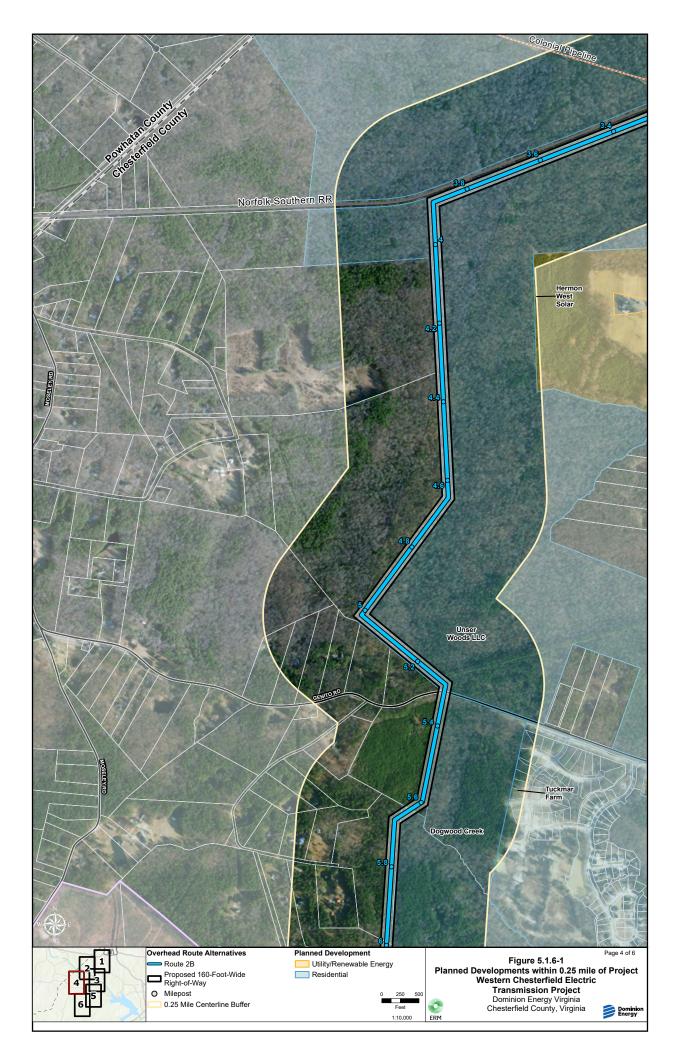


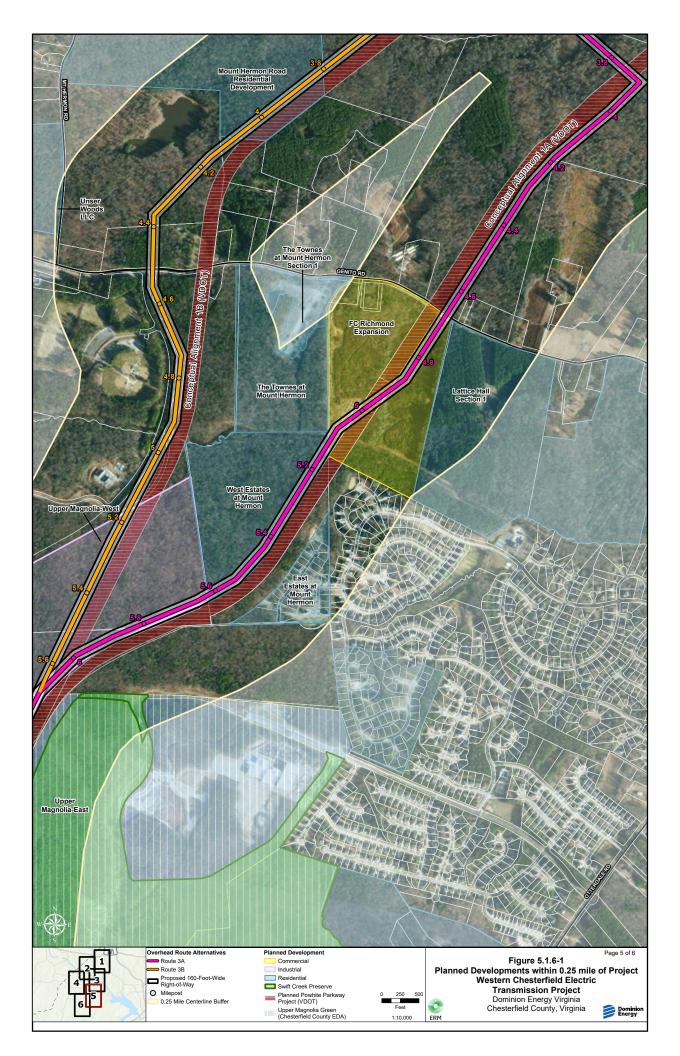


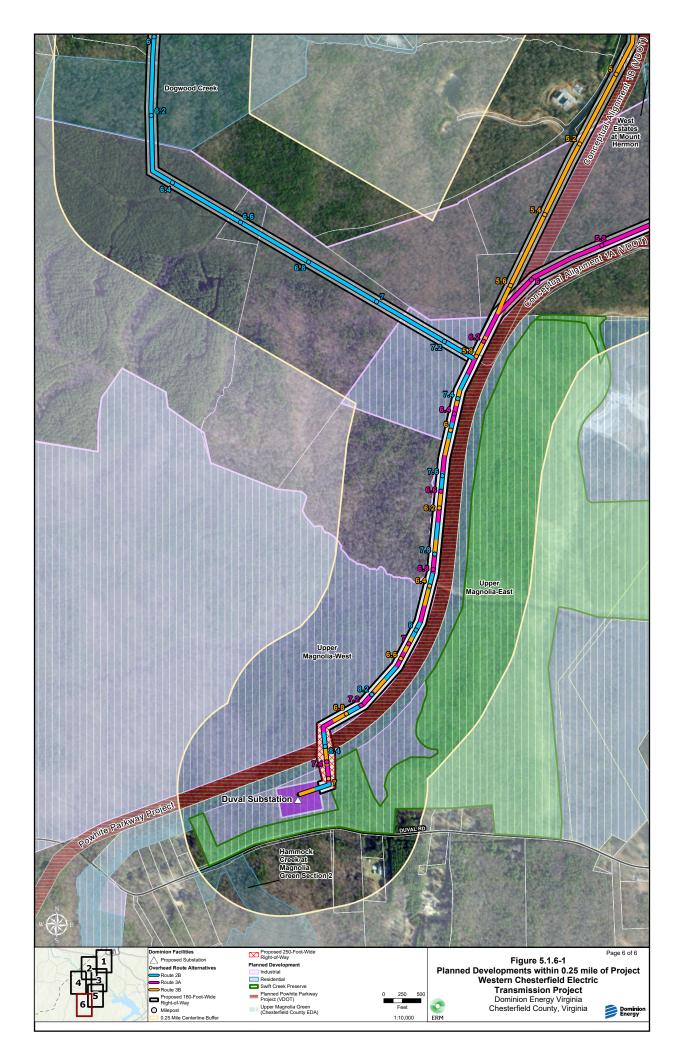


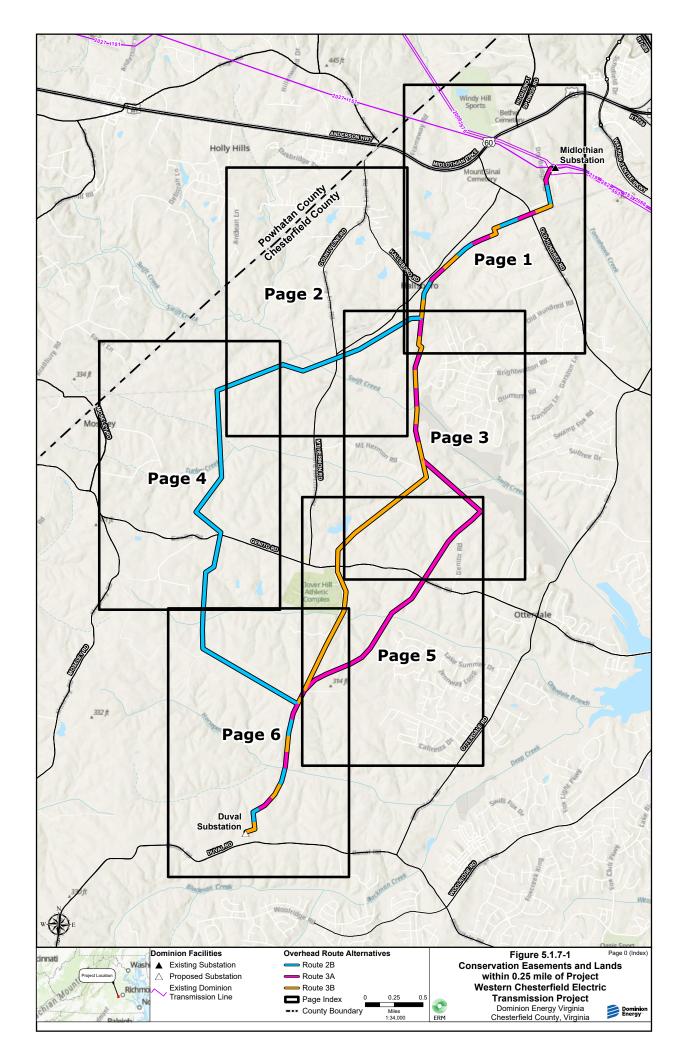


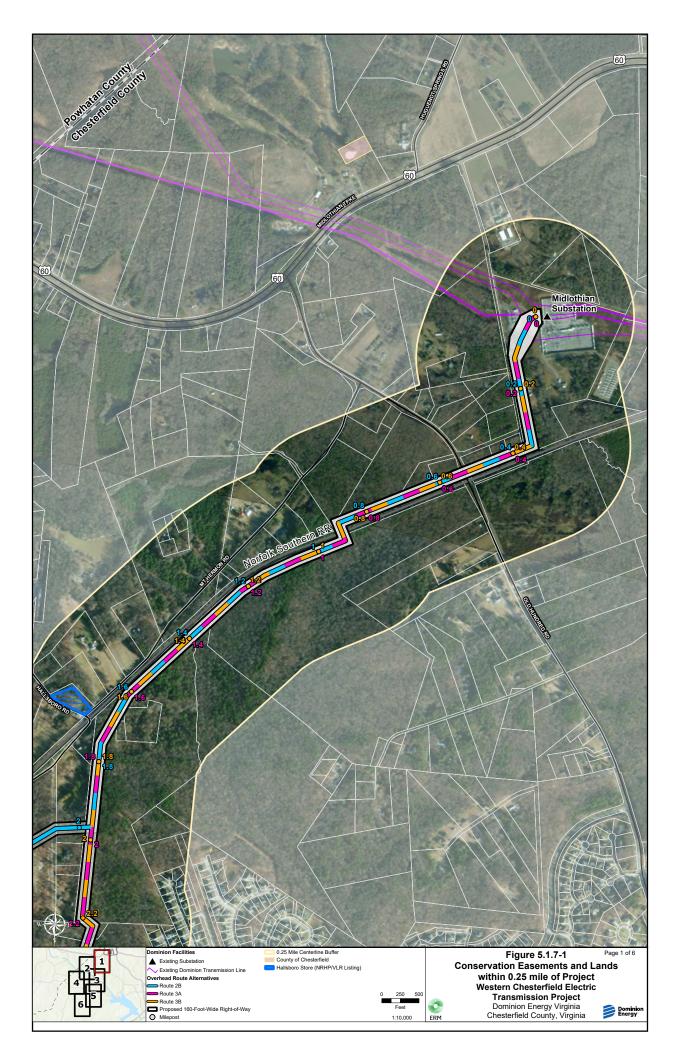






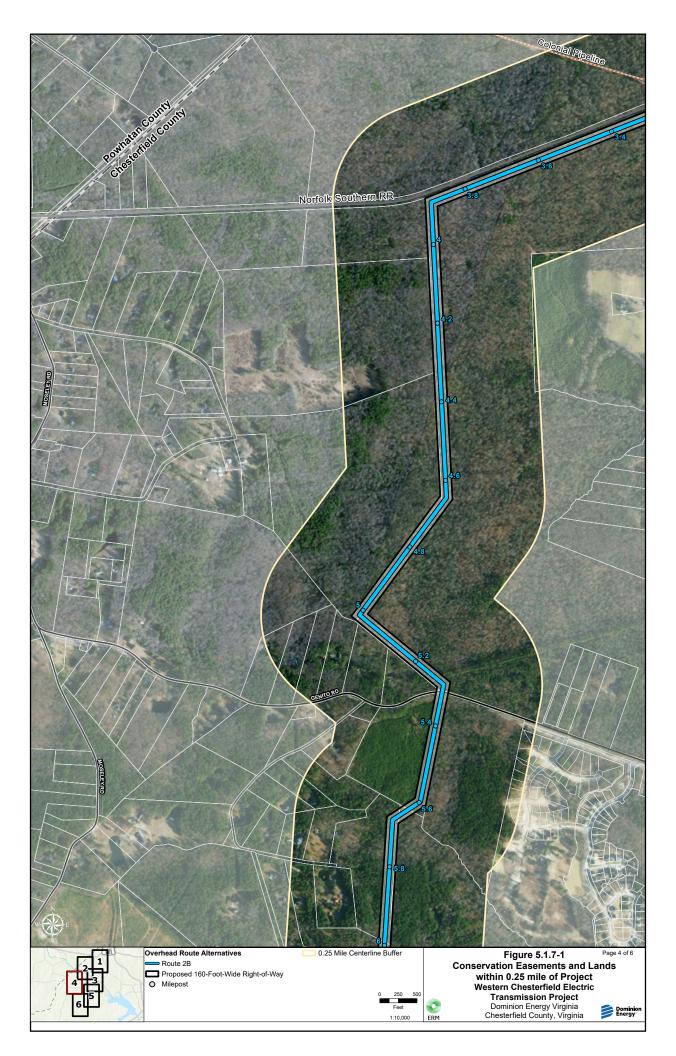


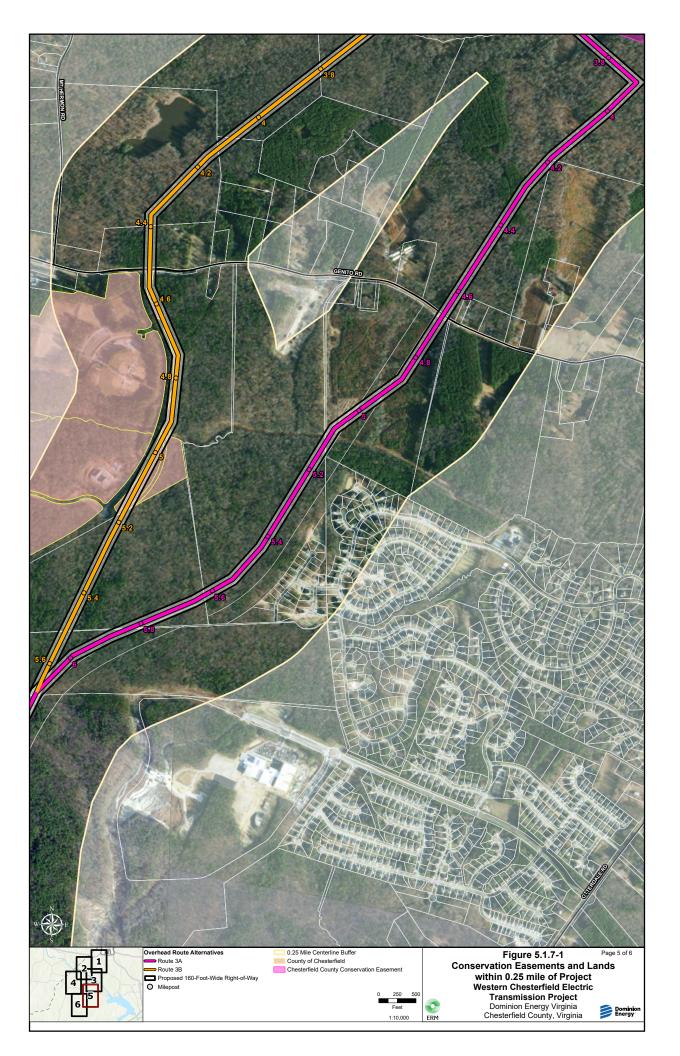


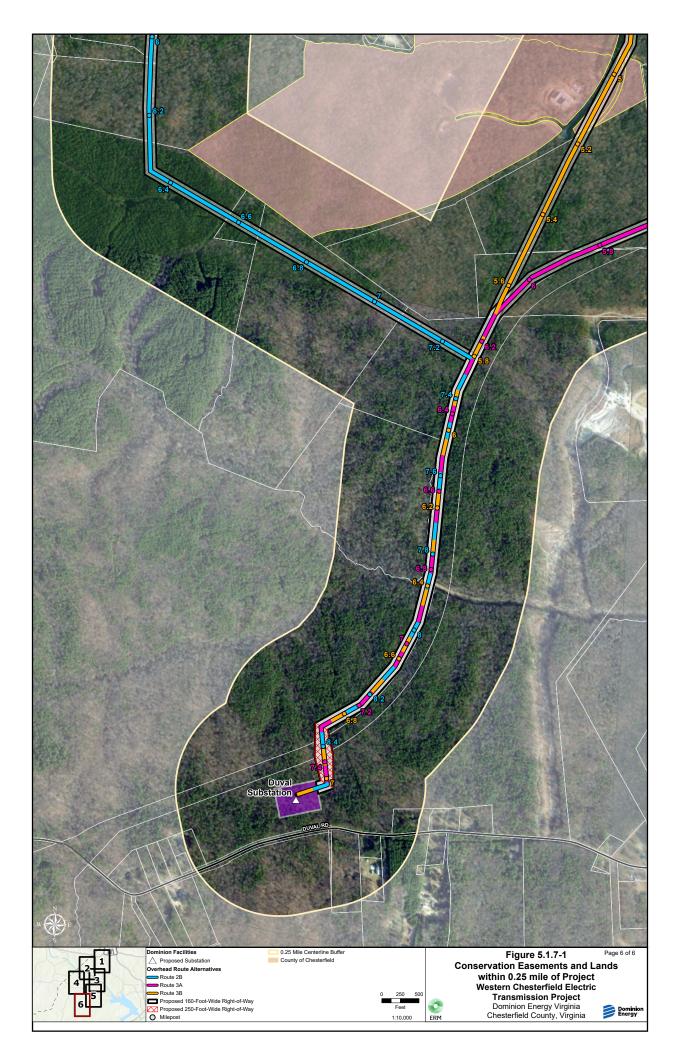


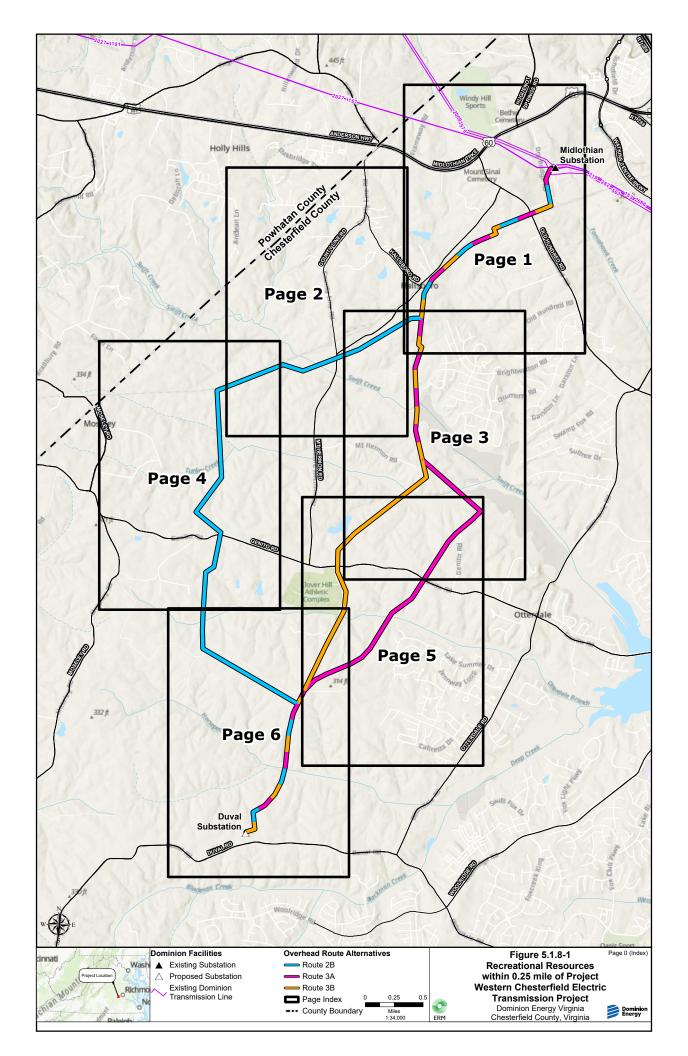


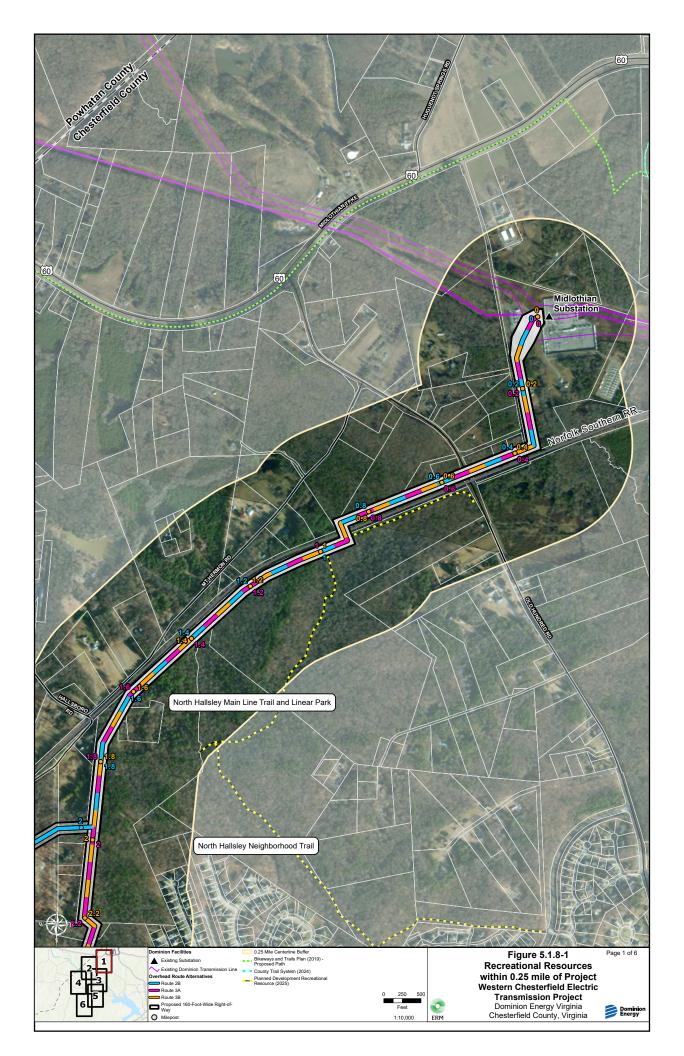


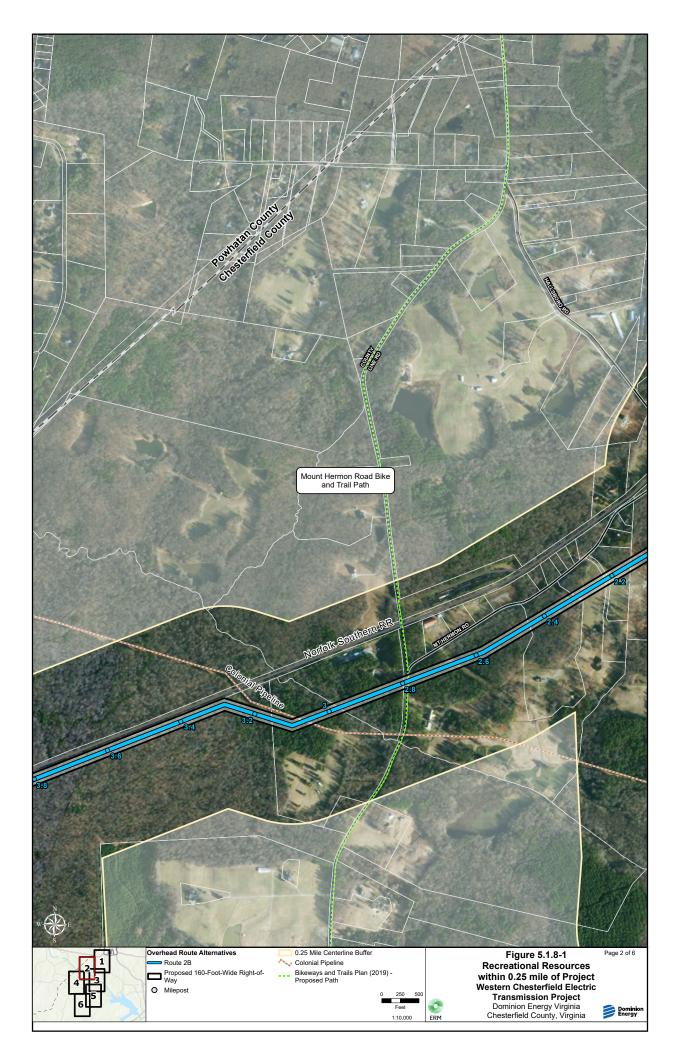


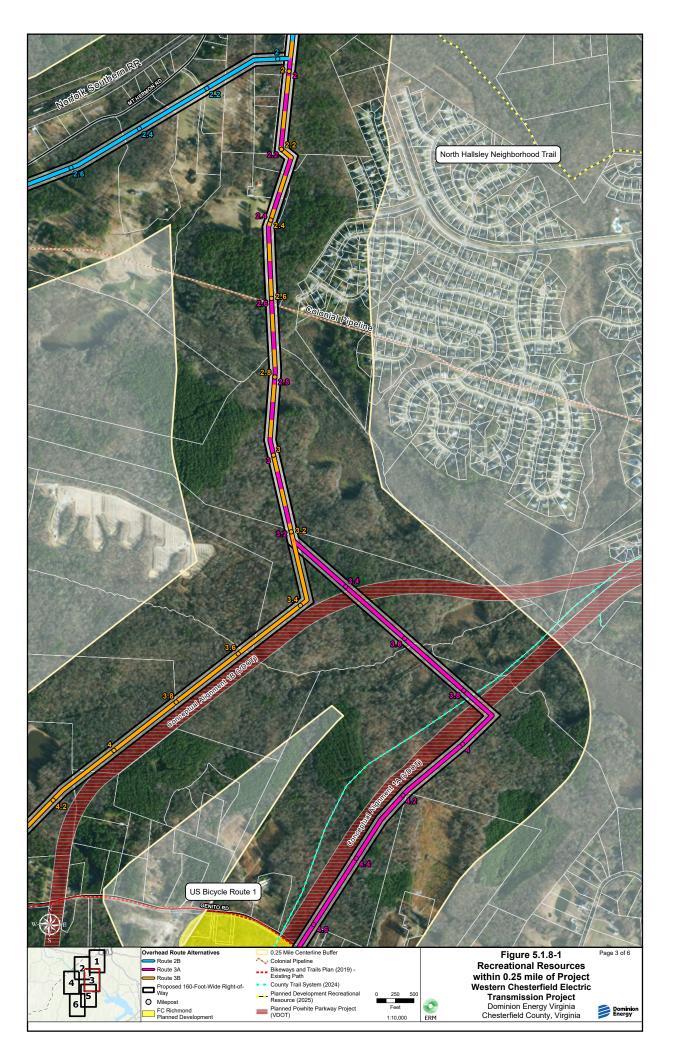


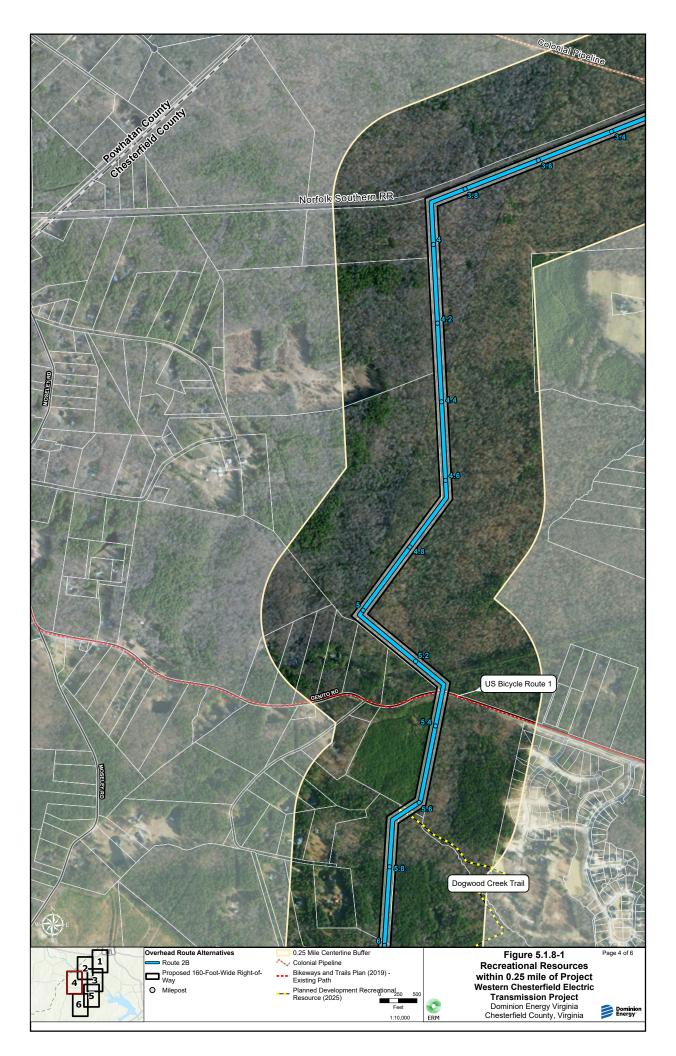


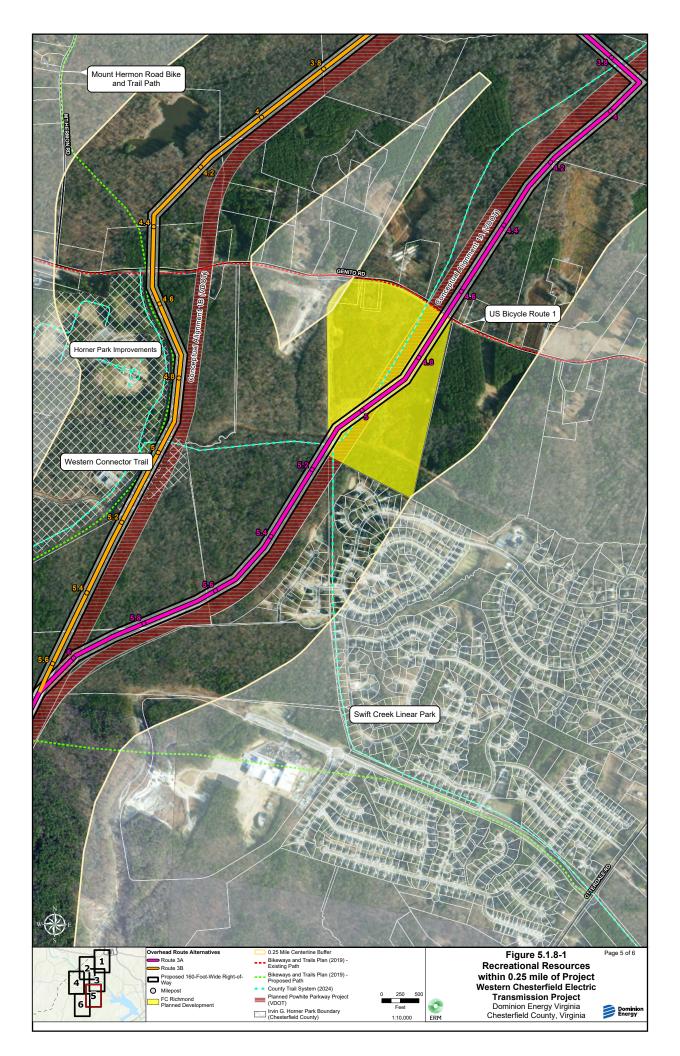


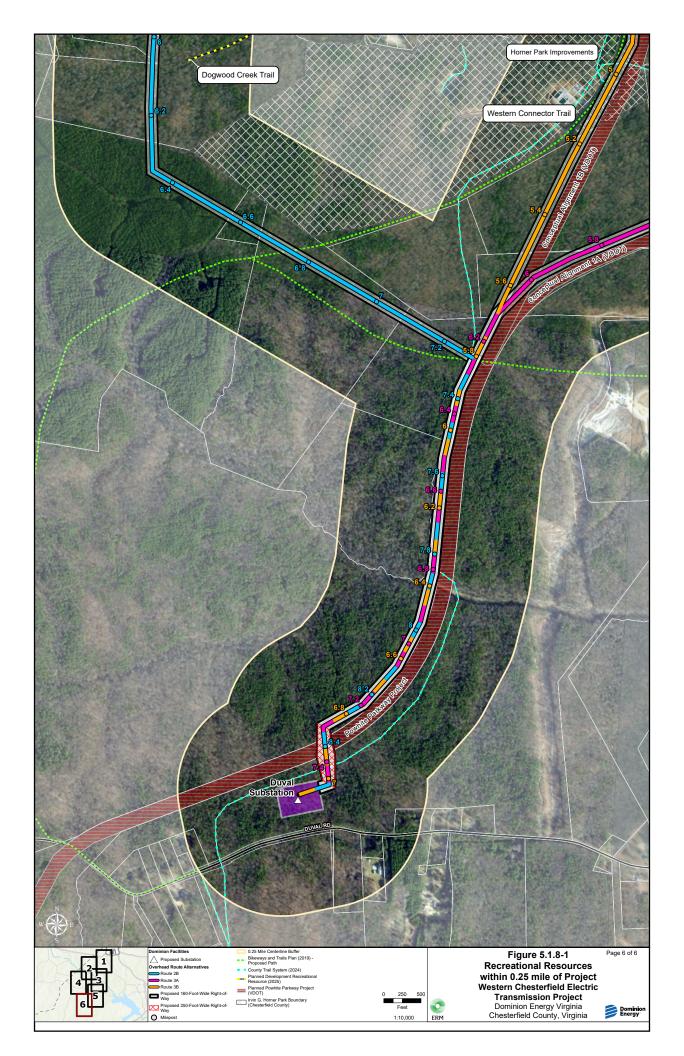


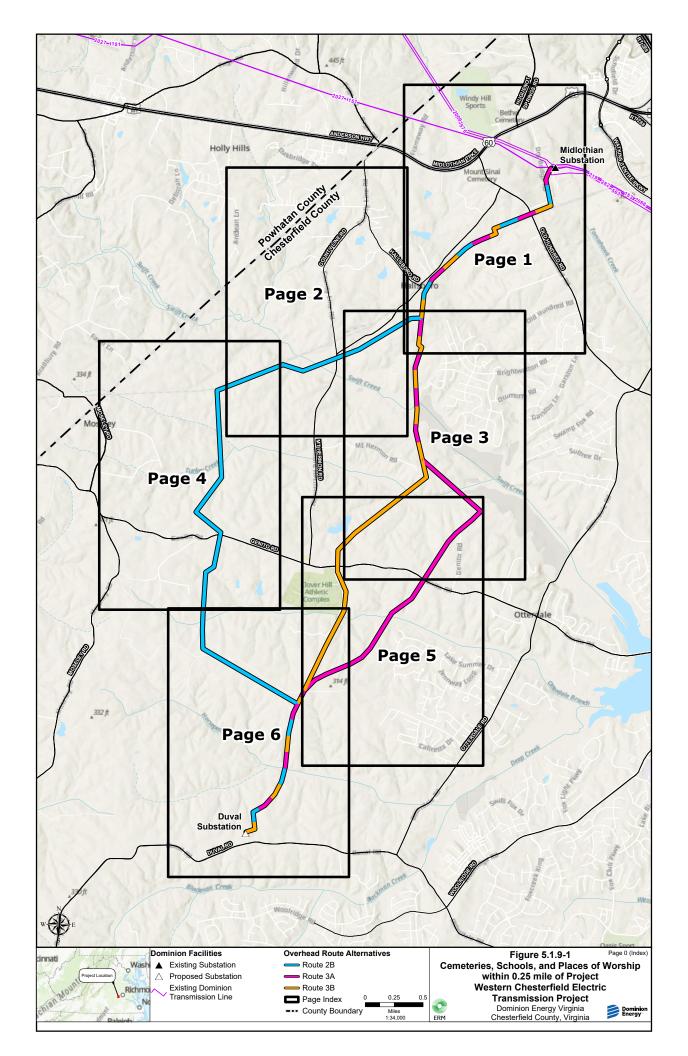




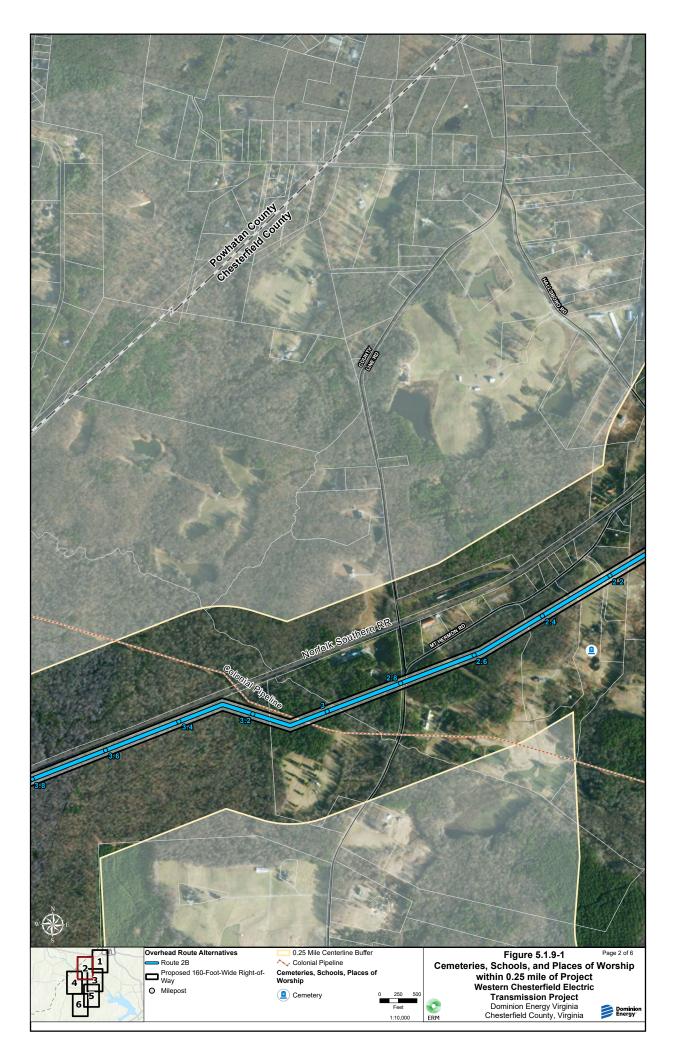




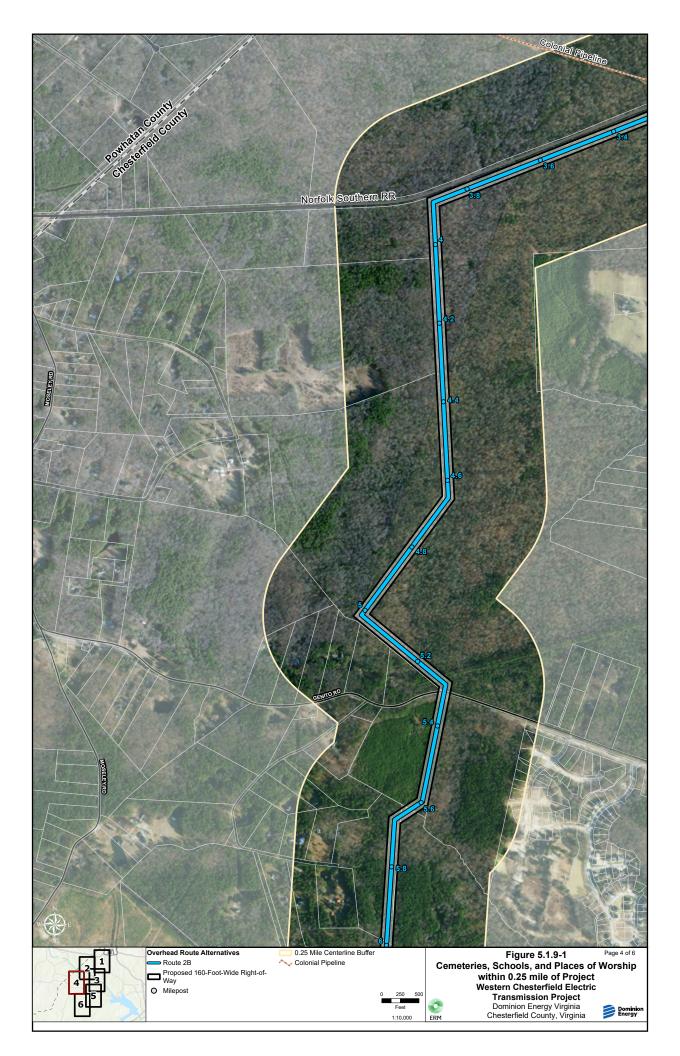


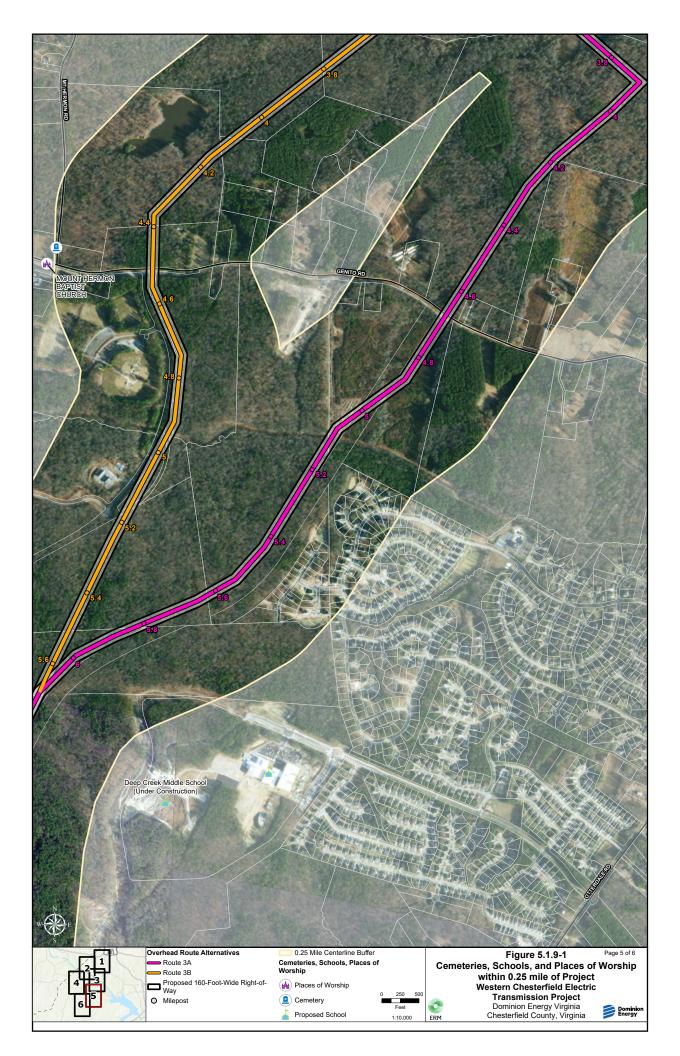


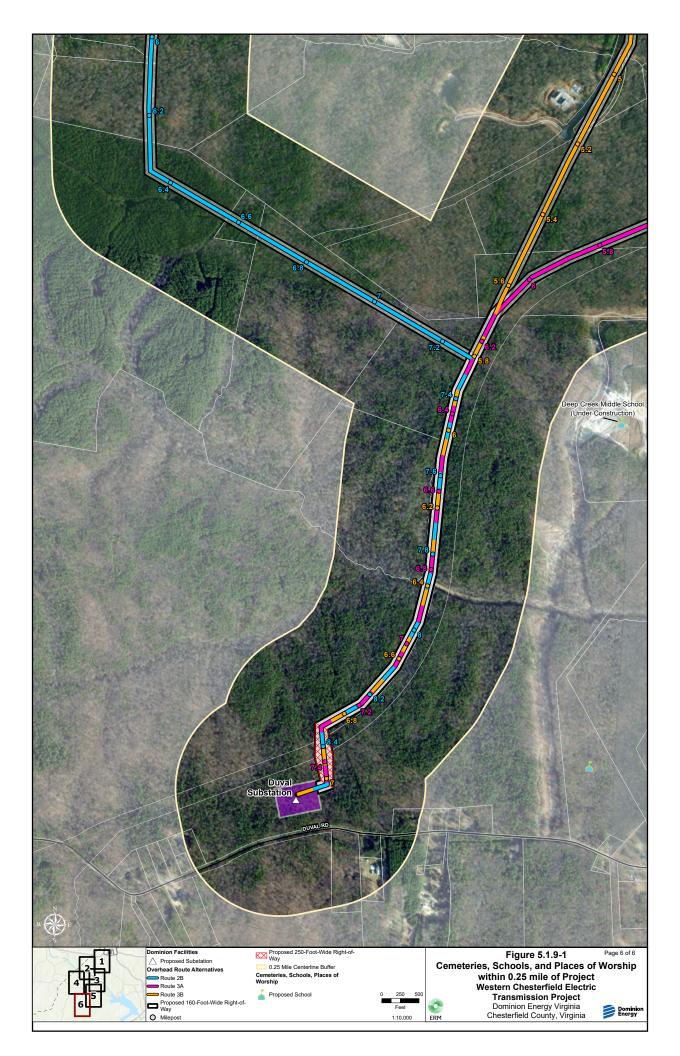


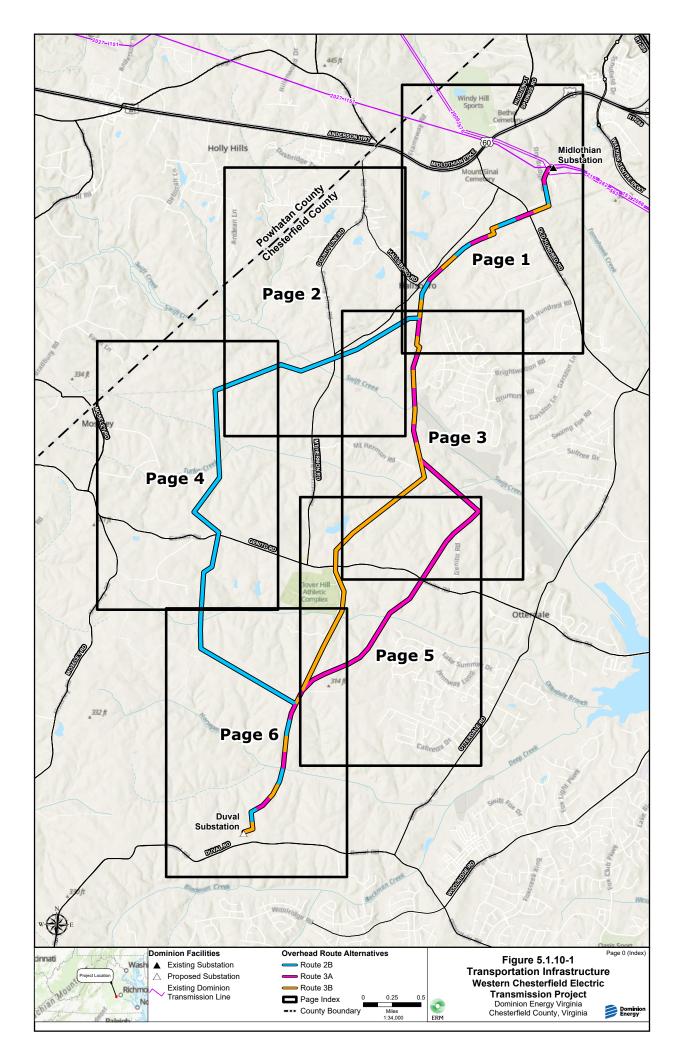




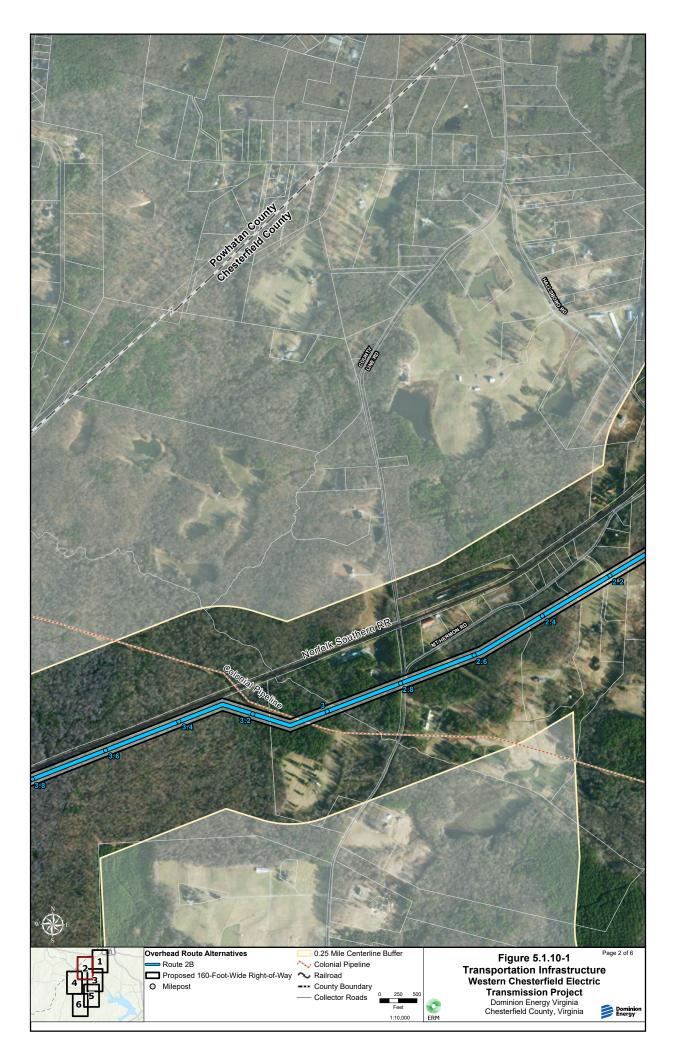




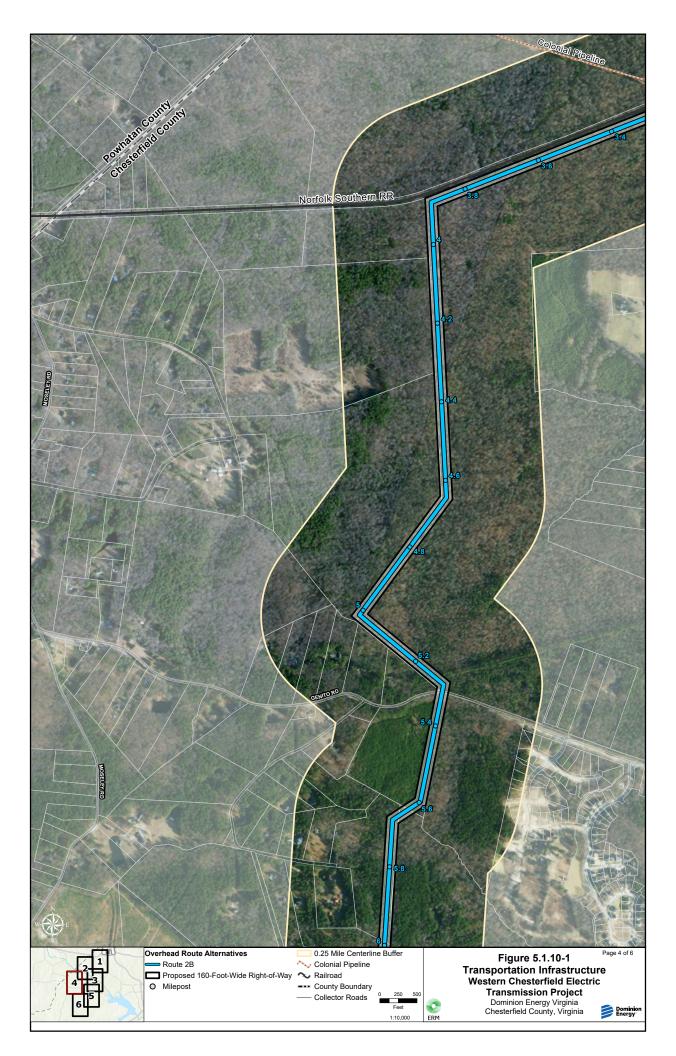




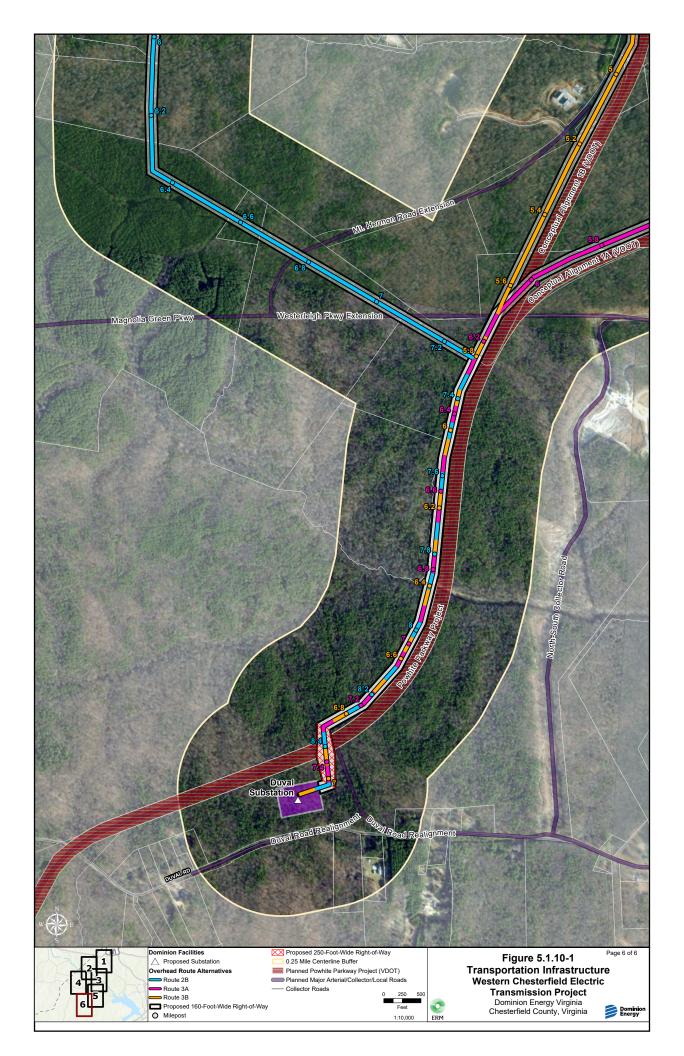


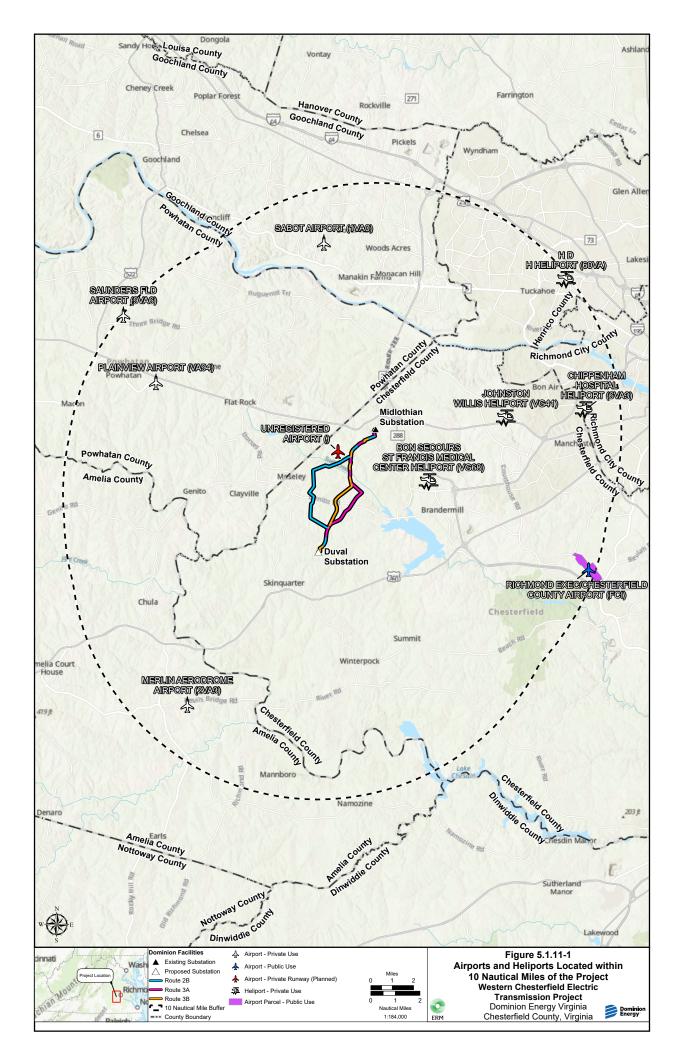


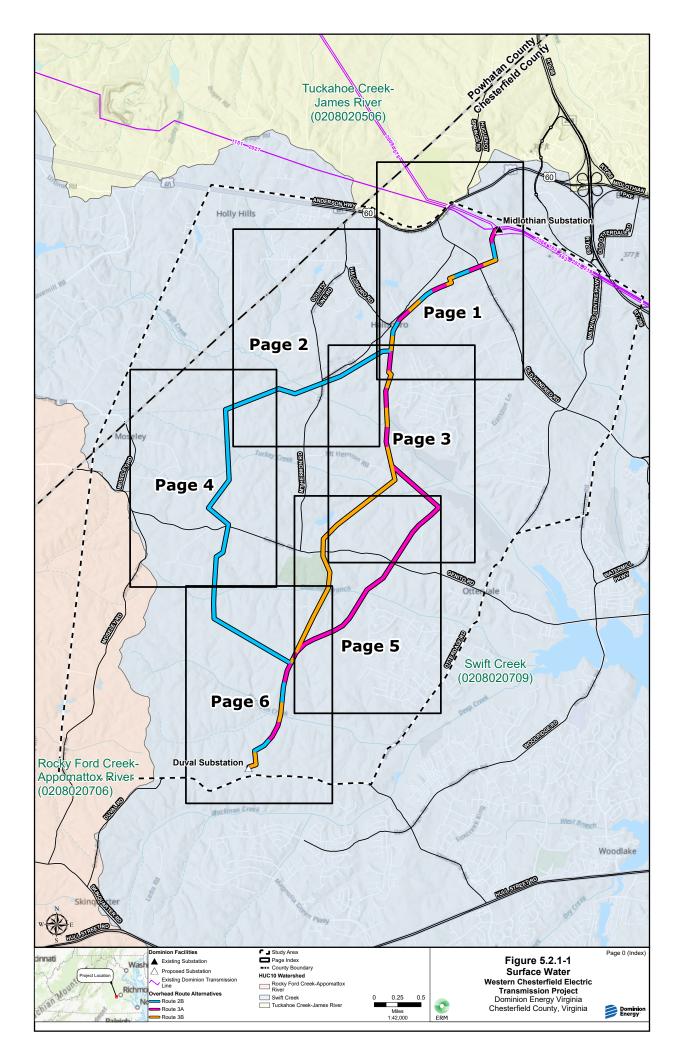


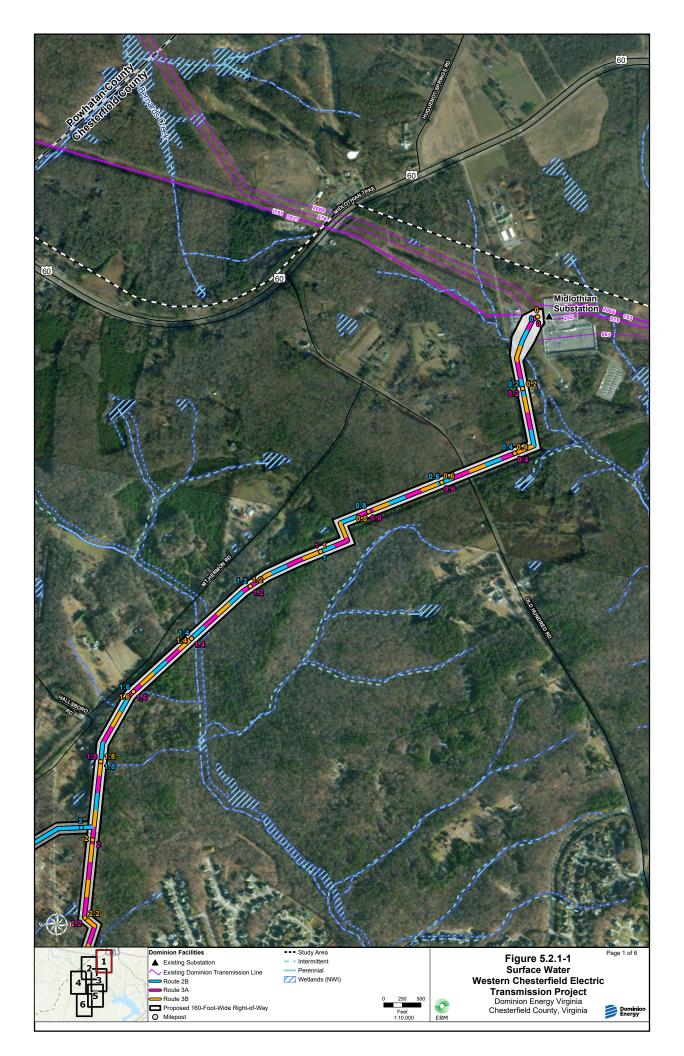


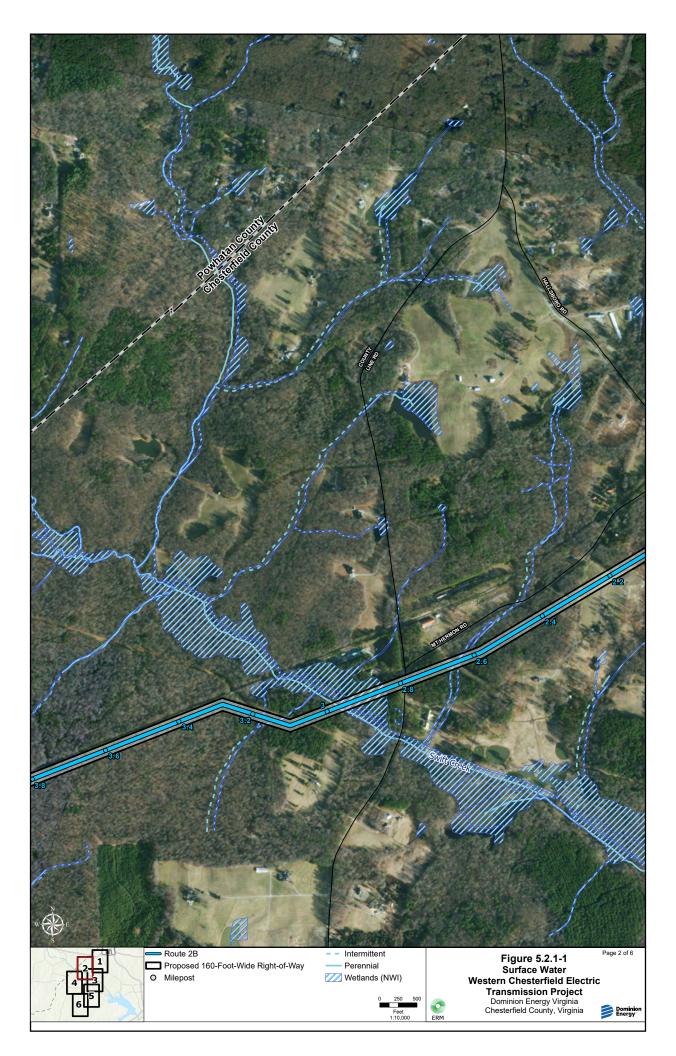










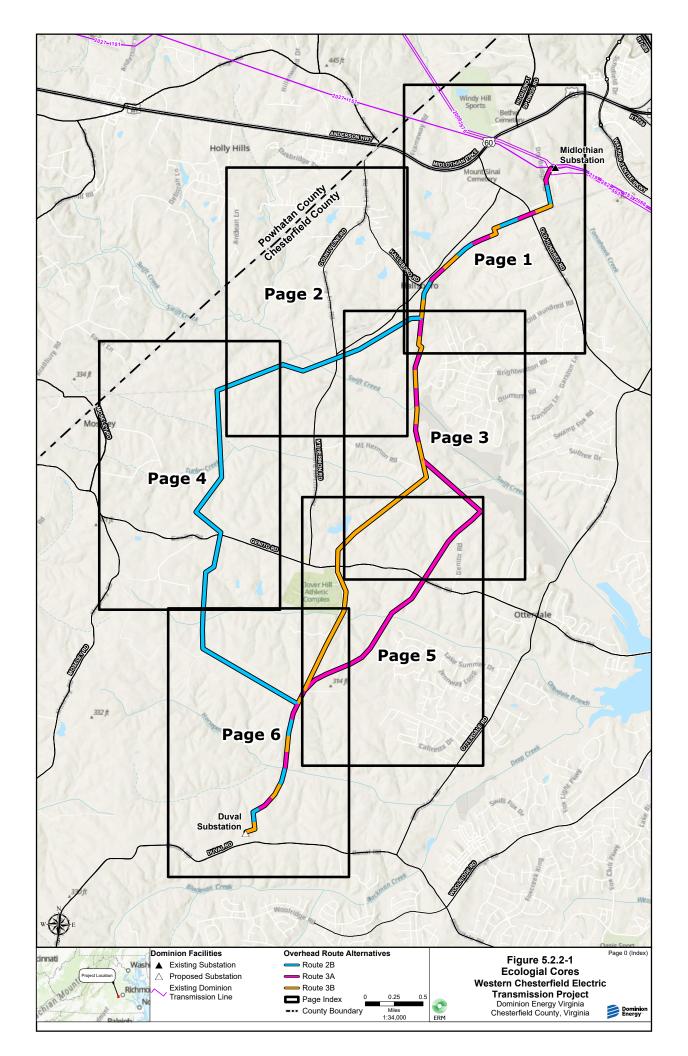


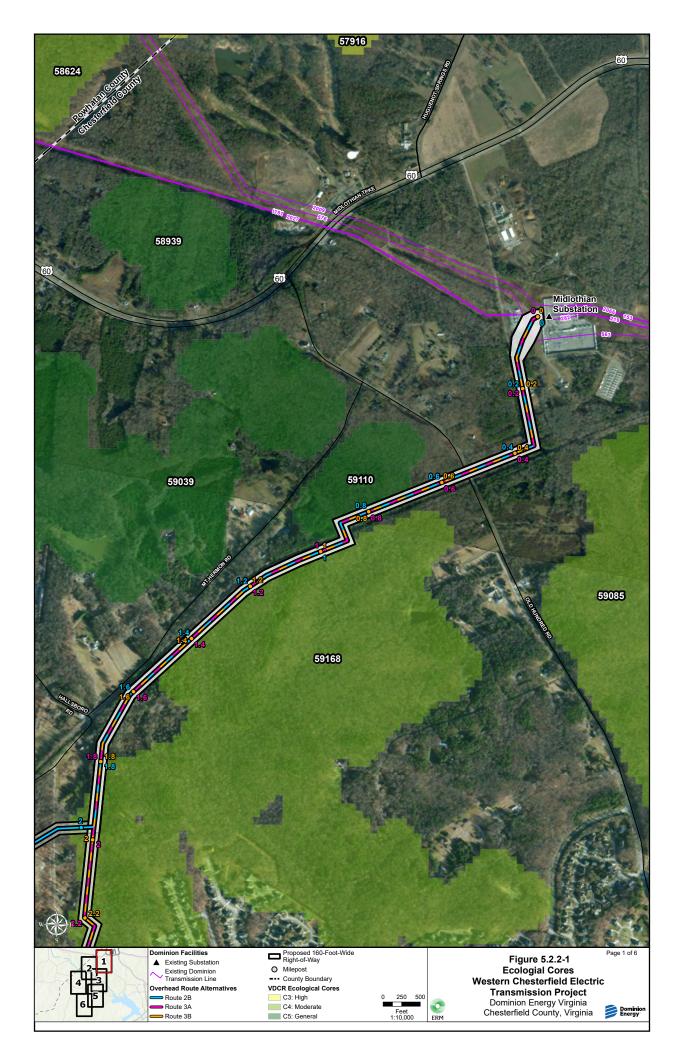












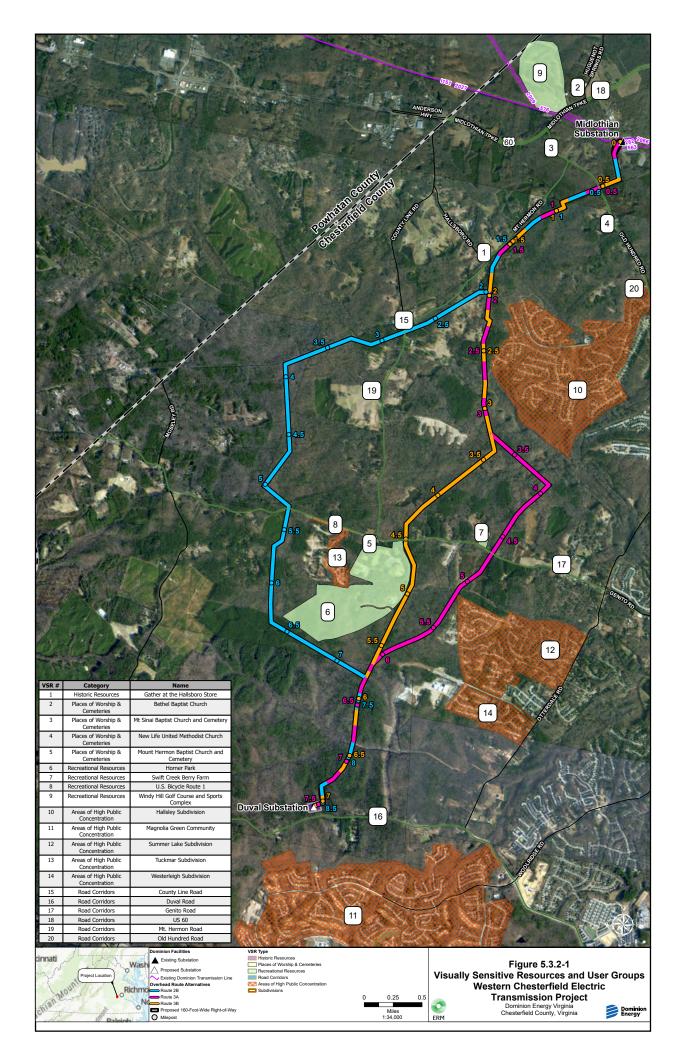


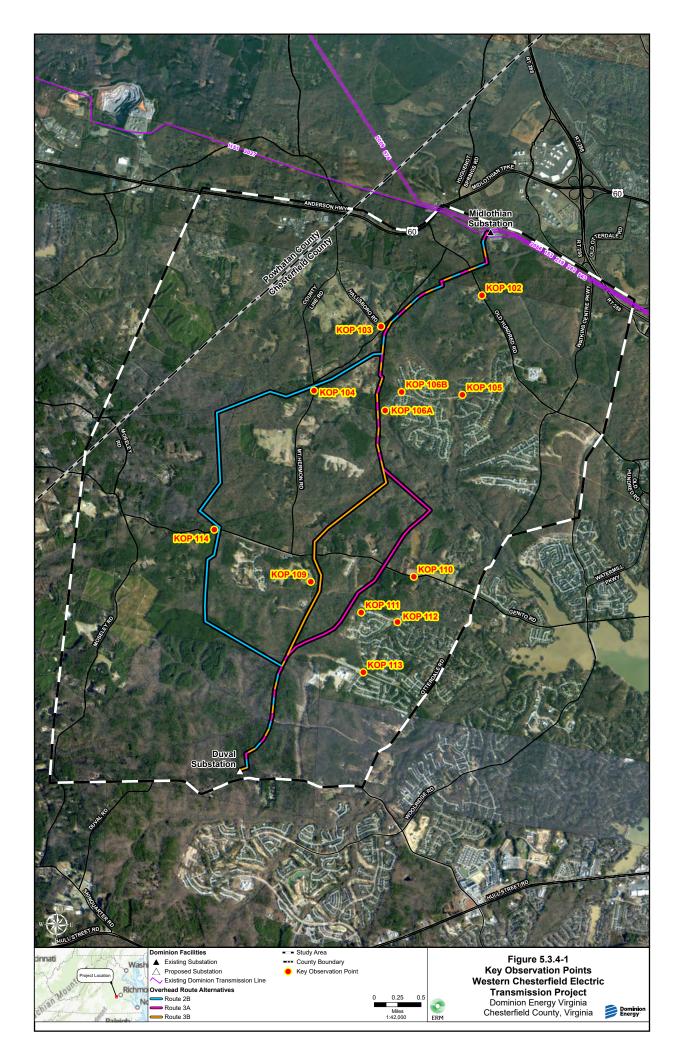


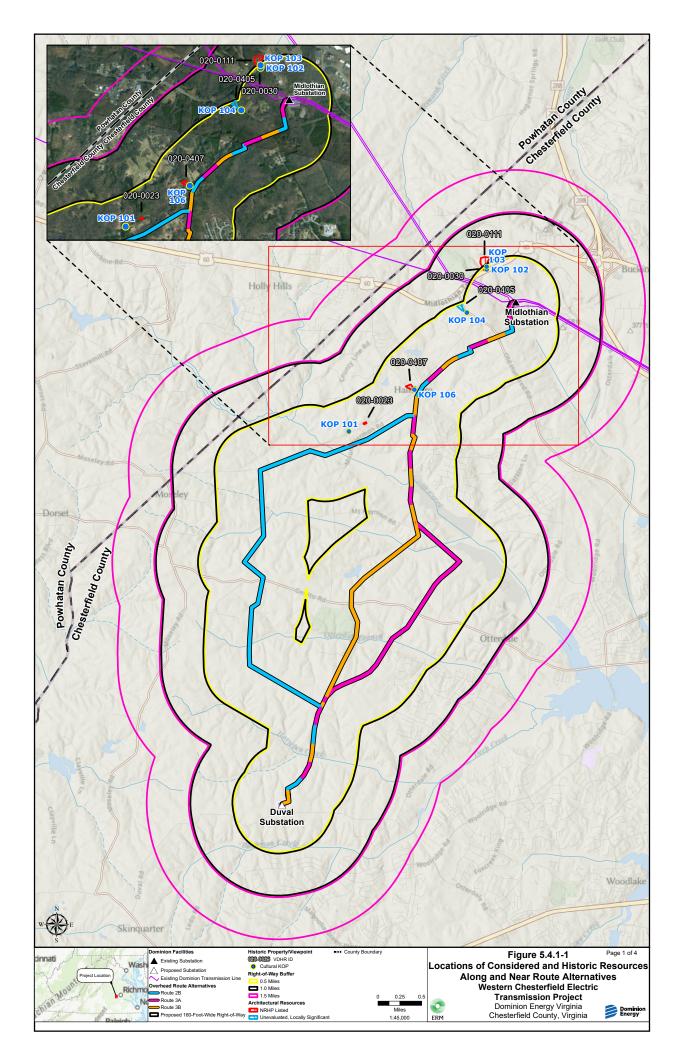


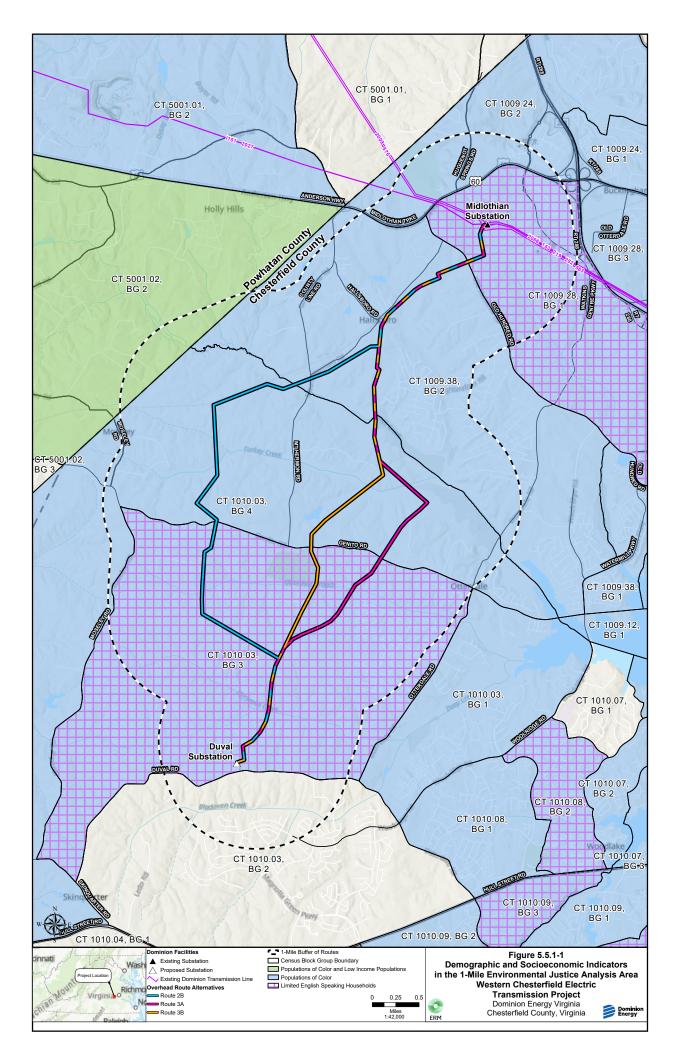






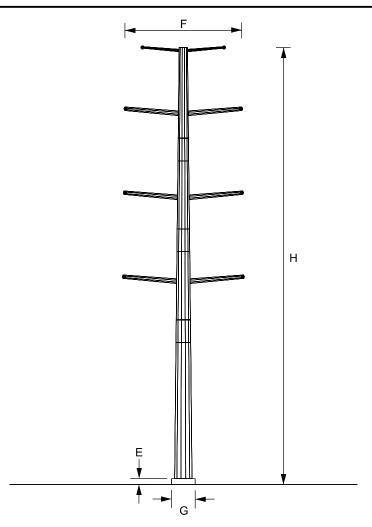








APPENDIX B STRUCTURAL DRAWINGS



TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (42) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE

RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: CONCRETE AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH AT CROSSARM: 26'

G. AVERAGE WIDTH AT BASE: SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 97'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 12'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 108 127' 108'

I. AVERAGE SPAN LENGTH: 689' (371' - 992')

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
- THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

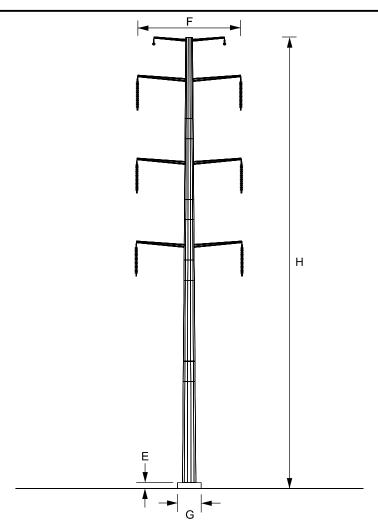
Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.a

DRAWN BY: TMR



TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (I-STRING)

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (50) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE

RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL: CONCRETE

SEE NOTE 2

F. AVERAGE WIDTH AT CROSSARM:

G. AVERAGE WIDTH AT BASE: SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 107' MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 127' AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 119'

I. AVERAGE SPAN LENGTH (RANGE): 717' (427' - 898') - SEE NOTE 5

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL
- THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

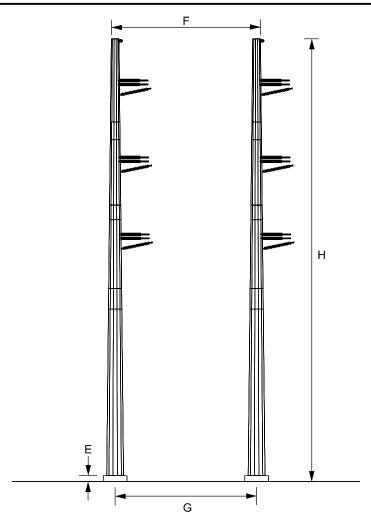
Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (I-STRING)

ATTACHMENT NO.

II.B.3.b

DRAWN BY: TMR



TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION; 2-POLES USED FOR HEAVY ANGLES TO OPTIMIZE POLE/FOUNDATION SIZE AND COST

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (16) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: CONCRETE AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH BETWEEN POLE EDGES: 36'

G. AVERAGE WIDTH AT BASE: 34' - SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 97'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 127'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 108'

I. AVERAGE SPAN LENGTH (RANGE): 519' (175' - 856') - SEE NOTE 5

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL

5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

BASED ON FINAL DESIGN

Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.c

DRAWN BY: TMR



APPENDIX C FEATURES CROSSING TABLE

FEATURE CROSSING TABLE FOR THE WESTERN CHESTERFIELD ELECTRIC TRANSMISSION PROJECT

Environmental Feature a, b	Unit	Route 2B	Route 3A	Route 3B
ROUTE LENGTH AND CONSTRUCTION FOOTPRINT				
Centerline Length	miles	8.6	7.5	7.1
Construction Footprint	acres	168.1	147.9	139.4
Structures ^c	count	72 (144 total)	68 (136 total)	59 (118 total)
ROUTING OPPORTUNITIES d	·			
Existing Facilities Collocation				
Existing Facilities Location (total)	miles	2.4	1.6	2.1
Dominion Transmission Lines	miles	0	0	0
Roads (total)	miles	0.3	0.3	0.8
Dry Bridge Road	miles	0.2	0.2	0.2
Genito Road	miles	<0.1	<0.1	<0.1
Mount Hermon Road	miles	<0.1	0	0.5
Old Hundred Road	miles	<0.1	<0.1	<0.1
Norfolk Southern Railway	miles	1.9	1.3	1.3
Colonial Pipeline	miles	0.1	0	0
Planned Facilities Collocation		I	I	I
Planned Roads (total)	miles	1.4	3.8	3.1
Major Arterial/Collector/Local Roads	miles	0.3	0.2	0.2
Powhite Parkway Project (Limited Access Highway)	miles	1.1	3.6	2.9
LAND USE	'	'		
Land Ownership				
Parcels Crossed (total)	count	35	27	33
Private	count	34	26	29
Public ^e	count	1	1	4
Chesterfield County-owned Parcels	miles	0	0	0.4



Environmental Feature a, b	Unit	Route 2B	Route 3A	Route 3B
	acres			5.3
Chesterfield County EDA-owned Parcels	miles acres	1.3 26.9	1.2 25.0	1.2 25.0
Land Use/Land Cover ^f				
Agricultural	acres	2.0	1.3	1.3
Developed	acres	1.6	1.3	1.6
