MAY 06 | 2022

Appendix I-2: Onshore Visual Impact Assessment

Coastal Virginia Offshore Wind Commercial Project

Dominion Energy®

Submitted by:
Dominion Energy Services, Inc.
707 E. Main Street,
Richmond, VA 23219

Prepared by:
ERM
180 Admiral Cochrane Drive Suite 400
Annapolis, MD 21401

Submitted to:
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, VA 20166

Signature Page

April 2022

Coastal Virginia Offshore Wind Commercial Project

Visual Impact Assessment: Onshore Components

Ben Sussman
Technical Director

ERM
180 Admiral Cochrane Drive
Suite 400
Annapolis, MD 21401

CONTENTS

List of Tables

Acronyms and Abbreviations

Name	Description
3D	three-dimensional
ac	acre
BLM	U.S. Bureau of Land Management
BOEM	U.S. Bureau of Ocean Energy Management
COP	Construction and Operations Plan
CVOW	Coastal Virginia Offshore Wind
Dominion Energy	Dominion Energy Virginia
ERM	Environmental Resources Management
ft	Feet
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectare
Hybrid Alternative	Hybrid Interconnection Cable Route Alternative 6
km	kilometer
KOP	Key Observation Point
kV	Kilovolt
LCA	Landscape Character Area
m	meter
mi	statute mile
OCS	Outer Continental Shelf
O&M	operations and maintenance
PMT	Portsmouth Marine Terminal
Project	Coastal Virginia Offshore Wind Commercial Project
SLVIA	Seascape/landscape visual impact assessment
VDHR	Virginia Department of Historic Resources
VIA	Visual Impact Assessment
VPA	Virginia Port Authority
VRM	Visual Resource Management

I-2.1. INTRODUCTION

This document presents the Visual Impact Assessment (VIA) of the Onshore Project Components associated with Dominion Energy Virginia's (Dominion Energy) proposed Coastal Virginia Offshore Wind (CVOW) Commercial Project (Project). The purpose of the VIA is to identify and assess the potential visual impacts resulting from construction and operation of the Onshore Project Components. This VIA describes the methodology used for evaluating visual impacts, describes visual conditions as they currently exist and would exist after construction of the Project, discusses the Project's visual impacts, and identifies potential mitigation measures to address those impacts. Dominion Energy has prepared a separate VIA to address the Offshore Project Facilities, which is included in this Appendix as Attachment I-2-1.

I-2.2. PROJECT DESCRIPTION

The Project will consist of a commercial-scale offshore wind generating facility and associated infrastructure connecting the facility to the electric transmission grid in Virginia. The wind generating facility will be built within Outer Continental Shelf (OCS) Lease Area OCS-A 0483, with the closest in-water structure approximately 27 miles (mi) (43.5 kilometers [km]) east of Virginia Beach, Virginia. A buried Offshore Export Cable will connect the wind generating facility to the mainland. The Onshore Project Components will include a Cable Landing Location, an Onshore Export Cable, a Switching Station, an Onshore Interconnection Cable, and an expanded Onshore Substation (Figure I-2-1-1 in Attachment I-2-1). Descriptions of the Onshore Project Components are provided below.

- **Cable Landing Location:** The intersection of the Offshore Export Cables and Onshore Export Cables will occur at the Cable Landing Location near the Croatan Parking Lot east of Lake Christine, within the State Military Reservation. Dominion Energy plans to use a trenchless installation to install the Offshore Export Cables under the beach and dune from a nearshore punch-out location approximately 730 to 3,280 ft (223 to 1,000 m) from the Cable Landing Location. The Offshore Export Cables will be brought to shore through a series of duct banks. The operational footprint for Cable Landing Location is anticipated to be approximately 2.8 ac (1.1 ha).
- **Onshore Export Cables:** At the Cable Landing Location, Dominion Energy will splice the Offshore Export Cables into a series of nine separate single-circuit duct banks laid in a single right-of-way, which will constitute the Onshore Export Cables. The Onshore Export Cables will transfer electricity from the Cable Landing Location to a Common Location south of Harper's Road via 230 kilovolt (kV) Onshore Export Cables installed in underground duct banks within a 4.4-mile (7.1 km) Onshore Export Cable Route Corridor.
- **Harpers Switching Station:** The Harpers Switching Station will be built at a site north of Harpers Road on Navy property in Virginia Beach to transition underground transmission circuits for Interconnection Cable Route Alternatives 1-5 (but not Route Alternative 6—see below) to an overhead configuration. The facility footprint will be approximately 21.8 acres (ac) (8.8 hectares [ha]), all of which would be fenced.
- **Chicory Switching Station:** This Switching Station would only be constructed if the Hybrid Interconnection Cable Route (the Hybrid Alternative) is selected. Selection of the Hybrid Alternative would bypass the Harpers Switching Station; all other alternatives would use the Harpers Switching Station. In the Hybrid Alternative, this Switching Station would be at a site north of Princess Anne Road, approximately 0.9 mile (1.4 km) southeast of the intersection with Dam Neck Road in Virginia Beach. This facility would transition the Hybrid Alternative's underground transmission circuits to an overhead configuration. The Switching Station facility footprint will be approximately 27.5 acres (11.1 ha), of which 19.3 acres (7.8 ha) would be fenced.

Interconnection Cables: Three 230 kV transmission lines will be constructed from the Common Location north of Harpers Road along an Interconnection Cable Corridor to the Onshore Substation. Dominion Energy is evaluating six Onshore Interconnection Cable Route Alternatives, consisting of five overhead routes (Alternatives 1 through 5) and one hybrid overhead/underground route (the Hybrid Alternative). Dominion Energy anticipates that an operational right-of-way of up to 140 ft (42.7 meters [m]) will be needed for overhead cables and up to 85 ft (25.9 m) will be needed for underground cables (the Alternative 4 crossing of the Intracoastal Waterway would require a 250 ft [76.2 m] right-of-way). Where an Interconnection Cable Route alternative can be collocated along existing Dominion Energy transmission lines, new operational right-of-way widths will be reduced by utilizing existing rights-of-way. The overhead segments within new right-of-way will consist of three 230 kV circuits suspended on three single-pole transmission structures.

Transmission structure heights will range from 75 to 170 ft (22.9 to 51.8 m), depending on terrain, with typical heights of 100 to 120 ft (30.5 to 36.6 m). The structures would typically be fabricated with weathering steel, although poles near the Harpers Switching Station, Chicory Switching Station (if constructed), and Onshore Substation would be galvanized, matching the electrical steel components within the station. The cables would use glass insulator strings and would not use non-specular conductors. Collocation with existing electric transmission lines will occur on all of the Interconnection Cable Route alternatives. The length of collocation for each of the Interconnection Cable Routes alternatives with existing transmission lines is as follows:

- Interconnection Cable Route Alternative 1: 9.6 mi (15.4 km) (approximately 68 percent of total length)
- Interconnection Cable Route Alternative 2: 5.1 mi (8.2 km) (approximately 34 percent of total length)
- Interconnection Cable Route Alternative 3: 4.0 mi (6.4 km) (approximately 26 percent of total length)
- Interconnection Cable Route Alternative 4: 7.7 mi (12.4 km) (approximately 47 percent of total length)
- Interconnection Cable Route Alternative 5: 4.7 mi (7.6 km) (approximately 23 percent of total length)
- Hybrid Interconnection Cable Route Alternative 6: 9.6 mi (15.4 km) (approximately 68 percent of total length), including approximately 7.8 mi (12.6 km) (approximately 80 percent) of aboveground transmission lines along this alternative

Collocation with existing transmission lines would include overlap of cleared corridors, thereby reducing the width of new corridor that would require vegetation clearing.

- **Onshore Substation:** The Onshore Substation will be an expansion of Dominion Energy's existing Fentress Substation, located northwest of the intersection of Centerville Turnpike and Etheridge Manor Boulevard in Chesapeake, Virginia. The Onshore Substation will serve as the final point of interconnection for power distribution to the grid. Fentress Substation was identified as an interconnection location because of its proximity to the Project, as well as being an integrated 230 kV and 500 kV substation—the only 500 kV substation located within a reasonable distance to the Cable Landing Location in Virginia Beach, Virginia. The Onshore Substation will require upgrades to accommodate the electricity from the Project. The current footprint of the Fentress Substation is approximately 11.7 ac (4.7 ha). The upgrades for the Onshore Substation footprint are anticipated to require approximately 8.9 additional ac (3.6 ha), for a total of 20.8 ac (8.4 ha).

Construction and Operations and Maintenance Ports

Dominion Energy currently is leasing a portion of the existing Portsmouth Marine Terminal (PMT) facility in the city of Portsmouth, Virginia, to serve as a Construction Port. The Construction Port will be used to store monopiles and transition pieces and to store and pre-assemble wind turbine generation components. Dominion Energy understands that the Virginia Port Authority (VPA) is planning to improve PMT to support broad-scale offshore wind development. Dominion Energy anticipates that the port upgrades will meet the needs of Dominion Energy's efforts to construct an offshore wind farm off the coast of Virginia. Dominion Energy further understands that VPA-made improvements to PMT are planned to benefit the larger offshore wind industry for years to come, are not dependent upon approval of the Project, will be completed in advance of the Project. In the event that upgrades are required, construction would be undertaken by the lessor and would be separately authorized as needed. As such, the VIA does not include analysis of the Construction Port facility.

Dominion Energy currently is evaluating several alternatives to lease portions of existing facilities in the Hampton Roads, Virginia Region for an operations and maintenance (O&M) facility. The preferred lease location for the O&M facility is Lambert's Point, which is located on a brownfield site in Norfolk, Virginia. Dominion Energy and the Port of Virginia area also evaluating leasing portions of the existing facilities at VPA's PMT or Newport News Marine Terminal. In the event that upgrades or a new, build to suit, facility is needed, construction would be undertaken by the lessor and would be separately authorized as needed.

As such, the VIA does not include analysis of the O&M facility.

I-2.3. STUDY METHODOLOGY

Dominion Energy provided its proposed Onshore Project Components VIA methodology to the U.S. Bureau of Ocean Energy Management (BOEM) on March 11, 2021. BOEM provided its comments on this methodology on June 11, 2021. At the time of submission of the methodology document, there was no approved process for assessing visual impacts for offshore wind farms in the United States. As a result, the VIA methodology uses an inventory and assessment approach that applies the concepts of the U.S. Bureau of Land Management's (BLM's) Visual Resource Management (VRM) system, as applicable. The Project does not occur on or affect BLM-administered lands, which typically have defined visual management objectives. The lands affected by the Project are mostly non-federal, and have no federal- or Commonwealth-designated visual management objectives. Nonetheless, the concepts that form the basis of the BLM VRM system can be used to assess potential visual impacts on a wide variety of lands, regardless of management status. Therefore, the methodology applied in the VIA has been modified from the VRM system to address the Onshore Project Components in the context of the Project and a Visual Study Area.

It is specifically noted that the BLM VRM system uses visual inventory forms (completed by visual impact assessment experts) to describe the affected visual environment, as well as visual contrast rating forms to help assess impacts. Because the Project does not affect BLM-administered lands, no BLM inventory or contrast forms were prepared for the onshore visual analysis. Rather, this analysis incorporates BLM concepts such as user types, distance zones, form, line, color, texture, and contrast into descriptions of existing onshore visual conditions and onshore visual impacts.

Subsequent to the submittal of the Onshore Project Components VIA methodology, BOEM published OCS Study BOEM 2021-032, *Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States* (BOEM 2021). This seascape and landscape visual impact assessment (SLVIA) document provided BOEM's recommended methodology for assessing onshore and offshore visual impacts. The SLVIA methodology was published in April 2021, following initiation of the VIA. As a result, this VIA (originally published in June 2021) was written to be

cognizant of—but may not fully incorporate—the BOEM SLVIA methodology. To ensure that the VIA would include sufficient analysis to assist BOEM in preparing the Environmental Impact Statement for the Project, Dominion Energy worked with BOEM to review the VIA methodology through online meetings in June 2021 and email correspondence in October 2021. As a result of this correspondence, BOEM concurred with Dominion Energy's approach to incorporating relevant aspects of the SLVIA methodology in this VIA.

I-2.3.1. Visual Study Area

The Onshore Visual Study Area includes the area within which aboveground Onshore Project Components (switching stations, the Fentress Substation, and aboveground Interconnection Cables) could potentially be visible (i.e., not blocked by vegetation and structures) under clear weather and atmospheric conditions. The analysis of onshore visual resources and impacts is generally limited to the subset of the Onshore Visual Study Area within 5 mi (8.0 km) of Onshore Project Components. The 5 mi distance is consistent with the start of the "background" distance zone, as defined in the BLM VRM system. At this distance, individual landscape features become simplified, with only large geometric landforms discernible from one another. Large patterns of vegetation and surface conditions are discernible, but textures have smoothed and disappeared and color has flattened.