Forested	acres	160.7	142.0	131.4
Open Space	acres	3.7	3.3	5.1
Open Water	acres	0	0	0
Zoning ^g	I	I	I	1
Agricultural (A)	miles	5.4	3.8	3.9
Residential (R-12)	miles	0	0.5	0
Residential (R-15)	miles	0.2	0.4	0.2
Residential (R-TH)	miles	0.6	0.9	0.9
Regional Business (C-3)	miles	0.5	0.5	0.5
Light Industrial (I-1)	miles	0.2	0	0
General Industrial (I-2)	miles	1.7	1.5	1.8
Residences		I	I	I
Dwellings within ROW	count	0	0	0
Dwellings within 100 Feet of Centerline	count	0	0	0
Dwellings within 250 Feet of Centerline	count	4	6	5
Dwellings within 500 Feet of Centerline	count	18	19	17
Planned Developments h		1	I	I
Planned Developments Crossed (total)	miles acres	5.1 77.4	3.0 50.4	2.4 38.3
Dogwood Creek	miles acres	0.3 4.9	0	0
FC Richmond	miles acres	0	0.4 8.7	0



Environmental Feature a, b	Unit	Route 2B	Route 3A	Route 3B
Moseley Hermon Solar LLC	miles acres	0	0	<0.1 0.8
Mount Hermon Road Residential	miles acres	0	0	0.3 5.5
North Hallsley	miles acres	0.4 8.8	0.4 8.8	0.4 8.8
Nunnally Family Subdivision	miles acres	0.1 1.7	0	0
Unser Woods LLC	miles acres	2.2 36.9	0	0
Upper Magnolia Green-East ⁱ	miles acres	0.1 0.7	0.1 0.7	0.1 0.7
Upper Magnolia Green-West	miles acres	2.0 24.4	1.6 22.5	1.6 22.5
West Estates at Mount Hermon	miles acres	0	0.5 9.7	0
Recreation Areas				
Horner Park	miles	0	0	0.4
U.S. Bicycle Route 1	count	1	1	1
Existing Trail Crossings (total)	count	4	6	4
Planned Trail Crossings (total)	count	6	4	4
Cemeteries, Schools, and Places of Worshi	p ^j	ı	ı	ı
Cemeteries within 500 Feet of Centerline	count	1	1	1
Schools within 500 Feet of Centerline	count	0	0	0
Places of Worship within 500 Feet of Centerline	count	0	0	1
Transportation				
Railroad Crossings	count	1	1	1
Existing Road Crossings (total)	count	3	2	2
Limited Access Roads	count	0	0	0
State Highways	count	0	0	0
Major Arterial/Collector/Local Roads	count	3	2	2
Planned Road Crossings (total)	count	4	9	3



Environmental Feature a, b	Unit	Route 2B	Route 3A	Route 3B
Limited Access Roads ^k	count	1	3	1
Major Arterial/Collector/Local Roads	count	3	6	2
Other Utility Infrastructure				1
Colonial Pipeline Crossings	count	1	1	1
NATURAL RESOURCES				1
Wetlands ^I				
Wetlands Affected (total)	acres	14.1	21.4	19.1
Palustrine Forested	acres	12.4	19.3	16.9
Palustrine Scrub-Shrub	acres	NA	NA	NA
Palustrine Emergent	acres	0.2	0.2	0.2
Palustrine Unconsolidated Bottom	acres	0.1	<0.1	<0.1
Riverine	acres	1.4	1.9	2.0
Waterbodies ^m		I	I	I
Waterbody (total)	count	29	24	22
Perennial	count	4	6	6
Intermittent	count	12	10	8
Non-NHD Mapped Waterbodies	count	13	8	8
Natural Heritage Resources		I	I	I
Ecological Cores				
C1: Outstanding	acres	0	0	0
C2: Very High	acres	0	0	0
C3: High	acres	58.3	91.9	78.9
C4: Moderate	acres	48.1	18.5	18.5
C5: General	acres	12.2	3.9	3.9
Forest Conservation Value		1	I	I
Average (1)	acres	23.2	17.7	17.8



Environmental Feature ^{a, b}	Unit	Route 2B	Route 3A	Route 3B
Moderate (2)	acres	35.1	26.0	22.3
High (3)	acres	33.9	21.0	24.3
Very High (4)	acres	27.4	24.2	24.7
Outstanding (5)	acres	40.0	51.6	36.4
Protected Species			1	1
Bald Eagle Nests within 330 Feet	count	0	0	0
Bald Eagle Nests within 660 Feet	count	0	0	0
NRCS Soil Classification (SSURGO)			ı	ı
Prime Farmland	acres	0.0	0.0	0.0
Farmland of Statewide Importance	acres	56.3	35.2	32.8
CULTURAL RESOURCES			1	1
Archaeological Sites within ROW	count	0	0	0
NRHP Eligible and NRHP Listed Properties, NHLs, Battlefields, and Historic Landscapes within ROW	count	0	0	0
NRHP Listed Properties, NHLs, Battlefields, and historic landscapes within 1.0 Mile	count	4	4	4
NRHP Eligible and NRHP Listed Properties, NHLs, Battlefields, and Historic Landscapes within 0.5 Mile	count	3	3	4
NHLs between 1.0 and 1.5 Miles	count	0	0	0
Historic Districts Crossed	count	0	0	0
VDHR Easements Crossed	count	0	0	0
Battlefields (National Park Service ABPP) Crossed	count	0	0	0

EDA = Chesterfield County Economic Development Authority; NA = not available; NHL = National Historic Landmark; NRHP = National Register of Historic Places; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

^d Collocation includes areas where the routes overlap or are immediately adjacent to existing transmission right-of-way, roads, and major utilities



^a The sum of the parts may not equal the totals due to rounding

^b The crossing lengths presented in this table for all feature categories are based on hypothetical centerlines within the right of way for each route alternative

^c Represents the number of transmission structures for each new 230 kV double-circuit line (two circuits) of the Duval-Midlothian Lines. As such, the total number of structures would be doubled for each route alternative.

- ^e Public parcels include one crossing of Chesterfield County EDA land, the Upper Magnolia Green development. Route 3B crosses three parcels owned by Chesterfield County and associated with the eastern portions of Horner Park. While formal land rights for this crossing have not been obtained as of April 2025, Chesterfield County has indicated that it can be crossed by new transmission lines.
- f Based on Virginia Land Cover Dataset (VGIN 2024)
- ⁹ Based on Chesterfield County's 2019 Zoning Ordinance
- ^h Based on publicly available planned developments as of April 2025

Non-residential buildings within the rights-of-way include storage sheds but do not include primary commercial or industrial buildings.

- Does not include the approximately 5.1 acres for the proposed Duval Substation site
- ^j For cemeteries, the distances measured are from the route centerline to approximate edge of the cemetery boundary based on publicly available information
- ^j Includes VDOT's Powhite Parkway Project and all conceptual alignments under review. Regardless of which conceptual alignment is chosen, Route 3A would cross the Powhite Project at least three times.
- Wetland acreages are based on results of the wetland and waterbody desktop study (see Appendix D). NA indicates not applicable due to absence of a wetland type within the Project footprint.
- ^m Waterbody counts are based on the USGS National Hydrography Dataset (USGS 2024)



APPENDIX D WETLAND AND WATERBODY DESKTOP STUDY



222 South 9th Street Suite 2900 Minneapolis, Minnesota 55402 T +0 804 253 1090 F +0 804 253 1091

erm.com

Virginia Department of Environmental Quality Office of Environmental Impact Review Ms. Bettina Rayfield, Manager P.O. Box 1105 Richmond, Virginia 23218 DATE
April 24, 2025
SUBJECT
Western Chesterfield Electric
Transmission Project
REFERENCE
0662361

Dear Ms. Rayfield:

Environmental Resources Management (ERM), on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company), conducted a desktop wetland and waterbody review of publicly available information for the proposed Western Chesterfield Electric Transmission Project (Project) in Chesterfield County, Virginia. This delineation was done using desktop resources and methodology. A field delineation is required to verify the accuracy and extent of aquatic resource boundaries. Project route alternatives are shown in Attachment 1, with aquatic resource type and probability shown on Attachments 2 and 3.

Dominion Energy Virginia is filing an application with the Virginia State Corporation Commission (SCC) to:

- Construct two new 230 kilovolt (kV) double circuit overhead transmission lines (for a total
 of four circuits) on a new primarily 160-foot-wide right-of-way. The new transmission
 lines will extend from the Company's existing Midlothian Substation to the proposed Duval
 Substation (Duval-Midlothian Lines); and
- Construct a new 230-34.5 kV substation in Chesterfield County, Virginia (Duval Substation) and perform substation-related work at the Company's existing Midlothian Substation.

These facilities are collectively referred to as the Project.¹

The Project is necessary to serve significant projected residential and commercial load growth identified by the Company in Chesterfield County, Virginia; to maintain and ensure reliable service for the overall load growth in the Project area thereby supporting economic development in Chesterfield County and Virginia; and to comply with mandatory North American Electric Reliability Corporation Reliability Standards.

¹ For outreach purposes, the Company also has referred to the Project as the "Western Chesterfield 230 kV Electric Transmission Improvement Project."



The purpose of this desktop analysis is to identify and evaluate potential impacts of the Project on aquatic resources (wetlands, streams, creeks, runs, and open water features) in the area. In accordance with Virginia Department of Environmental Quality (DEQ) and the SCC's Memorandum of Agreement, the evaluation was conducted using various data sets that may indicate wetland location and type. This report is being submitted to the DEQ as part of the DEQ Wetland Impacts Consultation.

This assessment did not include field investigations required for wetland delineations, as defined in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

PROJECT STUDY AREA AND POTENTIAL ROUTES

The Project study area encompasses the beginning and endpoints (i.e., the existing Midlothian Substation and the proposed Duval Substation site) and an area broad enough in between to allow for the identification of a reasonable alternative. Additionally, and to the extent practicable, the limits of the study area were defined by reference to easily distinguishable landmarks, such as roads or other recognizable features. The limits of the study area are generally defined by the following features:

- U.S. Route 60 (Midlothian Turnpike or Anderson Highway) and existing Dominion Lines #219, #282, and #576 connecting the Company's Midlothian Substation to the north;
- Route 667 (Otterdale Road) to the east;
- Route 605 (Moseley Road) to the west; and
- Route 668 (Duval Road) and the proposed Duval Substation to the south.

The study area encompasses approximately 18,000 acres (28 square miles) in western Chesterfield County and the eastern portion of Powhatan County, Virginia. About 90% of the study area encompasses Chesterfield County. The unincorporated communities of Holly Hills, Hallsboro, Moseley, and Otterdale are located within the study area. Land use and land cover consists mostly of forested, agricultural, and undeveloped lands; however, there are numerous planned developments throughout the study area including Chesterfield County Economic Development Authority's (EDA) proposed Upper Magnolia Green development. Most forested areas exist along Tomahawk Creek, Swift Creek, Turkey Creek, Otterdale Branch, Horsepen Creek, and associated tributaries. The largest forested/undeveloped areas are associated with riparian areas along Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek within waterways within the study area. Commercial and industrial buildings in the study area include medical facilities, athletic complexes, and commercial business facilities. In general, existing commercial businesses and buildings are located in the northwest portion of the study area, and residential development is generally located in the east portion of the study area. The study area is shown in Attachment 1.



DUVAL-MIDLOTHIAN LINES

ROUTE 2B

Route 2B is approximately 8.6 miles long. From the existing Midlothian Substation, the route heads southeast, collocating with Dry Bridge Road and the Norfolk Southern Railway for about 1.6 miles. Route 2B then turns south and southwest, crossing parcels south of Mount Hermon Road for about 1.7 miles. It again collocates with the railroad and a Colonial Gas pipeline for about 0.6 mile before turning south and generally following parcel boundaries for about 2.5 miles. This portion of Route 2B crosses large, forested parcels associated with two planned residential developments along Genito Road. The route turns southeast for approximately 0.9 mile crossing large, forested parcels that are associated with planned industrial development before turning south to collocate with the west side of VDOT's planned Powhite Parkway Project for about 1.2 miles across large, undeveloped and forested parcels within Chesterfield County EDA's planned Upper Magnolia Green development. Route 2B then crosses the planned Powhite Parkway Project for about 0.1 mile to enter the proposed Duval Substation site from the east.

ROUTE 3A

Route 3A is approximately 7.5 miles long. From the Midlothian Substation, it follows the same alignment as Route 2B for about 2.0 miles. Route 3A then runs south and southeast across large, forested parcels for approximately 2.0 miles to avoid existing and planned residential subdivisions along Old Hundred Road and Mount Hermon Road. Route 3A then turns southwest and collocates with VDOT's planned Powhite Parkway Project Conceptual Alignment 1A for about 2.3 miles (including one angled crossing of the Powhite Parkway alignment). The remaining approximately 1.2 miles of Route 3A to the proposed Duval Substation site follows the same alignment as Route 2B.

ROUTE 3B

Route 3B is approximately 7.1 miles long. It follows the same alignment as Route 3A for approximately 3.2 miles, then turns southeast to collocate with the west side of VDOT's planned Powhite Parkway Project Conceptual Alignment 1B for 2.4 miles (except for a 0.7-mile segment near Genito Road that is not collocated, in order to avoid an existing residence). The remaining approximately 1.5 miles of Route 3B to the proposed Duval Substation site follows the same alignment as Route 2B.

DUVAL SUBSTATION

The proposed 230-34.5 kV Duval Substation, located north of Duval Road and on Chesterfield County EDA's property (the Upper Magnolia Green development), will be constructed on property rights to be obtained by Dominion. The substation will be designed to accommodate



multiple network connections to allow for increased reliability and to serve the projected load. The total area of the proposed Duval Substation is approximately 5.1 acres.

DESKTOP EVALUATION METHODOLOGY

The area of effect considered for this study consists of the proposed rights-of-way identified above within which the electric transmission lines would be constructed and operated. Data sources used for this review include the following, each of which is described briefly below:

- Digital Aerial Photography taken in January 2025 (Planet Labs Imagery 2025);
- ESRI World Imagery from 2024 (ESRI et al. 2024b);
- Google Earth aerial imagery (Google Earth 2025);
- ESRI (Environmental Systems Research Institute, Inc.) World Elevation Terrain 2-foot contours (ESRI et al. 2024a);
- NWI maps from the USFWS online data mapping portal (USFWS 2024a);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);
- VGIN statewide land cover dataset (VGIN 2024); and
- Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2024).

NATURAL COLOR AND INFRARED AERIAL PHOTOGRAPHY

Recent (2025) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. Infrared aerial photography was used to identify the potential presence of wetlands based on signatures associated with the levels of reflectance. For example, areas that are inundated with water appear very dark (almost black) due to the low level of reflectance in the infrared spectrum. The presence of these dark colors can be used as a potential indicator of hydric or inundated soils that are likely associated with wetlands.

TOPOGRAPHIC MAPS

Recent ESRI world topographic maps show the topography of the area as well as other important landscape features such as forest cover, development, buildings, agricultural areas, streams, lakes, and wetlands (ESRI et al. 2024a).

USFWS NATIONAL WETLAND INVENTORY MAPPING

NWI maps provide the boundaries and classifications of potential wetland areas as mapped by the USFWS (USFWS 2024). NWI data is based primarily on aerial photo interpretations with limited ground-truthing and may represent incorrect boundaries or wetland cover types. NWI data can be unreliable in some areas, especially in forested landscapes, where aerial photography is used as the major data source. The classifications of the majority of the NWI



polygons in the study area appear to be accurate based on a review of the cover types observed in the aerial photography. However, in areas where there was an obvious discrepancy between the NWI classification and the aerial photography, ERM modified the classification to more accurately reflect current conditions. In order to acknowledge ERM's adjustment of NWI classifications where appropriate, all the wetland types referenced in this assessment are referred to as "assigned wetland cover types" regardless of whether the cover type was modified from the NWI classification.

USDA-NRCS SOILS DATA

Soils in the study area were identified and assessed using the SSURGO database, which is a digital version of the original county soil surveys (USDA-NRCS 2024). The attribute data within the SSURGO database provides the proportionate extent of the component soils and their properties (e.g., hydric rating) for each soil map unit. The soils in the study area were grouped into three categories based on the hydric rating of the component soils within each map unit: hydric, partially hydric, and non-hydric. Hydric soils were defined as those where the major component soils, and minor components in some cases, are designated as hydric. Hydric components in these map units account for more than 80% of the map unit. Partially hydric soils include map units that only contain minor component soils that are designated as hydric. The partially hydric map units in the Project area contain 10% or less hydric soils. The remaining map units do not contain any component soils that are designated as hydric. Areas mapped as hydric or partially hydric have a higher probability of containing wetlands than areas with no hydric soils.

USGS NATIONAL HYDROGRAPHY DATASET

The NHD dataset contains features such as lakes, ponds, streams, rivers, and canals (USGS 2024). The waterbodies mapped by the NHD appeared generally consistent with those visible in aerial photography.

PROBABILITY ANALYSIS

ERM used a stepwise process to identify probable wetland areas along the proposed routes, as follows:

- Infrared and natural color aerial photography was used in conjunction with topographic
 maps and soils maps to identify potential wetland areas. Boundaries were assigned to the
 areas that appeared to exhibit wetland signatures based on this review and a cover type
 was determined based on aerial photo interpretation. For the purpose of the study, these
 areas are referred to as Interpreted Wetlands.
- To further determine the probability of a wetland occurring within a given location, the Interpreted Wetland polygon shape files were digitally layered with the NWI mapping and soils information from the SSURGO database.



 The probability of a wetland occurring was assigned based on the number of overlapping data layers (i.e., indicators of potential wetland presence) that occurred in a particular area.

The criteria assigned to each probability are outlined in Table 1.

TABLE 1: CRITERIA USED TO RANK THE PROBABILITY OF WETLAND OCCURRENCE

Probability	Criteria			
High	Areas where layers of hydric soils, Interpreted Wetlands, and NWI data overlap			
Medium/High	NWI data overlaps hydric soils; or NWI data overlaps Interpreted Wetlands with or without partially hydric soils; or Hydric soils overlap Interpreted Wetlands			
Medium	Interpreted Wetlands with or without overlap by partially hydric soils			
Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils			
Low	Partially hydric soils only			
Very Low	Non-hydric soils only			

WETLAND AND WATERBODY CROSSINGS

The desktop analysis provides a probability of wetland and waterbody occurrence within each route, with wetlands classified based on the Cowardin classification system described below:

- Palustrine emergent (PEM) wetlands characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3.28 feet in height, excluding mosses and lichens;
- Palustrine scrub-shrub (PSS) wetlands characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine forested (PFO) wetlands characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger diameter at breast height (DBH);
- Palustrine unconsolidated bottom (PUB) open waters characterized by bottom substrate particles smaller than stones (less than 10 inches in diameter) covering greater than 25% of the area, with plants covering less than 30% of the area; and
- Riverine streams channels containing periodically or continuously moving water (USFWS 2013).



As stated above, field delineations were not performed and would be required to verify the accuracy and extent of aquatic resource boundaries. However, the Company obtained two separate field delineations completed by Timmons Group on January 28, 2022, and February 26, 2024, on parcels containing the Duval-Midlothian Lines and the proposed Duval Substation, which identified aquatic resources along the route alternatives between Mount Hermon Road and the proposed Duval Substation footprint, specifically, where all the route alternatives share an alignment on the County EDA's Upper Magnolia Green property. The boundaries of these field delineated aquatic resources were used in the desktop wetland delineation and are included in the wetland and waterbody numbers provided in this report.

RESULTS

Results of the probability analysis are presented in Table 2 below. A range of wetland occurrence probabilities are reported from very low to high. The probability of wetland occurrence increases as multiple indicators begin to overlap towards the "high" end of the spectrum. The medium, medium-high, and high probability categories are the most reliable representation of in-situ conditions, due to overlapping data sets, and these categories are reported in the summary below as a percentage of the total acreage of each route. Summaries are provided in the sections following the table. Riverine (stream) and PUB (open water features) are described in the Waterbody Crossings section below. Attachment 2 depicts the type and 3 depicts the probability of medium or higher interpreted wetlands displayed on color base map images.

TABLE 2: SUMMARY OF THE PROBABILITIES OF WETLAND AND WATERBODY OCCURRENCE ALONG THE PROJECT ^a

Probability	Total Within Right-of-way (acres)	Wetland and Waterbody type (acres)					
		PEM (Emergent)	PFO (Forested)	PSS (Scrub- Shrub)	PUB (Freshwater pond)	Riverine (Stream)	
Duval- Midlo	Duval- Midlothian Lines ^a						
Route 2B							
High	2.1	<0.1	1.9	NA	NA	0.1	
Medium/High	7.4	<0.1	6.6	NA	NA	0.8	
Medium	4.6	0.2	3.9	NA	0.1	0.5	
Medium/Low	1.3	NA	0.9	0.4	0.1	<0.1	
Low	NA	NA	NA	NA	NA	NA	



Probability	Total Within Right-of-way (acres)	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub- Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Very Low	NA	NA	NA	NA	NA	NA
Route 3A						
High	6.4	<0.1	5.9	NA	NA	0.5
Medium/High	7.1	<0.1	6.4	NA	<0.1	0.7
Medium	7.9	0.2	7.0	NA	NA	0.8
Medium/Low	1.6	NA	1.4	NA	0.1	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 3B						
High	4.8	<0.1	4.3	NA	NA	0.5
Medium/High	6.6	<0.1	5.9	NA	<0.1	0.7
Medium	7.7	0.2	6.7	NA	NA	0.8
Medium/Low	1.1	NA	1.0	NA	0.1	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Duval Substa	tion					
High	NA	NA	NA	NA	NA	NA
Medium/High	NA	NA	NA	NA	NA	NA
Medium	<0.1	NA	<0.1	NA	NA	NA
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

NA = Not applicable due to absence of a wetland type within the right-of-way or proposed footprint a Values have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of <0.1 indicates that less than 0.05 acre of a wetland type is present.



WETLAND CROSSINGS

Wetlands within the Project study area are associated with Tomahawk Creek, Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek, as well as their associated, unnamed tributaries. Large areas of PFO wetlands associated with the major tributaries, like Swift Creek and Turkey Creek, are located in the central portion of the study area while the southern portion of the study area contains PFO wetlands associated with Horsepen Creek.

ROUTE 2B

The length of the corridor for Route 2B is approximately 8.6 miles and encompasses a total of approximately 168.1 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 8.4% (14.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 14.1 acres consist of 12.4 acres of PFO wetlands, 0.2 acre of PEM wetlands, 0.1 acre of open water features, and 1.4 acres of riverine features.

ROUTE 3A

The length of the corridor for Route 3A is approximately 7.5 miles and encompasses a total of approximately 147.9 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 14.5% (21.4 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 21.4 acres consist of 19.3 acres of PFO wetlands, 0.2 acre of PEM wetlands, less than 0.1 acre of open water features, and 1.9 acres of riverine features.

ROUTE 3B

The length of the corridor for Route 3B is approximately 7.1 miles and encompasses a total of approximately 139.4 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 13.7% (19.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. These 19.1 acres consist of 16.9 acres of PFO wetlands, 0.2 acre of PEM wetlands, less than 0.1 acre of open water features, and 2.0 acres of riverine features.

DUVAL SUBSTATION

The footprint of the proposed Duval Substation site encompasses a total of 5.1 acres. Based on the methodology discussed above, the footprint will encompass approximately less than 0.1 acre of land with a medium or higher probability of containing wetlands and waterbodies, consisting of less than 0.1 acre of PFO wetlands.

WATERBODY CROSSINGS

ERM identified and mapped waterbodies in the study area using similar publicly available GIS databases as those used to identify and map wetlands. Waterbodies crossed by the route



alternatives and the proposed Duval Substation are perennial Tomahawk Creek, Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek, as well as their associated, unnamed tributaries and open waterbodies. These surface waters generally flow south and east and ultimately converge into the Swift Creek Reservoir to the west of the study area.

TABLE 2: WATERBODIES CROSSED BY THE PROJECT

Waterbodies Crossed	Unit	Route 2B	Route 3A	Route 3B	Duval Substation
Perennial Waterbodies	number	4	6	6	0
Intermittent Waterbodies	number	12	10	8	0
Non-NHD Mapped Waterbodies ^a	number	13	8	8	1
Total	number	29	24	22	1 b

Source: NHD (USGS 2024)

ROUTE 2B

Route 2B crosses 29 waterbodies, 16 of which are NHD-mapped waterbodies, including four perennial waterbodies (Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek) and 12 unnamed, intermittent streams. Additionally, ERM identified 13 unnamed, unclassified streams, and one open waterbody feature within the right-of-way using recent (2025) aerial imagery. Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 2B would encompass approximately 1.4 acres of riverine features and 0.1 acre of PUB open water features.

ROUTE 3A

Route 3A crosses 24 waterbodies, 16 of which are NHD-mapped waterbodies, including six perennial waterbodies (Swift Creek, a marsh/swamp associated with Swift Creek, Turkey Creek (two crossings), Otterdale Branch, and Horsepen Creek), and 10 unnamed, intermittent streams. Additionally, ERM identified eight unnamed, unclassified streams within the right-of-way using recent (2025) aerial imagery. Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 3A would encompass approximately 1.9 acres of riverine features and less than 0.1 acre of PUB open water features.

^a Identified during desktop analysis using aerial imagery (Google Earth 2025; Planet Labs Imagery 2025).

^b Identified via field delineations completed by Timmons Group (Timmons Group 2022; 2024)



ROUTE 3B

Route 3B crosses 22 waterbodies, 14 of which are NHD-mapped waterbodies, including six perennial waterbodies (Swift Creek (two crossings), a marsh/swamp associated with Swift Creek, Turkey Creek, Otterdale Branch, and Horsepen Creek), and eight unnamed, intermittent streams. Additionally, ERM identified eight unnamed, unclassified streams within the right-of-way using recent (2025) aerial imagery. Based on the methodology described above, the right-of-way for Route 3B would encompass approximately 2.0 acres of riverine features and less than 0.1 acre of PUB open water features.

DUVAL SUBSTATION

ERM identified no NHD-mapped waterbodies within the footprint of the proposed Duval Substation site; however, one field-delineated waterbody is crossed within the footprint.

PROJECT IMPACTS

Avoiding or minimizing new impacts on wetlands and streams was among the criteria used in developing routes for the Project. To minimize impacts on wetland areas, the transmission lines have been designed to span or avoid wetlands and waterbodies where possible, keeping transmission structures outside of aquatic resources to the extent practicable.

The majority of potential direct impacts on wetlands due to Project construction would be temporary in nature. Mats would be used for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way, some new access roads may be necessary along the route. If a section of line cannot be accessed from existing roads, Dominion Energy Virginia may need to install a culvert, ford, or temporary bridge along the right-of-way to cross small streams. In such cases, some temporary fill material in wetlands adjacent to such crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to original contours. When siting transmission lines, perpendicular crossings of wetland systems are prioritized to minimize direct impacts to these sensitive areas and reduce overall impacts to the watershed.

Permanent direct impacts to wetlands would be limited to placement of structures within wetlands, if unavoidable, and, due to the necessity of removing trees and shrubby vegetation from the right-of-way, the permanent conversion of PSS/PFO wetlands to PEM type wetlands.

No change in contours of wetlands and waterbodies, or redirection of the flow of water, is anticipated and the amount of spoil from foundation and structure placement would be minimal. Excess spoil in wetlands generated through foundation construction would be controlled through construction best management practices (e.g., the implementation erosion and sediment controls).

Required tree removal adjacent to waterbodies would reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater



storage and peak flow reduction, habitat diversity, and water temperature modification from shading. Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion Energy Virginia would use the least intrusive method reasonably possible to clear the corridor. Within the stream buffers (100 feet), trees and vegetation will be hand felled and stumps left in place to reduce the potential for erosion. Shrubs and trees with a diameter at breast height of less than three inches will be left in place unless it impedes temporary access where they would be clipped, leaving roots in place which will be able to naturally regenerate. Vegetation within the right-of-way would be allowed to return to maintained grasses and shrubs after construction, which would provide some filtration stabilization to help protect waterbodies from pollutants.

SUMMARY

This Wetland and Waterbody Summary report was prepared in accordance with the Memorandum of Agreement between the DEQ and the SCC for the purpose of initiating a Wetlands Impact Consultation. Please note that a formal onsite wetland delineation was not conducted as part of this review.

In addition, there is a Project website where the SCC application will be available after filing, as well as maps and discussions about the Project. It can be accessed by going to:

https://www.dominionenergy.com/projects-and-facilities/electric-projects/power-line-projects/western-chesterfield-electric-transmission-improvement-project.

If you have any questions regarding this wetland assessment, please contact me at 857-302-6502 or by email at jake.bartha@erm.com.

Sincerely,

Jake Bartha

Environmental Resources Management

cc: Lucas A. DuPont, Dominion Energy Virginia

Blair M. Parks, Dominion Energy Virginia

Enclosures: Attachments 1, 2, and 3



REFERENCES

- Environmental Laboratory. 1987. Technical Report Y-87-1: Corps of Engineers Wetlands
 Delineation Manual US Army Corps of Engineers, Waterways Experiment Station.
 January 1987.
- ESRI (Environmental Systems Research Institute, Inc.), Maxar, Earthstar Geographics, and the GIS User Community. 2024a. World Elevation Terrain. Accessed January 2025. Retrieved from: https://elevation.arcgis.com/arcgis/rest/services/ WorldElevation/Terrain/ImageServer.
- ESRI, Maxar, Earthstar Geographics, and the GIS User Community. 2024b. World Imagery.

 Accessed January 2025. Retrieved from:

 https://services.arcgisonline.com/ArcGIS/rest/services/

 World Imagery/MapServer.
- Google Earth. 2025. Google Earth Pro, Version 7.3.6. Aerial Imagery in Virginia. Accessed March 2025.
- Planet Labs Imagery. 2025. Digital Aerial Photography. Imagery purchased for the Western Chesterfield Electric Transmission Project. January 2025.
- Timmons Group. 2022. Field delineation for the Upper Magnolia Green Development, Chesterfield, Virginia completed by Timmons Group in January 2022. PDFs provided by Dominion Energy. Accessed March 2025.
- Timmons Group. 2024. Field delineation for the Upper Magnolia Green Development, Chesterfield, Virginia completed by Timmons Group in February 2024. PDFs provided by Dominion Energy. Accessed March 2025.
- USDA-NRCS (U.S. Department of Agriculture—Natural Resources Conservation Service). 2024. Soil Survey Geographic Database (SSURGO). Accessed: March 2025. Retrieved from: https://www.nrcs.usda.gov/resources/data-and-reports/soil-survey-geographic-database-ssurgo
- USFWS (U.S. Fish and Wildlife Service). 2013. Classification of Wetlands and Deepwater Habitats of the United States Wetlands Data. Accessed March 2025. Retrieved from: https://www.fws.gov/program/national-wetlands-inventory/classification-codes
- USFWS. 2024a. National Wetlands Inventory. Accessed: March 2025. Retrieved from: https://www.fws.gov/program/national-wetlands-inventory/wetlands-data
- USGS (U.S. Geological Survey). 2023. Boundary Descriptions and Names of Regions, Subregions, Accounting Units and Cataloging Units from the 1987 USGS Water-Supply Paper 2294. Accessed: March 2025. Retrieved from: https://water.usgs.gov/GIS/huc_name.html



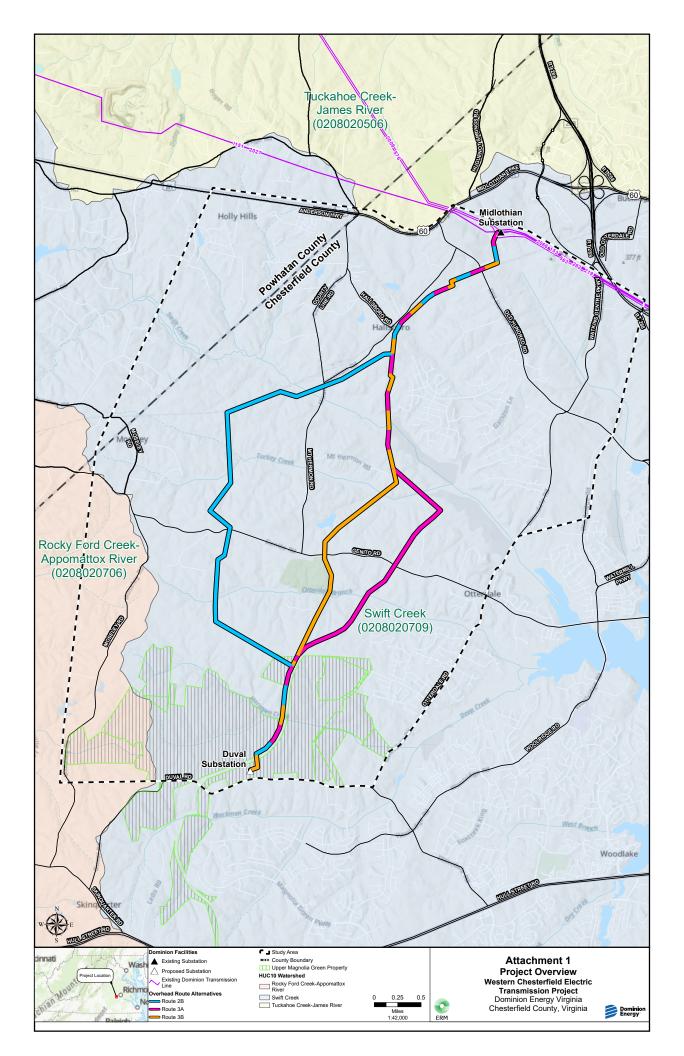




USGS. 2024. The National Hydrography Dataset Plus High Resolution. Accessed March 2025. Retrieved from: https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer

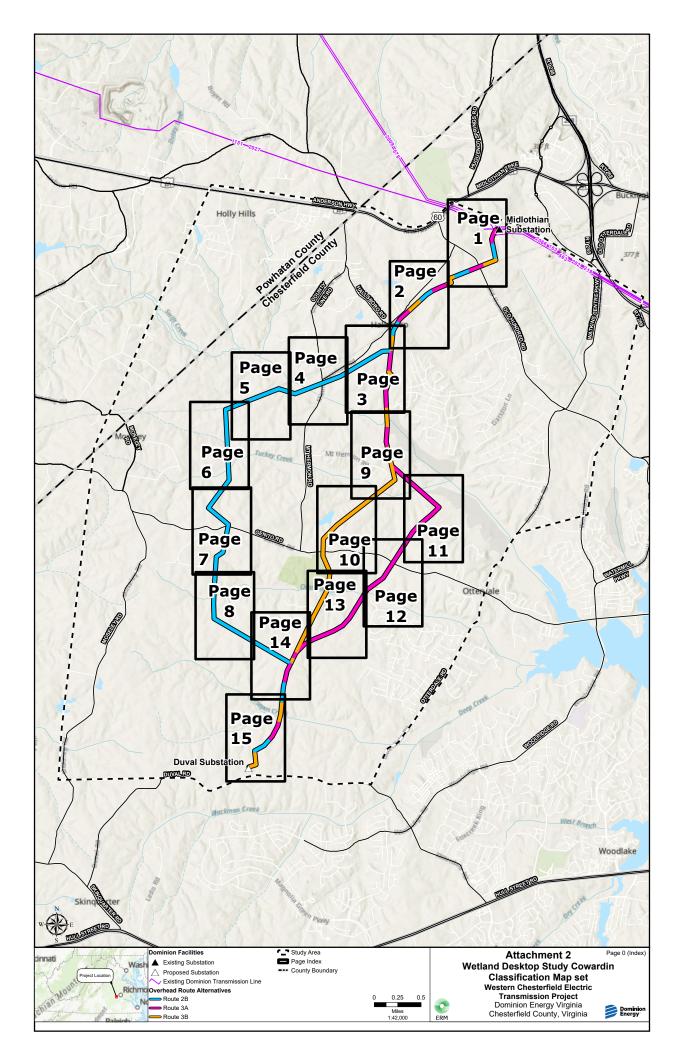


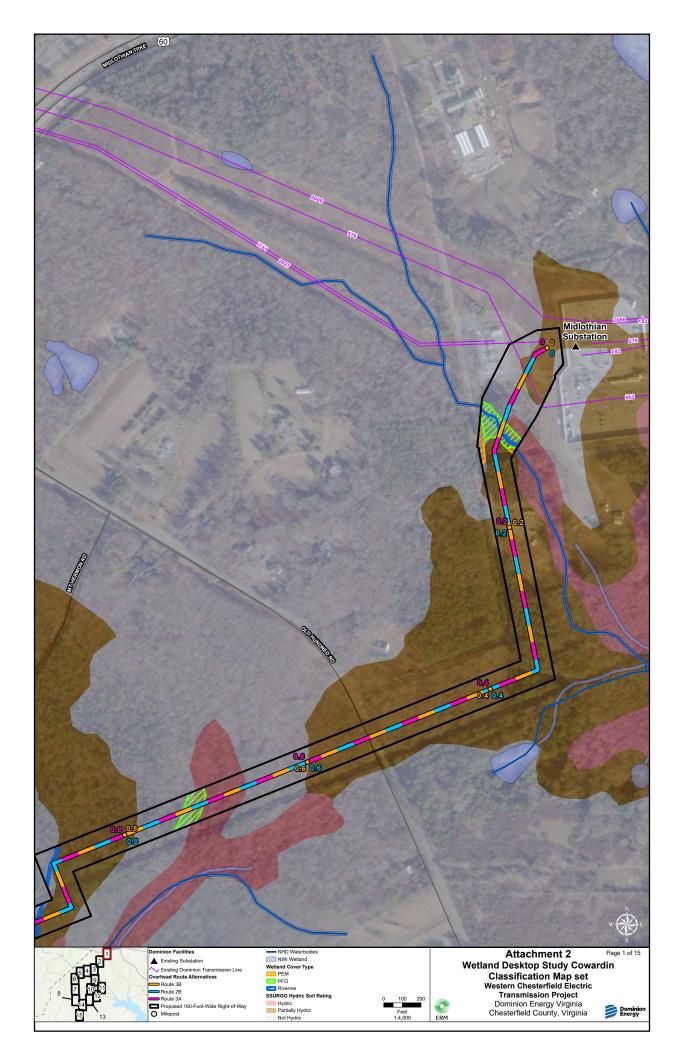
ATTACHMENT 1

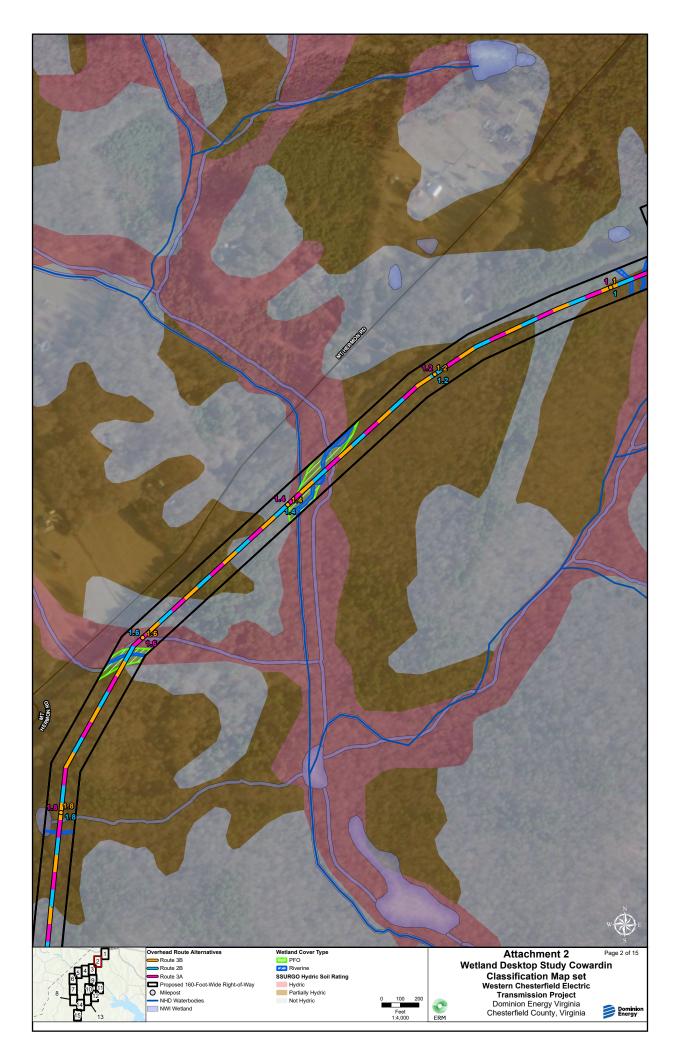


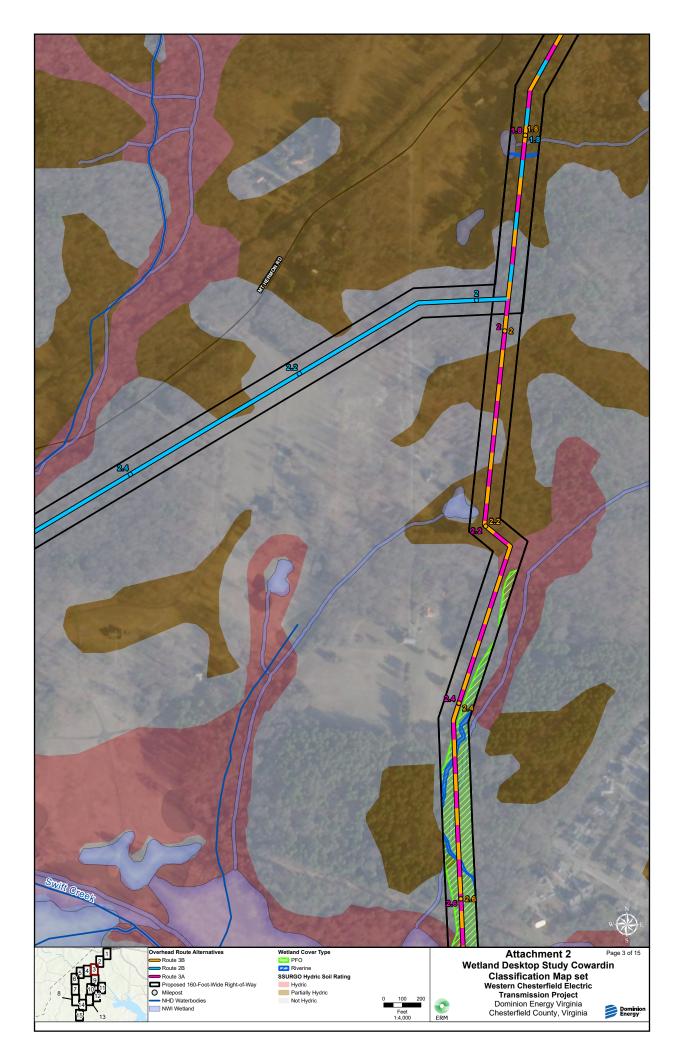


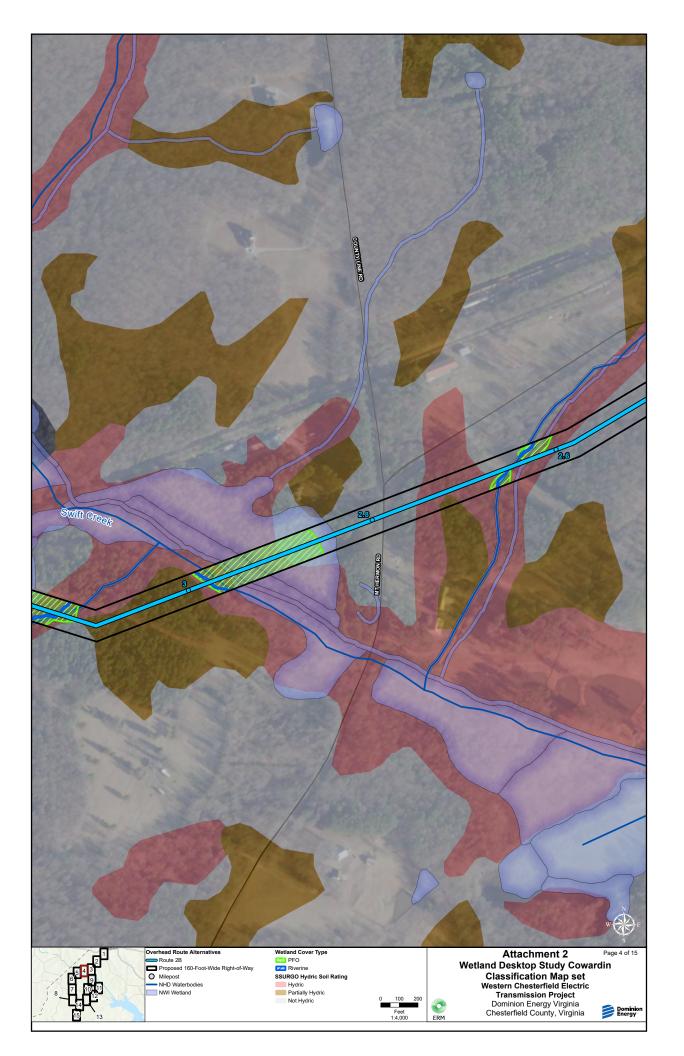
ATTACHMENT 2



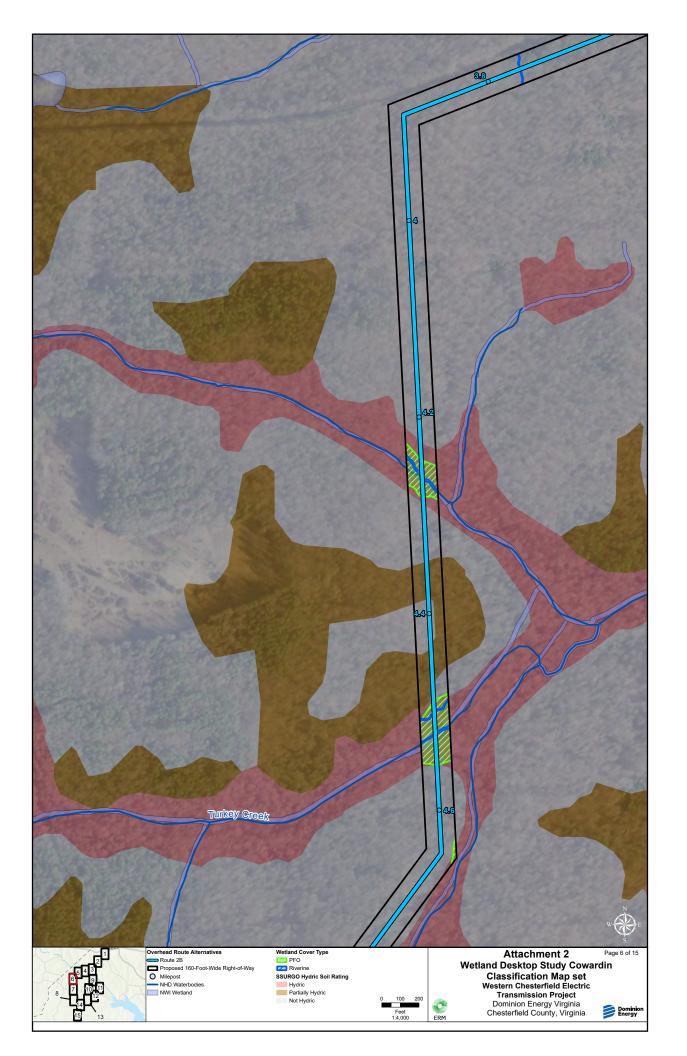


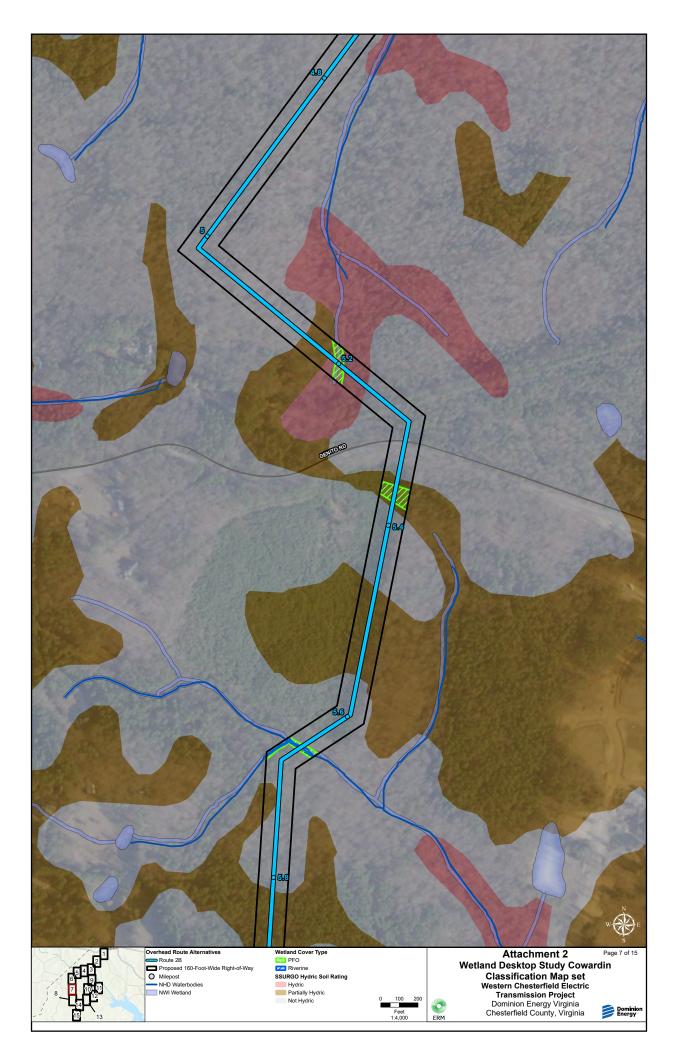




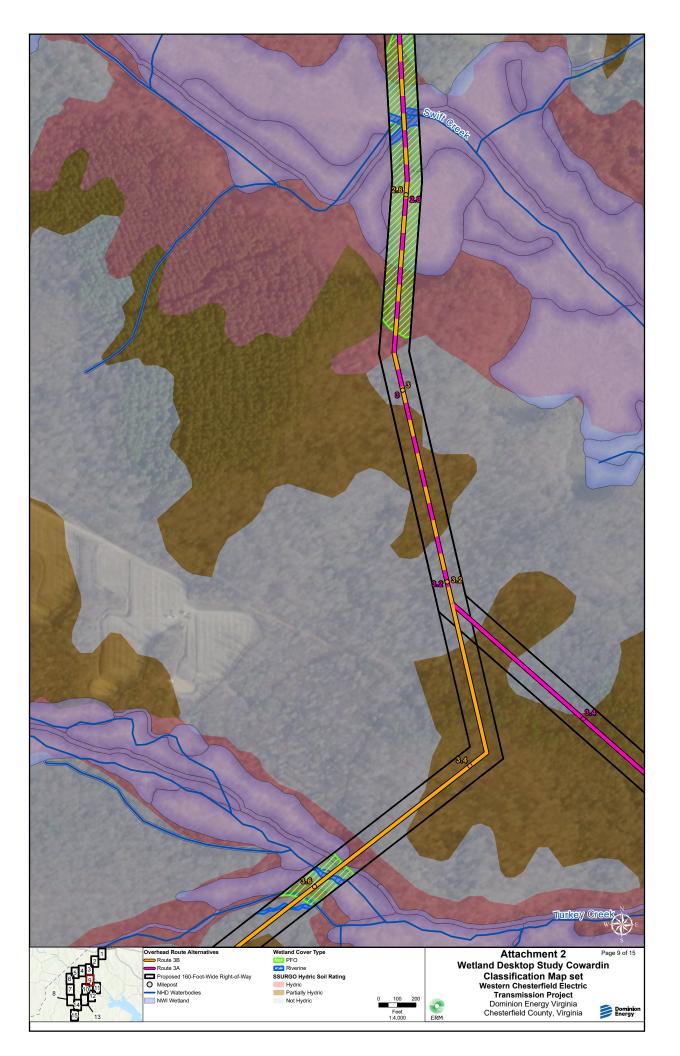




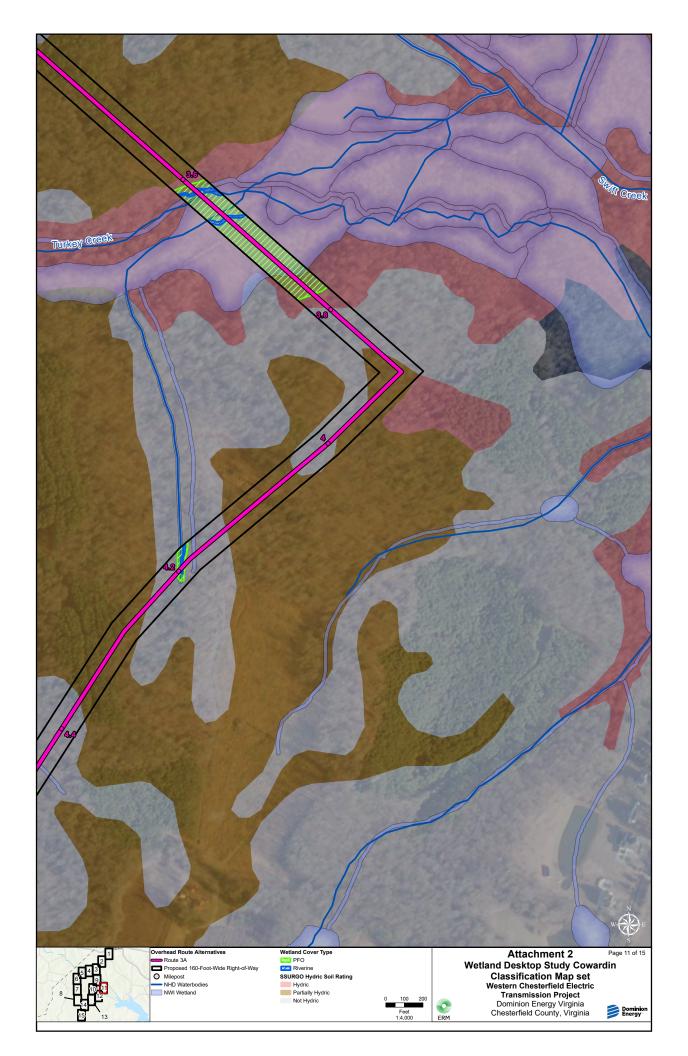


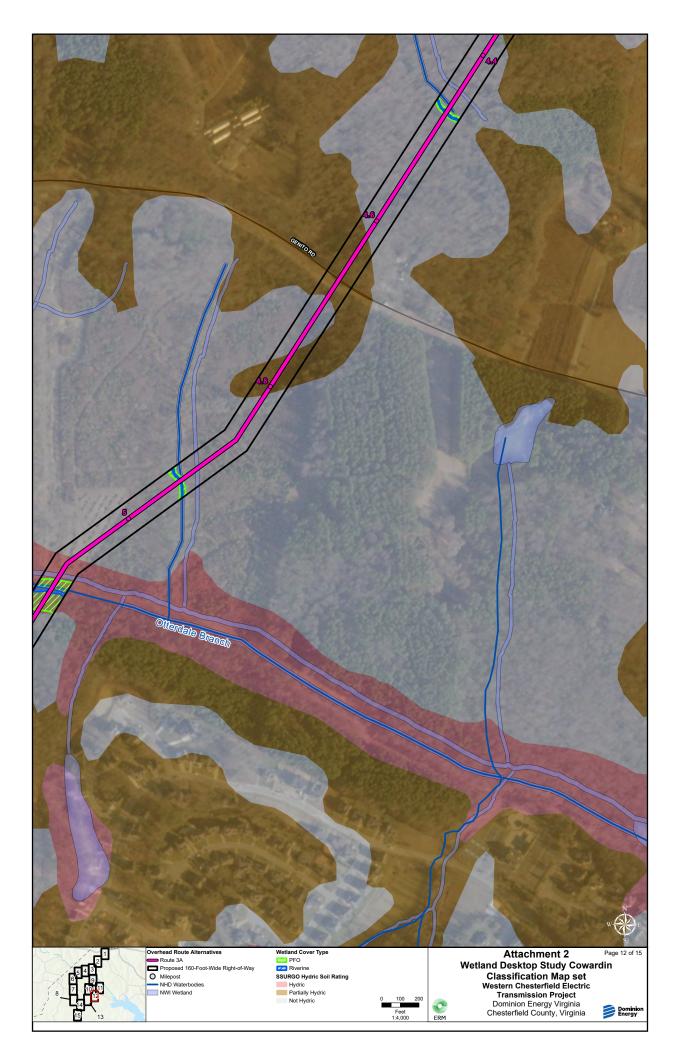


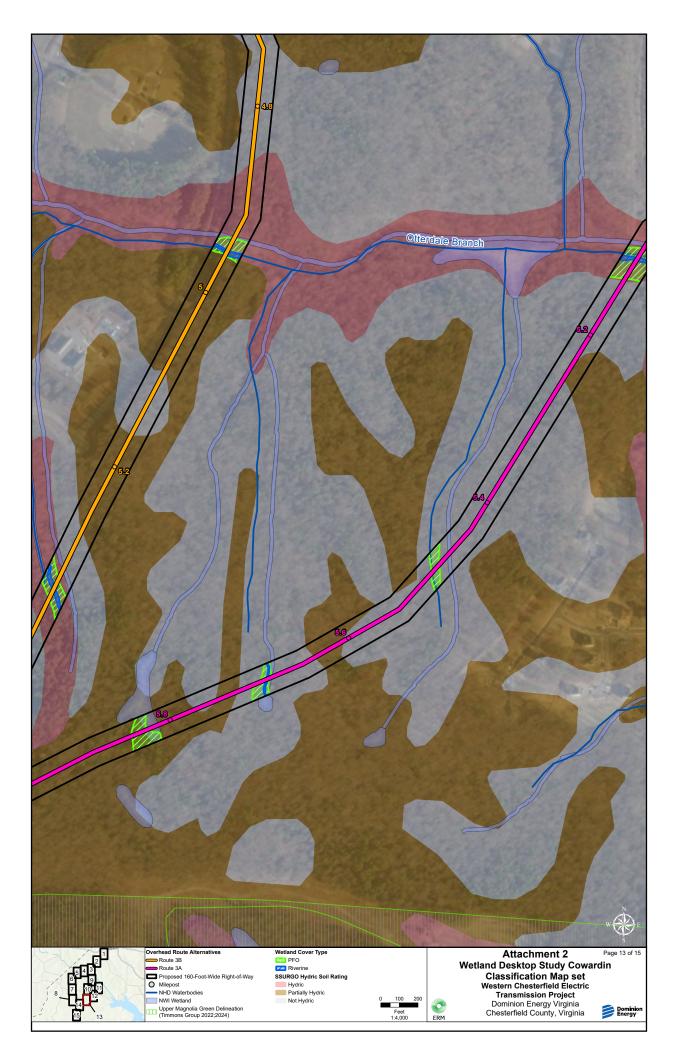


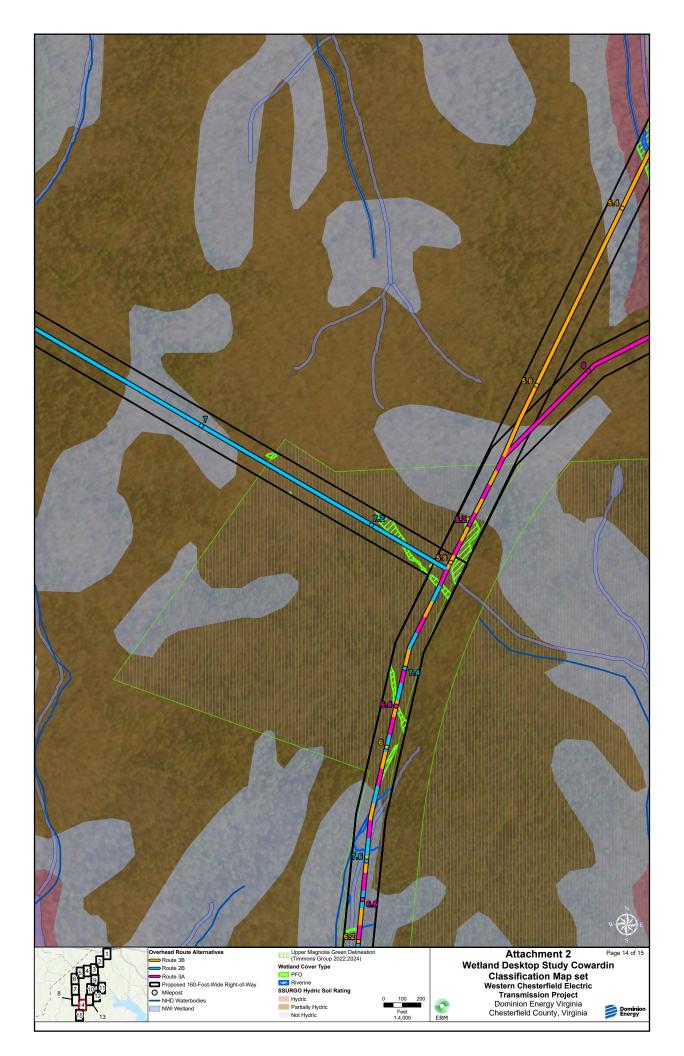








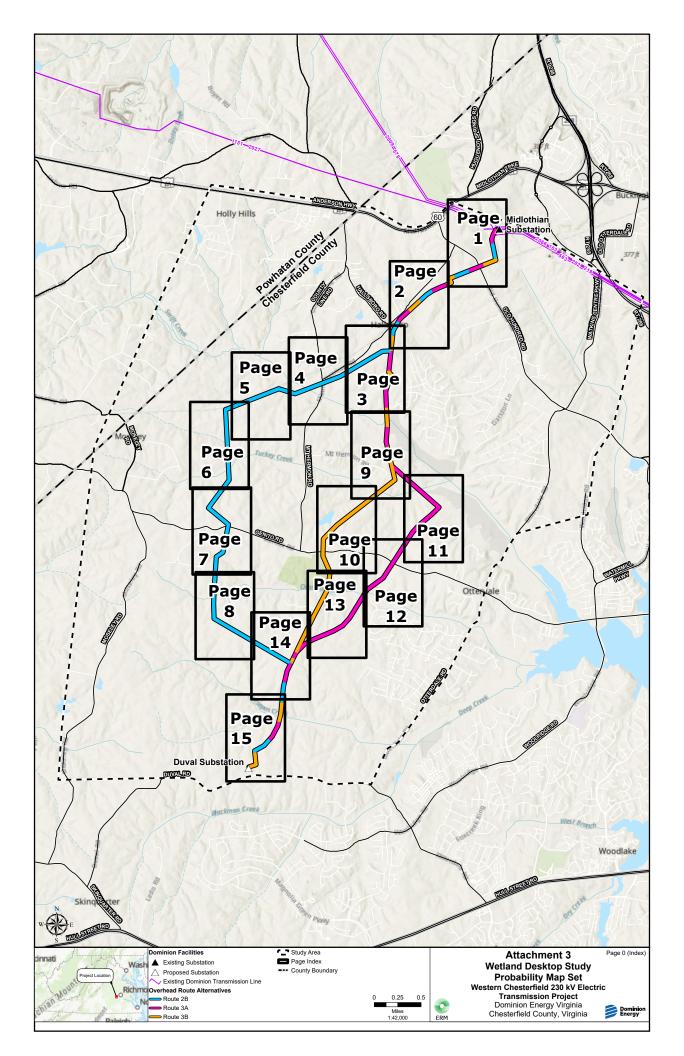


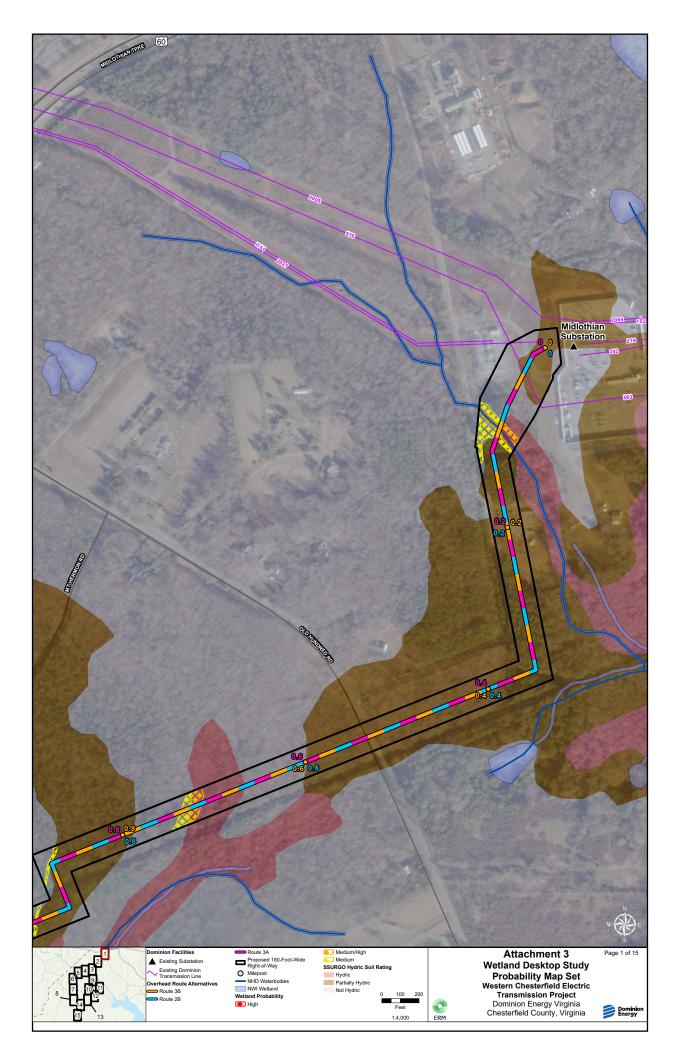


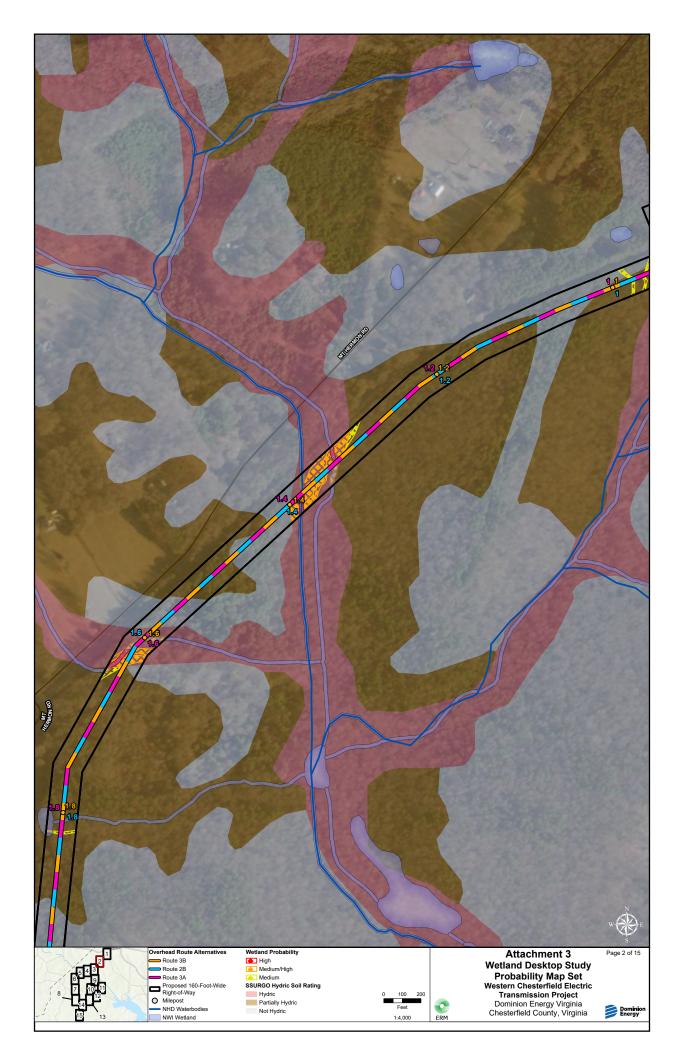


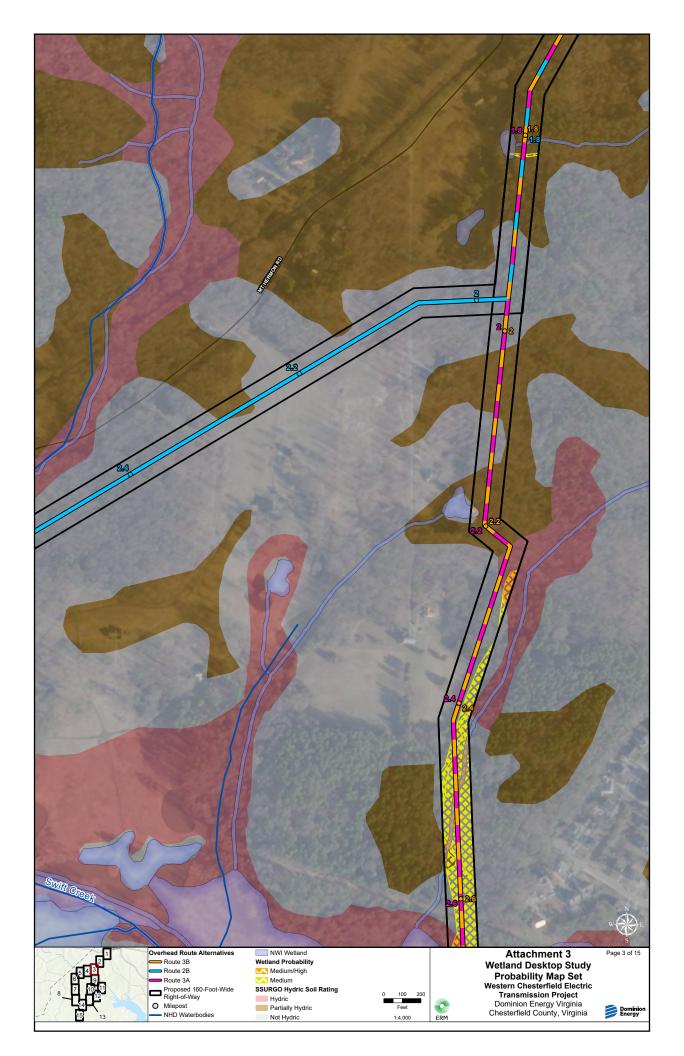


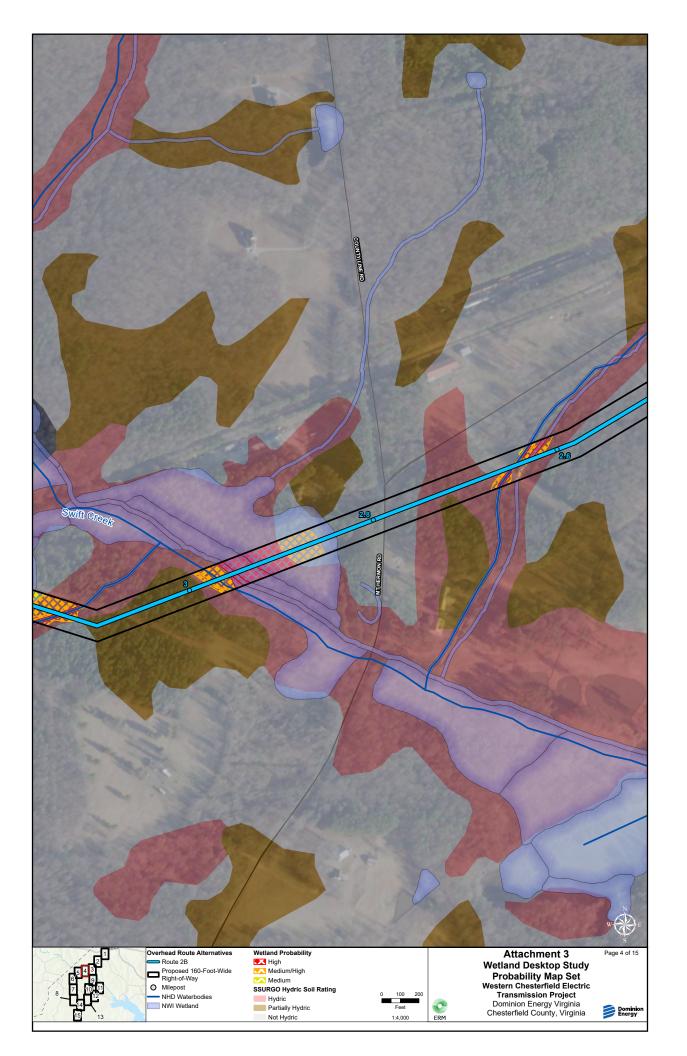
ATTACHMENT 3



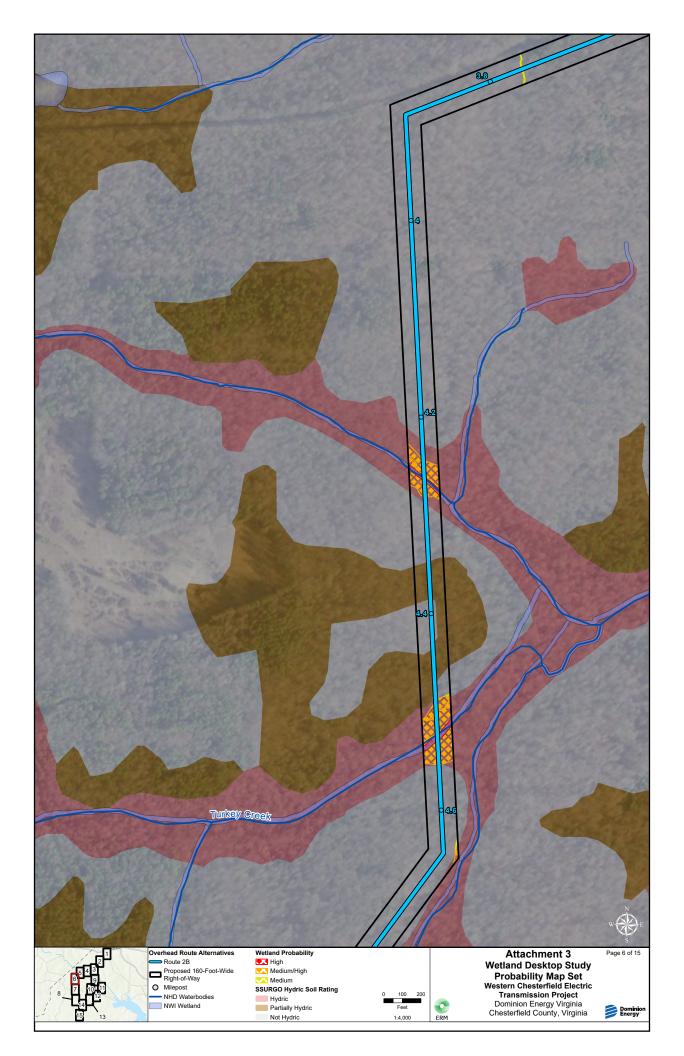


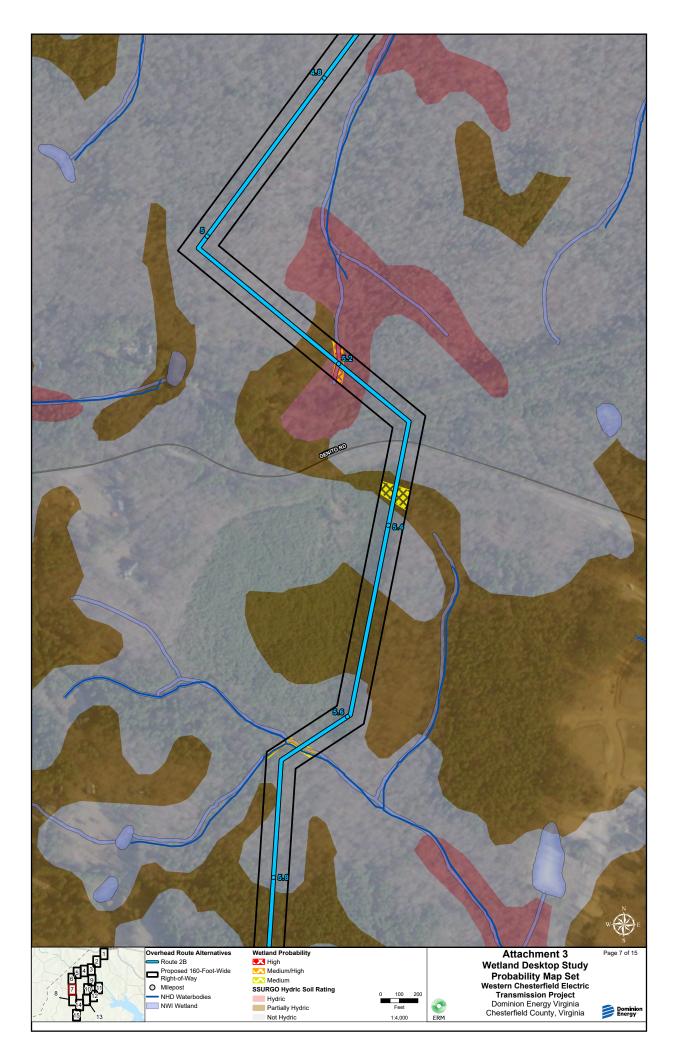




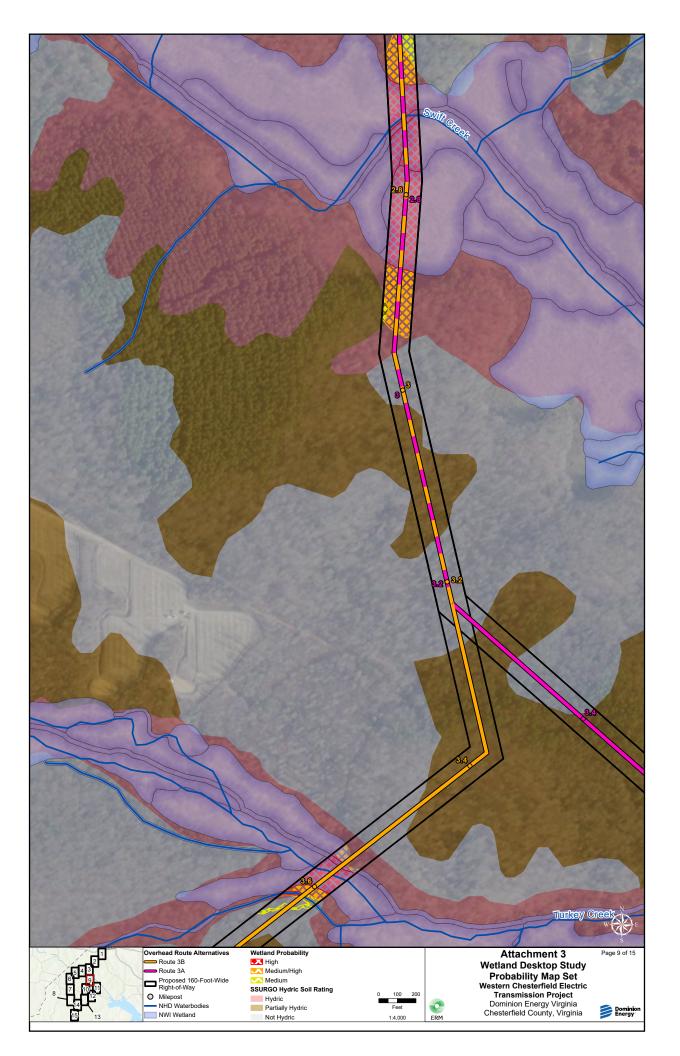




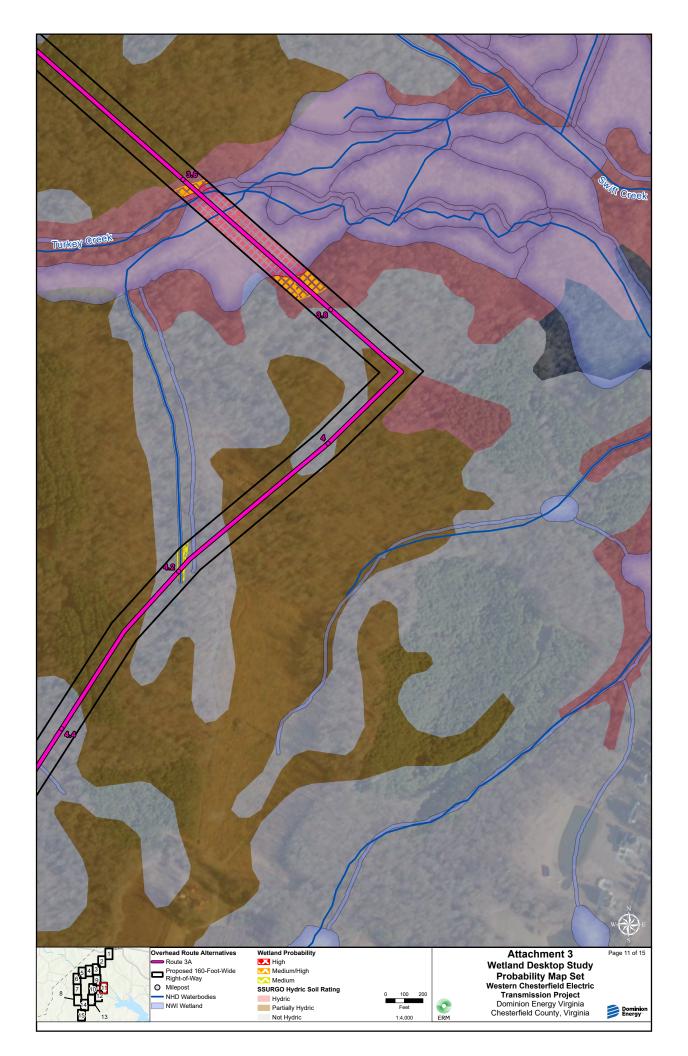


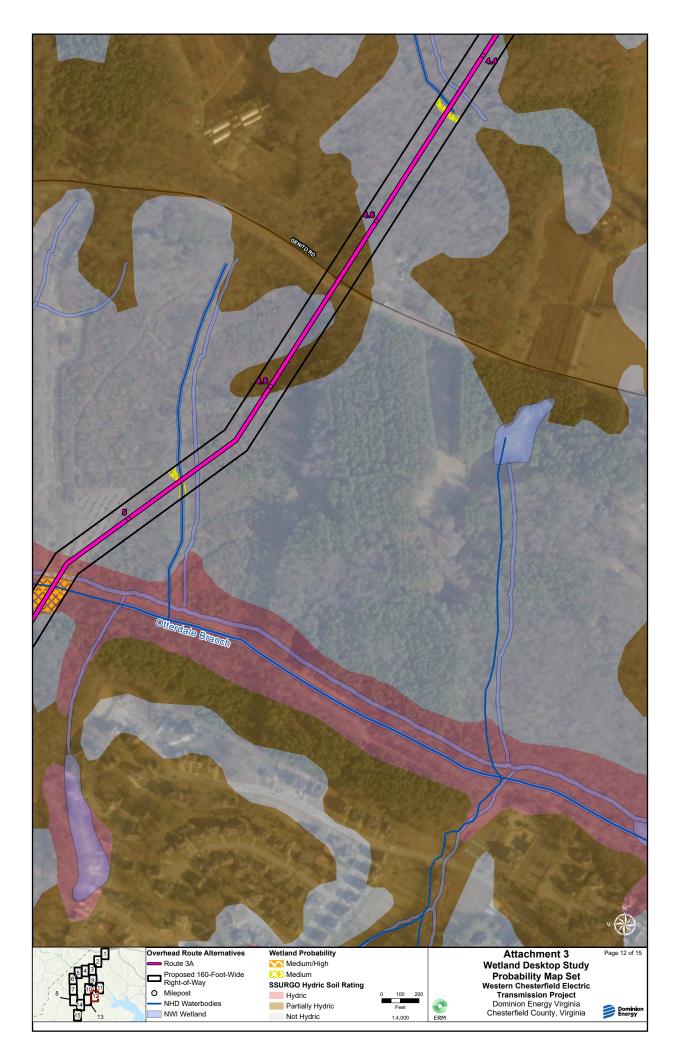


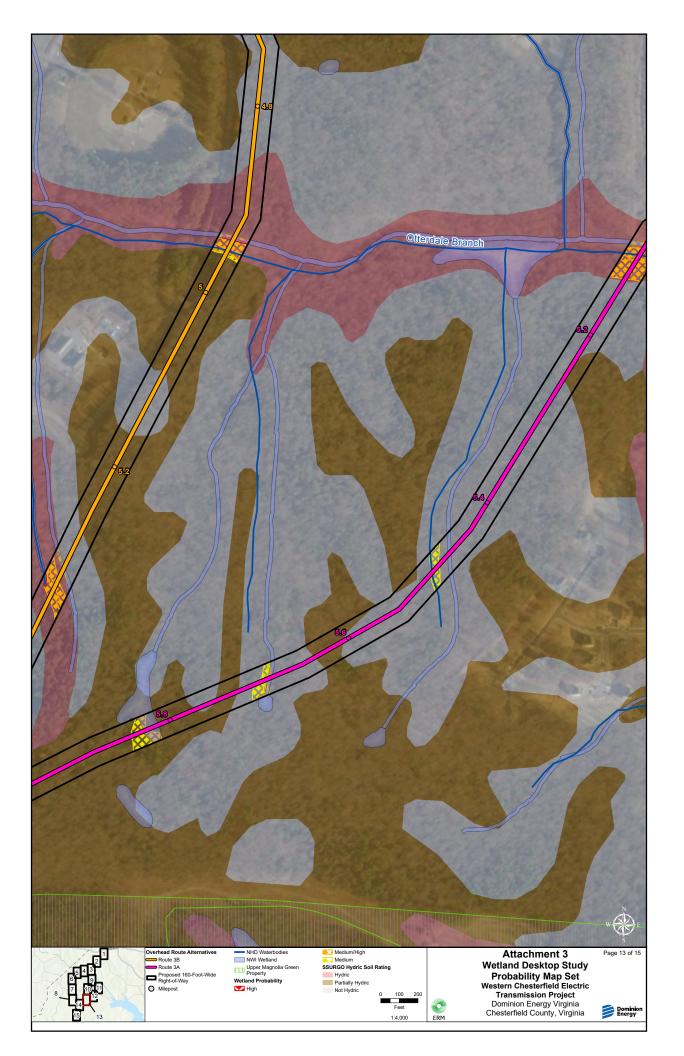


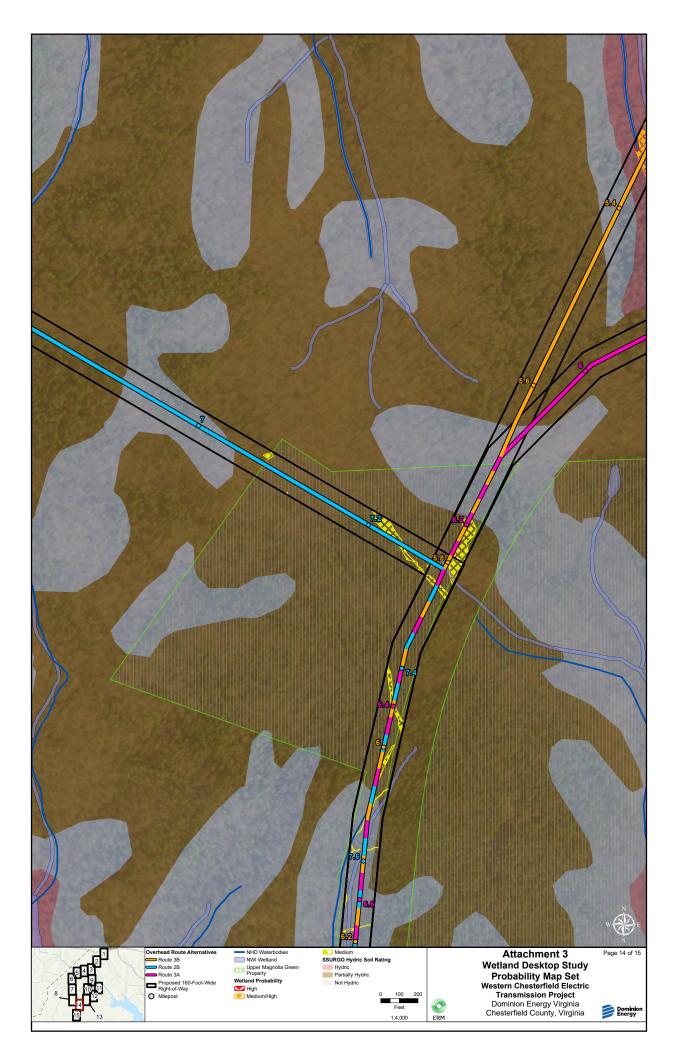
















APPENDIX E AGENCY CORRESPONDENCE

Matthew S. Wells *Director*

Andrew W. Smith Chief Deputy Director



Frank N. Stovall Deputy Director for Operations

Darryl Glover
Deputy Director for
Dam Safety,
Floodplain Management and
Soil and Water Conservation

Laura Ellis Deputy Director for Administration and Finance

March 5, 2025

Rosemary Hopson Environmental Resources Management, Inc. 800 Cranberry Woods Drive #290 Cranberry TWP, PA 55402

Re: 0688007, Western Chesterfield

Dear Ms. Hopson:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. 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.

Fine Creek Mills Quadrangle, Midlothian Quadrangle, Clayville Quadrangle, Hallsboro Quadrangle According to the information currently in Biotics, natural heritage resources have not been documented within the submitted project boundary including a 100 foot buffer. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. In addition, the project boundary does not intersect any of the predictive models identifying potential habitat for natural heritage resources.

DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for the right-of-way (ROW). The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (https://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2024.pdf) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs to the extent that it is consistent with erosion and sediment control requirements, robust monitoring, and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

In addition, the proposed project will impact Ecological Cores (C3, C4, C5) as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts

of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

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

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$360.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed at https://services.dwr.virginia.gov/fwis/ or contact Lee Brann at Lee.Brann@dwr.virginia.gov.

Should you have any questions or concerns, please contact me at 804-225-2429. Thank you for the opportunity to comment on this project.

Sincerely,

Tyler Meader

Tyle Meade

Natural Heritage Locality Liaison





Virginia Department of Wildlife Resources

Home » By Coordinates » VaFWIS GeographicSelect Options

Fish and Wildlife Information Service

Options

Species Information

By Name

By Land Management

References

Geographic Search

By Map

By Coordinates

By Place Name

Database Search

Help

Logout

Show This Page as **Printer Friendly**

VaFWIS Search Report Compiled on 1/24/2025, 4:12:16 PM

Known or likely to occur within a 2 mile buffer around polygon; center 37.5093200 -77.7516599 in 041 Chesterfield County, 145 Powhatan County, VA

View Map of Site Location

513 Known or Likely Species ordered by Status Concern for Conservation (displaying first 26) (26 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	la	Bat, northern long-eared	Myotis septentrionalis		BOVA,HU6
060017	FESE	la	Spinymussel, James	Parvaspina collina		BOVA
010032	FESE	lb	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
060173	FTST	la	Pigtoe, Atlantic	Fusconaia masoni		BOVA,HU6
060029	FTST	lla	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	la	Bat, little brown	Myotis lucifugus		BOVA,HU6
050034	SE	la	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA,HU6
050027	FPSE	la	Bat, tri-colored	Perimyotis subflavus		BOVA,HU6
060006	SE	lb	Floater, brook	Alasmidonta varicosa		BOVA
040096	ST	la	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	la	Shrike, loggerhead	Lanius ludovicianus		BOVA
060081	FPST	lla	Floater, green	Lasmigona subviridis		BOVA,HU6
040292	ST		Shrike, migrant loggerhead	Lanius Iudovicianus migrans		BOVA
030063	СС	Illa	Turtle, spotted	Clemmys guttata		BOVA,HU6
030031	СС	IIIc	<u>Kingsnake, scarlet</u>	Lampropeltis elapsoides		BOVA
010077		la	Shiner, bridle	Notropis bifrenatus		BOVA
060084		lb	Pigtoe, Virginia	Lexingtonia subplana		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA,HU6
020002		lla	Treefrog, barking	Hyla gratiosa		BOVA,HU6
040052		lla	Duck, American black	Anas rubripes	<u>Potential</u>	BOVA,BBA,HU6
040029		lla	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		lla	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040320		lla	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		lla	Woodcock, American	Scolopax minor		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		HU6
040105		IIb	Rail, king	Rallus elegans		BOVA

To view All 513 species View 513

^{*}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 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

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (2 records)

View Map of All Fish Impediments

ID	Name	River	View Map
1036	GENERAL LAND COMPANY DAM	TR-TOMAHAWK CREEK	<u>Yes</u>
1010	GORDON DAM	TR-TURKEY CREEK	<u>Yes</u>

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 (3 records)

View Map of All Query Results Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
CD0301	6	Mar 20 2006	HISTORIC	<u>Yes</u>
CD0702	3	Mar 9 2008	Unknown	<u>Yes</u>
CD9602	14	Jan 1 2002	HISTORIC	Yes

Displayed 3 Bald Eagle Nests

Species Observations (79 records - displaying first 20) <u>View Map of All Query Results</u>

- L - ID				N Species			
obsID	class	Date Observed	Observer	Different Species	Highest TE*	Highest Tier**	View Map
<u>66851</u>	SppObs	Jun 1 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	8		III	<u>Yes</u>
322326	SppObs	Apr 4 1986	M. Norman; R. Southwick; D. Shuber	12		III	<u>Yes</u>
<u>363626</u>	SppObs	Jan 1 1900		1		III	<u>Yes</u>
375250	Aquatics	Oct 5 2007	B. T. Watson, M. E. Bradley	7		IV	<u>Yes</u>
66870	SppObs	Oct 12 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	8		IV	<u>Yes</u>
<u>66869</u>	SppObs	Oct 5 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	10		IV	<u>Yes</u>
66867	SppObs	Sep 21 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	14		IV	<u>Yes</u>
66862	SppObs	Aug 20 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	7		IV	<u>Yes</u>
66849	SppObs	May 19 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	4		IV	<u>Yes</u>
66848	SppObs	May 7 2000	DR. R. J. REILLY (PRINCIPLE PERMITTEE)	15		IV	<u>Yes</u>
363688	SppObs	Jan 1 1900		1		IV	<u>Yes</u>
<u>363699</u>	SppObs	Jan 1 1900		3		IV	<u>Yes</u>
649049	SppObs	Apr 3 2023	David Beasley; Chris Horvath; Caleb Yankee; Tyler Mei	4			<u>Yes</u>
<u>631161</u>	SppObs	Sep 1 2019	Nettie; Hebert	1			<u>Yes</u>
628037	SppObs	Oct 21 2016	Dave Beasley; Jeremy Haley; Tyler Meighan; Vic DiCenz	5			<u>Yes</u>
<u>619876</u>	SppObs	Jun 11 2013	Sergio ; Harding Kylie; Draucker	1			<u>Yes</u>
613879	SppObs	Sep 8 2011	William; Kirkpatrick John ; Elliot	2			<u>Yes</u>
611511	SppObs	Jun 26 2010	Joyce; Caldwell	1			<u>Yes</u>
426879	SppObs	Aug 12 2005	VCU - INSTAR	9			<u>Yes</u>
<u>426873</u>	SppObs	Aug 5 2005	VCU - INSTAR	8			<u>Yes</u>

Displayed 20 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (7 records)

View Map of All Query Results Virginia Breeding Bird Atlas Blocks

		Breeding			
BBA ID	Atlas Quadrangle Block Name	Different Species	Highest TE*	Highest Tier**	View Map
48083	Clayville, CW	2			<u>Yes</u>
48086	Clayville, SE	71		III	<u>Yes</u>
48096	Fine Creek Mills, SE	54		III	Yes
49084	Hallsboro, CE	38		II	Yes
49083	Hallsboro, CW	1		II	<u>Yes</u>
49086	Hallsboro, SE	58		III	<u>Yes</u>
49096	Midlothian, SE	66		III	<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
041	<u>Chesterfield</u>	397	FESE	I
145	<u>Powhatan</u>	348	FESE	I

USGS 7.5' Quadrangles:

Clayville Fine Creek Mills Hallsboro Midlothian

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
JA23	Appomattox River-Skinguarter Creek	60	SE	l
JA28	Appomattox River-Smacks Creek	56	FPST	I
JA35	Winterpock Creek	51	SS	II
JA41	Swift Creek-Swift Creek Reservoir	57	SE	l
JA42	Swift Creek-Third Branch	63	FESE	l
JL02	Falling Creek	56	SS	II
JM81	Norwood Creek	49	FTSE	I
JM83	James River-Bernards Creek	65	FTSE	I

PixelSize=64, Anadromous=0.025994; BBA=0.046565, BECAR=0.020765; Bats=0.021679; Butler=0.372116; County=0.07071; HU6=0.86961; Impediments=0.02478; Init=0.421478; PublicLands=0.053788; SppObs=0.431124; TEWaters=0.028363; TierReaches=0.030907; TierTerrestria|=0.062821; Total=1.628312; Tracking_BOVA

© 1998-2025 Commonwealth of Virginia Department of Wildlife Resources

DWR | Credits | Disclaimer | Web Policy | Freedom of Information (FOIA) | View DWR Expenditures | DWR Organizational Chart | eVA: Transparency in Procurement | ADA

Compliance

1 3498442

If you have difficulty reading or accessing documents, please **Contact Us** for assistance.