At background distances, individual aboveground Onshore Project Components would be indiscernible in most lighting, weather, and atmospheric conditions. The degree to which aboveground Onshore Project Components would be visible or noticeable at distances of 5 mi or less depends on a number of factors including:

- Structure height, distance from viewer, and viewer elevation
- Topography, vegetation, and buildings/development that obscure transmission infrastructure
- Atmospheric conditions, including haze and cloud cover
- Lighting angles
- Nighttime lighting
- Viewing context

A study of transmission infrastructure in the western U.S. found that "skylined 230-kV H-frame tower facilities were observed at distances up to 8 mi (13 km). Facilities with 230-kV H-frame towers were judged to be noticeable to casual observers at distances of up to 3.5 mi (5.6 km). They were judged to strongly attract visual attention at distances of up to 1.5 mi (2.4 km)" (Sullivan et al. 2014). While some transmission structures for the Project could theoretically be visible above the treeline at distances of up to 8 miles, atmospheric conditions, vegetation, and topography in southeastern Virginia differ significantly from the western landscapes evaluated in the Sullivan et al. (2014) study. Specifically, the flat landscape in the vicinity of the Onshore Project Components offers no elevated views, and few if any long-distance views (i.e., up to 8 mi) exist. Moreover, the BLM VRM specifically advises that analyses exclude background areas where "the only thing discernible is the form or outline" (BLM 1986). As a result, areas more than 5 mi from Onshore Project Components are not evaluated.

To identify locations where viewers could potentially see the aboveground Onshore Project Components, a viewshed model was prepared using a Geographic Information System (GIS) for all areas within 5 miles of those components. The viewshed model was constructed using a digital elevation model from the National Elevation Dataset (USGS 2019), enhanced to add 30 ft (9.1 m) of elevation for all building footprints and 50 ft (15.2 m) of elevation for all forested areas, as identified through the National Land Cover Database (MRLC 2021). Figures I-2-1-2, I-2-1-3, I-2-1-4, and I-2-1-5 show the viewshed models for Interconnection Cable Route Alternatives 1, 2, 5, and the segment of Alternative 3 that does not overlap other routes (Alternative 4 overlaps other routes almost entirely). The Interconnection Cable Route alternatives would traverse areas of the Atlantic Coastal Plain defined by nearly flat topography. As shown in Figures I-2-1-2,

I-2-1-3, I-2-1-4, and I-2-1-5, the area's significant vegetation would obscure the large majority of the Interconnection Cables from all but the closest views. Exceptions include locations where Interconnection Cable Route alternatives cross public roads or cleared agricultural fields

As stated above, Dominion Energy intends to lease facilities to serve as the Construction and Operations and Maintenance Ports. Any upgrades required would be the responsibility of the property owners; therefore, the VIA does not include analysis of those facilities.

I-2.3.2. Landscape Character Areas

BOEM's SLVIA methodology recommends evaluation of Landscape Character Areas (LCAs), which are "discrete areas of…landscape, each with its own character and identity" (BOEM 2021). Within the Seascape/Landscape portion of BOEM's SLVIA guidance, these areas themselves are the resource for which impacts are evaluated. LCAs are geographic areas within the broader regional landscape that have similar landscape characteristics, including natural and built features. For the Project, the following LCAs have been identified:

- **Transportation Corridors:** Areas along major roads or railroads, or surrounding airports or other transportation hubs. Transportation corridors are often linear, and are characterized by extensive paved areas, collocated utilities, signage, and appurtenant structures such as traffic signals.
- **Developed—suburban residential:** Areas characterized primarily by single-family detached homes on individual lots, often with landscaped yards. This includes planned residential communities and subdivisions with consistent architectural and landscaping standards.
- **Developed—rural residential:** Areas characterized by single-family homes, generally on large lots, with a variety of vegetation and landscaping patterns. These typically occur along rural roads, and are often surrounded by agriculture, open lands, or forested areas.
- **Developed—commercial:** Areas characterized by retail (ranging from individual stores to shopping malls) or office uses. Commercial areas typically have low buildings with substantial parking and circulation and varied landscaping.
- **Developed—industrial:** Areas characterized by activities involving production, storage, or distribution of bulk materials. Structures are typically low-lying, set amid paved areas, with minimal landscaping or vegetation.
- **Agricultural and/or Open, Undeveloped Lands:** Lands characterized by active agricultural uses (i.e., row crops, pasture, livestock grazing and feeding) or inactive, open fields with low vegetation. Views are often expansive, terminated by distant treelines, with homes or other structures on adjacent properties visible but not prominent.
- **Open Water:** Areas where inland lakes and rivers are the dominant feature. As with agricultural and open lands, views over the water can be extensive, and are terminated by vegetation along the banks.
- **Forested:** Areas primarily characterized by trees and forests. Surrounding uses may be visible along the periphery, but are not the focus of the view. Forests may be on dry land (upland forests) interspersed with standing water, marshes, or other wetlands (forested wetlands).
- **Developed Recreational Areas:** Locations developed for specific types of active recreation, ranging from playgrounds and picnic areas to collections of athletic fields with associated stadium, restroom, and service facilities. Views primarily focus on the recreational facilities themselves, while other visible landscape features (e.g., vegetation or surrounding development) are secondary.

Figures I-2-1-6, I-2-1-7, I-2-1-8, and I-2-1-9 show the LCA designations within the visible portion of the viewshed for Interconnection Cable Route Alternatives 1, 2, 5, and the component of Alternative 3 that does not overlap other alternatives. Alternative 4 is not shown because the route is represented entirely by the mapping of the other alternatives.

The presence of historic districts or properties eligible for inclusion in the National Register of Historic Places adds additional visual concern. The Project would intersect and be visible from the Albemarle & Chesapeake Canal and its associated Historic District, both of which are listed on the National Register of Historic Places. The Project's impacts on these and other onshore cultural resources, including visual effects, are addressed in Construction and Operations Plan (COP) Appendix H, Historic Properties Assessment and Appendix G, Terrestrial Archaeology Resources Assessment.

Appendix EE-2 of the COP, which consists of an Environmental Justice Screening Report for the Onshore Project Components, addresses visual impacts on potential Environmental Justice communities, neighborhoods, and other receptor sites within 1 mile of the alternative routes. For reference, a map depicting the locations of these communities, neighborhoods, and receptor sites has been added to this VIA report as Figure I-2-1-10.

LCAs were identified using the principles of Landscape Similarity Zones, as detailed in the BLM VRM system. Specifically, National Land Cover Database designations were evaluated in the context of observed patterns of landform, development, water, and vegetation. Regulatory designations such as zoning, scenic byways or rivers, and other land use or visual controls also inform LCA identification, as summarized below.

- **Scenic Rivers:** A segment of the North Landing River crossed by (or within view of the crossing of) several Project alternatives, is a Commonwealth-designated Scenic River, pursuant to the Virginia Scenic Rivers Act (Code of Virginia §10.1-400, *et. seq.*). This segment begins at the North Landing Road bridge across the river, and flows downstream (southeast). Designation as a Scenic River requires all state agencies to "consider the visual, natural and recreational values of a scenic river in planning and permitting processes," (VDCR 2020) but includes no specific land use or visual controls.
- **Scenic Byways:** A segment of Indian River Road crossed by several Project alternatives is a Virginia Byway (the Commonwealth's term for a scenic byway). This designation identifies roads "having relatively high aesthetic or cultural value, leading to or within areas of historical, natural or recreational significance" (VDOT 2019). The designation does not carry land use or visual impact controls, but instead recognizes roads "controlled by zoning or otherwise, so as to reasonably protect the aesthetic or cultural value of the highway" (Code of Virginia § 33.2-406).
- **Green Sea Blueway and Greenway Management Plan:** Prepared by the City of Virginia Beach as a functional component of its Comprehensive Plan, this document addresses the North Landing River (and tributaries) and portions of Indian River Road. While the management plan does not establish regulations related to visual resources, it treats scenic resources as a contributing factor to goals related to environmental protection, agricultural preservation, passive recreation, tourism, growth management, and cultural heritage preservation. As such, the management plan supports the Comprehensive Plan policy of acquiring and protecting public lands (City of Virginia Beach 2015).
- **Local Plans and Land Development Ordinances:** The Comprehensive Plan for Virginia Beach generally discusses protection of scenic resources, but does not provide detailed policies or guidance applicable to the visual impacts from the Onshore Project Components (City of Virginia Beach 2017). The Comprehensive Plan for the City of Chesapeake includes an objective that encourages the location or relocation of utilities underground, and recommends working "with private energy providers to plan for high-capacity transmission lines and substations in order to minimize their impact on residences and businesses" (City of Chesapeake 2016). Land development ordinances such as zoning codes specify characteristics such as height, appearance, and visual screening; this VIA is based on

Project's compliance with these regulations (to the degree that they are applicable to Commonwealth-regulated utilities).

- **The City of Chesapeake Open Space and Agricultural Preservation Program.** Scenic resources are a component of a candidate property's eligibility for inclusion in the program (City of Chesapeake 2017). The program itself does not have overall restrictions or limitations related to visual or scenic resources, and there are no known cases where the Project would cross or be visible from a preserved parcel that has parcel-specific visual restrictions (City of Chesapeake 2018).

I-2.3.3. Viewer Types and Characteristics

For the VIA component of BOEM's SLVIA guidance, viewers who might experience visual effects from construction and operation of the Onshore Project Components are the resource for whom impacts are evaluated. These viewers can be classified into viewer types, based on distinctions such as viewer concern (i.e., expected sensitivity to landscape changes), activity types, and viewing characteristics.

Viewer concern can vary depending on the characteristics and preferences of each key viewer group. For example, residential viewers are expected to have high concern for changes in views from their residences, whereas motorist concern generally depends on when and where travel occurs and the type of travel involved (e.g., commuting vs. recreational travel). The types of viewers and their associated viewing characteristics are described below:

I-2.3.3.1. Local Residents/Workers

Local residential viewer groups consist of people who live within the Visual Study Area, most on a year-round basis with some seasonal residents. Local residents generally view the landscape from their yards and homes, as well as from places of employment while engaged in daily activities. Residents of primary interest for this analysis live in or near the Visual Study Area in locations with potential views of the Onshore Project Components.

Regardless of their residence location, local residents' sensitivity to visual quality can be variable and may be tempered by the existing visual character and setting of their neighborhoods. For example, residents with views of existing commercial or industrial facilities or electric transmission lines may respond differently to landscape changes from development of similar facilities than those with views of open fields or forested areas. It is understood, however, that local residents are generally familiar with the local landscape and may be more sensitive to visual changes.

I-2.3.3.2. Commuters/Travelers

Travelers passing through an area typically view the landscape from motor vehicles on their way to or from work or other destinations. Travelers include daily commuters and people engaged in various types of business or personal travel. Travelers would be concentrated on the major roads that cross the Visual Study Area. This viewer group is a large proportion of the viewers in the Visual Study Area, due to the presence of substantial residential development and employment centers (such as Naval Air Station Oceana and other businesses in Virginia Beach and the greater Norfolk area) within commuting distance of the Onshore Project Facilities.

Commuters do not tend to stop along their travel routes, have a relatively narrow field of view because they are focused on road and traffic conditions, and are destination-oriented. Passengers in commuter vehicles would have greater opportunities for prolonged off-road views toward landscape features and, accordingly, may have greater perception of changes in the visual environment.

Non-commuter travelers may have greater opportunities for prolonged views toward landscape features and may take more notice of changes in the visual environment. Within the Visual Study Area, the proposed transmission lines are occasionally collocated parallel to roadways or cross them perpendicularly.

I-2.3.3.3. Tourists/Recreational Users

This viewer group includes local and seasonal residents engaged in recreational activities as well as tourists and recreational users visiting from out of the local area. These users can be involved in outdoor recreational activities at parks and other developed recreational facilities or in undeveloped natural settings such as forests or preserves. Tourists and recreational users come to the area for the purpose of experiencing its cultural, scenic, and/or recreational resources. They may view the landscape while traveling to these destinations on local roads or from the sites themselves.

The recreational user group includes those involved in active recreation (e.g., bicyclists, golfers, hikers, joggers, swimmers, recreational boaters, kayakers, and participants in team sports and those involved in more passive recreational activities (e.g., picnicking, sightseeing, and wildlife observation). Because the Onshore Project Components would not be visible from beach areas, beachgoers and ocean-related recreationists are not addressed in this VIA. For some of these viewers, particularly those using undeveloped recreation facilities, scenery is an important part of their recreational experience, and recreational users often have continuous views of landscape features over relatively long periods of time. Most recreational viewers will only view the surrounding landscape from ground-level or water-level vantage points. Recreational users' sensitivity to visual quality and landscape character will be variable, depending on their reason for visiting the area. However, recreationalists are generally considered to have relatively high sensitivity to scenic quality and landscape character.