Site Location 37,30,33.5 -77,45,05.9 is the Search Point back Map Click Show Position Rings Yes ○ No 1 mile and 1/4 mile at the Search Point Show Search Area ● Yes ○ No 2 Search distance miles buffer Display | Search Point is not at map center at center Base Map Choices BW Aerial Photography > Map Overlay Choices Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous Map Overlay Legend T & E Waters Federal State Predicted Habitat WAP Tier I & II Aquatic Terrestrial **Trout Waters** Class I - IV Class V - VI Anadromous Fish Reach Confirmed Potential Impediment Position Rings 1 mile and 1/4 mile at the

Search Point

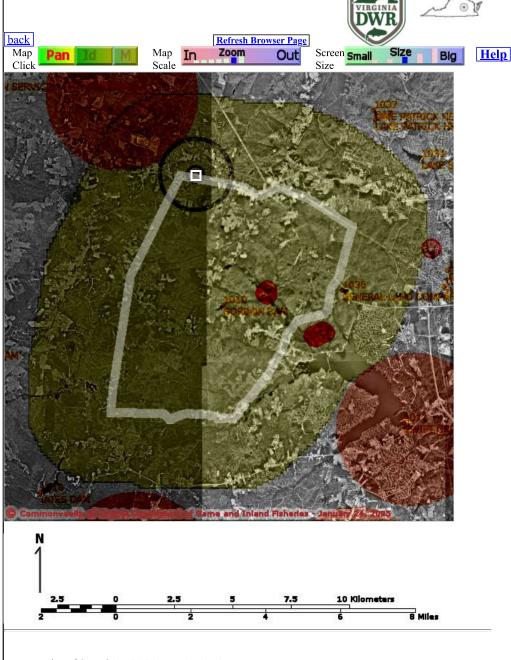
2 mile radius

Search Area

Concentration Areas

Bald Eagle

and Roosts



Point of Search 37,30,33.5 -77,45,05.9 Map Location 37,27,45.7 -77,44,01.5

Select Coordinate System: Degrees, Minutes, Seconds Latitude - Longitude

- O Decimal Degrees Latitude Longitude
- OMeters UTM NAD83 East North Zone
- OMeters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for

Map projection is UTM Zone 18 NAD 1983 with left 248621 and top 4159314. Pixel size is 32 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 19200 meters east to west by 19200 meters north to south for a total of 368.6 square kilometers. The map display represents 63002 feet east to west by 63002 feet north to south for a total of 142.3 square miles.

Topographic maps and Black and white aerial photography for year 1990+are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2025-01-24 16:25:21 (qa/qc March 21, 2016 12:20 - tn=3498442.0 dist=3218
I)
\$poi=37.5093200 -77.7516599

© 1998-2025 Commonwealth of Virginia Department of Wildlife Resources | <u>DWR | Credits | Disclaimer | Contact | Web Policy |</u>



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

In Reply Refer To: 03/07/2025 14:54:31 UTC

Project Code: 2025-0065644

Project Name: Western Chesterfield

Subject: List of threatened and endangered species that may occur in your proposed project

location 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 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 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.

Project code: 2025-0065644

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:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

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 Project Code 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
- Bald & Golden Eagles
- Migratory Birds

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

Project code: 2025-0065644

Project Code: 2025-0065644
Project Name: Western Chesterfield

Project Type: Transmission Line - New Constr - Above Ground

Project Description: New overhead powerline route.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4634676,-77.73599815418376,14z



Counties: Chesterfield and Powhatan counties, Virginia

ENDANGERED SPECIES ACT SPECIES

Project code: 2025-0065644

There is a total of 3 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. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Project code: 2025-0065644

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	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered
INSECTS NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> There is proposed critical habitat for this species. Your location does not overlap the critical	Proposed Threatened

CRITICAL HABITATS

Species profile: https://ecos.fws.gov/ecp/species/9743

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> 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.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

- 1. The Bald and Golden Eagle Protection Act of 1940.
- 2. The Migratory Birds Treaty Act of 1918.

Project code: 2025-0065644 03/07/2025 14:54:31 UTC

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the <u>National Bald Eagle Management Guidelines</u>. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to <u>Bald Eagle Nesting and Sensitivity to Human Activity</u>.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an <u>incidental take permit</u> may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the <u>Do I Need A Permit Tool</u>. For assistance making this determination for golden eagles, please consult with the appropriate Regional <u>Migratory Bird Office</u> or <u>Ecological Services Field Office</u>.

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME BREEDING SEASON

Bald Eagle Haliaeetus leucocephalus

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626 Breeds Sep 1 to Jul 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper

Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Project code: 2025-0065644

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (

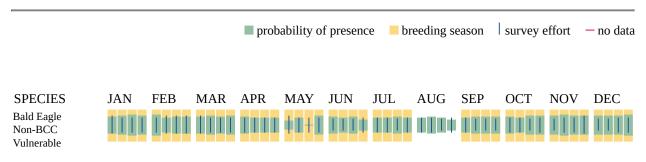
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (-)

A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory

birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The Bald and Golden Eagle Protection Act of 1940.
- 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black-billed Cuckoo <i>Coccyzus erythropthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Cerulean Warbler <i>Setophaga cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Chuck-will's-widow <i>Antrostomus carolinensis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9604	Breeds May 10 to Jul 10
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Grasshopper Sparrow <i>Ammodramus savannarum perpallidus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20

NAME	BREEDING SEASON
Kentucky Warbler <i>Geothlypis formosa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443	Breeds Apr 20 to Aug 20
Prairie Warbler <i>Setophaga discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

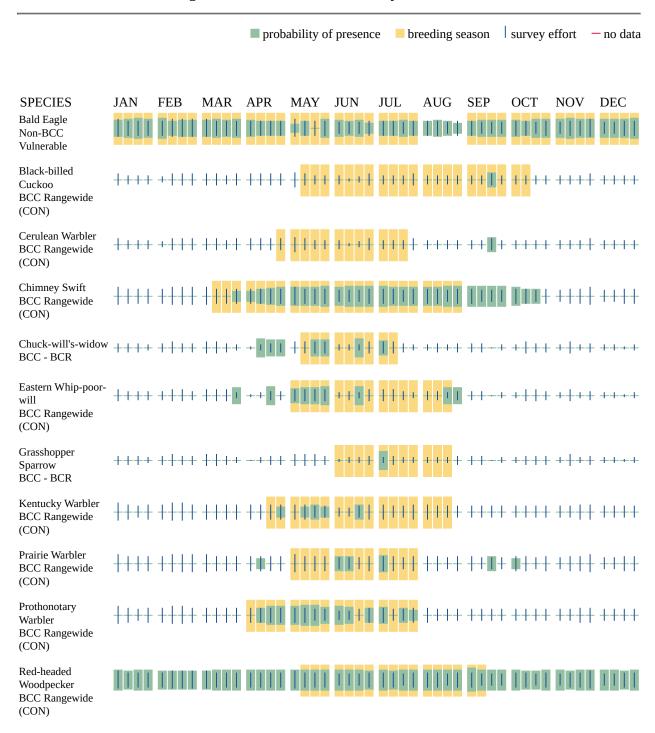
Breeding Season (

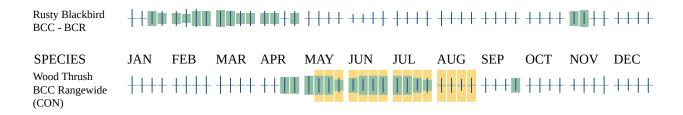
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–) A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Project code: 2025-0065644 03/07/2025 14:54:31 UTC

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Rosemary Hopson

Address: 800 Cranberry Woods Dr

Address Line 2: #290

City: Cranberry Twp

State: PA Zip: 16066

Email rosemary.hopson@erm.com

Phone: 3072998800



CCB Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-77.70217895507811, 37.459734584562185]

Man Link

 $\label{locator} $$ $ \frac{\text{https://ccbbirds.org/maps/\#layer=VA+Eagle+Nest+Locator\&zoom=12\&lat=37.459734584562185\&lng=-77.70217}{895507811\&base=Street+Map+%28OSM%2FCarto%29}$

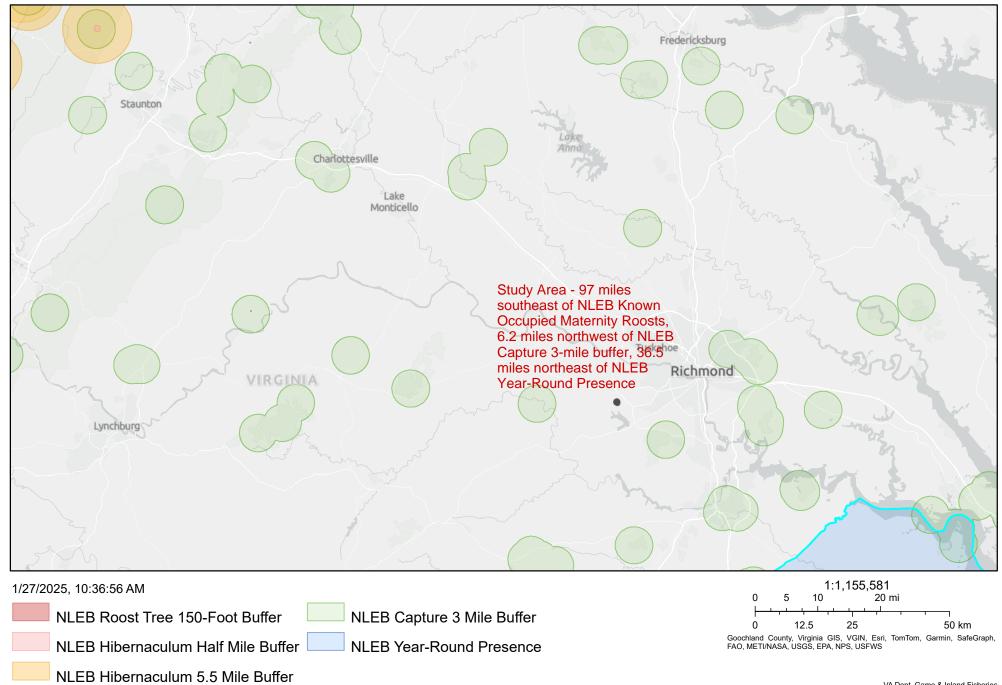
Report Generated On: 01/24/2025

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the <u>Data Use Agreement</u> to ensure compliance with our data use policies. For additional data access questions, view our <u>Data Distribution Policy</u>, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

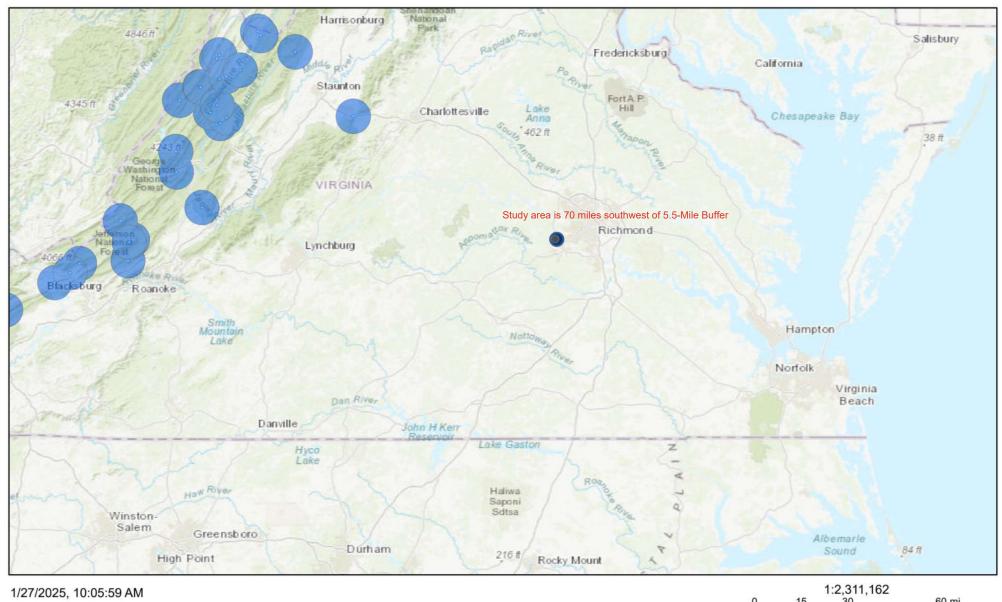
Report generated by The Center for Conservation Biology Mapping Portal.

To learn more about CCB visit $\underline{\text{ccbbirds.org}}$ or contact us at info@ccbbirds.org

NLEB Locations and Roost Trees - Western Chesterfield



MYLU-PESU Locations and Roost Trees - Western Chesterfield

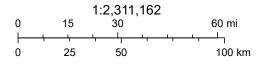




Critical Habitat - Western Chesterfield



Virginia Critical Habitat (published)



Esri, HERE, Garmin, FAO, USGS, EPA, NPS

From: nhreview (DCR)
To: Briana Cooney

Cc: <u>Hypes, Rene (DCR)</u>; <u>Weber, Joseph (DCR)</u>

Subject: Re: 0642267, Golden-Mars

Date: Thursday, May 23, 2024 9:58:13 AM

Attachments: image002.png

image.png image.png

EXTERNAL MESSAGE

Briana,

Thanks for your patience with this. I've reiterated your questions in blue, with answers below.

I was reviewing the SCS shapefile you all sent, and I noticed that there are pieces of the SCS that are now developed. Have there been any studies of this area recently? Are you able to tell me when this SCS area was created or last modified?

- Our **Chief of Biodiversity Information and Conservation Tools** said that there does seem to be areas of the SCS that were developed since it was created. Much of the SCS is still intact, however, and perhaps even more important for maintaining water quality for NHR.
- It looks like the SCS was last modified 7/6/2023. Stream Conservation Sites do not represent protected areas, but waterways and terrestrial areas that contribute to the habitat quality of the documented resource. These areas will affect the water quality of the Yellow lampmussel habitat regardless of their current land use.

I also noticed that the natural heritage resource associated with this SCS is the Yellow lampmussel; however, in my database searches, I haven't seen a documented occurrence of this species within the SCS or study area. Do you have additional information on the presence of this species?

- Generally we do not share the location of our documented resources, only the associated SCS or Conservation Site. Looking at my data, the Yellow lampmussel is documented within the SCS. The documented locations are in Broad Run, the main branch of the SCS in the northern portion. The other stream areas included in the SCS are upstream of documented occurrences and changes to the water quality within the SCS will impact the documented resource.
- I can't really comment on the lack of the Yellow lampmussel in the databases without knowing which ones you used. It would not be found in DWR or USFWS databases as it is not a listed species. NHDE (*Natural Heritage Database Explorer*) only shows documented occurrences to Tier 3 users, which is only available to our conservation partners.

I've also noticed in this project and previous projects that some ecological cores identified are less than 100 acres, and the VDCR letter states: "Ecological Cores are areas of at least 100 acres of continuous interior..." Should we continue to study cores that are under 100 acres?

- The cores are found in <u>Virginia Natural Landscape Assessment</u> Ecological Cores and Habitat Fragments data layer. It looks like the feature in question is a habitat fragment, the link above can give you some more information about Cores and Habitat Fragments.
- From our Chief of Biodiversity Information and Conservation Tools: "Smaller areas of continuous interior cover (i.e., 10 to 99 acres) called Habitat Fragments support Ecological

Cores and provide similar functions and values. Both feature types are discussed on the website.

- Ecological Cores and Habitat Fragments are ranked by Ecological Integrity based on variables including rare species habitats, habitat diversity, resilience, and water quality, to reflect the wide range of important benefits and ecosystem services they provide. Brief descriptions of Ecological Integrity rankings are:
- C1 Outstanding: These cores tend to be large in area, of deepest interior, of greatest water quality protections, highest in habitat diversity and rich in rare species, including species listed as threatened or endangered. Of all Ecological Cores in the Commonwealth 1% are ranked as C1.
- C2 Very High: These cores have all or many of the same characteristics and values as C1 cores, though to a lesser extent. About 2.5% of all cores in the Commonwealth are ranked C2.
- C3 High, C4 Moderate, and C5 General: These cores, as well as **habitat fragments**, have some of the same quantifiable values and characteristics as higher-ranked cores, though much reduced due to their having substantially less interior area and smaller area overall.
- There are no Habitat Fragments ranked above C3. "
- Due to Habitat Fragments ability to provide important ecological functions and values, we do still recommend avoiding impacts and when impacts can not be avoided to keep them to the edge of the fragment/core. We only recommend a formal impact analysis for C1 and C2 Cores, which never include fragments.

Hopefully this information is helpful. I have Cc'd Joe Weber our Chief of Biodiversity Information and Conservation Tools and Rene' Hypes our Project Review Coordinator. Let me know if you have anymore questions or if any of the information here needs clarification.

Thank you,

Nicki Gustafson (she/her) Project Review Assistant

Division of Natural Heritage
Virginia Department of Conservation and Recreation
600 E. Main Street, 24th Floor
Richmond, VA 23219
804-625-3979 | nicki.gustafson@dcr.virginia.gov







APPENDIX F VISUAL SIMULATIONS



Appendix F: Key Observation Point Descriptions, Photographs, and Simulations

Western Chesterfield Electric Transmission Project

1

1. INTRODUCTION

This appendix supplements the analysis in Section 5.3 of the Environmental Routing Study (Routing Study) for Virginia Electric and Power Company's (Dominion Energy Virginia, Dominion, or the Company) 230 kilovolt (kV) Duval-Midlothian Transmission Lines (four total circuits) located in Chesterfield County, Virginia (Project). It describes existing visual resource conditions at each key observation point (KOP), describes anticipated changes to these conditions due to Project construction and operation, and assesses the Project's visual impacts based on commonly used federal visual resource management systems, including:

- Federal Highway Administration Guidelines for the Visual Impact Assessment of Highway Projects (FHWA 2015)
- US Department of Agriculture Forest Service Scenery Management System (USFS 1995)
- Bureau of Land Management Visual Resource Management (BLM 1984)

These systems provide standardized approaches that recognize both the environmental setting (visual features that contribute to the landscape) and viewer perception of this setting (viewer preferences and sensitivity). While each of these systems is tailored meet the needs and landscapes of its respective federal agency, the methodologies all share common elements that can be used to objectively assess projects that lack a federal nexus. Specifically, all three methodologies establish procedures or techniques for objectively describing existing visual resource conditions of the landscape and for estimating the level of visual change caused by a proposed project.

Based on these federal methodologies, ERM's approach to evaluating existing visual conditions in the Project study areas focuses on three primary criteria, as described below.

- Landscape character: The set of attributes, qualities, or traits in the landscape that make it identifiable or unique. The landscape character is a combination of the following:
 - Landforms—the distinct topographic features of the landscape including any visible water bodies or rivers; and
 - Vegetation—the variety of vegetation/vegetative communities present on the landscape; and
 - Built Environment—Existing structures, facilities, or other human modifications on the landscape.

These criteria are also used to evaluate the magnitude of visual change from the proposed Project. Magnitude of change is categorized based on Project visibility and the degree to which the Project changes the existing landscape characteristics. For each KOP, the magnitude of visual change is estimated as negligible, small, medium, or large.

- Viewer Types and Sensitivity: Viewers are defined by their interaction with a landscape
 (e.g., residents, motorists) and their preferences or sensitivity to changes or modifications
 to the landscape. A qualitative sensitivity level (low, medium, or high) is estimated for each
 viewer group based on their anticipated perception of visual changes on the landscape and
 level of concern with these changes.
- Distance Zones: A frame of reference to discuss the landscape character and specific features based on their distance from a specific location. Distance zones include the:
 - foreground (up to 0.5 mile from the viewer);
 - middle ground (0.5 to 2 miles from the viewer); and
 - background (more than 2 miles from the viewer).

The remainder of this appendix describes existing conditions and Project impacts at each key observation point (KOP) identified for the Project, based on the criteria listed above. Each KOP evaluation includes a photograph of existing conditions and a photographic simulation of the proposed Project. High-resolution versions of these images are provided at the end of this appendix. The information in this appendix is the basis of the visual impacts described in Section 5.3 of the Routing Study.

2. KOP DESCRIPTIONS

As noted in Section 5.3, there is a substantial amount of approved, proposed, and planned development in the Project study area that will collectively change the existing visual resource setting and character of the area. The KOP descriptions in this section take into account current visual characteristics and generally do not speculate about how these characteristics may change due to approved, proposed, or planned development. That said, the visual impact discussion in the Routing Study acknowledges the changing visual setting and potential increased visibility and corresponding visual resource changes that may result from the Project.

Except where noted, all distances are approximate and are rounded to the nearest 0.1 mile or 100 feet.

2.1 KOP 102

2.1.1 EXISTING CONDITIONS



FIGURE 1 KOP 102, EXISTING CONDITIONS

KOP 102 is on Old Hundred Road, 1.0 mile southeast of the intersection with Midlothian Turnpike (Figure 1). The KOP faces northwest on a rural, two-lane road bordered by maintained lawns, other ground vegetation, and forested areas. An existing distribution line runs along the righthand (eastern) side of the road. The trees enclose views on the road and limit the views to the foreground. The characteristics of the landscape visible from KOP 102 are described below.

Landforms

- The landscape is relatively smooth and flat with subtle undulations discernable along the road.
- A shallow ditch creates a soft line that parallels the lefthand (western) side of the road.

Vegetation

- The mix of mowed lawn, natural grasses, shrubs, and trees creates a layered effect across the view. The density of vegetation limits views beyond the foreground.
- The shrubs and trees primarily appear as rounded, amorphous forms with some pyramidal forms. The trees add tall, vertical elements to the view.
- The tops of the trees create an irregular, horizontal line across the sky. The transition between lawn and trees is defined by a curved, horizontal line.
- The vegetation is predominantly green hues, with some matte reds and yellows adding variety.
- The mix of vegetation also contributes to a variety of textures from soft, smooth lawns to coarser leaves on the trees and shrubs.

Built Environment

- A flat, gray, two-lane road runs diagonally through the view and disappears behind the vegetation in the distance. Yellow and white lines add vibrant colors to the gray roadway.
- An existing distribution line along the righthand (eastern) side of the road added repeating, tall, vertical forms that are connected by thin, slightly undulating overhead horizontal lines.
- The tops of the distribution poles and lines are clearly visible above the tops of the trees and stand out against the sky.
- The bottoms of the light gray distribution line poles generally blend into the adjacent trees.

The primary viewer group at KOP 102 is motorists traveling along Old Hundred Road. Motorists would have low to medium sensitivity to changes in visual conditions at this location. In addition, several residences and a church are near this KOP. While the churchgoers may be less sensitive to changes in visual conditions (due to the internally focused nature of worship services and other activities), area residents typically have higher sensitivity levels.

2.1.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

The shared alignment of all route alternatives is 0.3 mile north-northwest of KOP 102. The existing, tall, mature trees along Old Hundred Road block views of the proposed Project; therefore, the Project would result in no change in visual conditions at this KOP. Any visual impacts from the Project would be negligible from KOP 102.

2.2 KOP 103

2.2.1 EXISTING CONDITIONS



FIGURE 2 KOP 103, EXISTING CONDITIONS

KOP 103 is at the intersection of Mount Hermon Road and Hallsboro Road (Figure 2). The view faces the northeast along Mount Hermon Road and includes a gravel parking area and distribution line to the left (north) of the road and the Norfolk Southern railroad bordered by a dense stand of trees to the right (south) of the road. The terrain and forest cover enclose and limit views from this KOP to the foreground. The characteristics of the landscape visible from KOP 103 are described below.

Landforms

- The landscape is relatively smooth and flat, although there are slight elevation changes in the foreground.
- There is a slight dip in the middle of the view and a gentle rise that extends forward and backward into the view.
- There is also a pronounced slope from the low point in the foreground to the railroad ballast.

Vegetation

- A contiguous wall of tall, mature trees extends along the righthand (south) side of Mount Hermon Road. A tall cluster of trees is visible on the lefthand (north) side of the view, with a dense mass of trees and other vegetation beyond.
- There is a slightly undulating, grass field on the lefthand side of Mount Hermon Road.
- The tops of the trees create an irregular, continuous line that is prominent against the sky.
 The trunks of several trees appear as tall, straight vertical lines that contrast with the primarily horizontal lines present in the built environment.
- The trees, grasses, and other vegetation exhibit a variety of green hues with some areas of tan and yellow.
- The small patches of grasses and other low-lying plants along the roadside and railroad embankment add medium textures to the view.

Built Environment

• A gray, two-lane paved road and an adjacent railroad track runs diagonally across the foreground. Both features introduce strong, linear elements to the landscape.

4

- A tan, flat, geometric gravel parking area is present to the left (north) of Mount Hermon Road and adds a strong horizontal line to this portion of the view.
- The smooth textures of the parking area, road, and railroad contrast with the medium textures of adjacent vegetation.
- A distribution line along the lefthand (north) side of Mount Hermon Road introduces tall, straight, vertical poles and regular, thin, continuous overhead lines to the view.
- Signs, utility enclosures, fencing, and other smaller built features add rectangular shapes, vertical and horizontal lines, and various colors (white, blue, green, metallic, brown, tan) to the view.

The primary viewer groups at KOP 103 are area residents and motorists. There are multiple homes in the vicinity that offer similar views as KOP 103. The viewers in these homes and others in the area likely have medium to high sensitivity to changes in visual resources. Motorists along Mount Hermon Road and Hallsboro Road, some of whom are also area residents, have medium sensitivity to visual changes in the landscape.

2.2.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

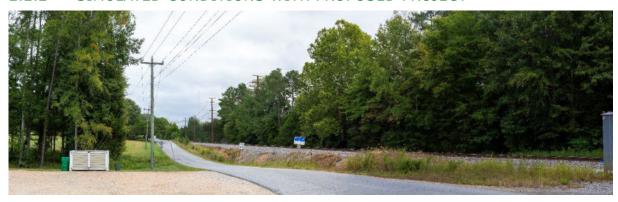


FIGURE 3 KOP 103, SIMULATED CONDITIONS

The shared alignment of all route alternatives is less than 0.1 mile east-northeast of KOP 103. The Project would add several transmission poles and overhead conductors to the foreground of the view in this location (Figure 3). From KOP 103, the proposed Project would result in changes to the visual characteristics of the landscape, as described below.¹

Landforms

• There would be no substantial changes to the terrain in this area from the proposed Project.

Vegetation

• Some of trees and other vegetation along the right (southern) side of Mount Hermon Road would be removed or thinned, resulting in reduced tree density and a gap in the vegetation through which the proposed Project, other vegetation at the far end of the cleared right-ofway, and the open sky would be visible.

5

¹ The Company notes that the key observation point simulations and renderings, which were provided to the public during community meetings and on the Project's website (as depicted in Appendix F), were prepared separately from the simulations showing the appearance of the proposed transmission structures on identified historic resources provided, which were prepared and submitted to VDHR in the Stage I Pre-Application Analysis Report (see Appendix G).

• Tree removal and thinning would modify the continuous irregular line along the tops of the trees and would slightly decrease the number of tall, straight vertical lines on the landscape in this area.

Built Environment

- The proposed Project would add several new paired, tall, narrow structures that are prominent on the right (southern) side of Mount Hermon Road. A portion of the route would be clearly visible in the new gap in vegetation from right-of-way clearing.
- The vertical transmission poles with their short, horizontal crossarms would be similar in form to the existing distribution poles on the left (northern) side of Mount Hermon Road. They would also be similar to the multiple vertical lines found throughout the vegetation along both sides of Mount Hermon Road.
- The Project would also add multiple sets of thin, parallel horizontal overhead lines that
 would be especially visible against the open sky and partially absorbed and less perceptible
 when they pass in front of dense stands of vegetation. The overhead, slightly undulating,
 horizontal lines would be similar to the existing distribution lines on the left (north) side of
 the road, but the Project would add many more individual lines that stretch between the
 transmission poles

Due to the vegetation removal and the addition of several new vertical and horizontal forms and lines within the foreground of KOP 103, the changes in visual conditions at this location would be medium.

2.3 KOP 104

2.3.1 EXISTING CONDITIONS



FIGURE 4 KOP 104, EXISTING CONDITIONS

KOP 104 is on Mount Hermon Road, less than 0.1 mile south of the intersection with County Line Road (Figure 4). The view faces north toward the intersection. A dense wall of trees borders the lefthand (west) side of Mount Hermon Road. A distribution line and a maintained lawn with ornamental plantings and small trees is visible on the righthand (east) side of the road. Tall trees backed by forested areas are present beyond the lawn and extend along both side of Mount Hermon and County Line Road in the distance. These forested areas along both roads enclose and limit views from this KOP to the foreground. The characteristics of the landscape visible from KOP 104 are described below.

Landforms

- The landscape is primarily smooth and flat with no substantial changes in elevation or other significant terrain features visible in the foreground.
- There are subtle dips and rises in the lawn on the righthand side of the view and along County Line Road in the distance. Fine diagonal lines in the landscape help define these subtle elevation changes.

Vegetation

- A solid block of dense forest frames the lefthand side of the view along Mount Hermon Road. The individual forms of the trees are vague but in aggregate they form a distinct, tall wall that limits views in that direction. This solid wall of vegetation continues into the distance along County Line Road and Mount Hermon Road to the right.
- A smooth, wide, strip of lawn defines the righthand side of the view.
- Solid, straight, vertical lines formed by the trunks of the trees are visible throughout the
 dense vegetation. A cluster of tall trees on the righthand side of the view have welldefined, tall, vertical trunks that are prominent in the view.
- The tops of the trees form an irregular line that defines the transition from vegetation to sky.
- The forested areas are a mix of deeper greens and browns, while the lawn and other grassy areas bordering the road are a more vibrant green.
- There is a contrast in textures from medium and rough in the trees to soft and smooth in the grassy areas.

Built Environment

- A definite, solid, narrow two-lane road runs diagonally through the view before splitting into separate branches that extend in other directions.
- The edges of the paved road create strong diagonal lines that define the transition from pavement to vegetation.
- A distribution line follows the road's alignment. The distribution poles add additional strong, vertical lines that reinforce the prominent vertical lines in the trees. The distribution conductors add thin, horizontal overhead lines to the view that are most noticeable against the open sky and less discernable where they are aligned in front of adjacent trees.
- The road and distribution line add light gray and brown colors to the view that are similar to the natural hues of the surrounding vegetation.

The primary viewer groups at KOP 104 are area residents and motorists. Similar to KOP 103, the area residents in the vicinity of this KOP have medium to high sensitivity while the motorists have medium sensitivity to changes in visual resource conditions in this area.

2.3.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT



FIGURE 5 KOP 104, SIMULATED CONDITIONS

Route 2B is less than 0.1 mile north of KOP 104 (Figure 5). The route would cross the view from left to right in the foreground. New structures, including transmission poles and conductors would be visible. From KOP 104, Route 2B would result in changes to the visual characteristics of the landscape, as described below.

Landforms

- While some grading may be necessary to install the proposed transmission poles, there would be no substantial changes to the terrain in this area from the proposed Project.
- The existing subtle slopes across the lawn and County Line Road would be more discernable due to vegetation removal.

Vegetation

- While large tracts of forest vegetation would remain along both Mount Hermon and County Line roads, the Project would result in a substantial reduction in tree cover within the Route 2B right-of-way. This would open the foreground along both roads and would create a more expansive view (although views are still limited to the foreground).
- The removal of the cluster of prominent, tall, vertical trees along the righthand side of the view would eliminate a previously dominant feature from the landscape.
- The vegetation clearing would also increase the amount of soft, smooth grassy areas that contrasts with the more highly textured forest cover.

Built Environment

- The Project would add new tall, rigid, narrow structures that contrast with the softer, organic shapes of the surrounding trees.
- The transmission poles would be similar in form to the existing distribution poles but substantially larger, which would increase their prominence in the view.
- The transmission poles would create strong vertical lines with multiple short, subtle
 horizontal lines the extend outward. The vertical lines would be similar to the existing
 vertical lines of the adjacent trees and distribution line poles.
- The Project would also add multiple sets of thin parallel horizontal overhead lines that
 extend across the view from left to right. While these lines would be similar to the existing
 distribution lines, they would be more numerous and would increase the magnitude of
 change from these new features.

The Project would add tall, vertical forms and long, thin horizontal lines that contrast with the existing landscape in this location. These new structures would be prominent in the foreground of this view. The combination of vegetation removal and new transmission route infrastructure would increase the human presence on the landscape and add utilitarian aspects to the largely rural/suburban character of the area. Route 2B would thus result in medium to large changes in visual resource conditions at KOP 104.

2.4 KOP 105

2.4.1 EXISTING CONDITIONS



FIGURE 6 KOP 105, EXISTING CONDITIONS

KOP 105 is at the entrance to the Hallsey Residents Club near the intersection of Brightwalton Road and Farnborough Drive, within the Hallsley residential subdivision (Figure 6). The view extends along a suburban road corridor with maintained lawns and short, newly planted specimen trees along both sides of the road. A fenced pool area is visible on the righthand (north) side of Brightwalton Road. Dense vegetation behind the lawns and pool area frame and enclose views to the foreground in this location. The characteristics of the landscape visible from KOP 105 are described below.

Landforms

- The terrain in this area is smooth and gently rolling, with small hills and slopes visible in the foreground.
- The hills and slopes introduce flowing, curved lines that extend horizontally across the view.

Vegetation

- The vegetation is a mix of well-maintained lawns, specimen trees, and planting beds backed by dense, naturally forested areas. The amorphous and conical forms of the trees are most noticeable where they are planted individually or in small clusters in planting beds.
- This combination of vegetation creates a contiguous, horizontal strip across the view that is a deeper green than the adjacent vibrant lawns. The tops of the trees introduce a continuous, irregular line across the horizon.
- The trees planted along Brightwalton Road are evenly spaced and create a repeating, rhythmic pattern that extends into the distance.
- Flat, smooth, softly textured lawns are visible along both side of the roadway and contribute to the suburban character of the setting.

• The textures range from fine grass to denser, rougher foliage in the surrounding shrubs and trees.

Built Environment

- A smooth, flat, paved two-lane road crosses diagonally and introduces a strong linear feature to the view.
- The white and yellow markings add vibrant colors to the gray road.
- A curving pedestrian pathway winds along the natural contours of the landscape in the foreground.
- A fenced recreational area with a pool, seating, and a shade structure is present on the righthand side of the view. This area features pyramidal and rectangular forms, short and subtle vertical lines, and bright colors to the landscape.
- The built features and corresponding elements generally integrate smoothly with the natural vegetation present on the landscape.

The primary viewer group at KOP 105 is area residents. These viewers live in the area and are likely the primarily recreationists at the pool/playground center and the motorists on Brightwalton and other area roads. Area residents have medium to high sensitivity to changes in visual resource conditions.

2.4.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

The shared alignment of Routes 3A and 3B would be 0.9 mile west of KOP 105. The Project would not be visible from this location, because of the distance between the route alternatives and the KOP and the density of tall, mature trees that limit more extensive views of the landscape from the KOP. Any visual impacts from the Project would be negligible from KOP 105.

2.5 KOP 106A

2.5.1 EXISTING CONDITIONS



FIGURE 7 KOP 106A, EXISTING CONDITIONS

KOP 106A is near the end of Tulip Hill Place, a cul-de-sac off of Tulip Hill Drive within the Hallsley residential subdivision (Figure 7). The view faces the southwest and features a two-story home and a forested area. The home and dense vegetation generally constrain views to the foreground in this location. The characteristics of the landscape visible from KOP 106A are described below.

Landforms

- The terrain at KOP 106 is relatively flat and smooth with a slight downward slope discernable beyond the pavement.
- There are no other prominent landforms (hills, ridges, rock outcrops, etc.) visible, because this view is limited to the immediate foreground.

Vegetation

- A area of deciduous and coniferous forest serves as a backdrop that forms a strong horizontal strip across the view.
- The trees add multiple definite, tall, vertical lines to the view and exhibit a range of deep to lighter green colors.
- A low, narrow strip of lawn extends from the righthand side of the view to the home on the lefthand side of the view.
- Several rounded shrubs are clumped together in the center of the view and a rectangular planting bed with additional clumps of irregular shrubs is visible in front of the home.
- The small shrubs, short trees, and maintained lawns add fine textures and additional green hues to the landscape.

Built Environment

- A light gray, paved road and light tan curb curves gently around the foreground. The curve
 adds a defined line to the view that separates the paved road from the natural-appearing
 forest and landscaped lawn and planting beds.
- A two-story, white and black single-family home dominates the lefthand side of the view.
 The geometric building shapes add distinct vertical and horizontal lines, as well as prominent diagonal lines to the landscape.
- While the house adds strong geometric forms, bold lines, and cool white color to the view, the dark colors of the roof and trip help the home to generally integrate into the surrounding natural-appearing forested areas.

The primary viewer group at KOP 106A is area residents, who have medium to high sensitivity to changes in visual conditions.

2.5.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

The shared alignment of Routes 3A and 3B would be less than 0.1 mile to the southwest of KOP 106A. Despite their proximity, the route alternatives would not be visible from this location because the dense forest screens views toward the west-southwest. As such, any visual impacts from the Project would be negligible from KOP 106A.

2.6 KOP 106B

2.6.1 EXISTING CONDITIONS



FIGURE 8 KOP 106B, EXISTING CONDITIONS

KOP 106B is at the intersection of Tulip Hill Drive and Baybon Road within the Hallsley residential subdivision. The view faces west toward the end of Baybon Road. A forested area dominates the end of the road and extends across the entire field of view. The view also features a newly built residential area with adjacent areas that are still under construction. The characteristics of the landscape visible from KOP 106B are described below.

Landforms

- The terrain visible from KOP 106B slopes upward away from and to the right of the viewer.
- Low, pyramidal berms extend along all three sides of the end of the road in the foreground.
- Light tan, patchy areas of soil (evidence of recent construction) are scattered along the berms.

Vegetation

- A dense tree line extends horizontally across most of the view. The trees form a tall, continuous block that limits views beyond the foreground. The understory is composed of smaller shrubs and saplings with rounded, amorphous forms that contribute to the layered, multi-height wall of vegetation.
- Several strong, vertical lines are prominent within the dense vegetation. Colors range from darker to lighter greens and brown with hints of yellow and red.
- Uneven, patchy grass covers parts of the low berms along the sides of the road. This low vegetation adds brighter green hues to the view.
- New shrubs and trees are scattered around the home on the lefthand side of the foreground and add amorphous and conical forms and pops of green against the light tan and white house.
- The soft, fine textures of the grassy areas contrast with the coarser leaves of the forested area and the rough-textured areas of bare ground.

Built Environment

- The light gray, paved end of Baybon Road terminates in front of the existing forest. The roadway adds a flat, smooth, trapezoidal form to the view with distinct diagonal lines.
- A couple of homes on the lefthand side of the view add solid, geometric forms to the landscape. The homes create a mix of vertical, horizontal and diagonal lines that contrast with the mostly irregular, organic lines in the adjacent vegetation. The homes contribute light tan, white, and gray colors to the view.

• Two small, dark green utility boxes add rectangular forms at the edge of the forest area.

The primary viewer group at KOP 106B is area residents, who have medium to high sensitivity to changes in visual conditions.

2.6.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Routes 3A and 3B would be 0.2 mile west of KOP 106B. The existing wall of tall trees and other vegetation would block views of the Project. Due to the lack of visibility and corresponding lack of change in visual conditions, any visual impacts from the Project would be negligible from KOP 106B.

2.7 KOP 109

2.7.1 EXISTING CONDITIONS



FIGURE 9 KOP 109, EXISTING CONDITIONS

KOP 109 is in Irvin G. Horner Park (formerly the Clover Hill Athletic Complex), a county park off Genito Road (Figure 9). The view faces southeast from the home plate area of one of the ballfields in the park. Left field and a portion of centerfield is visible and bounded by a low chain-link fence. A dugout adjacent to the lefthand side of the field and a couple of tall light poles are also within the field of view from this location. A contiguous line of trees beyond the field marks the edge of the athletic complex and separates it from Mount Hermon Road. The trees screen more distant views and limit views to the foreground. The characteristics of the landscape visible from KOP 109 are described below.

Landforms

• The terrain at KOP 109 is smooth and flat with no significant slope or other discernable topographic changes or features except for a slight rise at the lefthand edge of the view.

Vegetation

- A line of tall, vertical trees extends horizontally across the view and encloses the view to the foreground.
- The trees form a large, rectangular block, with the tops of the trees creating an irregular line against the sky. Tree trunks also provide multiple thin, vertical lines that are repeated throughout the forested backdrop of the view.
- A thin strip of grass extends horizontally across the view. The low, smooth outfield area visually separates the sandy infield that forms the lower portion of the view with the forest vegetation above. The grass is a lighter, more vibrant green compared to the deeper green hues of the forest vegetation.

• There is a distinct transition between the coarser texture of the forest and the uniform, fine, smooth texture of the lawn and adjacent infield.

Built Environment

- The infield creates a broad, flat, rounded form that dominates the lower portion of the view.
- The transparent fence around the field introduces a low strip of rectangular forms that extends horizontally and diagonally across the view.
- The fence posts add short vertical lines and continuous horizontal lines to the landscape. The dugout area introduces several additional short diagonal lines.
- Two light towers add tall, thin cylindrical forms and solid, vertical lines to the view along the fenceline.
- Tans and light grays dominate the developed features, with small patches of brown, blue, and yellow also visible.

The primary viewer group at KOP 109 is recreationists. These recreationists include participants in organized sports (e.g., baseball and softball players, soccer players), as well as spectators and have low to medium sensitivity to changes in visual resource conditions at this site.

2.7.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Route 3B would be 0.1 mile east-southeast of KOP 109. The existing trees that serve as a buffer between the athletic complex and Mount Hermon Road would also screen views of the Project. With limited to no visibility and no corresponding changes in visual conditions, any visual impacts from the proposed Project would be negligible from KOP 109.

2.8 KOP 110

2.8.1 EXISTING CONDITIONS



FIGURE 10 KOP 110, EXISTING CONDITIONS

KOP 110 is on Genito Road, 0.7 mile west of the intersection with Otterdale Road (Figure 10). The view faces west and is enclosed by forested areas. A dense line of trees borders the lefthand (southern) side of Genito Road and defines the leftmost extent of the view. A large, grassy field dominates the foreground to the right (north) of Genito Road. Several distribution lines extend across the field and then parallel Genito Road. The roadway and distribution line curve into and disappear behind a forested area that borders the field. The open field provides an unobstructed view of the foreground in this area, but the dense forested areas surrounding

the field and along Genito Road limit more extensive views of the landscape. The characteristics of the landscape visible from KOP 110 are described below.

Landforms

• Other than a subtle rise in the field on the righthand side of the view, the landscape is primarily smooth and flat with no substantial changes in elevation or other significant terrain features visible.

Vegetation

- A solid block of dense forest defines the lefthand side of the view along Genito Road. The
 individual forms of some trees are visible but in aggregate they form a definite, tall wall
 that limits views in that direction. The trunks of the trees appear as densely packed,
 repetitive vertical lines that form a thin horizontal strip between the road/ground
 vegetation and broader tops of the trees. This solid wall of vegetation continues into the
 distance as Genito Road curves out-of-sight to the right.
- A broad, smooth lawn defines the area to the right of Genito Road. The low, geometric form of the lawn is bordered by taller strips of shrubs and trees. The grass adds vibrant green, light brown, and yellow hues to the view.
- Horizontal layers of vegetation define the far end of the grassy field. A low strip of shrubs is
 interspersed with the taller, rounded forms of individual trees. A dense forest area sits
 behind shrubs and extends from Genito Road to the righthand extent of the view.
- Another line of trees delineates the righthand side of the lawn. Along with the trees at the
 far end of the lawn and the forested area along Genito Road, this line of trees encloses
 views at this KOP to the foreground.
- The tops of the trees form an irregular but continuous line that defines the transition from vegetation to sky.
- The shrubs and trees add a mix of deeper greens and browns to the view, as well as coarser textures that contrast with the fine, smooth texture of the lawn.

Built Environment

- The definite, solid, narrow form of the two-lane Genito Road runs along the lefthand side of the view. The light gray roadway includes subtle white and more vibrant yellow lines.
- The edges of the paved road create strong, slightly curving lines that define the transition from pavement to vegetation. A couple of driveways add low, horizontal lines that extend perpendicularly from Genito Road.
- Two distribution lines extend from the righthand side of the view toward Genito Road. The first line cuts diagonally across the lawn and then crosses and parallels Genito Road. This line adds narrow, vertical lines and thin, horizontal overhead lines to the view. The second distribution line extends horizontally along a driveway and connects to the first line. The vertical and horizontal forms and lines of this second line are partially absorbed into the adjacent vegetation, making them less prominent.
- The road, distribution lines, and other smaller built features (e.g., signs, mailboxes) primarily add muted gray and light tan hues to the landscape.

The primary viewer groups at KOP 110 are area residents and motorists. Area residents have medium to high sensitivity to changes in visual resource conditions, while motorists tend to have low to medium sensitivity.

2.8.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Route 3A would be 0.3 mile to the west of KOP 110. Tall trees and other dense forest vegetation constrain views from this location toward the Project. Due to the lack of visibility, any visual impacts from the Project would be negligible from KOP 110.