I-2.3.4. Analytical Approach

The analytical approach to evaluating the Project's visual impacts is described below. This approach involves identifying visual resources in the Visual Study Area, identifying locations where viewers are likely to observe the Project and its impacts on those visual resources, and simulating future conditions.

I-2.3.4.1. Inventory of Visual Resources

The inventory of visual resources involved both desktop and on-site review. GIS was used to identify local, state, and federal areas of visual significance that could be affected by the Project. These included (but were not limited to) resources such as parks, federal and state-managed lands, privately held conservation areas, and historic resources. Field observations were conducted in March and May 2021 to confirm these initial findings, to identify potential viewing areas and Key Observation Points (KOPs) where the assessment of visual impacts would be important to key user groups (see Section 3.4.2), and to identify potentially affected viewer types.

I-2.3.4.2. Identification of Key Observation Points

KOPs are locations with views of the Project and its potential visual impacts that are representative of the landscapes and viewer types that could be impacted. A preliminary list of KOPs was identified through the desktop review component of the visual resources inventory, and then refined based on field observations. The list of potential KOPs was checked to confirm that locations representing a range of LCAs, viewer types, and types of visual resources were selected.

Table I-2.2-1 provides information about the KOPs evaluated in this VIA. The KOPs are representative locations of viewing areas where viewer groups could notice changes in the existing landscape due to construction and operation of the Onshore Project Components. As such, the KOPs are primarily associated with key travel routes, recreation areas, and residential areas. Potential impacts to historic districts and historic architectural structures from the project are addressed in Construction and Operations Plan Appendix H, Historic Properties Assessment.

The KOPs were selected, in part, for their applicability to photographic simulations to be used to evaluate visual impacts. Figure I-2-1-11 depicts the locations of the KOPs. KOPs 01 and 02 were initially identified to evaluate the visual impacts of a proposed switching station site. That facility is no longer part of the Project, and the portion of the Project's transmission lines within potential view of these KOPs would be installed underground. As a result, KOPs 01 and 02 are not included in this analysis. It was determined that KOP 16 did not provide a meaningfully different view than KOP 17; therefore KOP 16 was also not evaluated.

Table I-2.2-1: Key Observation Points

KOP Number	Onshore Project Component	Location/Description	Distance from Viewer
KOP 03	Harpers Switching Station	View of Harpers Switching station from Harpers Road east of Nimitz Drive.	Approximately 1,000 ft
KOP 04a	Interconnection Cable (Alternative 3)	View looking west from south side of Dam Neck Road just east of London Bridge Road intersection, with utility and transmission lines adjacent to roadway near the commercial buildings	Within proposed corridor
KOP 04b	Interconnection Cable (Alternative 3)	View looking east from south side of Dam Neck Road just east of London Bridge Road intersection, consisting of agricultural fields, street trees and wooded stands	Within proposed corridor
KOP 05	Interconnection Cable (Alternatives 1, 2, 4, and 5)	View west from the median of Kingsland Lane looking down an existing transmission corridor	Within proposed corridor
KOP 06	Interconnection Cable (Alternatives 4 and 5)	View south from the proposed ROW across N. Landing Rd. (Rt. 165)) at the Kempsville Mennonite Church	Within proposed corridor
KOP 07	Interconnection Cable (Alternatives 4 and 5)	View facing north from Indian River Road east of North Landing Road, at proposed and existing transmission line crossing	Within proposed corridor
KOP 08a	Interconnection Cable (Alternatives 2, 3, and 4)	Rock shoreline of the Intracoastal Waterway near the North Landing Bridge off North Landing Road (Rt. 165) facing northwest, upstream.	Approximately 0.5 mi (0.8 km)
KOP 08c	Interconnection Cable (Alternative 5)	Shoreline of the Intracoastal Waterway near the North Landing Bridge off Mount Pleasant Road (Rt. 165) facing east-southeast, downstream.	Approximately 1,000 ft (304.8 m).
KOP 09	Interconnection Cable (Alternative 5)	View facing north past residences and cultivated fields on Long Ridge Road south of the intersection with Land of Promise Road	Approximately 0.3 mi (0.5 km)

KOP Number	Onshore Project Component	Location/Description	Distance from Viewer
KOP 10	Fentress Substation	View east for the median of Fentress Loop Road at the substation entrance north of intersection with Meredith Drive	Approximately 0.2 mi (0.5 km)
KOP 11	All Interconnection Cable Route Alternatives	View facing south-southeast from just east of the parking lot on north side of baseball and soccer fields in Princess Anne Sports Complex	Approximately 0.3 mi (0.3 km)
KOP 12	Interconnection Cable (Alternative 1 and Overhead Portion of Hybrid Alternative)	View along Salem Road west of the intersection with Highland Drive, facing east towards Salem Road Development, and the corner of Salem Road and Highland Drive	Approximately 0.3 mi (0.5 km)
KOP 13	Interconnection Cable (Alternatives 1 and Overhead Portion of Hybrid Alternative)	View facing south-southeast between two residential homes associate with the Highland Parish Development. End of Boarder Way Road (cul-de-sac)	Approximately 1,000 ft (304.8 m)
KOP 14a	Interconnection Cable (Alternatives 1 and Overhead Portion of Hybrid Alternative)	View facing southeast adjacent to Indian River Road, near Dewberry Farm residential subdivision	Within proposed corridor
KOP 14b	Interconnection Cable (Alternatives 1 and Overhead Portion of Hybrid Alternative)	View facing south-southwest adjacent to Indian River Road, near Dewberry Farm residential subdivision	Within proposed corridor
KOP 15	Interconnection Cable (Alternatives 2, 3, and 4)	View facing north across an open agricultural field with Santoro Way moving away from Mt Pleasant Road and the viewer on the right side of the frame.	Approximately 0.4 mi (0.6 km)
KOP 17	Interconnection Cable (Alternatives 2, 3, and 4)	View south-southeast from the transmission corridor perpendicular to Mt. Pleasant Road at the existing Line 271 crossing	Within proposed corridor
KOP 18	Chicory Switching Station (Hybrid Alternative)	View west from the Princess Anne Meadows subdivision toward the Chicory Switching Station site	Less than 0.1 mile (0.2 km)

I-2.3.4.3. Photographic Simulations

Photographic simulations were developed to depict the proposed Project components and their potential changes to the existing landscape. The approach to development of these simulations involves use of a high-resolution digital camera with tripod and Global Positioning System (GPS) to record existing views at each KOP location (in the selected viewing direction). For each KOP, a panoramic existing conditions image is prepared by combining multiple individual high-resolution images to replicate the human field of vision.

To represent visual conditions during Project operations, baseline photography is combined with accurate, computer-generated renderings of Project facilities. Location data captured by the GPS device attached to the camera during site photography are transferred to design software that combines GIS data with a three-dimensional (3D) model of the Project component that would be visible in the viewshed. Views from the digital photographs were matched in the 3D modeling software using virtual cameras with the same focal length and field-of-view as the camera settings used to capture the digital imagery. Date- and time-specific lighting were added into the 3D model. Renderings of Project facilities were overlaid on the site photography, and modifications to the existing landscape (e.g., the clearing of vegetation for new right-of-

way) were added to the images to simulate conditions after completion of construction and restoration. Simulations, labeled as Figures I-2-2-1 through I-2-2-22, are provided in Attachment I-2-1.

I-2.4. EXISTING AND FUTURE VISUAL CONDITIONS

This section describes the existing and future visual conditions at KOPs 03 through 15 and 17-18, based on the baseline photography and visual simulations prepared for each of those locations. Attachment I-2-1 includes all KOP baseline images and photosimulations. Table I-2.2-2 summarizes the viewer types and LCAs applicable to each KOP. The sections below provide a brief narrative description of the existing view from each KOP and the simulated view during Project operation, as shown in the images in Attachment I-2-1.

Table I-2.2-2: Existing Visual Conditions at KOPs

KOP Number	Viewer Type(s)	LCAs
KOP 03	Local Residents/Workers	Developed—industrial
KOP 04a	Local Residents/Workers, and Commuters/Travelers	Transportation Corridor, Agriculture/Open Land Developed—commercial
KOP 04b	Local Residents/Workers, and Commuters/Travelers	Transportation Corridor, Agriculture/Open Land Developed—commercial
KOP 05	Local Residents/Workers	Developed—suburban residential
KOP 06	Local Residents/Workers, and Commuters/Travelers	Agriculture/Open Land, Developed—suburban residential, Developed—rural residential
KOP 07	Local Residents/Workers, and Commuters/Travelers	Agriculture/Open Land, Developed—suburban residential, Developed—rural residential
KOP 08a	Local Residents/Workers, Commuters/Travelers, and Tourists/Recreational Users	Forested, Open Water
KOP 08c	Local Residents/Workers, Commuters/Travelers, and Tourists/Recreational Users	Forested, Open Water
KOP 09	Local Residents/Workers, and Tourists/Recreational Users	Developed Recreational Areas, Developed—rural residential
KOP 10	Local Residents/Workers	Agriculture/Open Land, Developed—suburban residential
KOP 11	Tourists/Recreational Users	Developed Recreation Area
KOP 12	Local Residents/Workers, and Commuters/Travelers	Agriculture/Open Land, Developed—rural residential
KOP 13	Local Residents/Workers	Developed—suburban residential
KOP 14	Local Residents/Workers, and Commuters/Travelers	Developed—suburban residential
KOP 15	Local Residents/Workers, Commuters/Travelers, and Tourists/Recreational Users	Agriculture/Open Land
KOP 17	Local Residents/Workers, Commuters/Travelers, and Tourists/Recreational Users	Agriculture/Open Land, Developed—rural residential
KOP 18	Local Residents/Workers	Developed—suburban residential

I-2.4.1. KOP 03

Existing Conditions

KOP 03 provides a view across Harpers Road toward the existing Aeropines Golf Course (obscured by trees) within the NAS Oceana fenceline. The view is composed of concrete and blacktop roadways in the foreground with a line of utility poles and associated equipment stretching into the background. The view across the road (Figure I-2-2-1), includes an existing galvanized chain link fence with three strands of barbed wire across the top, a manicured lawn and then a dense hedgerow consisting of mature deciduous trees and woody underbrush. The view is primarily anchored by the fence and hedgerow as they extend from the foreground on the left side of the view and continue into the background on the right side. The view is characterized by smooth foreground texture (from grasses, pavement, and galvanized fence); tan, yellow, gray, and green colors (with the possible addition of red and orange in the fall, depending on tree species); and a single horizontal line along the fenceline. From this KOP, as the fence travels away from the viewer definition of the individual components, (posts, wires, and chain link) start to blend into one form. The main viewer type associated with this area would be a local person driving to and from locations within the study area and/or using the sidewalk/path located on the north side of Harpers Road.

Future Conditions

The Harpers Switching Station (all HF Routes) and associated stormwater management features would replace the stand of trees in the near middleground, and would dominate the view (Figure I-2-2-1). To some degree, the Switching Station would be consistent with the appearance of the school bus parking depot located behind the viewer (on the south side of Harpers Road), and would include a fence and manicured lawn similar to the existing view. Overall, however, the facility would add industrial-appearing rectangular structures, strong vertical and horizontal lines (transmission structures and conductors), and smooth, white or gray surfaces to a generally natural-appearing view. The future view would be essentially the same for all Project alternatives, except the HF Hybrid Route, which would use an alternate site for the switching station.

I-2.4.2. KOP 04

Existing Conditions

KOP 04 provides two views (04a and 04b) along Dam Neck Road near the intersection with London Bridge Road. Both roads are divided, multi-lane facilities with at-grade intersections that meet at a signalized intersection.

KOP 04a (Figure I-2-2-2) shows the west-facing view toward the intersection, which has a primarily agricultural foreground and stands of trees on the far side of the intersection. Dam Neck Road occupies the right side of the view, while part of the London Bridge Marketplace, a small commercial property with shops and restaurants, occupies much of the left portion of the view. Contrasting linear features are present on the far side of London Bridge Road, along with the horizontal lines of the London Bridge Marketplace building, and vertical lines of various utility poles and street lights.

KOP 04b (Figure I-2-2-3) shows the opposite view, east along Dam Neck Road. This view is primarily agricultural on both sides of Dam Neck Road, with a mixed (deciduous and coniferous) stand of trees terminating the view in the foreground. Linear features here are prominent, including the smooth, gray pavement and street trees associated with Dam Neck Road. The predominant texture is rough, due to the presence of foliage and crops (which would typically be higher during the growing season). Predominant colors include gray on human-made surfaces, and tans and greens on natural features.

Future Conditions

The transmission structures and to a lesser degree, conductors, associated with the Dam Neck Route Variation would introduce dominant vertical elements in the center of the view, in both directions, adjacent to Dam Neck Road. The brown color of the weathering steel used for the transmission towers would contrast with the predominantly tan and green palette in the foreground, and would contrast with the commercial structures of London Bridge Marketplace in the background of the west-facing view (see Figures I-2-2-2 and I-2-2-3). [1]

The removal of vegetation along Dam Neck Road is noticeable in the simulation from both KOP 4a and KOP4b, both for the removal of roadside street trees and wooded stands. Although there would be a change in immediate perception because of this clearing, it does not open views to other forms of landscape character or change the overall landscape similarity zone.

I-2.4.3. KOP 05

Existing Conditions

KOP 05 shows the view looking west along an existing utility right-of-way within the Castleton subdivision. Overall, the view here is dominated by the existing utility structures and conductors, along with an assortment of various residential fence designs (Figure I-2-2-4). The left side of the view is primarily residential (the southern portion of the subdivision), while the right side is a forested buffer between the utility corridor and the northern portion of the subdivision.

Future Conditions

For HF Routes 1, 2, and 5, the existing transmission right-of-way in this location would be expanded by approximately 100 ft (30.5 m) (Figure I-2-2-4 and I-2-2-5) to the viewer's right (away from the visible houses). The new transmission structures would use a group of three single monopoles, compared to the existing H-frame design, and would be approximately 15 ft (4.6 m) taller than the existing structures in the view. While the design of the proposed structures would differ from the existing structures, most observers would likely consider the new structures and conductors to be similar in appearance to the existing structures, in part because the proposed structures would use similar materials to the existing structures. , Some new structures would appear "behind" existing vegetation along the south side of the ROW. The Project would introduce a wider area of open views (along the right-of-way). While the edge treatment along the south side of the right-of-way, along with textures, colors, and linear forms, associated with the proposed structures would be similar to the existing view, the addition of the Project would introduce substantially more transmission infrastructure (e.g., structures, conductors, etc.) to the view.

I-2.4.4. KOP 06

Existing Conditions

KOP 06 shows the view south from north of North Landing Road toward the Kempsville Mennonite Church (Figure I-2-2-6) property. The view includes elements of agriculture in the foreground, suburban residential on the left side of the view, and the church, which occupies much of the right side of the view. An existing electrical transmission ROW and associated infrastructure is present on the left side of the view along with distribution poles and equipment and white fence cross the center of the entire view (along North Landing

[1] Field investigation noted the presence of soybean crops in the field where the simulation photos were taken; such crops typically appear green during growing season and fade to yellow at the end of the season.

Road) and create strong horizontal lines. The lines of the church itself and nearby homes are broken up by the rough, irregular forms of trees and other vegetation, and the color palette is primarily green.

Future Conditions

HF Routes 4 and 5 would remove the largest visible stand of trees in this area, resulting in a view dominated by strong vertical lines (the existing and new transmission structures). The church building would be completely exposed. This, in combination with the new transmission structures and conductors, would result in a view dominated by regular polygons and flat textures, with more natural and rough textures limited to the distant horizon on the left side of the image (Figure I-2-2-6). The new weathering steel structures for the onshore Virginia Facilities would contrast with the existing galvanized structures.

I-2.4.5. KOP 07

Existing Conditions

KOP 07 shows the view north along the same existing electrical transmission line as in KOP 06, as seen from Indian River Road, approximately 1.0 mi (1.6 km) south of KOP 06 (Figure I-2-2-7). The view here is almost entirely agricultural, except for the transmission structures and conductors on the right side of the view, a line of mixed deciduous and evergreen trees to the right of the existing transmission line, and widely spaced residential structures and associated out buildings (including the Kempsville Mennonite Church) in the middleground, along North Landing Road, in the left-center of the view. Rough textures, irregular forms, and a green palette dominate the view.

Future Conditions

HF Routes 4 and 5 would result in minimal clearance of visible vegetation at KOP 07; thus the existing textures, forms, and colors would remain (Figure I-2-2-7). The new transmission structures for the onshore Virginia Facilities would add strong smooth, linear, textured brown features that would dominate the view. In particular, the view directly down the right-of-way would be industrial in appearance. As with KOP 06, the weathering steel structures for the onshore Virginia Facilities would contrast with the existing galvanized structures.

I-2.4.6. KOP 08

Existing Conditions

KOP 08a is located near Route165 (North Landing Road) slightly north of the North Landing Bridge across the Intracoastal Waterway. This location is representative of the view that multiple types of viewer groups will experience, including recreational users on the Intracoastal Waterway, as well as Local Residents/Workers, and Commuters/Travelers on the roads. KOP 08a shows the crossing location for Alternatives, 2, 3, and 4 to the northwest of the viewer (Figure I-2-2-8). The view from this location is almost entirely natural in appearance, with the river's flat, blue-brown color and variable texture (Figure I-2-2-8 shows a slightly wind-blow rippled texture, but the surface would vary with weather conditions) dominating the foreground and middleground, and a rougher, green-brown mix of deciduous and coniferous trees in various stages of growth and health on the opposite shore. A navigation buoy associated with the bridge is the only human-made feature noticeable in this view.

KOP 08c shows the location of the Alternative 5 crossing to the southeast (Figure I-2-2-10) (KOP 08b was not used). The view from this location is almost entirely natural in appearance, similar to the view of KOP 8A, with the river's flat, blue-brown color and rippled texture dominating the foreground and middleground. Wood pilings associated with the bridge and a utility line guy wire are the only human-made features noticeable in this view.

Future Conditions, KOP 08a

Alternatives 2 and 3 (which would use the same infrastructure here) and Alternative 4 would add new human-made, vertical, brown elements to the most distant part of the view—Alternatives 2 and 3 would cross the river approximately 0.5 mile from the viewer (Figure I-2-2-8), while Alternative 4 would cross approximately 0.4 mi (0.6 km) away (Figure I-2-2-9). At this distance, the Project's infrastructure would contrast with and would add new elements to the existing natural landscape character, but would not dominate or fully diminish the focal features of the view including the water and shoreline landscape. The alternatives visible from KOP 08a (the northwest-facing view from the North Landing Bridge) would not be within the designated Scenic River segment of the North Landing River, although these alternatives would likely be visible from designated segments approximately 1.2 miles southeast (beyond this point, bends in the river's path would obscure HF Routes 2, 3, and 4 from view). The alternatives visible from KOP 8a would cross the Albemarle & Chesapeake Canal and its associated Historic District. COP Appendix H evaluates the Project's impacts on cultural resources.

Future Conditions, KOP 08c

HF Route 5 would add new human-made, vertical brown elements in the foreground of the view (Figure I-2-2-10). The brown color and linear, vertical forms would somewhat mimic visible tree trunks; however, the new transmission structures would be substantially taller than (approximately twice as tall as) existing trees, and the horizontal lines of the conductors would clearly contrast with the predominantly natural, aquatic landscape. HF Route 5 would cross the designated scenic segment of the North Landing River, and would be visible from the entire 0.2 mile of designated scenic river upstream of the crossing, and approximately 1.0 mile of designated scenic river downstream.

I-2.4.7. KOP 09

Existing Conditions

KOP 09 shows the view from Long Ridge Road, south of Promised Land Road (Figure I-2-2-11). Low-density residential and rural-agricultural uses dominate the view, and characterize much of the landscape in this area. The treeline is rough and irregular during leaf-off conditions; the foreground grasses are somewhat rough and unkempt, with suburban lawns and plantings dominating the view. Residences along Long Ridge Road are gray, white, and brown with flat, boxy and/or linear characteristics. Residences, and one church along Promised Land Road, are approximately 0.5 mi (0.8 km) from the viewer as well as the irregular hedgerow.

Future Conditions

HF Route 5 would cross the entire field of view from this KOP, creating a noticeable linear feature (Figure I-2-2-11). While transmission towers would be visible, the horizontal lines of the conductors would be more dominant. At this distance, the Project's structures would noticeably contrast, although this contrast would be somewhat tempered by the distant treeline.

I-2.4.8. KOP 10

Existing Conditions

KOP 10 shows the view of the Fentress Substation site, as viewed from Fentress Loop, adjacent to Etheridge Lakes Park (Figure I-2-2-12). This view includes existing transmission infrastructure emanating from the substation site, within a forested corridor that occupies the foreground to the left and right of the transmission structures. The view itself is a combination of industrial and forest. Existing lattice structures and conductors create strong, black linear features, and the cleared right-of-way contrasts with the walls of

green and brown trees on either side. The KOP location is on a suburban street, with residential development on all other sides. The sidewalk in the foreground is part of the overall community sidewalk system, and leads past the entrance to Etheridge Lakes Park, approximately 0.1 mile north (to the left). None of the park's active spaces are visible from this KOP (including areas outside of the view shown in Attachment I-2-1). The dominant features in the existing view are the existing lattice structures and approximately 150 ft (45.7 m) tall communications tower.

Future Conditions

The fence around the expanded Fentress Substation (HF Routes 1, 2 and 5 and the HF Hybrid Route) would be the most visible change caused by the Project. This combined with clearance of additional land for the Fentress Substation would remove some of the rough, green and brown forested landscape and replace it with rectangular, smooth white structures (the fence and substation facilities) in the center of the foreground (Figure I-2-2-12). The more distant added transmission lines associated with each alternative transmission line route would add brown, vertical features, although these features would blend somewhat with existing transmission structures in this area.

A relocated cellular communication tower visible in Figure I-2-2-12 (to the left of the existing transmission lines) would be relocated and added to the top of a new structure just outside the Fentress Substation. This relocated communication equipment would be at the left edge of the cleared vegetation corridor. While only a small portion of the communication equipment on top of the structure is visible from the exact location of KOP 10, more of the structure itself and additional equipment could become visible from other locations near the KOP 10 location (i.e., within the same cleared corridor). The relocated equipment onto a transmission structure would be substantially lower than the existing tower, and would appear below the tops of the trees on the left side of the view.

I-2.4.9. KOP 11

Existing Conditions

KOP 11 shows south-facing views from the central concession/restroom facilities at the Princess Anne Athletic Complex, a large multi-sport facility (Figure I-2-2-13). The view here is an entirely developed recreational area, including athletic fields, goals and goalposts, lighting structures, bleachers, parking, and associated facilities. The treeline at the southern edge of the facility, approximately 0.2 mile from the viewer, contributes rough, irregular texture; however, the overall view is dominated by smooth, linear features such as the black vinyl chain-link fence in the foreground, the grass of the playing field, and the vertical and horizontal lines of goals, goalposts, and lighting structures.

Future Conditions

Each of the overhead alternative transmission line routes would add distinct vertical, brown, transmission structures and black, horizontal lines (conductors) at or above the existing horizon (Figures B-13 through J-15). Some trees would be removed, but none of the alternatives would meaningfully change the volume of rough, irregular features along the horizon. The new transmission facilities would be somewhat similar in form to the existing light towers, but would contrast substantially due to height and clustering and the number of new structures installed. HF Routes 4 and 5 (Figure I-2-2-15) would have the smallest effects, and would only be visible on the left side of the view. From this viewpoint, the clustering of transmission structures for HF Route and the HF Hybrid Route (Figure I-2-2-13) would create less contrast than those of HF Routes 2 and 3 (Figures I-2-2-2-14 and I-2-2-15); however, this would change from various points within the Athletic Complex.

I-2.4.10. KOP 12

Existing Conditions

KOP 12 shows the view facing southeast from Salem Road (Figure I-2-2-16). The landscape here is low-density residential, amid open, undeveloped lands. St. Luke's Catholic Church is to the left of the view, while a portion of the Highland Parish subdivision is visible at the extreme right of the view. Rough, irregular, green vegetated features dominate the view here, with a variety of vegetation types present. The treeline in the foreground is the primary linear feature in the view.

Future Conditions

The Project would not be visible from this location.

I-2.4.11. KOP 13

Existing Conditions

KOP 13 shows views from a cul-de-sac within the Highland Parish subdivision, a high-density suburban residential area (Figure I-2-2-17). Houses, with regular, flat, smooth textures and neutral colors are the dominant visual features, along with the flat, gray pavement of the cul-de-sac. Trees between the two houses are predominantly vertical features, with the tree trunks especially apparent from this distance and season; a more distant treeline is visible as an irregular shape through the foreground trees.

Future Conditions

The Project would not be visible from this location.