2.9 KOP 111

2.9.1 EXISTING CONDITIONS



FIGURE 11 KOP 111, EXISTING CONDITIONS

KOP 111 is on Blue Island Place, a cul-de-sac off of Lake Summer Loop within the Summer Lake residential subdivision (Figure 11). The view faces the northwest and features a residential area that is still under construction. The lefthand side of the view includes two homes while the righthand side of the view includes parcels that were undeveloped (but intended for development) at the time of photography. A dense forest area behind the homes and undeveloped parcels extends across the entire view and generally limits more extensive views of the landscape. The homes and trees enclose and confine views to the foreground in this location. The characteristics of the landscape visible from KOP 111 are described below.

Landforms

- The terrain at KOP 111 is generally flat and smooth.
- The are slight undulations in the lawns and a low berm along the righthand side of the culde-sac. Exposed areas of soil add light tan colors to the view.

Vegetation

- A dense line of trees defines the back of the view and forms a strong horizontal strip across
 the view. This line of trees blocks more distant views and confines visibility to the
 foreground in this location.
- The trees add multiple thin, vertical lines that are more prominent than the forested backdrop.
- The trees exhibit a range of deep to lighter green, brown, and gray that contrast with the vibrant green of the landscaped lawns.
- Low strips of grass surround the homes on the lefthand side of the view. Small, rounded shrubs and thin, amorphous and conical trees are planted around the homes.
- The small shrubs, short trees, and maintained lawns add fine textures and additional green hues to the landscape.

 Patches of grass and other low vegetation extend across the low berm on the righthand side of the view. These patches of vegetation introduce additional soft textures and dark to more vibrant greens to the landscape in this area.

Built Environment

- A light gray, paved road and light tan curb curves gently around the foreground. The curve
 adds a defined line to the view that creates horizontal separation between the paved road
 and the landscaped lawns and partially vegetated berm.
- A single, smooth, paved driveway extends from the cul-de-sac to one of the visible homes. The driveway adds low, curving lines and light gray and tan colors to the view.
- Two two-story homes dominate the lefthand side of the view. The geometric buildings add a distinct combination of vertical, horizontal, and diagonal lines to the landscape. The homes are primarily white, light tan, brown, and black.
- A darker gray home with white accents is partially visible through the trees on the righthand side of the view.
- A low, light gray and black silt fence also extends along the lower portion of the righthand side of the view.
- Other built features including geometric utility boxes, a single black mailbox on a low white post, and a rectangular black and white sign are scattered across the view.

The primary viewer group at KOP 111 is area residents, who have medium to high sensitivity to changes in visual conditions.

2.9.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Route 3A would be 0.1 mile west-northwest of KOP 111. Despite the proximity, the buffer of tall trees and dense forest vegetation would screen views of the Project from this location. Due to the lack of visibility, any visual impacts from the Project would be negligible from KOP 111.

2.10 KOP 112

2.10.1 EXISTING CONDITIONS



FIGURE 12 KOP 112, EXISTING CONDITIONS

KOP 112 is on Lake Summer Drive near the entrance to the Summer Lake Clubhouse, which includes the subdivision's swimming pool, tennis and pickleball courts, sports fields, a playground, and other recreational amenities (Figure 12). The view faces the west-northwest toward and features foreground views of the clubhouse property and nearby neighborhood. While the landscape along the road is open and provides broad views of the area, homes and

tall trees generally limit more extensive views. The characteristics of the landscape visible from KOP 112 are described below.

Landforms

- The terrain in this area consists of smooth, gentle rolling hills and shallow vegetated stormwater channels.
- The hills and channels create soft curving lines across the landscape.

Vegetation

- The mix of ornamental, residential, and natural vegetation introduces a variety of forms, textures, and colors to the foreground.
- To the left of the road that bisects the view, a grassy slope leads from the road to a row of rounded, flowering trees and a second, taller line of conical trees.
- Further along the lefthand side of the road, flat, smooth lawns are dotted with specimen trees and other ornamental plantings. These add shorter conical and rounded forms to the landscape.
- Soft, flat lawns that transition into ornamental and natural vegetation also characterize the
 righthand side of the road. Short, rounded shrubs grow from geometric planting beds with
 rounded corners that border several of the built features in this area. Individual and
 clusters of planted trees add medium height, rounded, conical, and amorphous forms to
 the view.
- Similar to the lefthand side of the road, low, smooth lawns with regularly placed shrubs and trees also extend along the righthand side of the road. These shrubs and trees add more rounded and conical forms that are similar to the forms of the taller, more mature forest vegetation in the foreground.
- An irregular wall of taller trees forms the backdrop of the view.
- Individual trees add vertical lines to the landscape, while the treetops create an irregular horizontal line that extends across the view.
- The vegetation introduces a range of more vibrant to deeper greens to the landscape. Other colors in the vegetation include white, pink, tan, and brown.

Built Environment

- The curving, paved, light gray form of Lake Summer Drive bisects the view in this location. The road creates defined, curving lines between the pavement and adjacent vegetation.
- A dark gray walking path that is separated by a strip of grass parallels the righthand side of the road. The edges of the pathway add slightly curving lines to the view.
- Low, white fences line several areas along the left side of the road. These fences add short vertical and long horizontal lines to the view. A paired, low brown fence also adds similar geometric forms and lines.
- Dark mesh fencing creates a semi-transparent rectangular form along the righthand side of the view. The medium height fence along with a light post introduce definite vertical and horizontal lines to the landscape.
- A geometric entrance post with a pyramidal cap indicates a transition into the adjacent residential area.

• Large, multi-story homes with geometric shapes are also clustered along both sides of the road. These homes add vertical, horizontal, and diagonal lines, as well as multiple light (tan, gray, white) and darker (dark gray, brown, red) colors to the landscape.

The primary viewer group at KOP 112 is area residents. These residents have exclusive use of the Summer Lake Clubhouse and amenities. As noted at other KOPs in residential areas, area residents have medium to high sensitivity to changes in visual conditions.

2.10.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Route 3A would be 0.5 mile west-northwest of KOP 112. Views of the Project from this location would primarily be blocked by tall trees and two-story homes. Due to the lack of visibility, any visual impacts from the Project would be negligible from KOP 112.

2.11 KOP 113

2.11.1 EXISTING CONDITIONS



FIGURE 13 KOP 113, EXISTING CONDITIONS

KOP 113 is on Westerleigh Parkway at the intersection with Melbrook Way (0.7 mile west of the intersection with Otterdale Road) within the Westerleigh residential subdivision (Figure 13). The view faces northwest into an active construction site for a proposed road extension and Deep Creek Middle School (see Sections 5.1.6 and 5.1.10 in the Routing Study). Bright orange barriers and barrels block public access into the site and several machines, other construction equipment and vehicles, and large piles of soil are visible at the site. A home and a tall cluster of trees is partially visible on the lefthand (south) side of the view. Tall trees and other forest vegetation border the righthand (north) side of Westerleigh Parkway and extend to the end of the roadway enclosing views. The framing of the new school building and additional construction equipment and materials are visible through the trees on the left side of the view. Overall, there is a high degree of activity and change within the foreground of the view from this KOP. The characteristics of the landscape visible from KOP 113 are described below.

Landforms

- The terrain is smooth and flat across the extent of the visible landscape in this location.
- Several light gray and tan mounds of exposed soil (temporary features associated with the in-progress construction at this KOP) are piled throughout the foreground.

Vegetation

- A dense line of tall, thin trees borders the road and construction site. These trees also add multiple vertical lines, light to deep green colors, and moderate textures to the landscape. The tops of the trees form an irregular but contiguous line across the view.
- A low, flat lawn is visible on the lefthand side of the view. This lawn has irregular patches of exposed, tan soil and transitions into a patch of ground vegetation interspersed with multiple tall, thin trees.

Built Environment

- The smooth, flat form of Melbrook Way extends as a thin strip along the bottom of the
 view, while the similar form of Westerleigh Parkway extends away from the viewer into the
 construction site. The lines along the edge of the roadways are irregular and not well
 defined, except along the righthand side of the view where a low, straight, white curb
 extends diagonally.
- A large construction site dominates the view and adds several temporary forms (solid, geometric, cylindrical, angular), lines (simple, straight, short), and colors (yellow, orange, white, red, gray) to the landscape.
- On the lefthand side of the view, a single home is partially visible. The deep gray (with white highlights), geometric form of the house adds vertical and diagonal lines to the view.
- A large, multicolor (white, green, blue, red, black), rectangular sign is visible next to the house. The linear frame of a partially constructed building is visible above the sign and through the cluster of trees.

The primary viewer group at KOP 113 is currently area residents. After completion of school construction, additional viewer groups would include workers and possibly recreationists in this location. Area residents have medium to high sensitivity to changes in visual conditions.

2.11.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT

Route 3A would be 0.5 mile west-northwest of and Route 3B would be 0.8 mile west of KOP 113. Distance and the current amount of forest vegetation between this KOP and the proposed routes would limit views. Due to the lack of visibility, the visual impacts from the Project (either Route 3A or 3B) would be negligible from KOP 113.

2.12 KOP 114

2.12.1 EXISTING CONDITIONS



FIGURE 14 KOP 114, EXISTING CONDITIONS

KOP 114 is on Genito Road, 0.9 mile west of the intersection with Mount Hermon Road. The view faces the east along the roadway (Figure 14). Forested areas line both side of Genito Road and generally enclose views to the roadway corridor in this area. The characteristics of the landscape visible from KOP 114 are described below.

Landforms

- The terrain visible from this KOP is generally flat with no significant elevation changes.
- Low, gentle undulations are perceptible along the edges of the roadway.

Vegetation

- Tall trees with shorter shrubs and other ground vegetation are visible along both sides of the roadway.
- The trees add multiple dominant, tall, thin, vertical lines across the view. The tree canopies broaden into a series of thin, spindly branches that form an intricate network of fine lines that are visible against the open sky. These fine lines would be replaced by dense leaf cover during the spring, summer, and fall.
- The trees and other vegetation contribute a mix of earth tones, including brown, tan, gray, and medium to dark green.
- The vertically stratified vegetation creates a medium, patchy, layered texture while the forest debris on the ground adds a coarser texture across the view.

Built Environment

- The smooth, flat, gray, two-lane form of Genito Road cuts through the view and gently curves to the right. Painted yellow and white lines contrast with the gray pavement and emphasize the curvilinear features of the road.
- Two low, geometric signs are visible along the road. A bright orange sign is particularly prominent in this location and stands out against the natural colors of the adjacent vegetation.

The primary viewer group at KOP 114 is motorists, who have low to medium sensitivity to changes in visual conditions. Because there are several homes along Genito Road (and

because Genito Road provides access to other residential areas), some of these motorists are also likely area residents who may have higher (medium to high) sensitivity to changes in visual conditions compared to other types of motorists (e.g., through-travelers).

2.12.2 SIMULATED CONDITIONS WITH PROPOSED PROJECT



FIGURE 15 KOP 114, SIMULATED CONDITIONS

Route 2B would be less than 0.1 mile east of KOP 114. The route would add multiple overhead conductors to the foreground of the view in this location (Figure 15). From KOP 114, the Project would result in changes to the visual characteristics of the landscape, as described below.

Landforms

• There would be no substantial changes to the terrain in this area from the Project.

Vegetation

- The Project would require tree clearing in the right-of-way, which would reduce the density of vegetation along both sides of Genito Road and open new gaps in the trees.
- Repeating, tall, vertical lines would continue to dominate the view. Irregular, amorphous
 forms and horizonal and vertical lines characterize the treetops and are more apparent in
 the newly opened areas.

Built Environment

- The Project's conductors would add multiple thin, parallel, overhead lines would across the view. These slightly undulating lines would be highly noticeable above the roadway and also clearly visible through the existing and new gaps in the thinned vegetation. When leafed out, trees would reduce the visibility of the conductors.
- Where visible, new transmission poles generally blend into the vertical forms of the surrounding trees and vegetation.

Due to vegetation removal and the addition of multiple new overhead horizontal lines within the foreground of KOP 114, the changes in visual conditions at this location would be medium. The planned Dogwood Creek (left side of the view) and Unser Woods (right side of the view) developments would flank Genito Road and would likely change the overall visual character of the area. This change may soften but would not eliminate the Project's visual impacts.

WESTERN CHESTERFIELD

ELECTRIC TRANSMISSION PROJECT

▲ Existing Substation

KOP Location

Proposed Substation

Existing Dominion Transmission Lines

H Railroad

--- Study Area

Upper Magnolia Green

Chesterfield County — Route 3B Public Parcels

Route Alternatives

- Route 2B

- Route 3A

Dominion Energy®



KOP 102

Date: 09/16/2024 Time: 9:15 am Viewing Direction: Northwest

KOP LocationRoute 3B

Route 3A

- Route 2B









WESTERN CHESTERFIELD

ELECTRIC TRANSMISSION PROJECT

KOP 103

Date: 09/16/2024 Time: 10:53 am Viewing Direction: Northeast

MOP Location

- Route 3A

- Route 3B - Route 2B







KOP 104

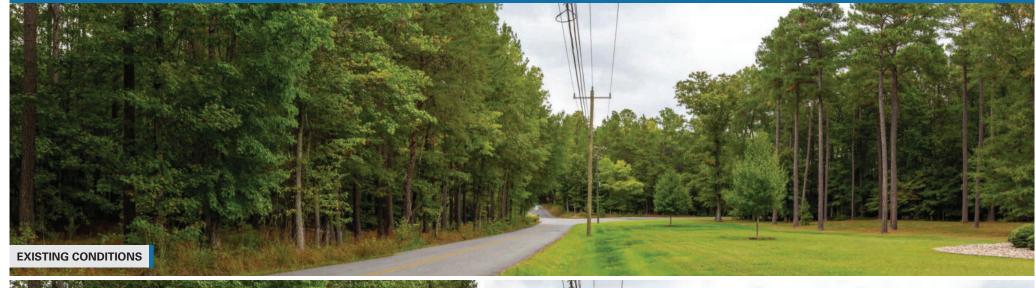
Date: 09/16/2024 Time: 1:10 pm Viewing Direction: North

MOP Location

- Route 2B









KOP 105

Date: 09/16/2024 Time: 8:59 am Viewing Direction: West

KOP LocationRoute 3B

- Route 3A









KOP 106A

Date: 09/16/2024 Time: 8:31 am Viewing Direction: Southwest

KOP Location

Route 3A

- Route 3B









KOP 106B

Date: 09/16/2024 Time: 8:40 am Viewing Direction: West

KOP Location

Route 3A











KOP 109

Date: 09/16/2024 Time: 1:53 pm Viewing Direction: Southeast

MOP Location

- Route 3B









KOP 110

Date: 09/16/2024 Time: 7:58 am Viewing Direction: West

MOP Location

Route 3A









KOP 111

Date: 09/16/2024 Time: 7:46 am Viewing Direction: Northwest

MOP Location

- Route 3A









KOP 112

Date: 09/16/2024 Time: 7:20 am Viewing Direction: Northwest

MOP Location

- Route 3A









KOP 113

Date: 09/16/2024 Time: 7:07 am Viewing Direction: Northwest

MOP Location

- Route 3A









KOP 114

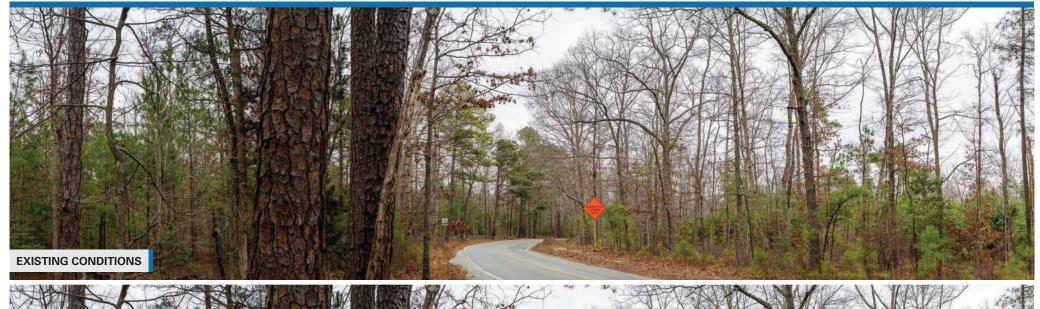
Date: 02/05/2025 Time: 1:46 pm Viewing Direction: East

MOP Location

- Route 2B











APPENDIX G STAGE 1 PRE-APPLICATION ANALYSIS OF CULTURAL RESOURCES



Western Chesterfield Electric Transmission Project

Pre-Application Analysis Report

PREPARED FOR



Dominion Energy Virginia

DATE April 23, 2025

REFERENCE 0662361





SIGNATURE PAGE

Western Chesterfield Electric Transmission Project

Pre-Application Analysis Report

many Beth of Derexick

Mary Beth Derrick

Senior Architectural Historian

Markeynlandl

MacKenzie Carroll

Architectural Historian

ERM 3300 Breckenridge Boulevard Suite 300 Duluth, GA 30096 Jeffrey L. Holland

Senior Historian

Kaitlin Becht

Architectural Historian

Kattlin Becht

CONTENTS

EXE	CUTIVE SUMMARY	1
1.	INTRODUCTION	3
1.1	OVERVIEW	3
1.2	1.1.1 Route 2B 1.1.2 Route 3A 1.1.3 Route 3B 1.1.4 Duval Substation MANAGEMENT RECOMMENDATIONS	5 5 5 5
2.	RECORDS REVIEW	7
2.1	DATA COLLECTION APPROACH	7
2.2	ARCHAEOLOGICAL RESOURCES	7
2.3	HISTORIC RESOURCES	7
2.4	2.3.1 Route 2B 2.3.2 Route 3A 2.3.3 Route 3B PREVIOUS SURVEYS	10 10 10 11
3.	STAGE 1 PRE-APPLICATION ANALYSIS FINDINGS	13
3.1	METHODS OF ANALYSIS	13
3.2	STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS	14
3.3	ASSESSMENT OF POTENTIAL IMPACTS	15
3.4	HISTORIC RESOURCE DESCRIPTIONS	15
	3.4.1 020-0023, Dinwiddie County Pullman Car 3.4.2 020-0030, Hallsborough Tavern 3.4.3 020-0111, Bethel Baptist Church 3.4.4 020-0405, Mt. Sinai Baptist Church 3.4.5 020-0407, Hallsboro Store	15 16 16 17 18
3.5	HISTORIC RESOURCE FINDINGS FOR ROUTE 2B	18
2.6	3.5.1 020-0023, Dinwiddie County Pullman Car 3.5.2 020-0030, Hallsborough Tavern 3.5.3 020-0111, Bethel Baptist Church 3.5.4 020-0405, Mt. Sinai Baptist Church 3.5.5 020-0407, Hallsboro Store	18 19 19 19 19
3.6	HISTORIC RESOURCE FINDINGS FOR ROUTE 3A	20
3.7	3.6.1 020-0023, Dinwiddie County Pullman Car 3.6.2 020-0030, Hallsborough Tavern 3.6.3 020-0111, Bethel Baptist Church 3.6.4 020-0405, Mt. Sinai Baptist Church 3.6.5 020-0407, Hallsboro Store HISTORIC RESOURCE FINDINGS FOR ROUTE 3B	20 20 20 21 21 21
	 3.7.1 020-0023, Dinwiddie County Pullman Car 3.7.2 020-0030, Hallsborough Tavern 3.7.3 020-0111, Bethel Baptist Church 	21 22 22



	3.7.4 3.7.5	020-0405, Mt. Sinai Baptist Church 020-0407, Hallsboro Store	22 22
3.8		OLOGY FINDINGS	23
4.		USION AND RECOMMENDATIONS	24
4.1	ROUTE 2		24
4.2	ROUTE :		25
4.3	ROUTE :	3B	26
4.4	FUTURE	INVESTIGATIONS	26
5.	REFERE	ENCES	28
ATTA	CHMENT	1 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ASSOCIATED WITH PROPOSED PROJECT ALTERNATIVES	
ATTA	CHMENT	2 CULTURAL RESOURCES SURVEYS WITHIN 1 MILE OF PROJECT	
ATTA	CHMENT	3 TYPICAL DESIGN AND LAYOUT	
ATTA	CHMENT	4 HISTORIC RESOURCE PHOTOS	
ATTA	CHMENT	5 PHOTO SIMULATIONS	
LIST	OF TAB	LES	
TABL	E 1	EXECUTIVE SUMMARY OF PROJECT IMPACTS TO CONSIDERED ABOVEGROUND HISTORIC RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES	2
TABL	.E 2	HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2B	10
TABL	.E 3	HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3A	10
TABL	.E 4	HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3B	11
TABL	.E 5	CULTURAL RESOURCE SURVEYS WITHIN 1 MILE OF THE PROJECT	12
TABL	E 6	COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDY AREA OF THE ALTERNATIVE ROUTES	\S 24
TABL	.E 7	IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 2B	25
TABL	.E 8	IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3A	25
TABL	E 9	IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3B	26
LIST	OF FIG	URES	
FIGU	RE 1	OVERVIEW OF TRANSMISSION LINE SEGMENTS UNDER CONSIDERATION FOR THE PROJECT	4
FIGU	RE 2	LOCATIONS OF CONSIDERED HISTORIC RESOURCES ALONG AND NEAR ROUTES	9



ACRONYMS AND ABBREVIATIONS

ACRONYM	Description
3D	Three dimensional
AF	Auto Focus
CMOS	Complementary Metal Oxide Semiconductor
ERM	Environmental Resources Management
ESRI	Environmental Systems Research Institute
GNSS	Global Navigation Satellite System
JPEG	Joint Photographic Experts Group format
КОР	Key Observation Point
kV	kilovolt
NHL	National Historic Landmark
NPS	National Park Service
NRHP	National Register of Historic Places
NERC	North American Electric Reliability Corporation
PBR	Physically Based Rendering
PDF	Portable Document Format
ROW	Right-Of-Way
SCC	State Corporation Commission
SLR	Single-Lens Reflex
UTM	Universal Transverse Mercator
VCRIS	Virginia Cultural Resource Information System
VDHR	Virginia Department of Historic Resources



EXECUTIVE SUMMARY

This report presents the findings of a pre-application analysis completed by Environmental Resources Management, Inc. (ERM) on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company) for the proposed Western Chesterfield Electric Transmission Project in Chesterfield County, Virginia (Project).

Dominion Energy Virginia is filing an application with the Virginia State Corporation Commission (SCC) to:

- Construct two new 230 kilovolt (kV) double circuit overhead transmission lines (for a total of four circuits) on a new primarily 160-foot-wide right-of-way. The new transmission lines will extend from Dominion's existing Midlothian Substation to the proposed Duval Substation (Duval-Midlothian Lines); and
- Construct a new 230–34.5 kV substation in Chesterfield County, Virginia (Duval Substation) and perform substation-related work at the Company's existing Midlothian Substation.

These facilities are collectively referred to as the Project.¹

The Project is necessary to serve significant projected residential and commercial load growth identified by the Company in Chesterfield County, Virginia; to maintain and ensure reliable service for the overall load growth in the Project area thereby supporting economic development in Chesterfield County and Virginia; and to comply with mandatory North American Electric Reliability Corporation Reliability Standards.

This pre-application analysis assesses and compares potential impacts on previously recorded historic and archaeological resources in relation to three route alternatives under consideration for the Project. ERM conducted the analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts to historic resources. The pre-application analysis is a required study for transmission line projects regulated by the SCC. The study was completed in accordance with the Virginia Department of Historic Resources' (VDHR's) Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (VDHR 2008) (Guidelines).

No known archaeological sites are within or adjacent to the right-of-way for any of the routes under consideration. Five previously recorded aboveground historic resources meeting criteria specified in the Guidelines are within study tiers defined by the VDHR for identifying aboveground historic resources along and near transmission line routes (Table 1). Because the alternative routes utilize common or similar alignments where they pass near the resources, Project impacts would be identical regardless of the route selected by the SCC. ERM recommends that installation of transmission infrastructure related to the alternative routes would result in a severe impact for one resource and no impact for the remaining four resources. Because the resource impacts are the same regardless of the route chosen, and no previously recorded archaeological sites are within or adjacent to the route rights-of-way, no alternative is preferable to the others with respect to known cultural resource impacts.

¹ For outreach purposes, the Company also has referred to the Project as the "Western Chesterfield 230 kV Electric Transmission Improvement Project."



_

TABLE 1 EXECUTIVE SUMMARY OF PROJECT IMPACTS TO CONSIDERED ABOVEGROUND HISTORIC RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES

Considered	Alternative Routes				
Resource	Route 2B	Route 3A	Route 3B		
020-0023	None	None	None		
020-0030	None	None	None		
020-0111	None	None	None		
020-0405	None	None	None		
020-0407	Severe	Severe	Severe		

Source: VDHR 2025



1. INTRODUCTION

This report presents the findings of a pre-application analysis completed by ERM on behalf of Dominion for its proposed Project in Chesterfield County, Virginia. The Project is necessary to serve significant projected residential and commercial load growth identified by the Company in Chesterfield County, Virginia; to maintain and ensure reliable service for the overall load growth in the Project area thereby supporting economic development in Chesterfield County and Virginia; and to comply with mandatory North American Electric Reliability Corporation Reliability Standards.

The Project consists of two components:

- Construction of two new 230 kilovolt (kV), double circuit overhead transmission lines (for a total of four circuits) on a new 160-foot-wide right-of-way. The new transmission lines will extend from the Company's existing Midlothian Substation to the proposed Duval Substation (Duval-Midlothian Lines); and
- Construct a new 230–34.5 kV substation in Chesterfield County, Virginia (Duval Substation) and perform substation-related work at the Midlothian Substation.

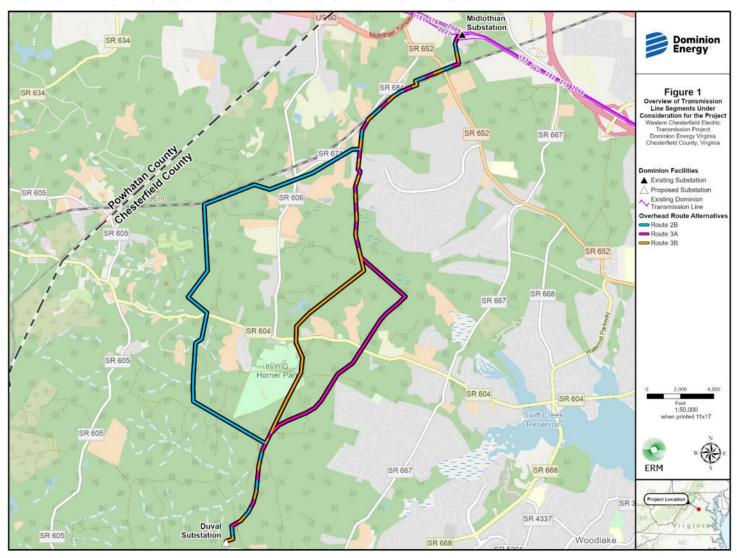
The pre-application analysis assesses potential impacts on previously recorded historic and archaeological resources relative to route alternatives under consideration for the Project. ERM conducted the analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts on historic resources. The study was completed in accordance with the Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008) (Guidelines).

1.1 OVERVIEW

Three overhead route alternatives (Routes 2B, 3A, and 3B) are under consideration for the proposed Duval-Midlothian Lines. A map depicting each alternative route and the proposed Duval Substation is provided as Figure 1.



FIGURE 1 OVERVIEW OF TRANSMISSION LINE SEGMENTS UNDER CONSIDERATION FOR THE PROJECT



1.1.1 ROUTE 2B

Route 2B is approximately 8.6 miles long. From the existing Midlothian Substation, it heads southeast, collocated with Dry Bridge Road and the Norfolk Southern Railway, for about 1.6 miles. Route 2B then turns south and southwest, following parcel boundaries south of Mount Hermon Road and crossing large, forested parcels for about 1.7 miles. It again collocates with the railroad for about 0.6 mile before turning south and generally following parcel boundaries for about 2.5 miles. This portion of Route 2B crosses large, forested parcels and a planned residential development along Genito Road. The route then turns southeast for approximately 0.9 mile before turning south to collocate with the west side of the planned Powhite Parkway Project for about 1.3 miles across large, undeveloped and forested parcels and land within the planned Upper Magnolia Green development. Route 2B then crosses the planned Powhite Parkway Project to enter the proposed Duval Substation site from the east.

1.1.2 ROUTE 3A

Route 3A is approximately 7.5 miles long. From Midlothian Substation, it follows the same alignment as Route 2B for about 2.0 miles. Route 3A then runs south and southeast across large, forested parcels for approximately 2.0 miles to avoid existing and planned residential subdivisions along Old Hundred Road and Mount Hermon Road. The route then turns southwest and collocates with the planned Powhite Parkway Project Conceptual Alignment 1A for about 2.5 miles (including one angled crossing of the Powhite Parkway alignment). The remaining about 1.4 miles of Route 3A to the proposed Duval Substation site follows the same alignment as Route 2A.

1.1.3 ROUTE 3B

Route 3B is approximately 7.1 miles long. It follows the same alignment as Route 3A for about 3.2 miles, then turns southeast to collocate with the west side of the planned Powhite Parkway Project Conceptual Alignment 1B for about 2.4 miles (except for a 0.7-mile segment near Genito Road that is not collocated, to avoid an existing residence). The remaining approximately 1.5 miles of Route 3A to the proposed Duval Substation site follows the same alignment as Route 2A.

1.1.4 DUVAL SUBSTATION

Dominion will obtain property rights for and construct the proposed 230–34.5 kV Duval Substation north of Duval Road on 5.1 acres of land currently within Chesterfield County Economic Development Authority's Upper Magnolia Green-East planned development. The substation will be designed to accommodate multiple network connections to allow for increased reliability and to serve the projected load.

1.2 MANAGEMENT RECOMMENDATIONS

No known archaeological sites are within or adjacent to the alternative routes' rights-of-way.

Five previously recorded historic resources meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic sites along and near transmission line routes. Because the alternative routes share common alignments where they pass near these resources, the Project impacts would be identical regardless of the route selected



by the SCC. ERM recommends that installation of transmission infrastructure related to the alternative routes would result in a severe impact for one resource and no impact for the remaining four resources. Because the resource impacts would be the same regardless of the route chosen, and no previously recorded archaeological sites are within in or adjacent to the right-of-way, no route is preferable over the others with respect to known cultural resource impacts.



RECORDS REVIEW

2.1 DATA COLLECTION APPROACH

ERM conducted an analysis of potential cultural resource impacts for the alternative routes under consideration in accordance with the Guidelines. For each route, this analysis identified and considered the following previously recorded resources:

- National Historic Landmarks (NHLs) within a 1.5-mile radius of each alternative route;
- National Register of Historic Places (NRHP)-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of each alternative route;
- NRHP-eligible and NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each alternative route; and
- All the above qualifying resources as well as archaeological sites within the right-of-way for each alternative route.

Information on the considered resources in each study tier was collected from the Virginia Cultural Resource Information System (VCRIS) (VDHR 2025). ERM also collected information from the Chesterfield County Preservation Committee (2025), Chesterfield Historical Society of Virginia (2025), Experience Chesterfield (2025), and Preservation Virginia (2025) to identify locally significant resources within a 1.0-mile radius of each route.

Along with the records review, ERM conducted field assessments of the considered aboveground resources along each route in accordance with the Guidelines. Digital photographs of each historic resource and views to the transmission line routes were taken. Photo simulations were then prepared to assess the potential for visual impacts from the new transmission infrastructure on the resources.

2.2 ARCHAEOLOGICAL RESOURCES

No known archaeological sites were identified within the right-of-way for any of the alternative transmission line routes.

2.3 HISTORIC RESOURCES

The following discussion summarizes the known historic resources in the vicinity of each alternative route based on the VDHR's tiered study model defined in the Guidelines. The locations of the considered resources and the various alternative routes are shown on Figure 2. Individual maps for the routes are provided in Attachment 1.

Resources within the right-of-way of a route may be subject to both direct impacts from placement of the line across the property as well as visual impacts from changes to the viewshed introduced by the new transmission line structures and conductors. Resources in the 0.5-mile tier would not be directly impacted, but would likely be visually impacted, unless topography, vegetation, or the built environment obscures the view to the transmission line. At over 0.5 mile and 1.0 mile, it becomes progressively less likely that a resource would be within line-of-sight of the proposed transmission line due to distance.

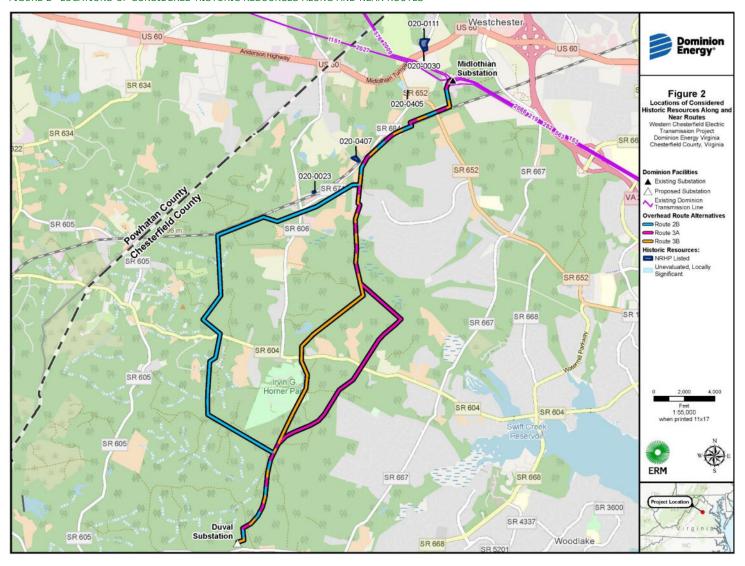


Because the alternative routes use common alignments where they pass aboveground resources, impacts would be the same for the Project regardless of the alternative selected by the SCC. The nature of the impacts, while estimated in this study with the assistance of photo simulations, would depend on the final Project design in which the exact placement and height of transmission structures are determined. The purpose of the simulations and associated assessments in this report are to provide data on likely impacts.

Once a route is certified by the SCC, that route would be subject to a full historic architectural survey in which additional (yet, unrecorded) historic properties could be identified and Project impacts assessed. The survey area would be defined based on the design height of the transmission line structures, topography, tree cover, and other factors impacting line-of-sight from historic resources to the selected route.



FIGURE 2 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ALONG AND NEAR ROUTES



2.3.1 ROUTE 2B

The considered resources that lie within the VDHR tiers for Route 2B are presented in Table 2 and depicted in the map provided as Attachment 1, Sheet 1. ERM identified five aboveground historic resources within the VDHR tiers for Route 2B. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 2 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2B

Buffer (miles)	Resource Category	Resource Number	Description
		020-0023	Dinwiddie County Pullman Car
	National Register Properties (Listed)	020-0030	Hallsborough Tavern
0.0 to 0.5		020-0111	Bethel Baptist Church
		020-0407	Hallsboro Store
	Locally Significant	020-0405	Mt. Sinai Baptist Church

Source: VDHR 2025

2.3.2 ROUTE 3A

The considered resources that lie within the VDHR tiers for Route 3A are presented in Table 3 and depicted in the map provided as Attachment 1, Sheet 2. ERM identified five aboveground historic resources within the VDHR tiers for Route 3A. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 3 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3A

Buffer (miles)	es) Resource Category Resource Number Description		Description
0.5 to 1.0	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car
	National Register Properties (Listed)	020-0030	Hallsborough Tavern
0.0 to 0.5		020-0111	Bethel Baptist Church
0.0 to 0.5		020-0407	Hallsboro Store
	Locally Significant	020-0405	Mt. Sinai Baptist Church

Source: VDHR 2025

2.3.3 ROUTE 3B

The considered resources that lie within the VDHR tiers for Route 3B are presented in Table 4 and depicted in the map provided as Attachment 1, Sheet 3. ERM identified five aboveground historic resources within the VDHR tiers for Route 3B. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.



TABLE 4 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3B

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car
		020-0030	Hallsborough Tavern
0.0 to 0.5	National Register Properties (Listed)	020-0111	Bethel Baptist Church
0.0 to 0.5		020-0407	Hallsboro Store
	Locally Significant	020-0405	Mt. Sinai Baptist Church

Source: VDHR 2025

2.4 PREVIOUS SURVEYS

Some portions of the Project have previously been surveyed for cultural resources among 13 studies reported within 1.0 mile of the Project. Three of the surveys intersect at least one of the routes under consideration. Information on these previous surveys—including VDHR survey number, report title, report authors, and report date—is provided in Table 5. The extent of the previous survey coverage is depicted on maps provided in Attachment 2.



TABLE 5 CULTURAL RESOURCE SURVEYS WITHIN 1 MILE OF THE PROJECT

VDHR Survey #	Title	Author(s)	Date
CF-007	A Cultural Resources Survey and Evaluation of the Right-of- Way for the Carson-Midlothian 500 kV Transmission Line in Chesterfield and Dinwiddie Counties, Virginia	James E. Fitting, Jeffrey C. Kimball, and C. Stephan Demeter	1977
CF-104	Midlothian to Trabue: 230kV Transmission Line and Trabue Substation, Preliminary Phase I Archaeological Reconnaissance Survey	Lyle E. Browning	1989
CF-109	Archaeological Survey of a Portion of Proposed Route 288, Chesterfield County, Virginia	Ellen M. Brady and Loretta Lautzenheiser	1998
CF-257	Horner Park Access Road Phase I Cultural Resources Intensive Survey Report	Lyle E. Browning	2006
CF-402	Phase I Archaeological Survey of the 11-acre Area of Potential Effect within the Proposed 26,000-foot Tomahawk Creek Sanitary Sewer Line, Chesterfield County, Virginia	Darby O'Donnell	2020
CF-403	Phase I Cultural Resources Survey of Dry Bridge Energy Center, LLC, Chesterfield County, Virginia	Skye Hughes, Carol D. Tyrer, and Dawn M. Muir	2020
CF-408	Phase I Archaeological Survey of the Proposed Dry Bridge Energy Center, LLC Access Road, Chesterfield County, Virginia	Randy Lichtenberger	2020
CF-409	Peer Review of Phase I Archaeological Survey of Dry Bridge Energy Center, LLC	Karen Hutchins-Keim and Jean Cascardi	2020
CF-413	Phase I Archaeological Survey of the Proposed Dry Bridge Energy Center, LLC, Chesterfield County, Virginia	Dwayne W. Pickett and Randy Lichtenberger	2021
CF-419	Phase I Cultural Resource Survey of the ±.16-Hectare (±.4-Acre) Dry Bridge Project Area, Chesterfield County, Virginia	Dara Friedberg	2021
CF-440	Phase I Cultural Resource Survey of the ±81 Hectare (±199 Acre) NE Upper Magnolia Project Area, Chesterfield County, Virginia	David H. Dutton, Christine Muron, and Dara Friedberg	2022
CF-459	Phase I Archaeological Survey of the Proposed Moseley Solar Project Area, Chesterfield County, Virginia	Joseph R. Blondino and Claudia Abernathy	2023
CF-472	Phase I Cultural Resource Survey of the ±43.1-Hectare (±106.4-Acre) Upper Magnolia CCPS Project Area, Chesterfield County, Virginia	David H. Dutton, Dara Friedberg, and Michael A. Lundberg	2024

Source: VDHR 2025



^{*} Gray highlighted rows denote surveys that overlap portions of the route alternatives

3. STAGE 1 PRE-APPLICATION ANALYSIS FINDINGS

3.1 METHODS OF ANALYSIS

Fieldwork for the pre-application analysis was conducted by Haley Hoffman and Emma Jennings under the direction of Secretary of the Interior Qualified architectural historian, Mary Beth Derrick on February 5, 2025. The fieldwork involved photographing five resources requiring visual assessment according to the Guidelines and examining potential line-of-sight views from each resource toward the alternative routes. For resources where property owner approval was granted for historic resource documentation, photographs were taken toward the alternative route(s) from the property at the most prominent view of the landscape. When permission to access such locations was not available, photographs were taken from the public right-of-way (typically a road) nearest to the resource facing toward the applicable route(s).

Panoramic photographs were taken from each resource, with an effort to capture the direction with the clearest, most unobstructed view toward the applicable route or routes. The precise location of the photograph was captured with a mobile tablet device connected to a sub-meter accurate Global Navigation Satellite System (GNSS) receiver, the Trimble R1. The locations from which photographs were taken were noted as Key Observation Points (KOPs). Site visits to the KOPs were prioritized based on their location relative to the resource, so that viewpoints east of the resource were visited in the morning and viewpoints west of the resource were visited in the afternoon. This helped ensure, where possible, that the sun was behind the photographer at the time the viewpoint photography was captured. Additionally, minor adjustments to position were made to obtain as clear a view to the site center as possible, avoiding trees, landscaping, or built obstructions. Tablets recorded the center bearing, angle of view, altitude, and camera lens height. Upon receipt of the viewpoint location information, the viewpoints were plotted onto open-source mapping from the Environmental Systems Research Institute (ESRI) using the Universal Transverse Mercator (UTM) 18N coordinate system.

The process of taking panoramas included setting up the tripod and camera. The camera was placed on the panoramic head in a landscape orientation where its lens height was confirmed and set at 1.5 meters (note: a portrait camera orientation was sometimes used in situations where the viewpoint is very close to a development so that the top of the development is not cut off by the image boundaries). The tripod head and camera combination were then leveled. With the camera's viewfinder centered on the perceived site center, exposure and focus settings were taken. These were then fixed manually on the camera so that they could not be inadvertently altered. The head was rotated 90 degrees to the left where the first frame of the 360-degree sequence was then taken. Each subsequent frame was taken using a 50 percent overlap of the previous frame until the full 360-degree sequence was captured. The camera was then removed from the tripod and a viewpoint location photograph was captured showing the tripod in its position.

The following camera and tripod configuration was used:

 Camera body: Nikon z6ii professional specification digital Single Lens Reflex (SLR) (full frame complementary metal oxide semiconductor [CMOS] sensor)



Camera lens: Nikkor Auto Focus (AF)50mm f1.8 prime

Tripod: Ulanzi Zero F38 Quick Release Travel Tripod 3131 with Level

Panoramic head: Nodal Ninja 6 with Nadir Adapter

After the photos were complete, they were uploaded to a server to begin the simulation/ visualization process. The single-frame photographs were opened in Adobe Photoshop CC 2022 where they were checked, and any camera sensor dust spots were removed before being saved as high-resolution joint photographic experts group format (JPEG) images. If required, discrete color and tonal adjustments were made to each frame before they were saved. The single-frame photographs were stitched together in PTGui Pro version 12.11 professional photographic stitching software using cylindrical projection settings. The camera locations were plotted in Global Mapper version 23.1. Digital models of the transmission line structures were provided by Dominion, then cleaned up and textured in Autodesk 3DS Max 2021. The transmission structures along each route were rendered in Vray version 5.2 from each KOP camera location. Three-dimensional (3D) imagery was produced at the field of view using camera matching. Renderings for each route and each tower combination were then exported for use as an overlay.

Detailed, correctly dimensioned 3D computer models of the transmission structures along each route were generated using Autodesk 3DS Max 2021 and iToo RailClone. The virtual 3D model of the structures was created using real-world measurements and elevation drawings provided by the Company (see Attachment 3). These were textured using Vray physically based rendering (PBR) materials to simulate the weathering steel texture. The detailed, textured models were rendered to a digital image using a simulated physical camera and a sun and sky simulation lighting model in the computer software consistent with conditions within the original viewpoint photography.

Photomontages were produced by overlaying the rendered image on the photograph, using known control points and the wireline imagery showing the tower columns at the correct height and distance. Final adjustments were then made to the brightness and contrast of the rendered images to match them to the photograph. Final photomontages were prepared from each viewpoint for each route. These were then opened in Adobe Photoshop CC 2022 where minor changes were made such as placing relevant tree/building/hedge screening or telegraph wires over the proposed development renders where necessary. Finally, the final images were cropped to the proportions required for the visual simulation figures, and the visualization figures were prepared in Adobe InDesign CC2022 and exported in a portable document format (PDF).

3.2 STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS

The Company proposes to construct the Duval-Midlothian Lines supported primarily by double circuit, weathering steel monopoles. The transmission lines would be installed within new right-of-way typically measuring 160-feet-wide to accommodate a total of four circuits. The structures would have a minimum height of approximately 80 feet, a maximum height of 125 feet, and an average height of approximately 108 feet for Route 2B, approximately 105 feet for Route 3A, and approximately 110 feet for Route 3B.



Structure heights are estimated based on preliminary conceptual design, do not include foundation reveal, and are subject to change based on final engineering. Attachment 3 provides section views depicting typical right-of-way widths and structure configurations.

3.3 ASSESSMENT OF POTENTIAL IMPACTS

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

- **None**–Project is not visible from the resource.
- **Minima**l–Viewsheds have existing transmission lines, there would be only a minor change in height, and/or other 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.

3.4 HISTORIC RESOURCE DESCRIPTIONS

3.4.1 020-0023, DINWIDDIE COUNTY PULLMAN CAR

Dinwiddie County Pullman Car (020-0023) is located to the northeast of the intersection of County Line Road and Mount Hermon Road in Midlothian, in the Hallsboro Yard, which is associated with the Norfolk Southern Railroad. The surrounding area is forested and rural.