I-2.4.12. KOP 14

Existing Conditions

KOP 14 shows views from Indian River Road looking southeast (KOP 14a) and south-southwest (KOP 14b) (Figures I-2-2-18 and I-2-2-19, respectively). The views themselves are largely suburban residential, with landscaped areas surrounding single-family houses, with Indian River road extending through the foreground and middleground. The views have strong horizontal lines from existing electrical transmission and distribution lines, as well as vertical lines from trees and streetlights in the foreground. The landscape is a mix of rough, irregular green trees and shrubs along with smoother-textured green grass. Human components (houses, fences, landscaping) are the dominant features.

Future Conditions

HF Route 1 and HF Hybrid Route would replace the existing single set of black lattice transmission structures with two sets of brown (weathering steel) monopole structures, along with an increased number of conductors (Figures I-2-2-18 and I-2-2-19). The form and color of the new structures would blend somewhat with other existing transmission and utility structures; however, the new transmission facilities would increase the number of visible structures, and would place the structures closer to the viewer and to Indian River Road. Overall, the Project would add substantial visual clutter to the views from KOP 14a and 14b, primarily due to the increased number of structures and especially the increased number of conductors.

I-2.4.13. KOP 15

Existing Conditions

KOP 15 shows the view from Mt. Pleasant Road near Santoro Road (Figure I-2-2-20). The view is dominated by open fields, characterized by rough, bright green grass. Low-density residential structures with smooth, rectangular, gray and white features are on the right side of the image, and a RV dealer parking lot behind the treeline on the left. The rough, gray-green treeline behind the open fields is approximately 0.4 mile from the viewer.

Future Conditions

HF Route 2 would add vertical and horizontal structures along the horizon (Figure I-2-2-20). While visible, these structures would not strongly contrast with the existing landscape due to distance from the viewer and the location of the conductors near the horizon.

I-2.4.14. KOP 17

Existing Conditions

KOP 17 shows the view from the ROW north of Mt. Pleasant Road facing south along an existing utility corridor crossing (Figure I-2-2-21). The black, linear features of the existing lattice transmission structures and conductors dominate the view here, and electrical distribution lines along Mt. Pleasant Road also contribute strong linear components. The foreground is an agricultural field whose color and texture would change throughout the year, but would typically be green with rough-textured plants. The smooth, rectilinear residences on either side of the existing transmission lines are generally characteristic of the low-density residential development along this portion of Mt. Pleasant Road. Trees create irregular shapes and vertical features (trunks).

Future Conditions

HF Routes 1, 2, and 4 and the HF Hybrid would replace the existing lattice transmission structures with brown (weathering steel) monopole structures (Figure I-2-2-21). These new structures would occupy a noticeably larger portion of the right-of-way, but would not change any of the existing landscape. To some degree, these new structures would blend with their surroundings better than the existing structures, due to the reduced number of physical elements, as compared to the numerous individual pieces of steel in each lattice structure.

I-2.4.15. KOP 18

Existing Conditions

KOP 18 shows the view from Bermuda Grass Loop in the Princess Anne Meadows subdivision looking west towards the Chicory Switching Station site (Figure I-2-2-22). The flat, geometric shapes of the two story residential structures—with dark gray, cream, and white exterior finishes—dominate the view. In between houses, the rough, irregular green trees and shrubs along with smoother-textured green grass contrasts with the houses. Black, shiny streetlights provide additional vertical lines in the view.

Future Conditions

A conductor associated with a static pole from within the Chicory Switching Station (Hybrid Alternative) would be visible behind the houses and above the trees (Figure I-2-2-22). A limited number of transmission structures associated with this conductor may also be visible in certain views, specifically when a structure extends above the treeline and is backlight by the sky. Similarly, if the Hybrid Alternative is constructed, tall

structures associated with the Chicory Switching Station could also be visible. The simulation view for KOP 18 is at an angle where the residential buildings block views to the Switching Station and its structures; however, observers in adjacent locations or in backyards of individual homes could have more direct views of the taller switching station equipment. The rest of the switching station equipment and the 15-foot-tall fence surrounding the facility would be screened by the remaining vegetation in the treeline. Visibility through the remaining vegetation would vary depending on time of year and viewing location, with more direct views available in fall, winter, and early spring when the deciduous trees behind the houses have no leaves.

I-2.5. VISUAL IMPACT ASSESSMENT

For each alternative Interconnection Cable Route alternative, this section discusses the degree of visual changes between the existing and proposed Project environments, based on the discussion of existing and future conditions in Section 4. Those changes, in turn, form the basis for assessing the level of impact on viewer groups within the respective LCAs, and the overall level of impact on views and landscapes resulting from construction and operation of the Project. The sections below describe each alternative's impacts. Alternative 1 is described in detail, whereas the impacts of the other Alternatives are described only to the degree that they differ from previously discussed alternatives.

I-2.5.1. Harpers to Fentress Route 1

The impacts of HF Route 1 are summarized below according to affected LCA. As stated in Table I-2.2-1, HF Route 1 would affect KOPs 3, 5, 10, 11, 12, 13, 14a, and 14b.

- **Transportation Corridors:** HF Route 1 would cross transportation corridors in several locations (e.g., KOP 17), but would generally not be collocated with major roads. Transmission structures near roads would be somewhat visually consistent with other transportation-related features, such as existing distribution lines along transportation corridors; however, the new transmission structures for the onshore Virginia Facilities would be substantially larger than existing distribution lines, and would typically cross transportation corridors perpendicularly. As a result, the new transmission infrastructure would create substantial contrast with the existing view experienced by travelers along transportation corridors. Because views of HF Route 1 along transportation corridors would generally be brief (i.e., limited to the immediate area around the crossing), and because human influences are common in this LCA, adverse impacts would be limited.
- **Developed—suburban residential:** Suburban residential areas would comprise the majority of the area that would potentially experience visual impacts from HF Route 1. Affected subdivisions would include Castleton, Highland Parish, and Indian River Farms, the human-made transmission structures would be visually contrasting modern elements with strong vertical and horizontal linear elements, smooth surfaces, and brown (weathering steel) or black (conductors) colors. These structures and their cleared ROWs would contrast with the predominantly flat, rectangular, light-colored character of residential structures, streets, sidewalks, and other architectural design features. Transmission structures would also contrast with the rough-textured, green, irregular shapes of landscaping within suburban residential developments. Due to this contrast and the height and mass of the transmission structures, the new structures would be noticeable if not dominant features in many views, especially close views (i.e., KOPs 5 and 13). Most viewers would be local residents or commuters traveling on public roads. These viewers—especially local residents—would likely be sensitive to visual changes, especially along segments of HF Route 1 that are not collocated with existing transmission lines (i.e., KOPs 3 and 12–14).

- **Developed—rural residential:** The visual impacts of Alternative 1 in rural residential areas would be similar to those in suburban residential areas, except that views of Alternative 1's transmission infrastructure would be available from greater distances, due to the predominantly open lands that surround rural residential uses. Rural residential areas would be limited to areas near the Fentress Substation. Viewers in this area would be sensitive to visual changes, and contrast would be substantial at close distance, but less noticeable where the Project is near the tree line.
- **Developed—industrial:** Industrial areas would be limited to areas near KOP 3 and the Fentress Substation. In these areas, HF Route 1's structures would be similar in form, texture, color, and line to existing industrial facilities—especially at the Harpers Road Switching Station and Fentress Substation where the new infrastructure would be galvanized. Viewers here would be accustomed to industrial views, and would thus have low sensitivity to change.
- **Agricultural and/or Open, Undeveloped Lands:** For HF Route 1, these areas exist near the Harpers Road Switching Station (KOP 3) and northeast of the Fentress Substation. As with rural residential areas, agricultural and open lands would have longer-distance views of HF Route 1. Contrast would be substantial, especially closer to the transmission infrastructure. The brown and black, smooth linear features of the transmission structures would contrast substantially with the rough, uneven, yellow, tan, and green features of agricultural and open fields. Viewers in these areas, primarily residents at their homes and farms, or traveling along rural roads, would be sensitive to visual changes, although substantial portions of the route across agricultural and open lands would parallel existing transmission lines (e.g., Lines #271/I-74 and Line #2240).
- **Open Water:** Open water views would exist at HF Route 1's crossing of the Intracoastal Waterway canal, which would be collocated with an existing transmission ROW (Line #271/I-74). The transmission structures and conductors from HF Route 1 would introduce additional linear, smooth shapes to a predominantly natural visual environment. This would create incremental, but substantial, contrast. Viewers would include individuals in boats or travelers in cars on Centerville Turnpike, which crosses the river approximately 1.2 miles west of the crossing. These viewers, especially recreationists, would be very sensitive to visual changes, although the presence of existing transmission infrastructure would mitigate this sensitivity.
- **Forested:** HF Route 1 would cross forested areas at various locations, with the most substantial crossing north of the North Landing River. In these areas, the primary source of contrast would be the clearing of trees for new or (in most cases along HF Route 1) expanded ROW (e.g., along Line #271/I-74). Where new ROW is established, the contrast would be extensive, effectively partitioning otherwise continuous forest. In collocated areas, the newly installed transmission structures and conductors would be the primary source of contrast, although this change would be incremental. Recreational viewers (to the degree that trails exist near HF Route 1) would be particularly sensitive to changes, while travelers along adjacent roads would have more limited views of HF Route 1 in forested areas, and would have less sensitivity to change.
- **Developed Recreational Areas:** HF Route 1 would be visible from south-facing locations within the Princess Anne Athletic Complex. The new transmission structures and conductors would be visible and noticeable, but would be similar in form, texture, and color to other features visible at the same time. Moreover, viewers at this location would be primarily focused on activities on the playing surfaces, and thus would be less sensitive to visual contrast on the horizon. Users of the Battlefield Golf Club (east of the Fentress Substation) would likely have similar attitudes, especially because HF Route 1 would be within and adjacent to an existing transmission ROW (Line #2240).

I-2.5.2. Harpers to Fentress Route 2

As stated in Table I-2.2-1, HF Route 2 would affect KOPs 3, 5, 8a, 10, 11, 15, and 17. HF Route 2 would diverge from HF Route 1 at the Princess Anne Athletic Complex. From there, HF Route 2 would cross an area of rural residential, agricultural, and forested land north of the North Landing River, and would cross the river about 0.5 mile northwest of KOP 08. The visual impact at the river crossing would be larger than for HF Route 1, because the crossing would be visible from (although it would not occur within) portions of the river designated as scenic (see Section 4.4.2, Landscape Character Areas). HF Route 2's alignment south of the North Landing River would be within forested areas and along a tree line at the north edge of rural residential and agricultural parcels. Contrast would be substantial along this new right-of-way within the forest, and transmission infrastructure would be noticeable along the horizon, as viewed by residents and travelers near rural residential and agricultural properties. HF Route 2 would follow the same alignment as HF Route 1 from the point where it joins Dominion's existing ROW for Lines #271/I-74 to Fentress Substation.

I-2.5.3. Harpers to Fentress Route 3

As stated in Table I-2.2-1, HF Route 3 would affect KOPs 3, 4a, 4b, 8a, 10, 11, 15, and 17. HF Route 3 would diverge from the alignments of HF Routes 1, 2, and 5 west of the Harpers Switching Station site. From there, it would travel west adjacent to Dam Neck Road, before heading south across a forested area to rejoin the other routes. The alignment for the route variation would affect a transportation corridor (Dam Neck Road), a developed commercial area (London Bridge Marketplace—see Section 5.4.2.2, KOP 04), and agricultural and forested areas, including the Holland Pines Park between the Holland Pines and Lake Placid subdivisions. While drivers along transportation corridors are typically accustomed to the presence of transmission infrastructure, the affected segment of Dam Neck Road is bordered by agricultural lands and forest, with minimal existing infrastructure (other than the road). In addition, the size and proximity of the new transmission structures to viewers would create substantial contrast in this area. Similarly, while users of the London Bridge Marketplace would typically be focused on shopping, the size and proximity of the new transmission infrastructure would be noticeable, and could be viewed as an adverse impact.

I-2.5.4. Harpers to Fentress Route 4

As stated in Table I-2.2-1, HF Route 4 would affect KOPs 3, 5, 6, 7, 8a, 10, 11, 15, and 17. HF Route 4 would follow the same alignment as HF Route 5 along Dominion's existing ROW for Line #2085 from the Princess Anne Athletic Complex to a point south of Indian River Road and east of North Landing Road. As with HF Route 5, the segment along Line #2085 would cross agricultural land along the western edge of the Courthouse Estates subdivision (paralleling the existing transmission line). Visual impacts within the suburban residential subdivision would be substantial, due primarily to the scale of the HF Route 5 transmission structures (which would be larger than the existing structures for Line #2085). The route would then head east within a new ROW through forested areas and across the North Landing River before intersecting HF Route 2. The North Landing River crossing would be outside of the designated scenic portion of the river, but would be closer to KOP 8 than HF Route 2. Additionally, given the span length across the river, this segment of the route would utilize H-frame structures, rather than monopole structures, requiring a wider (approximately 250-foot-wide) ROW. As a result, HF Route 4 would have incrementally larger visual impacts at the river crossing.

I-2.5.5. Harpers to Fentress Route 5

As stated in Table I-2.2-1, HF Route 5 would affect KOPs 3, 5, 6, 7, 8c, 9, 10, 11, 15, and 17. HF Route 5 would follow the same alignment as HF Route 1 to the Princess Anne Athletic Complex, then follow Dominion's existing ROW for Line #2085 south towards Indian River Road, then head southwest within a new ROW to the north bank of North Landing River. The segment along Line #2085 would cross agricultural land along the western edge of the Courthouse Estates subdivision (paralleling the existing transmission line). Visual impacts within the suburban residential subdivision would be substantial, due primarily to the scale of the HF Route 5 transmission structures (which would be larger than the existing structures for Line #2085). The route would then cross North Landing River east of KOP 8 before crossing through extensive stretches of forest, agricultural, and rural residential land, all within a new ROW. The river crossing would be within the designated scenic portion of the river. HF Route 5 would cross and then run through forests along the south bank of the Pocaty River, a scenic-designated tributary of the North Landing River. These crossings and the removal of riparian forest near the Pocaty River for new ROW could conflict with the Commonwealth of Virginia's visual resources management intent for the designated scenic river segments. In the rural agricultural areas south and west of Fentress Airfield, HF Route 5 would be visible for extended distances (see Section 5.4.2.7, KOP 09). From distant views, the linear form of HF Route 5 along the horizon would contrast with the irregular form of tree lines. Depending on the distance of the view, HF Route 5 would create low to moderate contrast in these areas.

I-2.5.6. Harpers to Fentress Hybrid Route

The HF Hybrid Route would follow HF Route 1 in its entirety, but would remain underground between Harpers Road and the Chicory Switching Station site in Virginia Beach. This would avoid visual impacts on an area of suburban residential development (Castleton and Pine Ridge) at the eastern end of the route. As stated in Table I.2.2-1, the Chicory Switching Station could affect KOP 18, and would replace primarily forested areas adjacent to a Transportation Corridor (Princess Anne Road—a multi-lane divided highway flanked by forest, similar to the description of Dam Neck Road in Section 5.4.2.2, KOP 04). Existing ROW within or near the subdivisions would be expanded to accommodate the underground portion of the route, but no new structures would be built in these areas. The northern edge of the Chicory Switching Station could be visible from adjacent subdivisions, across an existing transmission right-of-way and through trees along the facility's northern boundary. As a result, the HF Hybrid Route would have lower impacts on suburban residential LCAs than other alternatives.

I-2.6. MITIGATION

The design and routing of the Project's Onshore Components incorporates several features and embedded controls intended to reduce visual impacts. These controls include:

- installation of the Onshore Export Cable underground between the Cable Landing Location and the Harpers Switching Station;
- siting of the Harpers Switching Station within NAS Oceana in an area with existing and planned industrial and commercial development.
- collocation of the Interconnection Cables where reasonably feasible, to avoid creation of new rights-of-way and visual impacts; and
- use of weathering steel materials for transmission structures, which can appear similar in character to wooden transmission and distribution poles commonly viewed in the landscape.

Because these features are incorporated into the Project design, they are also reflected in the impact assessment discussion in Section 5.

In addition, Dominion would implement a Fugitive Dust Plan to minimize dust and visual pollution, would evaluate vegetative buffers to help screen views of the Onshore Substation and Switching Stations, and would design the lighting of the Onshore Substation and Switching Station to reduce light pollution where feasible (e.g., downward lighting, motion-detecting sensors).

Because the Harpers Switching Station is on U.S. Navy property at NAS Oceana, any mitigations for visual impacts, such as color treatments or landscaping, will be determined by the U.S. Navy through the site acquisition process. No specific mitigation for visual impacts at the Chicory Switching Station or Fentress Substation have been identified. Mitigation (e.g., color treatments or landscaping) would be determined for the Chicory Switching Station by the City of Virginia Beach through the conditional use permitting process if the Chicory Switching Station is selected for the Project. Similarly, mitigation for the Fentress Substation would be determined by the City of Chesapeake.

I-2.7. CONCLUSION

The Onshore Project Components would introduce new, visible transmission infrastructure in predominantly undeveloped rural forested or agricultural areas, as well as through some suburban residential areas from (and including) the Harpers Switching Station to the Fentress Substation. The human-made transmission structures would be visually contrasting modern elements with strong vertical and horizontal linear elements, smooth surfaces, and brown (weathering steel) or black (conductors) colors.

These structures would contrast with the predominantly rough, green, irregular pattern of agricultural and forest areas, as well as the flat, rectangular light-colored character of residential areas. Due to this contrast and the height and mass of the transmission structures, the Project's structures would be noticeable if not dominant features in most views, especially close views within or adjacent to the proposed ROW (such as but not limited to KOPs 4a, 4b, 6, 7 and 17).

Most viewers would be local residents or commuters traveling on public roads. These viewers—especially local residents—would likely be sensitive to visual changes such as those observed at the KOPs associated with Alternative 1. Viewers would likely be more sensitive to change along segments of Alternative 1 that are not collocated with existing transmission lines (i.e., KOPs 3 and 12-14). Viewers in more developed commercial or non-residential locations (i.e., KOP 11) would likely be less sensitive to visual changes.

I-2.8. REFERENCES

BLM. 1986. Manual H-8410-1 - Visual Resource Inventory. Available online at https://blmwyomingvisual.anl.gov/docs/BLM_VRI_H-8410.pdf Accessed April 2022.

BOEM (Bureau of Ocean Energy Management). 2021. Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States. OCS Study BOEM 2021-032. Accessed: May 2021. Retrieved from: https://www.boem.gov/sites/default/files/documents/environment/environmental-studies/BOEM-2021-032.pdf

City of Chesapeake. 2016. Moving Forward: Chesapeake 2035. 2035 Comprehensive Plan. Accessed: June 2021. Retrieved from: https://resources.cityofchesapeake.net/comp-plan-2035/#page=1

City of Chesapeake. 2017. Open Space and Agricultural Preservation Program (OSAP) Manual. Accessed: June 2021. Retrieved from: https://www.cityofchesapeake.net/Assets/documents/departments/planning/OASP+Manual+adopted+August+15$!2c+2017.pdf

City of Chesapeake. 2018. Open Space and Agricultural Preservation Program (OSAP). Accessed: June 2021. Retrieved from: https://www.cityofchesapeake.net/government/city-departments/departments/Planning-Department/Planning-Library/open-space-agriculture.htm

City of Virginia Beach. 2015. Green Sea Blueway and Greenway Management Plan. Accessed: June 2021. Retrieved from: https://www.vbgov.com/government/departments/planning/areaplans/Documents/Agricultural%20and%20Rural%20Areas/Green%20Sea%20Blueway%20Greenway%20Mgmt%20Plan-final.pdf

City of Virginia Beach. 2017. It's Our Future: A Choice City. Virginia Beach Comprehensive Plan (Amended December 2017). Accessed: June 2021. Retrieved from: https://www.vbgov.com/government/departments/planning/2016ComprehensivePlan/Documents/2016%20Update/CompPlanRevSharon10_4_2018.pdf

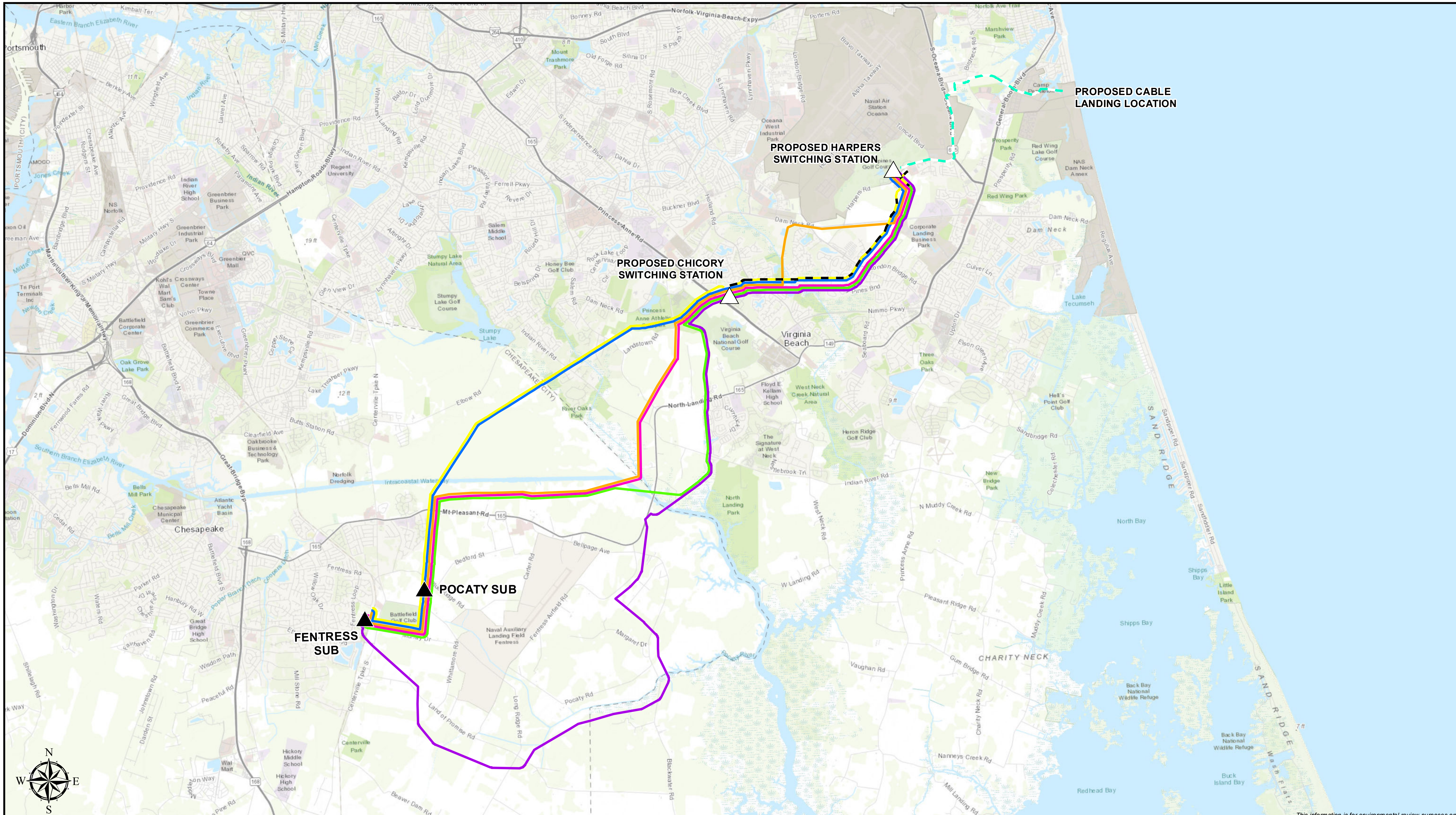
Sullivan, R., J.M. Abplanalp, S. Lahti, K. J. Beckman, B. L. Cantwell, and P. Richmond. Electric Transmission Visibility and Visual Contrast Threshold Distances in Western Landscapes. Accessed April 2022. Retrieved from https://blmwyomingvisual.anl.gov/assess-simulate/research-reports/.