020-0023 was most extensively and recently surveyed by Jospeh S. White, III in 1991. The Dinwiddie County Pullman Car is a heavyweight, all-steel sleeping car built in 1926 with ten sections and one observation lounge, built in the style coined "Pullman Deco." The car was built at the Pullman Company's works in Chicago, Illinois, and was the first of this design produced by Pullman. White mentioned a clerestory roof that provided ventilation to the car through a series of vents and fans, which was modified in 1937 with the addition of an enclosure over the middle section for mechanical air-conditioning. Originally the car was a blunt-end car and could only operate as the last car in the train. In the 1930s, the Pullman Company fitted a platform, vestibule, diaphragm, and buffer plate to the car allowing it to operate at any position in the train (White 1991).

ERM attempted to revisit the Dinwiddie County Pullman Car in February 2025, but could not view the car due to its location on private property (Attachment 4, Figure 1). Any changes that have occurred to the car could not be observed from the nearest public right-of-way. However, according to historic aerial photographs, it does appear that a pole shed was built over the car between 2011 and 2012 for shelter (NETROnline 2025).

The Dinwiddie County Pullman Car was listed on the NRHP in 1991 under Criteria A and C for significance in transportation and engineering. It is a well-preserved example of railroad passenger sleeping cars that were popular in the United States from the 1920s to the 1950s, and



it was one of 30 cars built to this plan, with only two still extant as of 1991. The Dinwiddie Pullman Car (020-0023) lies within the 0.5-mile study tier for Route 2B and within the 1.0-mile study tiers for Routes 3A and 3B.

3.4.2 020-0030, HALLSBOROUGH TAVERN

Hallsborough Tavern (020-0030) is located at 16300 Midlothian Turnpike in Midlothian, at the intersection of Midlothian Turnpike and Huguenot Spring Road. The surrounding area is rural and forested, with a church (Bethel Baptist Church, 020-0111) situated directly to the north.

020-0030 was most extensively and recently surveyed by the Virginia Historic Landmarks Commission Staff in 1979. They noted that the tavern was patronized by nineteenth century travelers along what is now Midlothian Turnpike. The original portion of the dwelling was built in the last quarter of the eighteenth century as a three-bay, double-pen, one-and-a-half story structure with a gabled roof and weatherboard siding. The second addition was built prior to 1832, and included a one-story single-pen, single-bay room on the west elevation with a scored stucco foundation. The third addition was completed by 1832, and included a double-pen, two story section on the east elevation, originally constructed as a hall-parlor. This section featured a one-story, shed-roofed porch. A circa 1900 renovation changed the hall-parlor to a central passage plan when a stair was inserted and divided the rooms to form a central passage. This circa 1900 renovation also included an addition to the eastern elevation. The survey also noted three twentieth century outbuildings: a shed, barn, and smokehouse (Virginia Historic Landmarks Commission Staff 1979). Two outbuildings were mentioned in a 1977 survey that were not mentioned in the 1979 survey: an outhouse and granary.

ERM surveyed the resource in February of 2025 and noted minor changes since the prior study (Attachment 4, Figure 2). A ramp for wheelchair access and a stoop have been added to the north elevation. The tavern now functions as an antique store. The outbuildings were not visible from the public right-of-way due to vegetation, but all five outbuildings are visible on aerial imagery (GoogleEarth Pro 2025).

The Hallsborough Tavern was listed on the NRHP in 1980 under Criteria A and C for its association with transportation as a historic tavern for travelers throughout much of the nineteenth century and for its architecture as a well-preserved example of an evolutionary vernacular building. Hallsborough Tavern (020-0030) is within the 0.5-mile study tiers for Routes 2B, 3A, and 3B.

3.4.3 020-0111, BETHEL BAPTIST CHURCH

Bethel Baptist Church (020-0111) is located on an approximate 19.13-acre parcel at 1100 Huguenot Springs Road in Midlothian. The surrounding area is rural, with Hallsborough Tavern (020-0030) directly to the south. A golf course is located west of the resource with commercial and residential areas to the east. The parcel has dense tree growth surrounding the resource (GoogleEarth Pro 2025).

Bethel Baptist Church was established in 1799, an offshoot of Spring Creek Church. Among the founding members were several French Huguenot families that had fled France in 1700 to escape persecution. They settled at Manakin-towne on the James River, about 4.0 miles from the church. Some of these Huguenots were influenced in the 1770s by itinerant Baptist preachers who were



initially jailed for their dissent against the Church of England. In the 1790s, members of the Spring Creek Church began meeting for prayer services at Shortt's Tavern, in the Hillsborough community, which was closer to their homes. In 1799, they purchased land for a church on the current site of Bethel Baptist Church. Among the founders of the church were members of the Trabue, Martin, Foudree, Forsee, Ammonette, and Flournoy families of Huguenot descent (Moseley 1998).

Bethel Baptist Church was most extensively surveyed in 1998 by Lucille C. Moseley. The church was built in 1894 and replaced two former meeting houses in 1803 and 1820. The current church is a Gothic Revival structure with a steep slate gabled roof and five course American bond brick cladding. Modifications included a wing added in 1906 and additional classrooms and office spaces added in 1980 and 1987. The resource also includes a gymnasium built in 1910 with wood siding and a tin roof. This structure was altered in 1960 with the addition of brick veneer, various additions, and a front porch with columns. Finally, a cemetery enclosed by a cast-iron fence is located to the west. Nearly 500 persons are buried in the cemetery, including veterans of the Revolutionary War though the Vietnam War (Moseley 1998). ERM visited the resource in February of 2025 and noted a large addition had been built on the gymnasium's north elevation between 2006 and 2007, and a breezeway was added between the two buildings. No other changes were noted (Attachment 4, Figure 3).

020-0111 was listed on the NRHP in 1999 under Criterion A for its involvement in religious liberty in Virginia and its hosting of African American members in its congregation prior to the Civil War. Bethel Baptist Church's founding members included several Huguenot families whose ancestors fled France to escape religious persecution from the Catholic Church. Bethel Baptist Church (020-0111) is within the 0.5-mile study tiers for Routes 2B, 3A, and 3B.

3.4.4 020-0405, MT. SINAI BAPTIST CHURCH

Mt. Sinai Baptist Church (020-0405) is located on an approximate 2.01-acre parcel at 200 Old Hundred Road/Route 652 in Midlothian. It is situated directly south of the intersection of Midlothian Turnpike and Old Hundred Road/Route 652. The surrounding area is densely wooded and rural.

The resource was surveyed once, in 1977 by J.M. O'Dell. O'Dell briefly described the church as a circa 1884 building with a gabled roof, weatherboard siding, concrete foundation, and arched windows (O'Dell 1977). ERM visited the resource in February of 2025 and observed no major changes, but did note additional details. The land where the church was built was provided by members of Bethel Baptist Church (020-0111) after the Civil War, to assist African Americans in forming their own church during Reconstruction (Mt. Sinai Baptist Church 2025). The church's website claims that the present building was built in 1884 and originally had a flat roof and sat on pillars. Since that time, the roof was replaced with a front-gable design, the foundation was rebuilt using concrete masonry units, and an internal brick chimney was added. In addition, the weatherboard siding mentioned in the 1977 survey has been replaced by vinyl siding and the church now includes a basement level. Furthermore, O'Dell described the church as having arched windows, but they are lancet windows.



According to aerial imagery, the primary entrance is located through a front-gabled portico, which was added to the east elevation prior to 1955 (NETROnline 2025). A large gabled rear addition was constructed on the church's west elevation in 2004 and features the same materials as the main block (Attachment 4, Figure 4). A cemetery is located to the north of the church and includes burials from 1915 to 2022 (Find a Grave 2025).

Mt. Sinai Baptist Church (020-0405) has not been formally evaluated for NRHP eligibility. ERM has categorized the resource as locally significant for the purposes of this Project due to its association with the African American community. Mt. Sinai Baptist Church lies within the 0.5-mile study tier for Routes 2B, 3A, and 3B.

3.4.5 020-0407, HALLSBORO STORE

Hallsboro Store (020-0407) is located on an approximate 2.79-acre parcel at 920 Mount Hermon Road in Midlothian at the intersection of Hallsboro and Mount Hermon Roads. The surrounding area is rural and consists of dense forest with few surrounding dwellings.

Hallsboro Store was most extensively surveyed in 2004 by Teresa Hudson, who described the building as a circa 1885 two-story frame structure with a slate hipped roof, weatherboard siding, and a brick and concrete foundation. The primary entrance is on the southeast elevation through a double-leaf door with a nine-light transom window. The door is flanked by store windows with wooden shutters. The entrance is accessed via a full-width porch with an asphalt shingle shed roof supported by wooden posts. The primary elevation features a bracketed cornice. A circa 1970 pump house is located to the west of the store (Hudson 2004). The store served as a post office and general store and was built directly adjacent to the Norfolk-Southern Railroad (originally Richmond-Danville Railroad), which brought rail passengers to the store. The property was placed under easement with VDHR in 2005. A 2016 survey noted a circular brick-lined pit and categorized it as an archaeological site, although no archaeological site number was assigned (McDonald 2016). ERM visited the property in February of 2025 and noted no changes since the 2004 survey (Attachment 4, Figure 5).

The Hallsboro Store was listed on the NRHP in 2005 under Criterion C as an intact, well-designed example of a rural county store from the late nineteenth century. Hallsboro Store (020-0407) lies within the 0.5-mile study tier for Routes 2B, 3A, and 3B.

3.5 HISTORIC RESOURCE FINDINGS FOR ROUTE 2B

3.5.1 020-0023, DINWIDDIE COUNTY PULLMAN CAR

The Dinwiddie County Pullman Car is approximately 798 feet to the northwest of Route 2B in an area where the route does not share an alignment with Routes 3A and 3B (Attachment 5, Figure 1). The area between the route and the resource contains the Norfolk Southern Railroad and vegetation. One simulation was prepared for the resource, at KOP 101, along County Line Road (Attachment 5, Figure 2). This location was chosen because it was the closest point to the resource from the public right-of-way. As shown in the simulation, the route's conductors would only be visible at the road crossing. The resource is east of the KOP; however, at a place where the road would not be visible and from which there is no break in the trees. Extrapolating from the



simulation, transmission infrastructure installed along the route would not be visible from the resource due to the dense vegetation to its south. Thus, ERM recommends that the Project would have **No Impact** on 020-0023, Dinwiddie County Pullman Car, if Route 2B is selected for the Duval-Midlothian Lines.

3.5.2 020-0030, HALLSBOROUGH TAVERN

Hallsborough Tavern is approximately 0.46 mile to the northwest of Route 2B in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 3). The area between the route and the resource consists of dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 102, near the intersection of Midlothian Turnpike and Huguenot Springs Road (Attachment 5, Figure 4). As shown in the simulation, a transmission line installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends that the Project would have **No Impact** on 020-0030, Hallsborough Tavern, if Route 2B is selected for the Duval-Midlothian Lines.

3.5.3 020-0111, BETHEL BAPTIST CHURCH

Bethel Baptist Church is approximately 0.49 mile to the northwest of Route 2B in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 5). The area between the route and the resource consists of dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 103, along Huguenot Springs Road (Attachment 5, Figure 6). As shown in the simulation, a transmission line installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends that the Project would have **No Impact** on 020-0111, Bethel Baptist Church, if Route 2B is selected for the Duval-Midlothian Lines.

3.5.4 020-0405, MT. SINAI BAPTIST CHURCH

Mt. Sinai Baptist Church is approximately 0.37 mile to the north-northwest of Route 2B in an area where the route uses a greenfield alignment (Attachment 5, Figure 7). The area between the route and the resource consists of dense vegetation. Two simulations were prepared for the resource, at KOP 104, along Old Hundred Road (Attachment 5, Figures 8 and 9). As shown in the simulations, a transmission line installed along the route would not be visible from the resource when looking to the south or east due to intervening vegetation. Thus, ERM recommends that the Project would have **No Impact** on 020-0405, Mt. Sinai Baptist Church, if Route 2B is selected for the Duval-Midlothian Lines.

3.5.5 020-0407, HALLSBORO STORE

The Hallsboro Store is approximately 250 feet to the northwest of Route 2B in an area where the route uses a greenfield alignment (Attachment 5, Figure 10). The area between the route and the resource includes the Norfolk Southern Railroad. One simulation was prepared for the resource, at



KOP 106, along Mount Hermon Road (Attachment 5, Figure 11). As shown in the simulation, a transmission line installed along Route 2B would be visible from the resource's southern boundary when looking to the east and northeast. In addition, the construction of the route would require vegetation and tree removal to the south and east, which would also be visible from the resource. The thinning in the trees in this area would make the transmission line more prominent during offleaf seasons. The line would add modern elements to the resource's northeastern and eastern viewsheds where there currently are no modern elements, and it would remove trees and vegetation along the right-of-way. Thus, ERM recommends that the Project would have a **Severe Impact** on 020-0407, the Hallsboro Store, if Route 2B is selected for the Duval-Midlothian Lines.

3.6 HISTORIC RESOURCE FINDINGS FOR ROUTE 3A

3.6.1 020-0023, DINWIDDIE COUNTY PULLMAN CAR

The Dinwiddie County Pullman Car is approximately 0.53 mile to the west of Route 3A in an area where the route uses a greenfield alignment (Attachment 5, Figure 12). The area between the route and the resource is heavily wooded. One simulation was prepared for the resource, at KOP 101, along County Line Road (Attachment 5, Figure 13). This location was the closest point to the resource from public right-of-way. As shown in the simulation, transmission infrastructure installed along the route would not be visible from the resource due to distance and intervening vegetation. Thus, ERM recommends that the Project would have **No Impact** on 020-0023, the Dinwiddie County Pullman Car, if Route 3A is selected for the Duval-Midlothian Lines.

3.6.2 020-0030, HALLSBOROUGH TAVERN

Hallsborough Tavern is approximately 0.46 mile to the northwest of Route 3A in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 14). The area between the route and the resource consists of dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 102, near the intersection of Midlothian Turnpike and Huguenot Springs Road (Attachment 5, Figure 15). As shown in the simulation, transmission infrastructure installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends that the Project would have **No Impact** on 020-0030, Hallsborough Tavern, if Route 3A is selected for the Duval-Midlothian Lines.

3.6.3 020-0111, BETHEL BAPTIST CHURCH

Bethel Baptist Church is approximately 0.49 mile to the northwest of Route 3A in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 16). The area between the route and the resource contains dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 103, along Huguenot Springs Road (Attachment 5, Figure 17). As shown in the simulation, transmission infrastructure installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends



that the Project would have **No Impact** on 020-0111, Bethel Baptist Church, if Route 3A is selected for the Duval-Midlothian Lines.

3.6.4 020-0405, MT. SINAI BAPTIST CHURCH

Mt. Sinai Baptist Church is approximately 0.37 mile to the north-northwest of Route 3A in an area where the route uses a greenfield alignment (Attachment 5, Figure 18). The area between the route and the resource consists of dense vegetation. Two simulations were prepared for the resource, at KOP 104, along Old Hundred Road (Attachment 5, Figures 19 and 20). As shown in the simulations, transmission infrastructure installed along the route would not be visible from the resource when looking to the south or east due to intervening vegetation. Thus, ERM recommends that the Project would have **No Impact** on 020-0405, Mt. Sinai Baptist Church, if Route 3A is selected for the Duval-Midlothian Lines.

3.6.5 020-0407, HALLSBORO STORE

The Hallsboro Store is approximately 250 feet to the northwest of Route 3A in an area where the route uses a greenfield alignment (Attachment 5, Figure 21). The area between the route and the resource includes the Norfolk Southern Railroad. One simulation was prepared for the resource, at KOP 106, along Mount Hermon Road (Attachment 5, Figure 22). As shown in the simulation, Route 3A would be visible from the resource's southern boundary when looking to the east and northeast. In addition, construction of the transmission line along the route would require vegetation and tree removal to the south and east, which would also be visible from the resource. The thinning in the trees in this area would make the transmission line more prominent during offleaf seasons. Installation of the transmission line along the route would add modern elements to the resource's northeastern and eastern viewsheds where there currently are no modern elements, and it would remove trees and vegetation along the right-of-way. Thus, ERM recommends that the Project would have a **Severe Impact** on 020-0407, the Hallsboro Store, if Route 3A is selected for the Duval-Midlothian Lines.

3.7 HISTORIC RESOURCE FINDINGS FOR ROUTE 3B

3.7.1 020-0023, DINWIDDIE COUNTY PULLMAN CAR

The Dinwiddie County Pullman Car is approximately 0.53 mile to the west of Route 3B in an area where the route uses a greenfield alignment (Attachment 5, Figure 23). The area between the route and the resource is heavily wooded. One simulation was prepared for the resource, at KOP 101, along County Line Road (Attachment 5, Figure 24). This location was chosen because it was the closest point to the resource from public right-of-way. As shown in the simulation, transmission infrastructure installed along route would not be visible from the resource due to distance and intervening vegetation. Thus, ERM recommends that the Project would have **No Impact** on 020-0023, the Dinwiddie County Pullman Car, if Route 3B is selected for the Duval-Midlothian Lines.



3.7.2 020-0030, HALLSBOROUGH TAVERN

Hallsborough Tavern is approximately 0.46 mile to the northwest of Route 3B in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 25). The area between the route and the resource consists of dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 102, near the intersection of Midlothian Turnpike and Huguenot Springs Road (Attachment 5, Figure 26). As shown in the simulation, transmission infrastructure installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends that the Project would have **No Impact** on 020-0030, Hallsborough Tavern, if Route 3B is selected for the Duval-Midlothian Lines.

3.7.3 020-0111, BETHEL BAPTIST CHURCH

Bethel Baptist Church is approximately 0.49 mile to the northwest of Route 3B in an area where the route connects to Dominion's existing Midlothian Substation, which also connects to Dominion's existing Lines #153, #219, #282, #563, #576, #1151, #2009, #2027, and #2066 (Attachment 5, Figure 27). The area between the route and the resource contains dense vegetation and Dominion's existing transmission lines. One simulation was prepared for the resource, at KOP 103, along Huguenot Springs Road (Attachment 5, Figure 28). As shown in the simulation, transmission infrastructure installed along the route would not be visible from the resource due to distance and intervening vegetation and infrastructure. Thus, ERM recommends that the Project would have **No Impact** on 020-0111, Bethel Baptist Church, if Route 3B is selected for the Duval-Midlothian Lines.

3.7.4 020-0405, MT. SINAI BAPTIST CHURCH

Mt. Sinai Baptist Church is approximately 0.37 mile to the north-northwest of Route 3B in an area where the route uses a greenfield alignment (Attachment 5, Figure 29). The area between the route and the resource consists of dense vegetation. Two simulations were prepared for the resource, at KOP 104, along Old Hundred Road (Attachment 5, Figures 30 and 31). As shown in the simulations, transmission infrastructure installed along the route would not be visible from the resource when looking to the south or east due to intervening vegetation. Thus, ERM recommends that the Project would have **No Impact** on 020-0405, Mt. Sinai Baptist Church, if Route 3B is selected for the Duval-Midlothian Lines.

3.7.5 020-0407, HALLSBORO STORE

The Hallsboro Store is approximately 250 feet to the northwest of Route 3B in an area where the route uses a greenfield alignment (Attachment 5, Figure 32). The area between the route and the resource includes the Norfolk Southern Railroad. One simulation was prepared for the resource, at KOP 106, along Mount Hermon Road (Attachment 5, Figure 33). As shown in the simulation, transmission infrastructure installed along Route 3B would be visible from the resource's southern boundary when looking to the east and northeast. In addition, construction along the route would require vegetation and tree removal to the south and east, which would also be visible from the resource. The thinning in the trees in this area would make the route more prominent during off-



leaf seasons. Installation of the transmission line along Route 3B would add modern elements to the resource's northeastern and eastern viewsheds where there currently are no modern elements, and would remove trees and vegetation along the right-of-way. Thus, ERM recommends that the Project would have a **Severe Impact** on 020-0407, the Hallsboro Store, if Route 3B is selected for the Duval-Midlothian Lines.

3.8 ARCHAEOLOGY FINDINGS

No known archaeological sites have been documented in the rights-of-way of the transmission line alternative routes.



4. CONCLUSION AND RECOMMENDATIONS

The pre-application analysis gathered information on archaeological and historic architectural resources that qualify for consideration according to the VDHR Guidelines for transmission line projects. No known archaeological sites are adjacent to or in the right-of-way of the transmission line alternative routes reviewed in this study. Five aboveground historic resources fall within the VDHR study tiers for each route under consideration. A comparison of the number of resources impacted and the degree of impact of each route is presented in Table 6. The specific resources affected by each route are covered in the subsections that follow.

TABLE 6 COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDY AREAS OF THE ALTERNATIVE ROUTES

Alternative Route	Number of Considered Resources in Each Impact Category					
	None	Minimal	Moderate	Severe	Total	
Route 2B	4	-	-	1	5	
Route 3A	4	-	-	1	5	
Route 3B	4	-	-	1	5	

Final assessments of Project impacts will be dependent on the completion of identification-phase archaeological and historic structure surveys along the route selected by the SCC followed by review of survey results by VDHR and other consulting parties. For any resources where the agencies concur in a finding of moderate or severe impact, the Company will propose treatments to avoid, minimize, or mitigate those impacts. Treatment options for archaeological sites could include selective structure placement to avoid direct impacts on sites, minor route adjustments to avoid crossing sites, or archaeological data recovery. Treatment options for aboveground historic resources could include detailed site documentation, historic research, and historic preservation studies; preparation of digital media or museum-type exhibits on sites for public interpretation; installation of historic markers or signs; installation of vegetative screening; or contributions to historical preservation organizations or specific preservation projects. Additional mitigations could be identified through consultation with VDHR and other consulting parties.

4.1 ROUTE 2B

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 2B (Table 7). If this route is selected for the Duval-Midlothian Lines, the Project would have no impact on four resources (020-0023, 020-0030, 020-0111, and 020-0405) and a severe impact on one resource (020-0407).



TABLE 7 IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 2B

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (Listed)	-	-	-
0.0 to 0.5	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car	None
		020-0030	Hallsborough Tavern	None
		020-0111	Bethel Baptist Church	None
		020-0407	Hallsboro Store	Severe
	National Register – Eligible	-	-	-
	Locally Significant	020-0405	Mt. Sinai Baptist Church	None
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed and Eligible)	-	-	-

Source: VDHR 2025; ROW = right-of-way

4.2 ROUTE 3A

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 3A (Table 8). If this route is selected for the Duval-Midlothian Lines, the Project would have no impact on four resources (020-0023, 020-0030, 020-0111, and 020-0405) and a severe impact on one resource (020-0407).

TABLE 8 IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3A

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car	None
0.0 to 0.5	National Register Properties (Listed)	020-0030	Hallsborough Tavern	None
		020-0111	Bethel Baptist Church	None
		020-0407	Hallsboro Store	Severe
	National Register – Eligible	-	-	-
	Locally Significant	020-0405	Mt. Sinai Baptist Church	None
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed and Eligible)	-	-	-

Source: VDHR 2025; ROW = right-of-way



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 23, 2025

4.3 ROUTE 3B

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 3B (Table 9). If this route is selected for the Duval-Midlothian Lines, the Project would have no impact on four resources (020-0023, 020-0030, 020-0111, and 020-0405) and a severe impact on one resource (020-0407).

TABLE 9 IMPACTS TO HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3B

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (Listed)	020-0023	Dinwiddie County Pullman Car	None
0.0 to 0.5	National Register Properties (Listed)	020-0030	Hallsborough Tavern	None
		020-0111	Bethel Baptist Church	None
		020-0407	Hallsboro Store	Severe
	National Register – Eligible	-	-	-
	Locally Significant	020-0405	Mt. Sinai Baptist Church	None
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed and Eligible)	-	-	-

Source: VDHR 2025; ROW = right-of-way

4.4 FUTURE INVESTIGATIONS

The next stage of assessing impacts on cultural resources will be to conduct an identification-phase field survey to identify and assess resources along the route selected by the SCC for the Project. Survey of the approved alternative route will be conducted in accordance with the following guidelines:

- Guidelines for Assessing Impacts of Proposed Electrical Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (VDHR 2008);
- Guidelines for Conducting Historic Resources Survey in Virginia (VDHR 2017);
- National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (National Park Service [NPS] 1995).

The survey teams will be led by individuals meeting the Secretary of the Interior's professional qualifications standards for archaeology and architectural history, respectively. Teams will traverse the length of the Project corridor, revisiting previously recorded historic architectural resources and documenting additional as-of-yet unrecorded cultural resources in the survey area defined in the Guidelines for the Project design. The archaeological survey will adhere to VDHR survey standards (VDHR 2017) and will entail systematic coverage of the approved route. All material culture, including artifacts and features, that could be 50 years old or older will be recorded. Sites



CLIENT: Dominion Energy Virginia
PROJECT NO: 0662361 DATE: April 23, 2025

will be delineated within the proposed right-of-way and investigations will include subsurface testing sufficient to inform recommendations of potential eligibility for the NRHP under Criterion D. Each site will be fully documented with appropriate mapping, digital photography, and artifact collection/analysis. Site forms will be prepared for VCRIS submittal along with full descriptions in the technical report.

The historic architectural survey will likewise adhere to VDHR standards. While the NPS Bulletin 15 (NPS 1995) defines a historic property as a resource that is 50 years or older, for the purposes of this Project, survey will include those 45 years or older to accommodate the length of time needed to complete the permitting phase for the Project. Furthermore, the survey will also record those resources that may have reached significance prior to the 50 (45) year age in accordance with NPS guidance if they are integral parts of districts or have merit to be considered eligible for the NRHP on their own. Digital photographs will be taken to record resources' overall appearance and details. Sketch maps will be drawn depicting the relationship of dwellings to outbuildings and associated landscape features. Additional information on the structures' appearance and integrity will be recorded to assist in making recommendations of NRHP eligibility. Historic maps, aerial photographs, and tax assessor data will be consulted to assist in dating the resources. Resources identified in the field effort will be reported to the VDHR, VCRIS numbers will be obtained, and shapefiles and database information will be provided. Sufficient information will be collected to make recommendations for each identified historic resource regarding eligibility for listing on the NRHP and to assess Project impacts.

Because this study indicates that each of the alternative routes would result in a severe impact on 020-0407, the Hallsboro Store, mitigation of impacts from the Project will likely be required. The Company will address impacts on this resource in the next stage of investigations.



5. REFERENCES

Blondino, Joseph R. and Claudia Abernathy

2023 Phase I Archaeological Survey of the Proposed Moseley Solar Project Area, Chesterfield County, Virginia. Prepared by Gray & Pape, Inc., Richmond, Virginia. Prepared for Moseley Hermon Solar, LLC, Washington, D.C.

Brady, Ellen M. and Loretta Lautzenheiser

1998 Archaeological Survey of a Portion of Proposed Route 288, Chesterfield County, Virginia. Prepared by Coastal Carolina Research, Inc., Tarboro, North Carolina. Prepared for the Virginia Department of Transportation, Richmond, Virginia.

Browning, Lyle E.

1989 Midlothian to Trabue: 230kV Transmission Line and Trabue Substation, Preliminary Phase I Archaeological Reconnaissance Survey. Prepared by Browning & Associates, Richmond, Virginia. Prepared for Virginia Power, Richmond, Virginia.

2006 Horner Park Access Road Phase I Cultural Resources Intensive Survey Report.
Prepared by Browning & Associates, Midlothian, Virginia. Prepared for Chesterfield County
Department of Parks & Recreation, Chesterfield, Virginia.

Chesterfield County Preservation Committee

2025 Chesterfield County's Local Historic Landmark Designation Guide. https://chesterfieldva.maps.arcgis.com/apps/Shortlist/index.html?appid=48eefd68d76d4aa d80ad0e5ea3c4c4be. Accessed February 2025.

Chesterfield Historical Society of Virginia

2025 Visit Us. https://chesterfieldhistoricalsociety.com/visit-us/about-chesterfield-historicalsociety/. Accessed February 2025.

Dutton, David H., Christine Muron, and Dara Friedberg

2022 Phase I Cultural Resource Survey of the ±81 Hectare (±199 Acre) NE Upper Magnolia Project Area, Chesterfield County, Virginia. Prepared by Dutton + Associates, LLC, Midlothian, Virginia. Prepared for Timmons Group, Richmond, Virginia.

Dutton, David H., Dara Friedberg, and Michael A. Lundberg

2024 Phase I Cultural Resource Survey of the ±43.1-Hectare (±106.4-Acre) Upper Magnolia CCPS Project Area, Chesterfield County, Virginia. Prepared by Dutton + Associates, LLC, Midlothian, Virginia. Prepared for Timmons Group, Richmond, Virginia.

Experience Chesterfield

2025 Black History in Chesterfield. https://experiencechesterfield.com/blog/black-history-in-chesterfield-history-happened-here/. Accessed February 2025.

Fitting, James E., Jeffrey C. Kimball, and C. Stephan Demeter

1977 A Cultural Resources Survey and Evaluation of the Right-of-Way for the Carson-Midlothian 500 kV Transmission Line in Chesterfield and Dinwiddie Counties, Virginia. Commonwealth Associates Inc., Jackson, Mississippi. Prepared for Virginia Electric and Power Company, Richmond, Virginia.

Find a Grave

2025 Mount Sinai Baptist Church Cemetery Memorials. https://www.findagrave.com/cemetery/2150240/memorial-



search?cemeteryName=Mount+Sinai+Baptist+Church+Cemetery&orderby=d-&page=1#sr-246191268. Accessed March 2025.

Friedberg, Dara

2021 Phase I Cultural Resource Survey of the ±.16-Hectare (±.4-Acre) Dry Bridge Project Area, Chesterfield County, Virginia. Prepared by Dutton + Associates, LLC, Midlothian, Virginia. Prepared for Dominion Energy, Richmond, Virginia.

GoogleEarth Pro

2025 Aerial Imagery. Assessed March 2025.

Hudson, Teresa

National Register of Historic Places Registration Form: Hallsboro Store. On file, Virginia Department of Historic Resources, Richmond, Virginia.

Hughes, Skye, Carol D. Tyrer, and Dawn M. Muir

2020 Phase I Cultural Resources Survey of Dry Bridge Energy Center, LLC, Chesterfield County, Virginia. Prepared by Circa.

Hutchins-Keim, Karen and Jean Cascardi

2020 Peer Review of Phase I Archaeological Survey of Dry Bridge Energy Center, LLC. Prepared by Rummel, Klepper, and Kahl, LLP, Baltimore, Maryland. Prepared for Virginia Department of Historic Resources, Richmond, Virginia.

Lichtenberger, Randy

2020 Phase I Archaeological Survey of the Proposed Dry Bridge Energy Center, LLC Access Road, Chesterfield County, Virginia. Prepared by Hurt & Proffitt Inc., Lynchburg, Virginia. Prepared for Dry Bridge Energy, LLC, Charlottesville, Virginia.

McDonald, Brad

2016 VCRIS Architecture Form, 020-0407. On file, Virginia Department of Historic Resources, Richmond, Virginia.

Moseley, Lucille C.

1998 National Register of Historic Places Registration Form: Bethel Baptist Church. On file, Virginia Department of Historic Resources, Richmond, Virginia.

Mt. Sinai Baptist Church

2025 History. http://mountsinaibaptist.com/history/. Accessed February 2025.

Nationwide Environmental Title Research LLC (NETROnline)

Historic Aerial Photographs. https://www.historicaerials.com/viewer. Accessed March 2025.

NPS (National Park Service)

1995 National Register Bulletin: How to Apply the National Register Criteria for Evaluation (NRB 15). Revised for Internet 1995. Accessed June 2024. Retrieved from: https://www.nps.gov

O'Dell, J.M.

1977 VCRIS Architecture Form, 020-0405. On file, Virginia Department of Historic Resources, Richmond, Virginia.



O'Donnell, Darby

2020 Phase I Archaeological Survey of the 11-acre Area of Potential Effect within the Proposed 26,000-foot Tomahawk Creek Sanitary Sewer Line, Chesterfield County, Virginia. Prepared by Darby O'Donnell, LLC, Henrico, Virginia. Prepared for U.S. Army Corps of Engineers, Richmond, Virginia.

Pickett, Dwayne W. and Randy Lichtenberger

2021 Phase I Archaeological Survey of the Proposed Dry Bridge Energy Center, LLC, Chesterfield County, Virginia. Prepared by Hurt & Proffitt Inc., Lynchburg, Virginia. Prepared for Dry Bridge Energy, LLC, Charlottesville, Virginia.

Preservation Virginia

2025 Rosenwald School Architectural Survey. https://preservationvirginia.org/our-work/architectural-rosenwald-school-survey/. Accessed February 2025.

Virginia Department of Historic Resources (VDHR)

- 2008 Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia. Accessed June 2022. Retrieved from: https://www.dhr.virginia.gov/wp-content/uploads/2018/08/DHR_Guidelines_for_Transmission_Line_Assessment.pdf.
- 2017 Guidelines for Conducting Historic Resources Survey in Virginia. Accessed February 2024. Retrieved from: https://www.dhr.virginia.gov/wp-content/uploads/2023/05/SurveyManual_2017.pdfeyManual_2017.pdf (virginia.gov).
- Virginia Cultural Resources Information System. Accessed 2025. Retrieved from: https://www.dhr.virginia.gov/programs/vcris/.

Virginia Historic Landmarks Commission Staff

1979 National Register of Historic Places Inventory – Nomination Form: Hallsborough Tavern. On file, Virginia Department of Historic Resource, Richmond, Virginia.

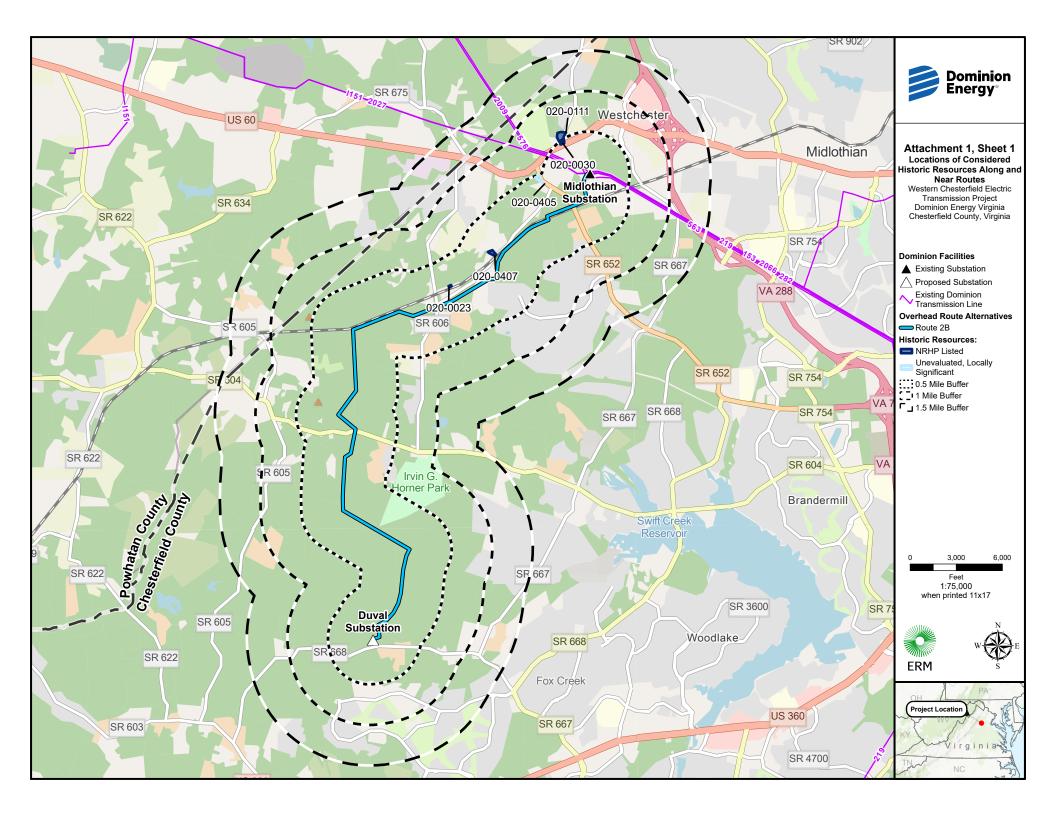
White, Joseph S. III

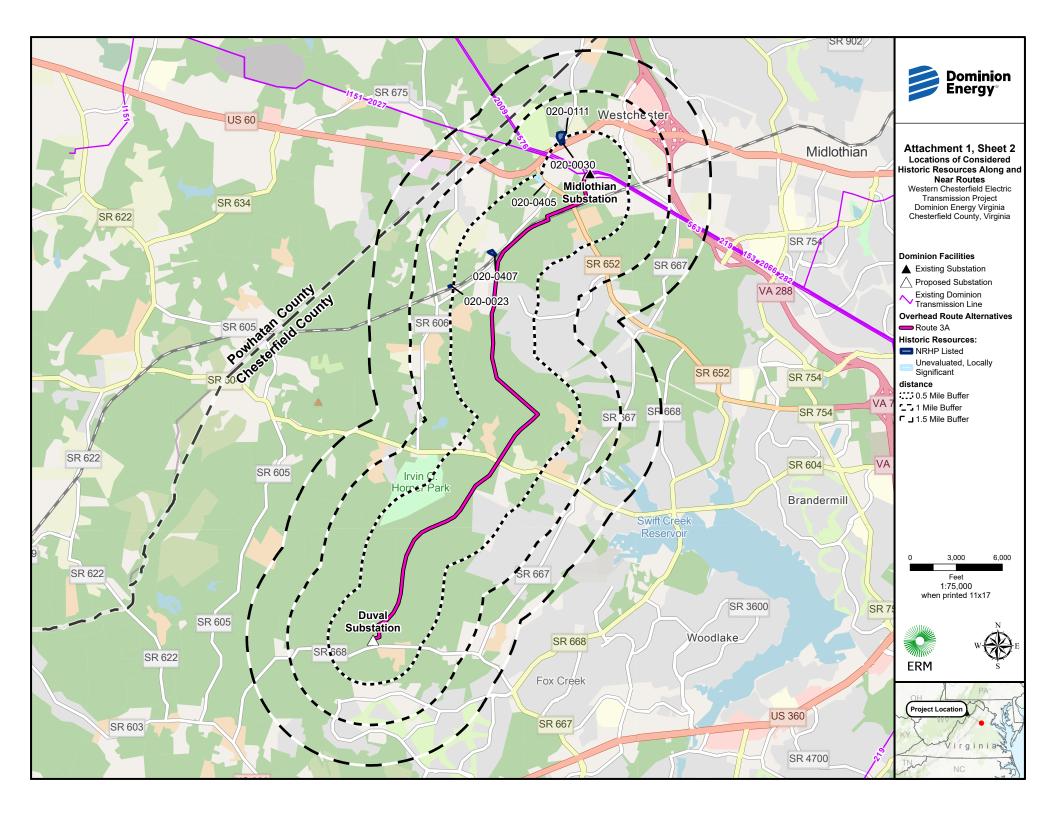
1991 National Register of Historic Places Registration Form: Dinwiddie County Pullman Car. On file, Virginia Department of Historic Resources, Richmond, Virginia.

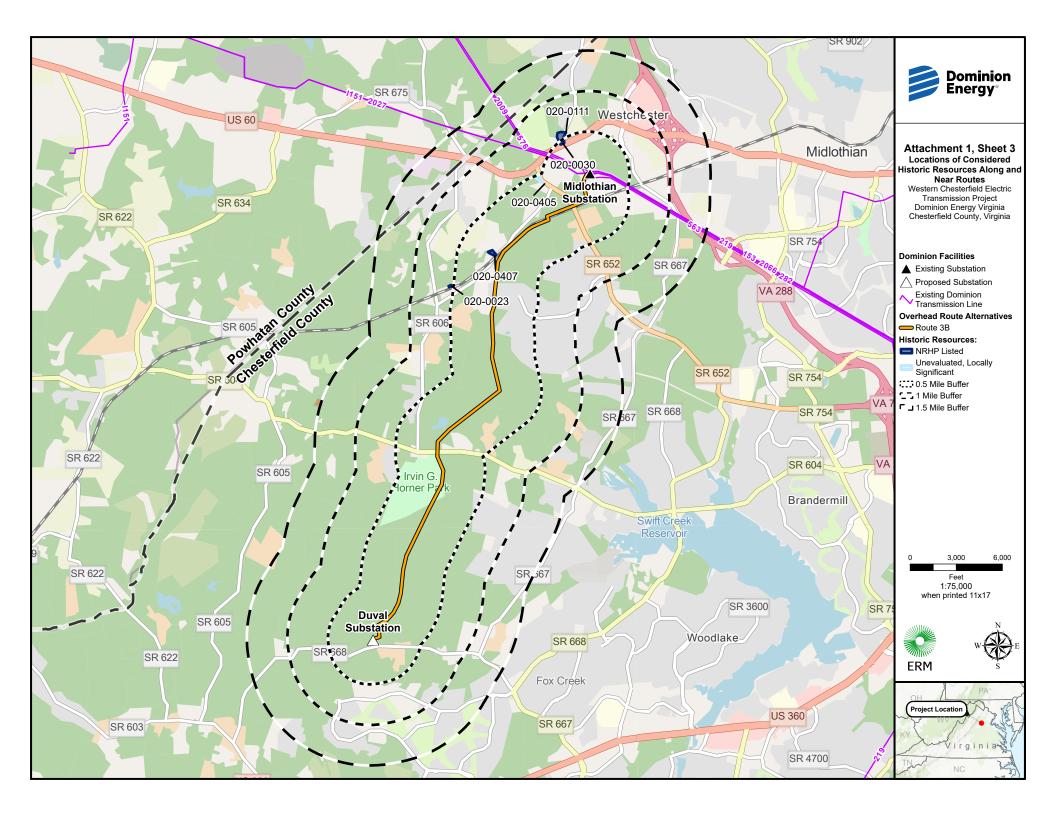




ATTACHMENT 1 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ASSOCIATED WITH PROPOSED PROJECT ALTERNATIVES

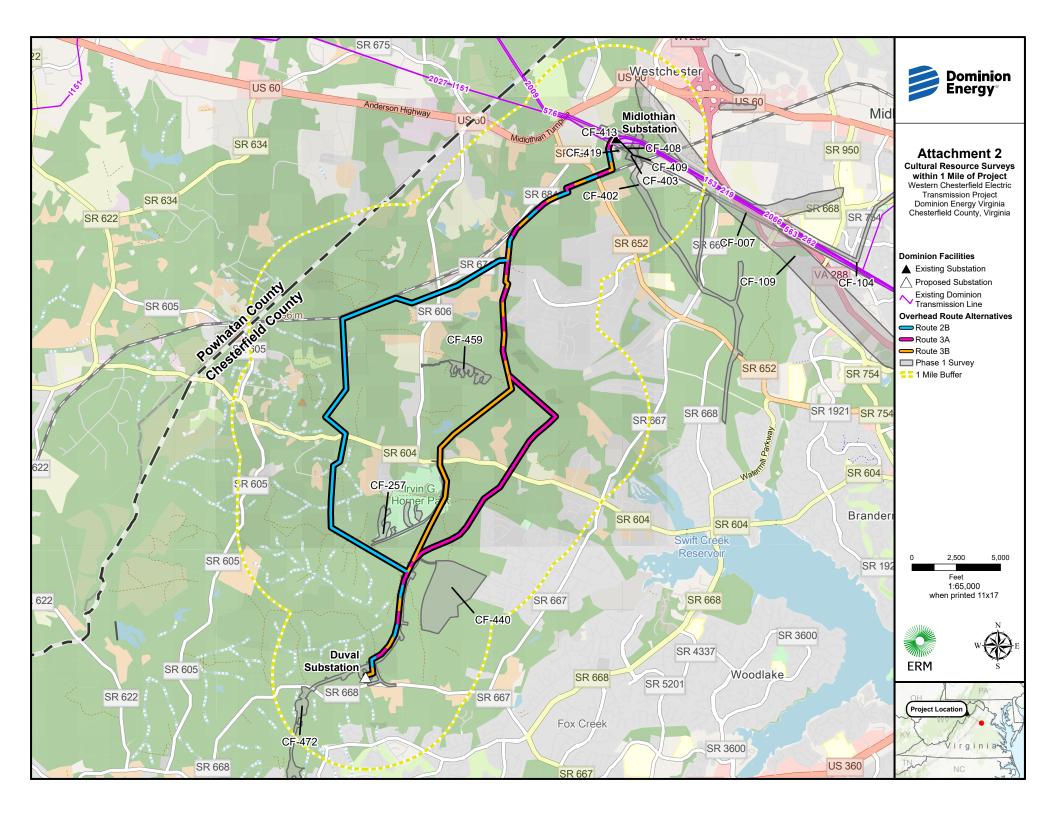






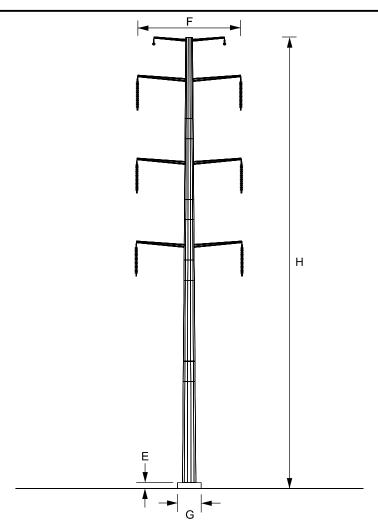


ATTACHMENT 2 CULTURAL RESOURCES SURVEYS WITHIN 1 MILE OF PROJECT





ATTACHMENT 3 TYPICAL DESIGN AND LAYOUT



TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (I-STRING)

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (50) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE

RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL: CONCRETE

SEE NOTE 2

F. AVERAGE WIDTH AT CROSSARM:

G. AVERAGE WIDTH AT BASE: SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 107' MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 127' AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 119'

I. AVERAGE SPAN LENGTH (RANGE): 717' (427' - 898') - SEE NOTE 5

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL
- THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

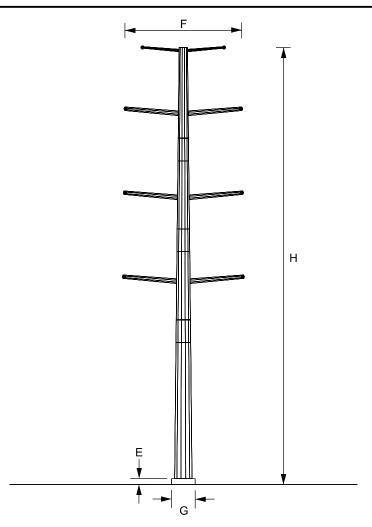
Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (I-STRING)

ATTACHMENT NO.