VDCR (Virginia Department of Conservation & Recreation). 2020. Virginia Scenic Rivers Program. Accessed: June 2021. Retrieved from: https://www.dcr.virginia.gov/recreational-planning/document/scenrivbro.pdf

VDHR (Virginia Department of Historic Resources). 2018. Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia. Accessed: June 2021. Retrieved from: https://www.dhr.virginia.gov/wp-content/uploads/2018/08/DHR_Guidelines_for_Transmission_Line_Assessment.pdf

VDOT (Virginia Department of Transportation). 2019. Virginia's Scenic Byways. Accessed: June 2021. Retrieved from: http://www.virginiadot.org/programs/prog-byways.asp

FIGURES



0 1 2
Miles

1:100,000

- Key Observation Point
- Field of View
- View Direction
- Existing Substation
- Proposed Switching Station
- Cable Landing to Harpers
- Harpers to Fentress - Hybrid Underground Route
- Harpers to Fentress - Hybrid Overhead Route
- Harpers to Fentress Route 1
- Harpers to Fentress Route 2
- Harpers to Fentress Route 3
- Harpers to Fentress Route 4
- Harpers to Fentress Route 5

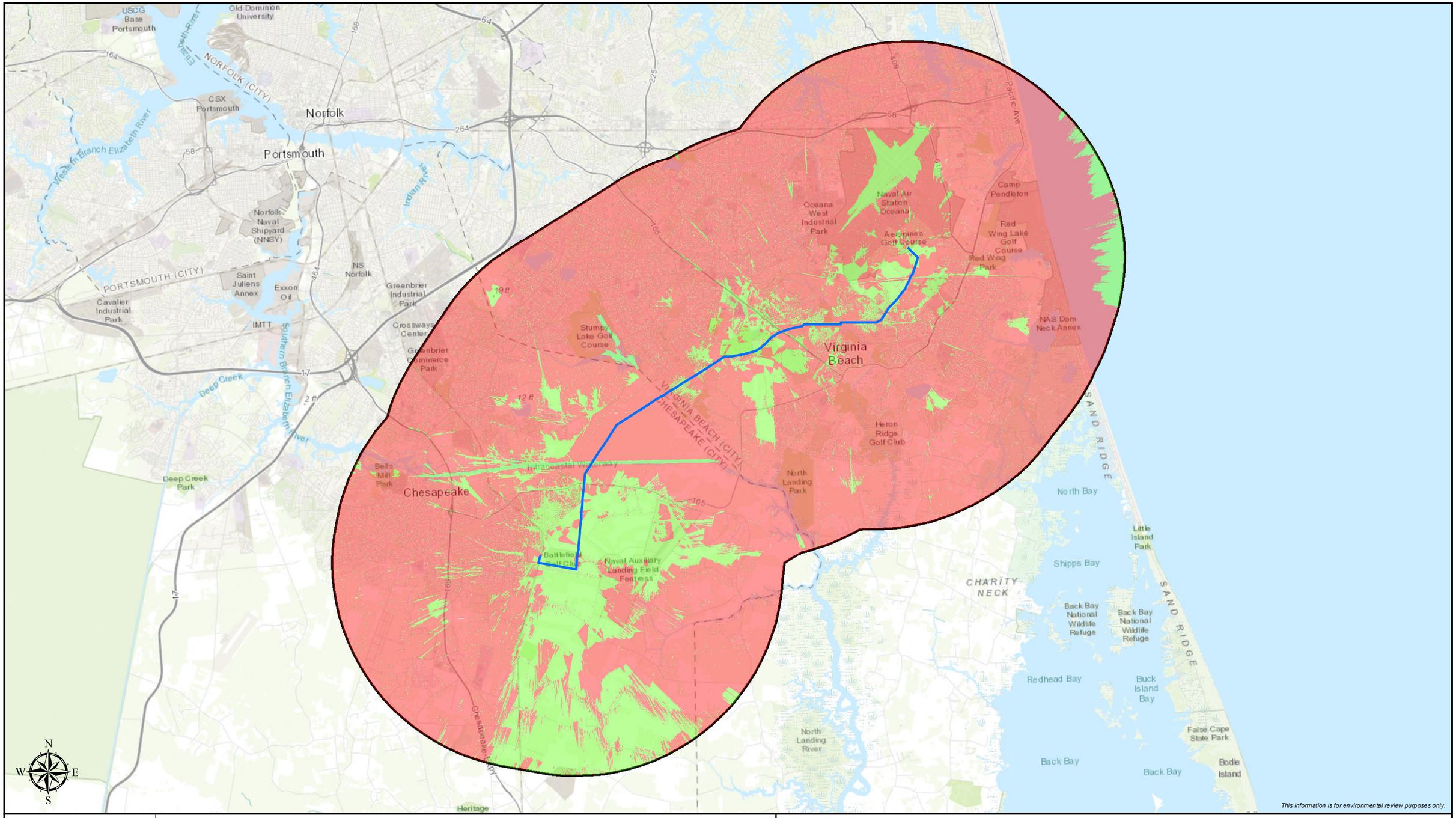
Figure I-2-1-1
Coastal Virginia Offshore Wind Commercial Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Project Overview Map

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\10\07_KOPs_DOM_CVOW_VIA_KOPs_Oct2021.mxd | REVISED: 10/11/2021 | SCALE: 1:100,000 when printed at 11x17

DRAWN BY: JPB



0 1 2
Miles

1:140,000

Harpers to Fentress Route 1

Five Mile Buffer

Visibility

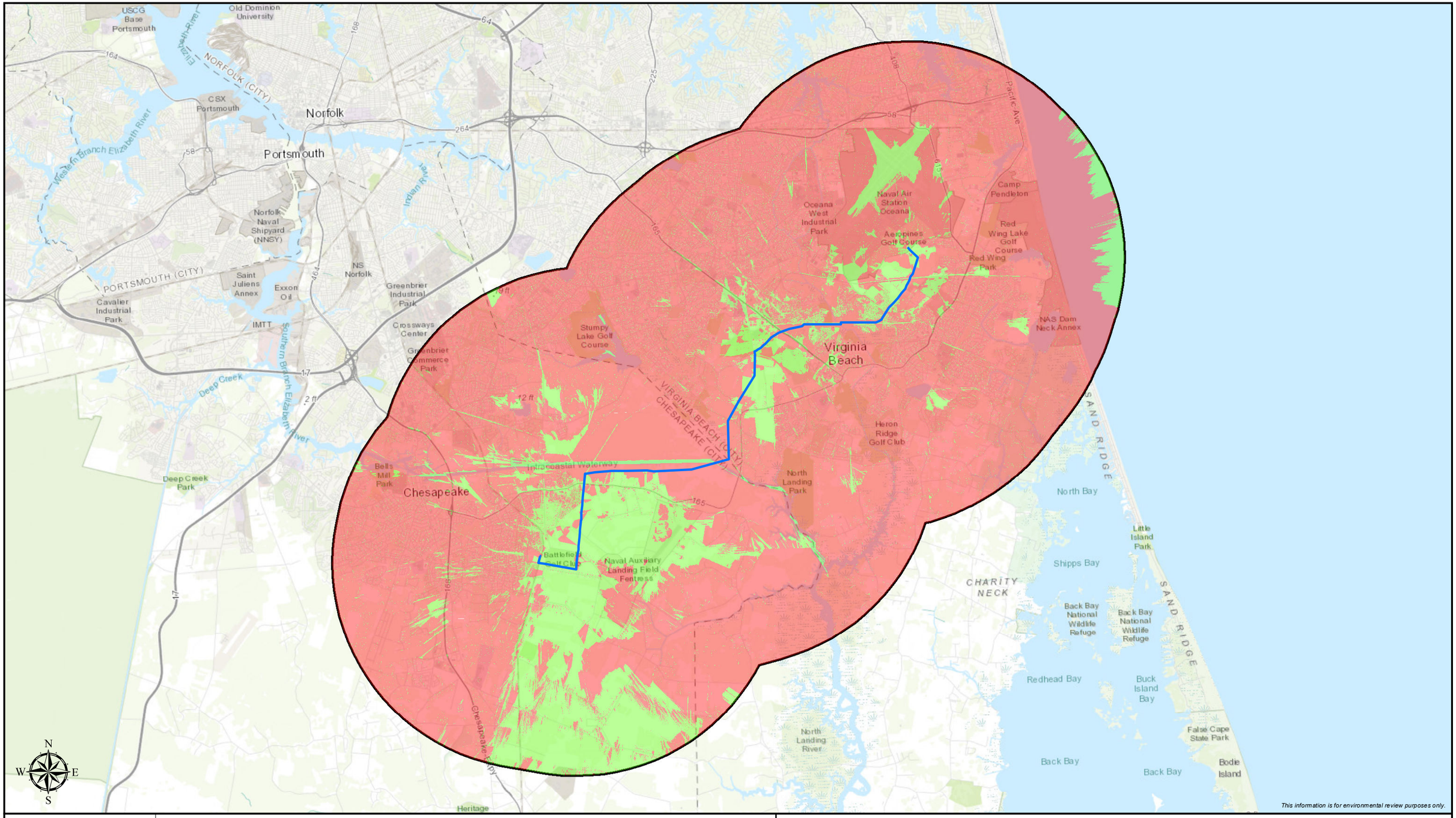
Visible

Not Visible

Figure I-2-1-2
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Viewshed of Harpers to Fentress Route 1 and Hybrid Alternative Route

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_1.mxd | REVISED: 09/14/2021 | SCALE: 1:140,000 when printed at 11x17

DRAWN BY: JPB



0 1 2
Miles

1:140,000

Harpers to Fentress Route 2

Five Mile Buffer

Visibility

Visible

Not Visible

Figure I-2-1-3
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Viewshed of Harpers to Fentress Route 2

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_2.mxd | REVISED: 09/14/2021 | SCALE: 1:140,000 when printed at 11x17

DRAWN BY: JPB

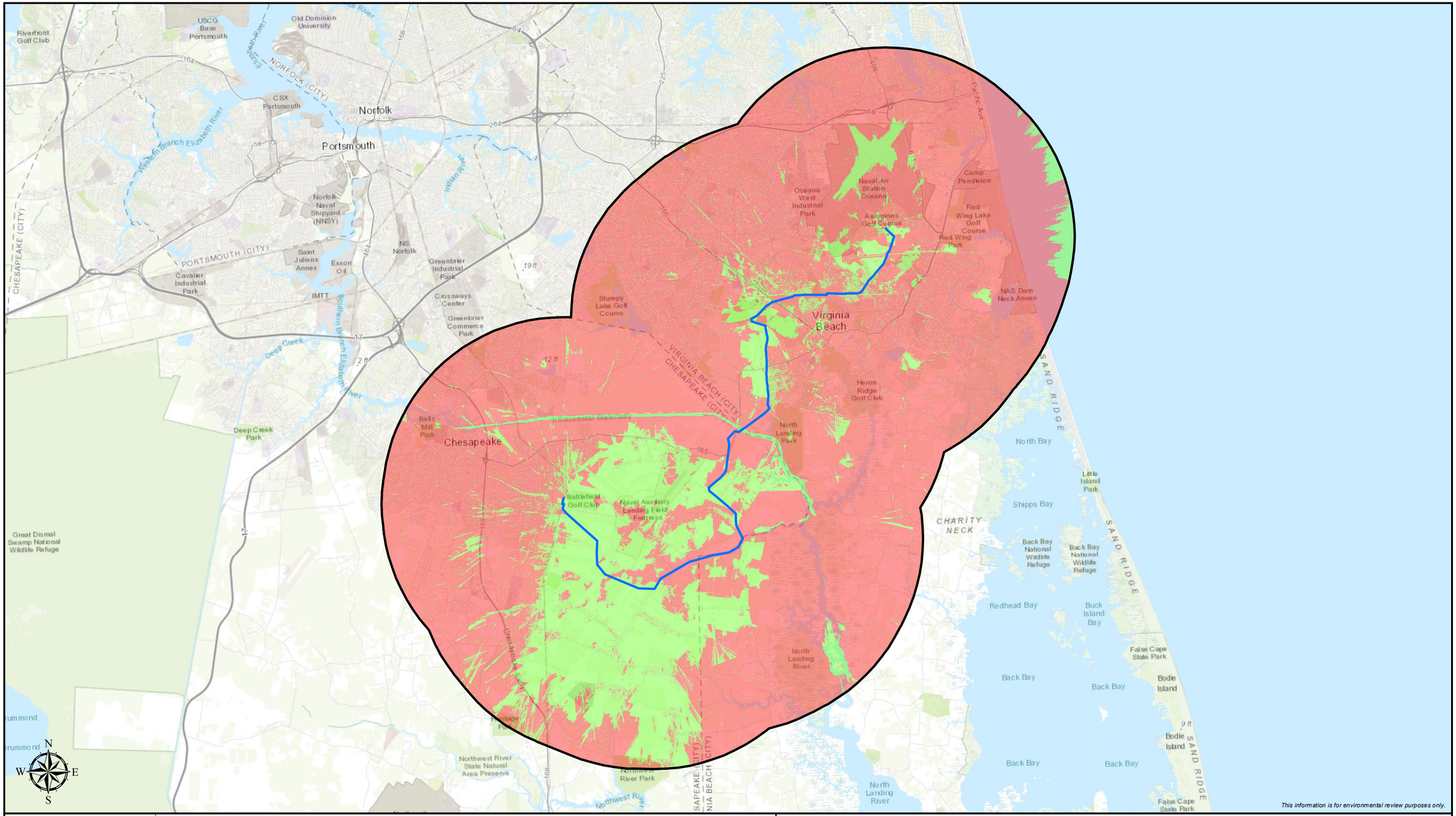
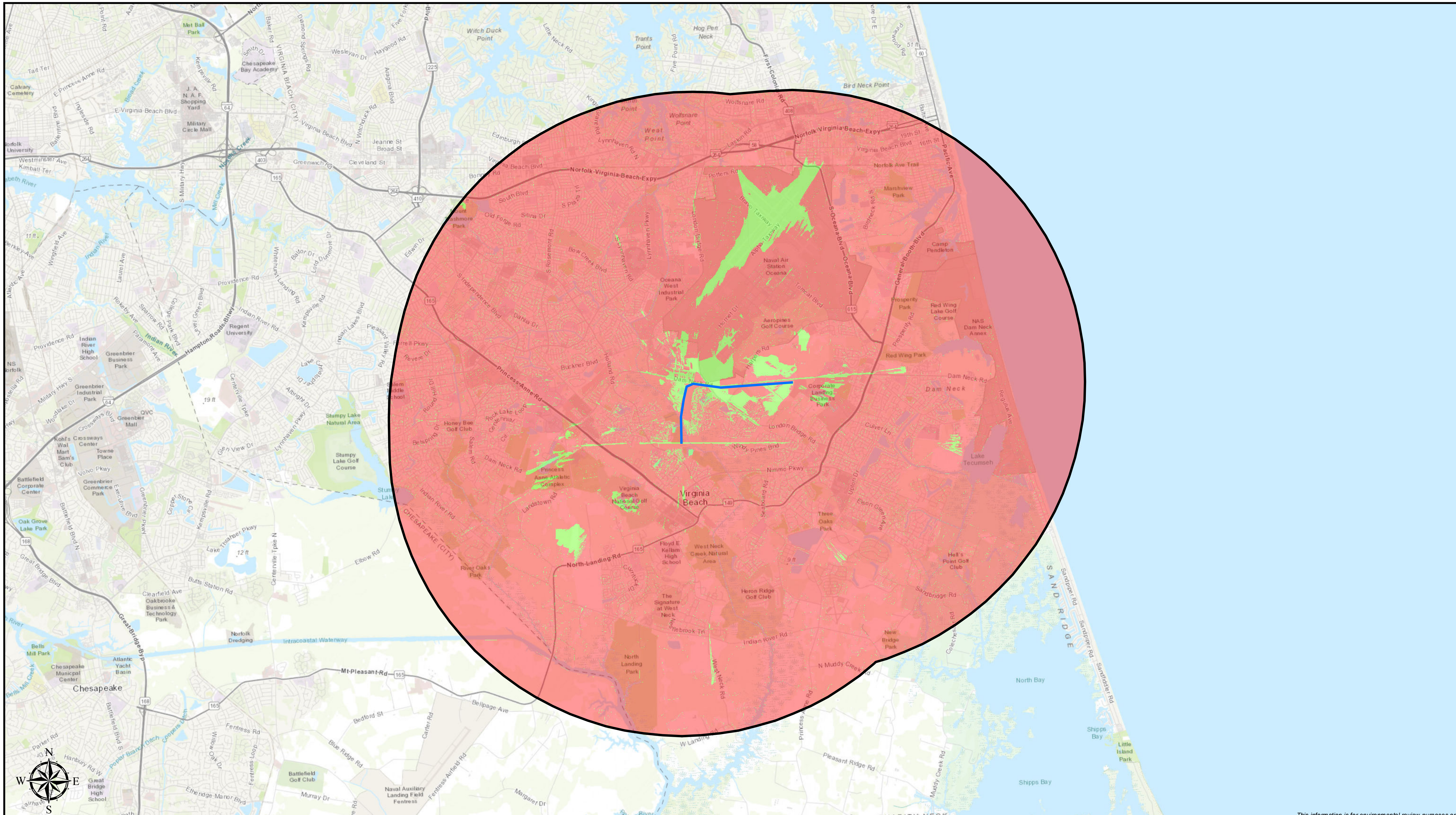