II.B.3.b

DRAWN BY: TMR



TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (42) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE

RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: CONCRETE AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH AT CROSSARM: 26'

G. AVERAGE WIDTH AT BASE: SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 97'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 12'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 108 127' 108'

I. AVERAGE SPAN LENGTH: 689' (371' - 992')

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
- THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

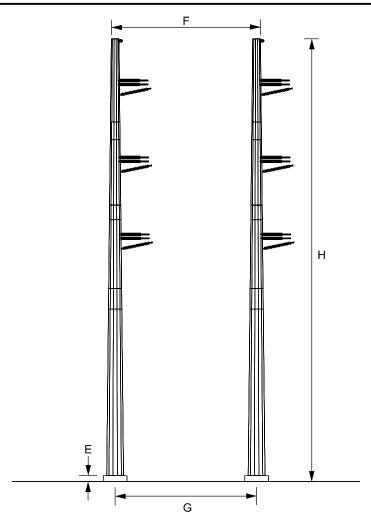
Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.a

DRAWN BY: TMR



TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE: MINIMIZES RIGHT OF WAY ACQUISITION; 2-POLES USED FOR HEAVY ANGLES TO OPTIMIZE POLE/FOUNDATION SIZE AND COST

C. LENGTH OF R/W (STRUCTURE QTY): 7.10 MILES (16) - SEE NOTE 1

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR STRUCTURE MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE RURAL NATURE OF THE PROPOSED RIGHT OF WAY

E. FOUNDATION MATERIAL: CONCRETE AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH BETWEEN POLE EDGES: 36'

G. AVERAGE WIDTH AT BASE: 34' - SEE NOTE 3

H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): 97'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): 127'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4): 108'

I. AVERAGE SPAN LENGTH (RANGE): 519' (175' - 856') - SEE NOTE 5

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES: 1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES

- 2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
- 3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
- 4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL

5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

Dominion

BASED ON FINAL DESIGN

Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060 LINES 2448, 2449, 2453, & 2454

TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.c

DRAWN BY: TMR



ATTACHMENT 4 HISTORIC RESOURCE PHOTOS

FIGURE 1 020-0023, DINWIDDIE COUNTY PULLMAN CAR, NOT VISIBLE, VIEW TO EAST-NORTHEAST



FIGURE 2 020-0030, HALLSBOROUGH TAVERN, SOUTH ELEVATION, VIEW TO THE NORTH



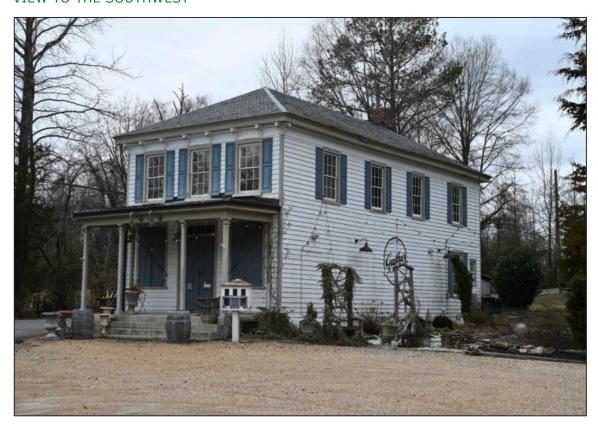
FIGURE 3 020-0111, BETHEL BAPTIST CHURCH, WEST AND SOUTH ELEVATIONS, VIEW TO THE NORTHEAST



FIGURE 4 020-0405, MT. SINAI BAPTIST CHURCH, NORTH AND EAST ELEVATIONS, VIEW TO THE SOUTHWEST



FIGURE 5 020-0407, HALLSBORO STORE, NORTHEAST AND SOUTHEAST ELEVATIONS, VIEW TO THE SOUTHWEST





ATTACHMENT 5 PHOTO SIMULATIONS







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 101

County Line Rd

Figure 2
Route: 2B

Date:02/05/2025 Time: 12:20 pm

Viewing Direction: South

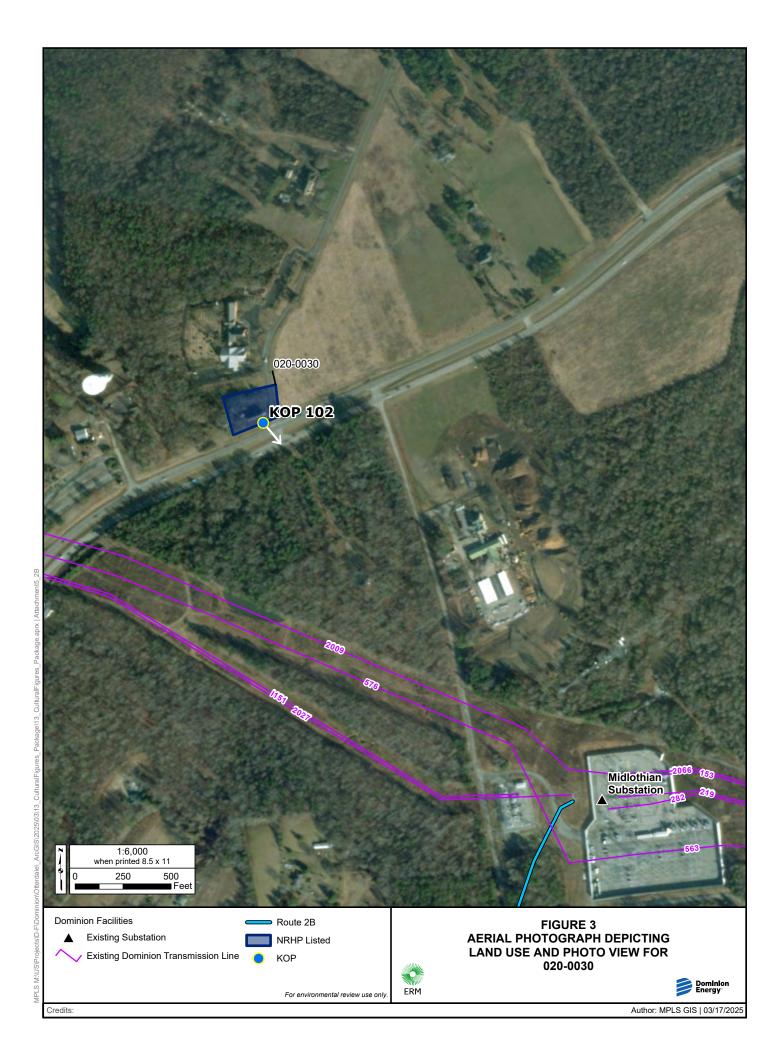
Distance to closest feature: 798 feet



Legend



Overhead Route Alternatives







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 102

Midlothian Tpke

Figure 4 Route: 2B

Date:02/05/2025

Time: 10:38 am

Viewing Direction: Southeast

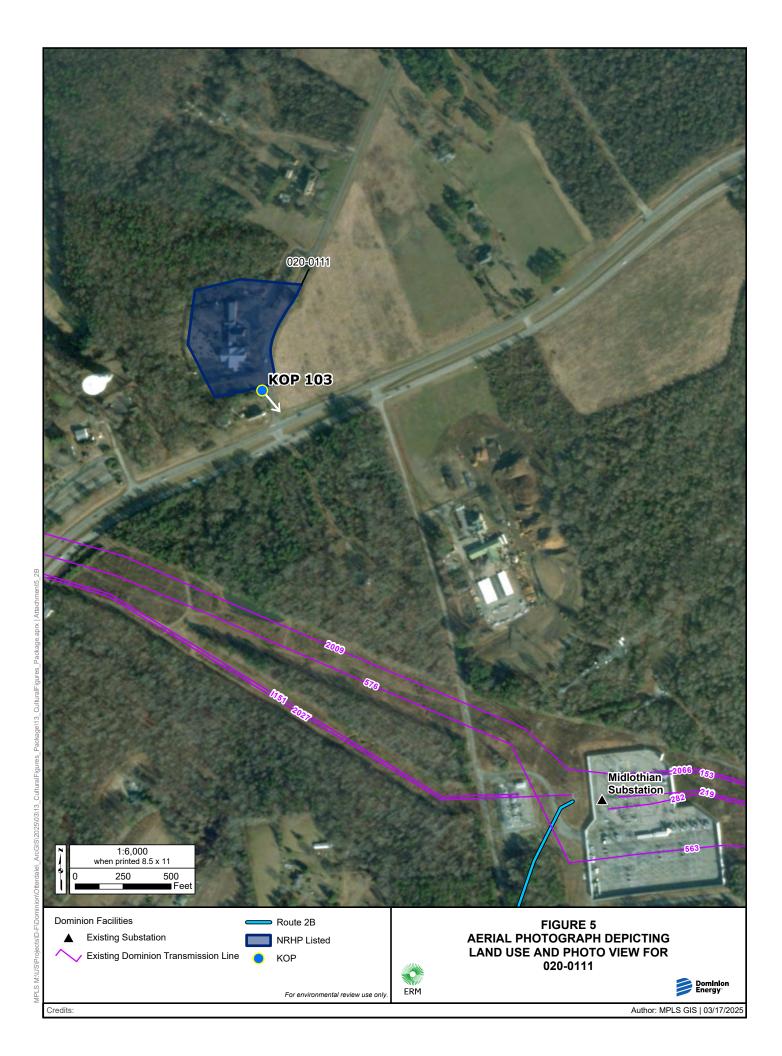
Distance to closest feature: 0.46 mile

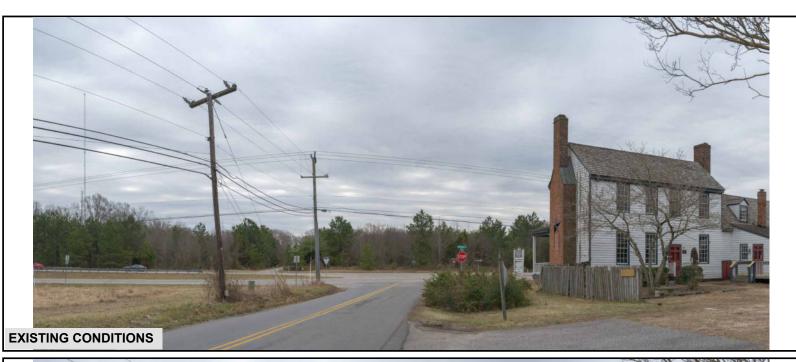


Legend

Existing Substation
 Existing Dominion

★ KOP
Overhead Route Alternative
— Route 2B







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 103

Midlothian Tpke

Figure 6 Route: 2B

Date:02/05/2025 Time: 10:33 am

Viewing Direction: Southeast

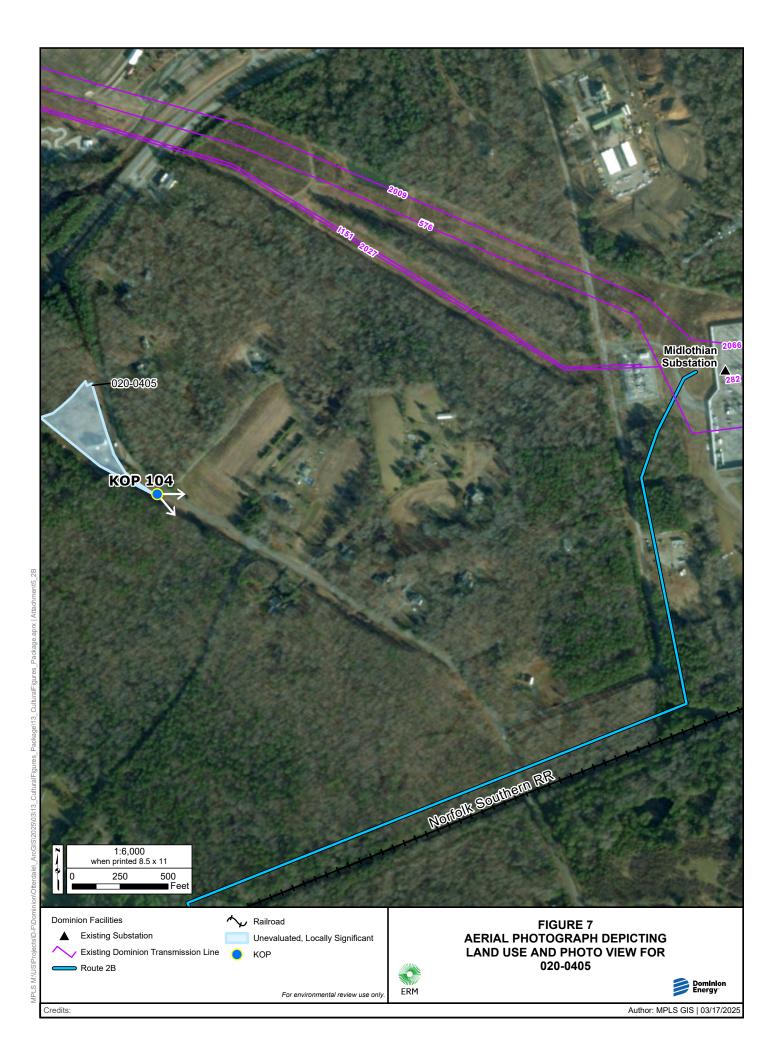
Distance to closest feature: 0.49 mile



Legend

Existing Substation
 Existing Dominion

Verhead Route Alternative
Route 2B







WESTERN CHESTERFIELD Electric Transmission Project Dominion Energy Virginia

Dominion Energy Virginia Chesterfield County, Virginia



KOP 104

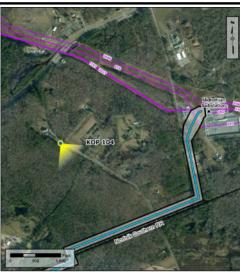
Old Hundred Rd

Figure 8 Route: 2B

Date:02/05/2025 Time: 10:33 am

Viewing Direction: Southeast

Distance to closest feature: 0.37 mile



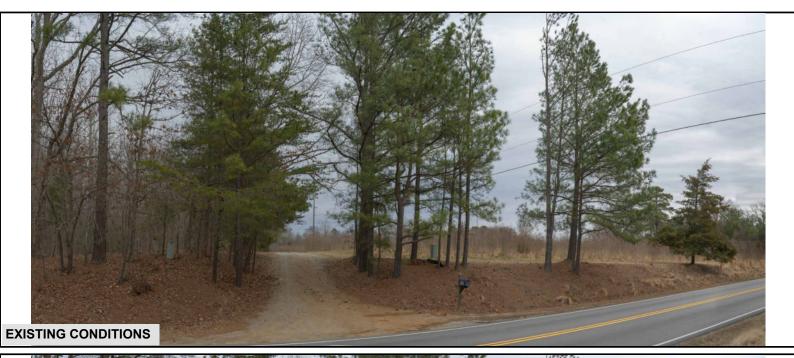
Legend

▲ Existing Substation

Existing Dominion
Transmission Line

Railroad

Verhead Route Alternative
Route 2B





WESTERN CHESTERFIELD **Electric Transmission Project Dominion Energy Virginia** Chesterfield County, Virginia



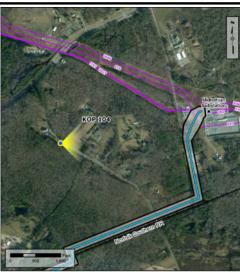
KOP 104

Old Hundred Rd

Figure 9 Route: 2B Date:02/05/2025 Time: 10:33 am

Viewing Direction: East

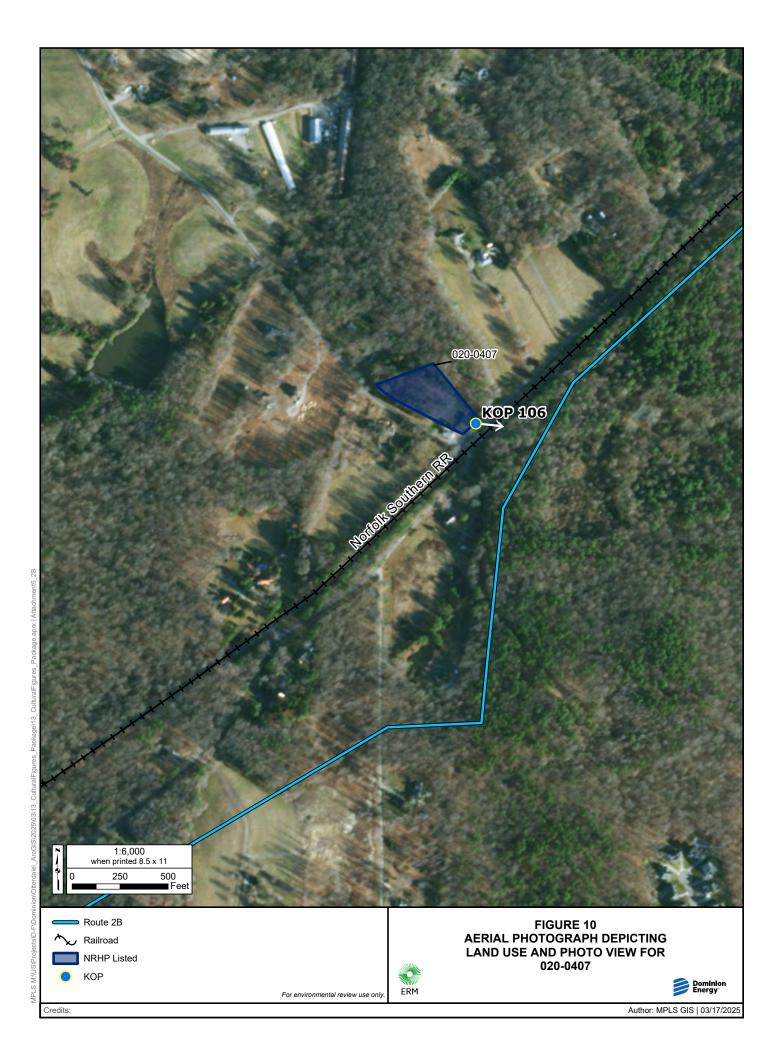
Distance to closest feature: 0.37 mile



Legend

▲ Existing Substation Existing Dominion Transmission Line ~ Railroad

→ KOP Route 2B







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 106

Mount Hermon Rd

Figure 11
Route: 2B

Date:02/05/2025 Time: 11:40 am

Viewing Direction: East

Distance to closest feature: 250 feet



Legend

Overhead Route Alternatives
Route 2B







WESTERN CHESTERFIELD Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 101

County Line Rd

Figure 13 Route: 3A Date:02/05/2025 Time: 12:20 pm

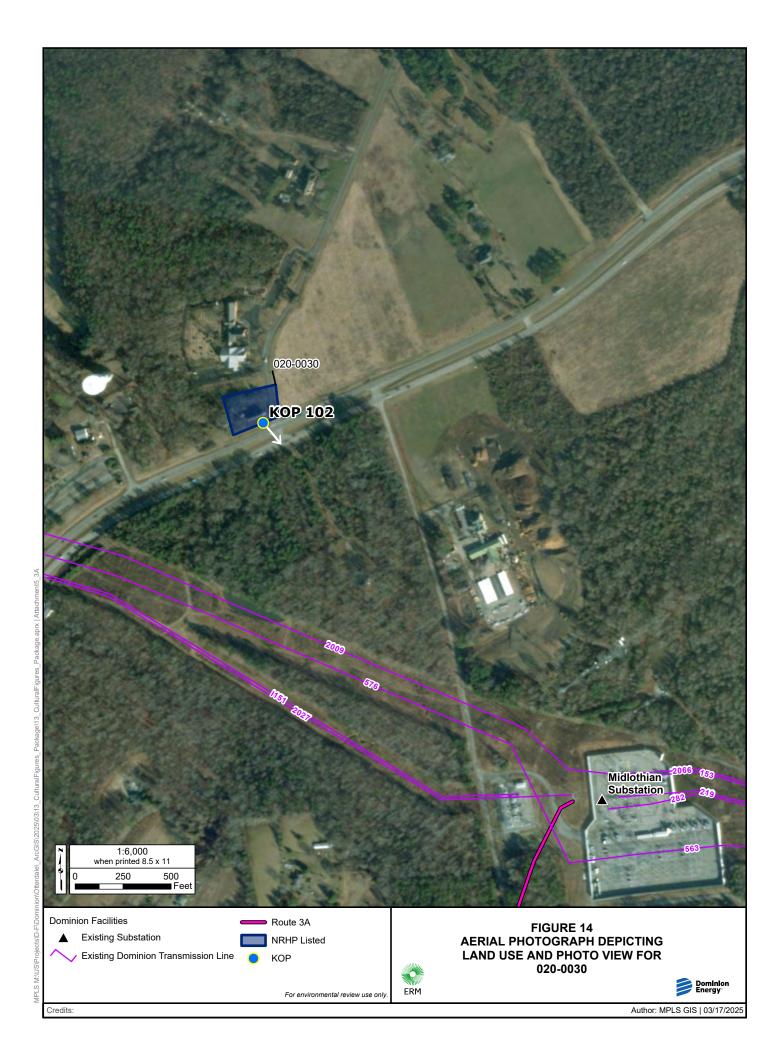
Viewing Direction: Southeast

Distance to closest feature: 0.53 mile



Legend

Overhead Route Alternatives







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 102

Midlothian Tpke

Figure 15 Route: 3A Date:02/05/2025

Time: 10:38 am

Viewing Direction: Southeast

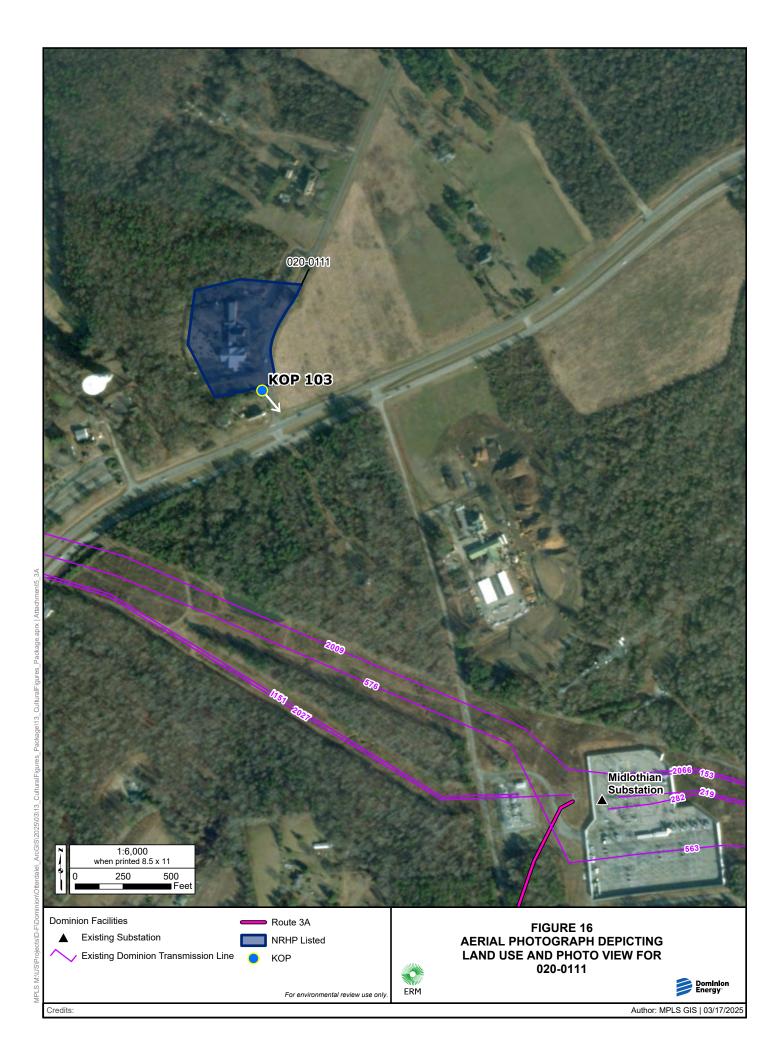
Distance to closest feature: 0.46 mile

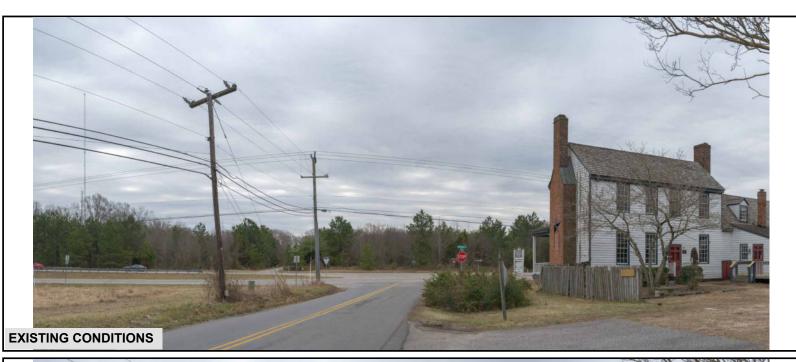


Legend

Existing Substation
Existing Dominion

Verhead Route Alternative
Route 3A







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 103

Midlothian Tpke

Figure 17 Route: 3A

Date:02/05/2025 Time: 10:33 am

Viewing Direction: Southeast

Distance to closest feature: 0.49 mile



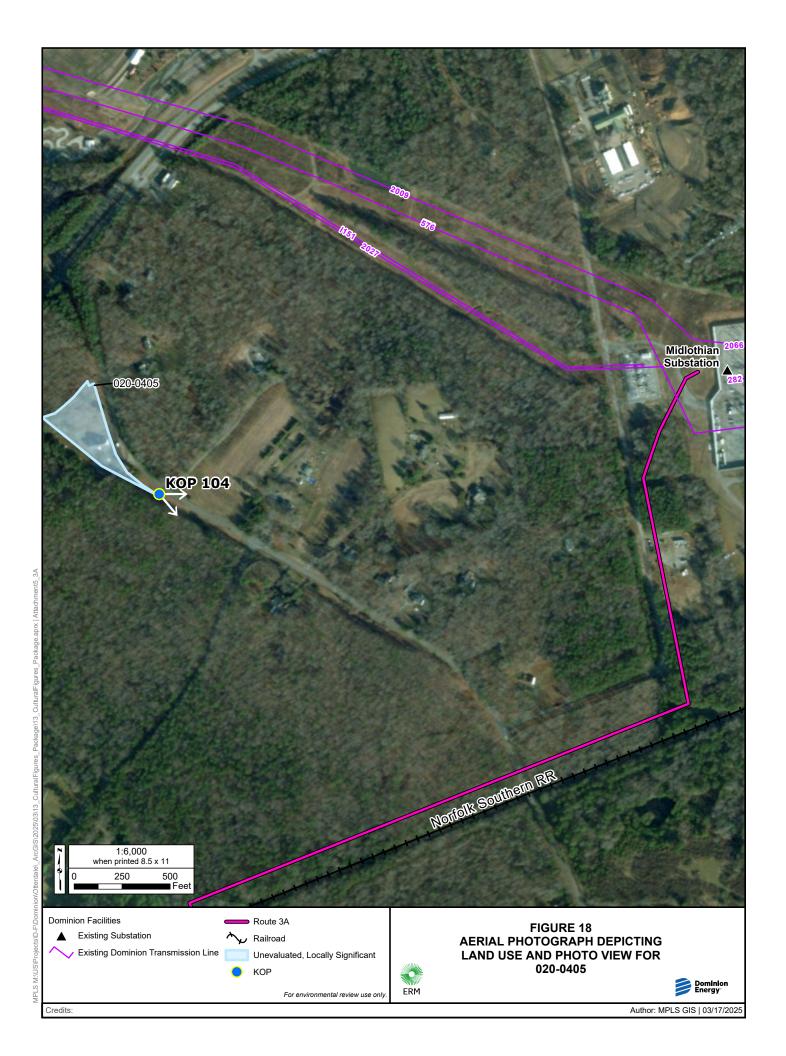
Legend

Existing Substation
 Existing Dominion
 Transmission Line

✓ KOP

Overhead Route Alternative

— Route 3A









KOP 104

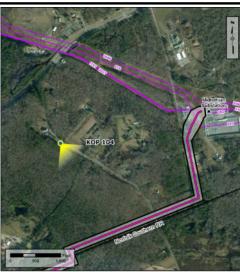
Old Hundred Rd

Figure 19 Route: 3A Date:02/05/2025

Time: 10:33 am

Viewing Direction: Southeast

Distance to closest feature: 0.37 mile



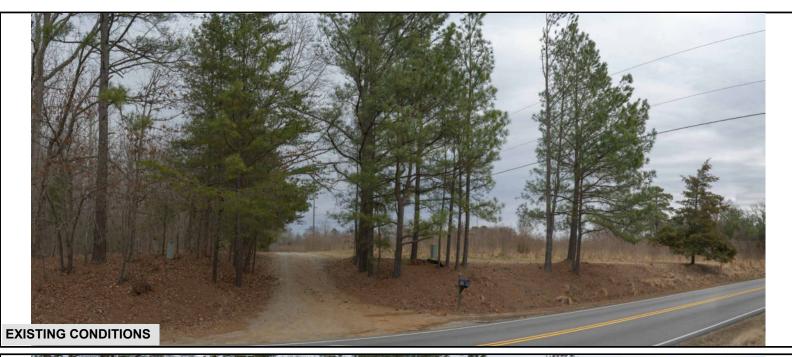
Legend

▲ Existing Substation

Existing Dominion
Transmission Line

Railroad

★ KOP Overhead Route Alternative — Route 3A







KOP 104

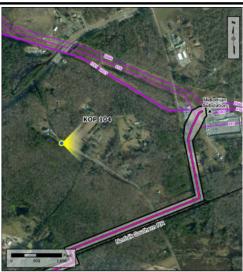
Old Hundred Rd

Figure 20 Route: 3A Date:02/05/2025

Time: 10:33 am

Viewing Direction: East

Distance to closest feature: 0.37 mile



Legend

▲ Existing Substation

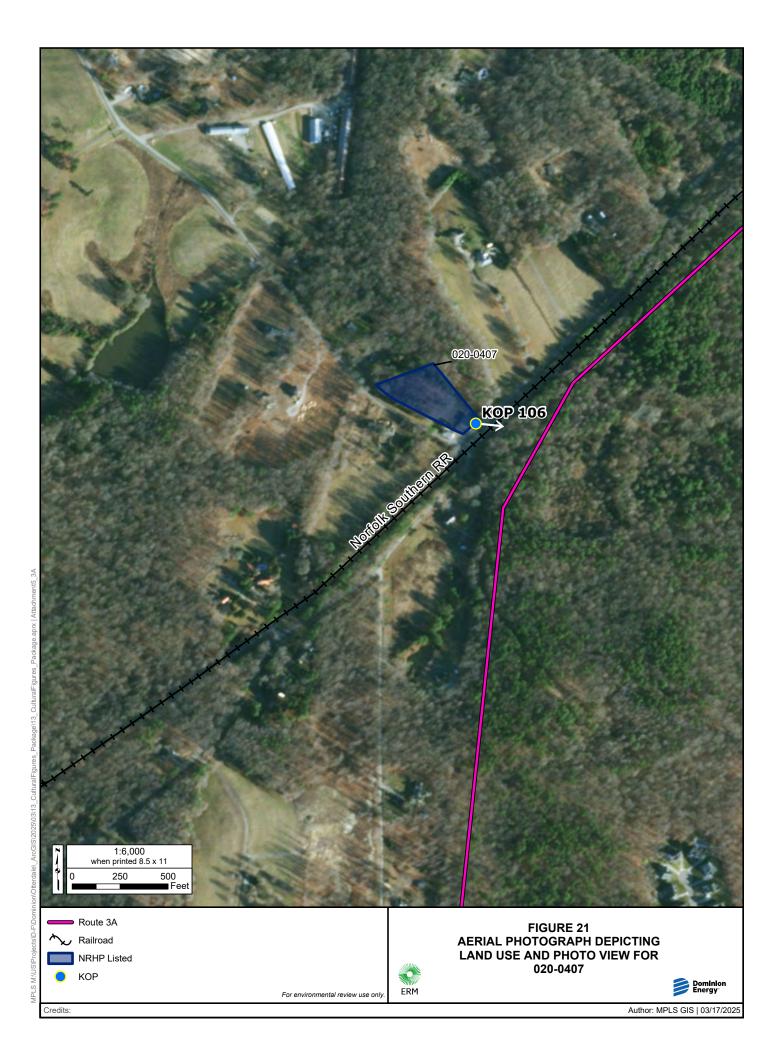
Existing Dominion
Transmission Line

Railroad

✓ KOP

Overhead Route Alternative

— Route 3A







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 106

Mount Hermon Rd

Figure 22 Route: 3A Date:02/05/2025

Time: 11:40 am

Viewing Direction: East

Distance to closest feature: 250 feet



Legend

Overhead Route Alternatives
Route 3A









KOP 101

County Line Rd

Figure 24 Route: 3B Date:02/05/2025 Time: 12:20 pm

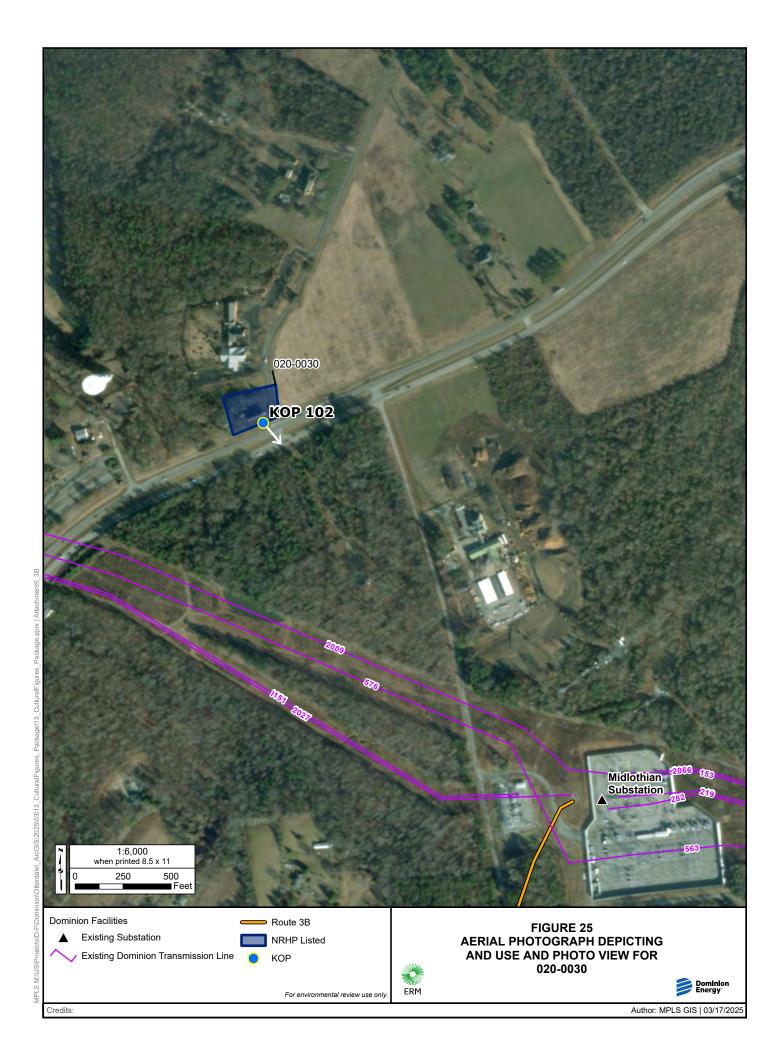
Viewing Direction: Southeast

Distance to closest feature: 0.53 mile



Legend

Overhead Route Alternatives







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 102

Midlothian Tpke

Figure 26 Route: 3B Date:02/05/2025

Time: 10:38 am

Viewing Direction: Southeast

Distance to closest feature: 0.46 mile



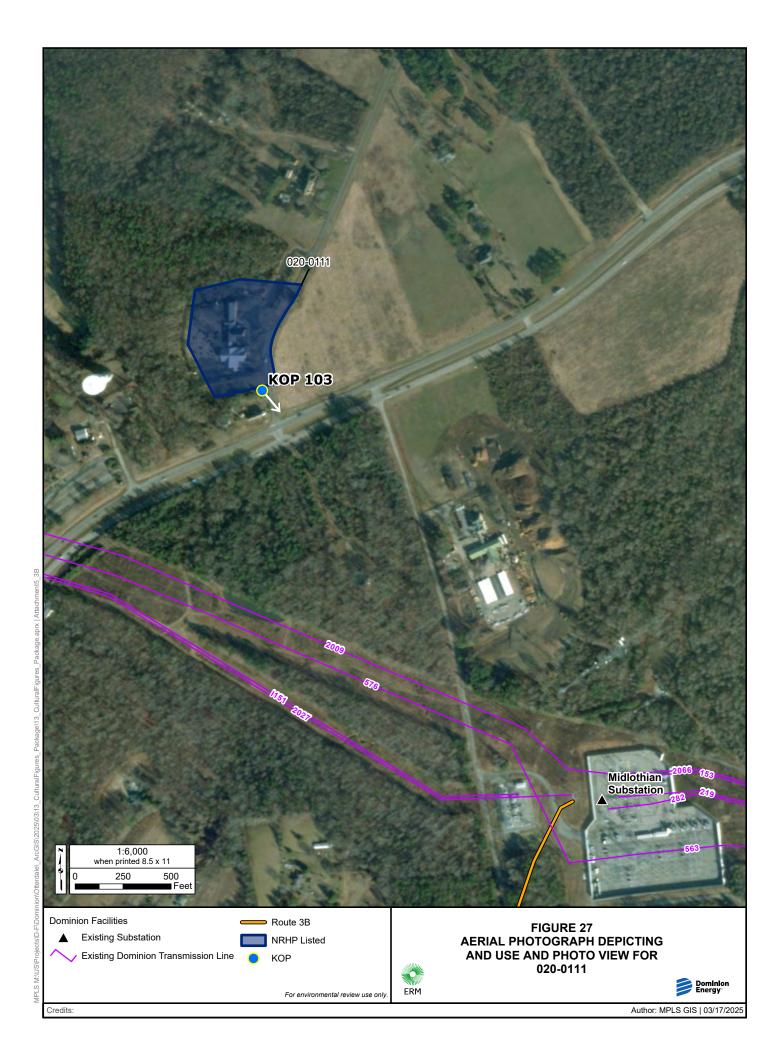
Legend

Existing Substation
Existing Dominion
Transmission Line

VOP

Overhead Route Alternativ

Route 3B







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 103

Midlothian Tpke

Figure 28 Route: 3B

Date:02/05/2025 Time: 10:33 am

Viewing Direction: Southeast

Distance to closest feature: 0.49 mile



Legend

▲ Existing Substation

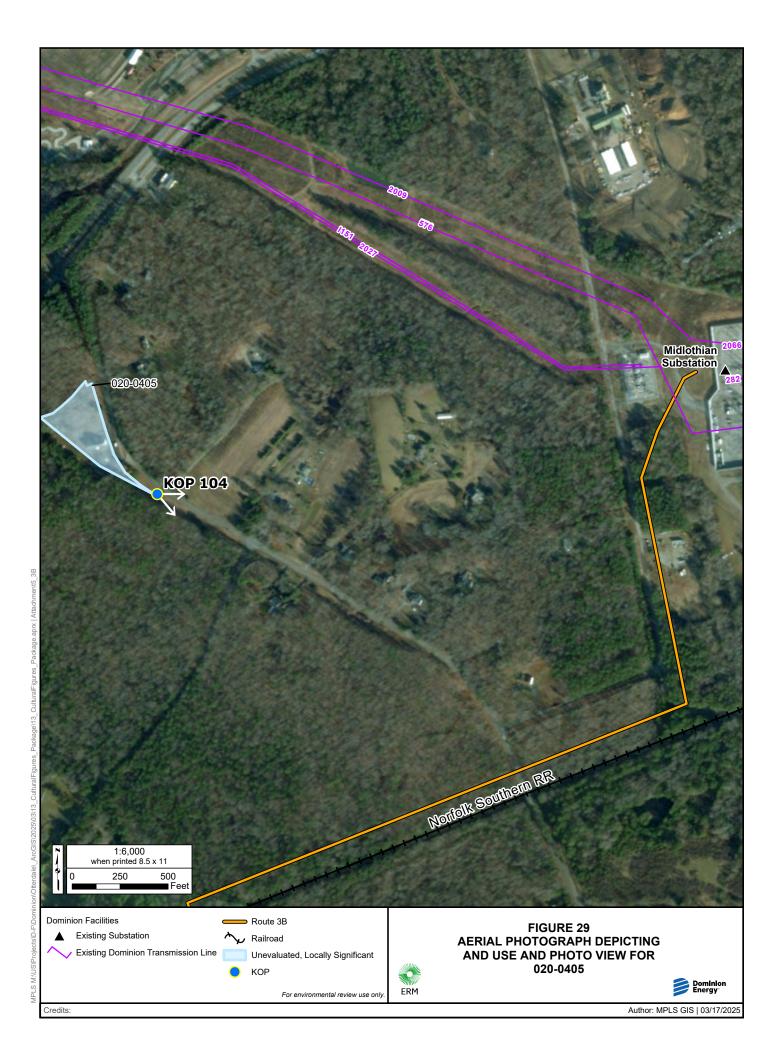
Existing Dominion

Transmission Line

VOP

Overhead Route Alternation

Route 38









KOP 104

Old Hundred Rd

Figure 30 Route: 3B Date:02/05/2025

Time: 10:33 am

Viewing Direction: Southeast

Distance to closest feature: 0.37 mile



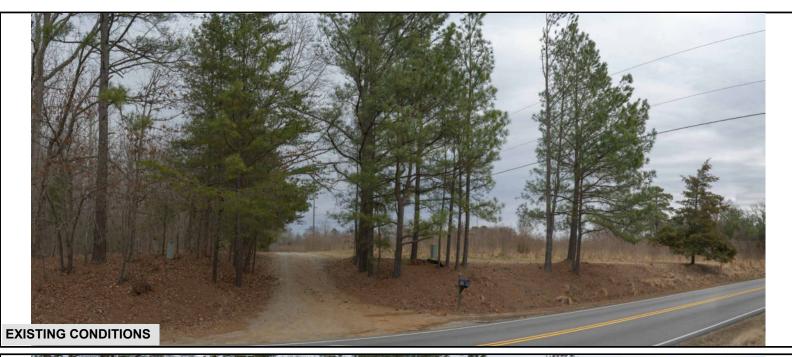
Legend

▲ Existing Substation

Existing Dominion
Transmission Line

Railroad

✓ KOP
 Overhead Route Alternatives
 — Route 3B







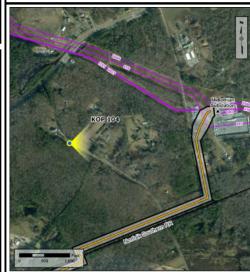
KOP 104

Old Hundred Rd

Figure 31 Route: 3B Date:02/05/2025

Time: 10:33 am Viewing Direction: East

Distance to closest feature: 0.37 mile



Legend

▲ Existing Substation

Existing Dominion
Transmission Line

Railroad

✓ KOP
 Overhead Route Alternative
 — Route 3B







Electric Transmission Project Dominion Energy Virginia Chesterfield County, Virginia



KOP 106

Mount Hermon Rd

Figure 33 Route: 3B Date:02/05/2025

Time: 11:40 am

Viewing Direction: East

Distance to closest feature: 250 feet



Legend

Overhead Route Alternatives
Route 3B



ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

Argentina The Netherlands

Australia New Zealand

Belgium Peru

Brazil Poland

Canada Portugal

China Puerto Rico

Colombia Romania

France Senegal

Germany Singapore

Ghana South Africa

Guyana South Korea

Hong Kong Spain

India Switzerland

Indonesia Taiwan

Ireland Tanzania

Italy Thailand

Japan UAE

Kazakhstan UK

Kenya US

Malaysia Vietnam

Mexico

Mozambique

ERM's Duluth Office

3300 Breckenridge Boulevard

Suite 300

Duluth, GA 30096

www.erm.com