Figure I-2-1-4
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Viewshed of Harpers to Fentress Route 5

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_3.mxd | REVISED: 09/15/2021 | SCALE: 1:160,000 when printed at 11x17 | DRAWN BY: JPB



0 1 2

Miles

1:100,000

Harpersto Fentress Route 3 Segment

Five Mile Buffer

Visibility

Visible

Not Visible

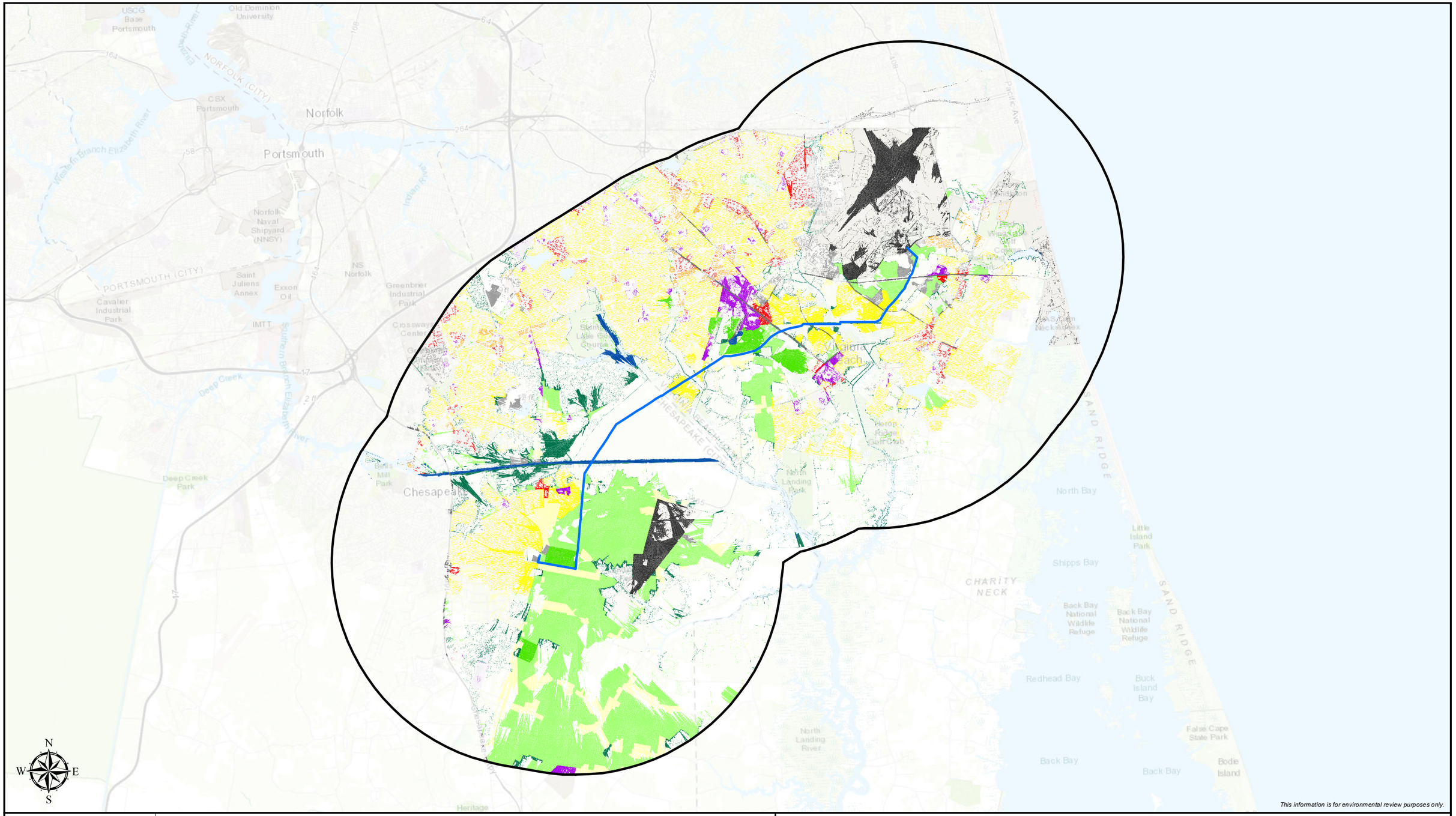
Dominion Energy

Figure I-2-1-5
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Viewshed of Harpers to Fentress Route 3 Segment

ERM

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Dam_Neck_RV.mxd | REVISED: 09/15/2021 | SCALE: 1:100,000 when printed at 11x17

DRAWN BY: JPB



0 1 2
Miles

1:140,000

- Harpers to Fentress Route 1
- Five Mile Buffer

Landscape Character Areas

- Active Recreation
- Beach and Dunes
- Commercial
- Forest
- Industrial
- Institutional
- Military
- Multifamily Residential
- Open Water
- Open/Ag
- Rural Residential
- Suburban Residential
- Transportation Corridor

Dominion Energy

Figure I-2-1-6
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Landscape Character Areas and Viewshed, Harpers to Fentress Route 1 and Hybrid Alternative Route

ERM

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_1_LCA.mxd | REVISED: 09/23/2021 | SCALE: 1:140,000 when printed at 11x17

DRAWN BY: JPB

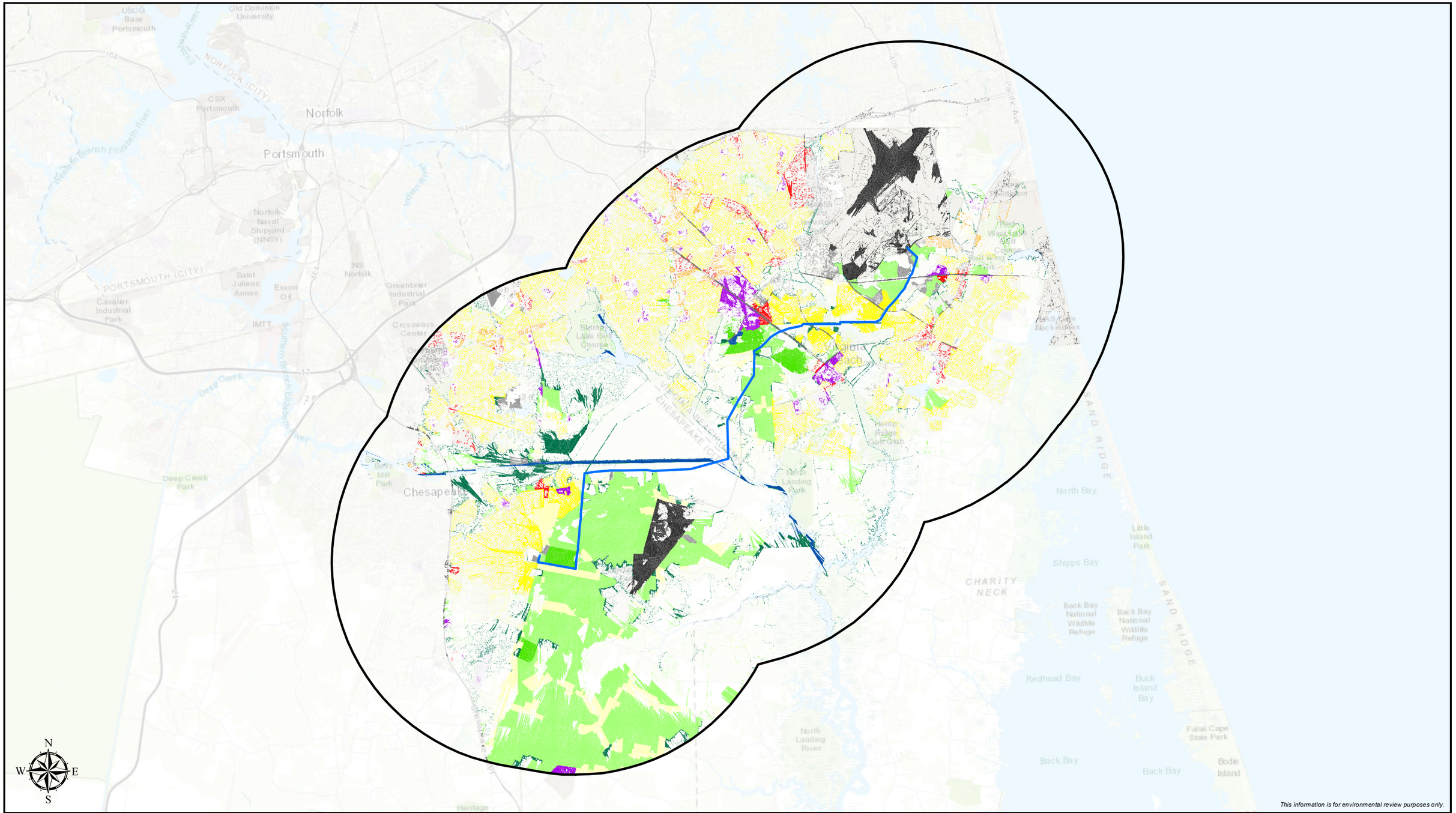


Figure I-2-1-7
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Landscape Character Areas and Viewshed, Harpers to Fentress Route 2

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_2_LCA.mxd | REVISED: 09/24/2021 | SCALE: 1:140,000 when printed at 11x17

DRAWN BY: JPB

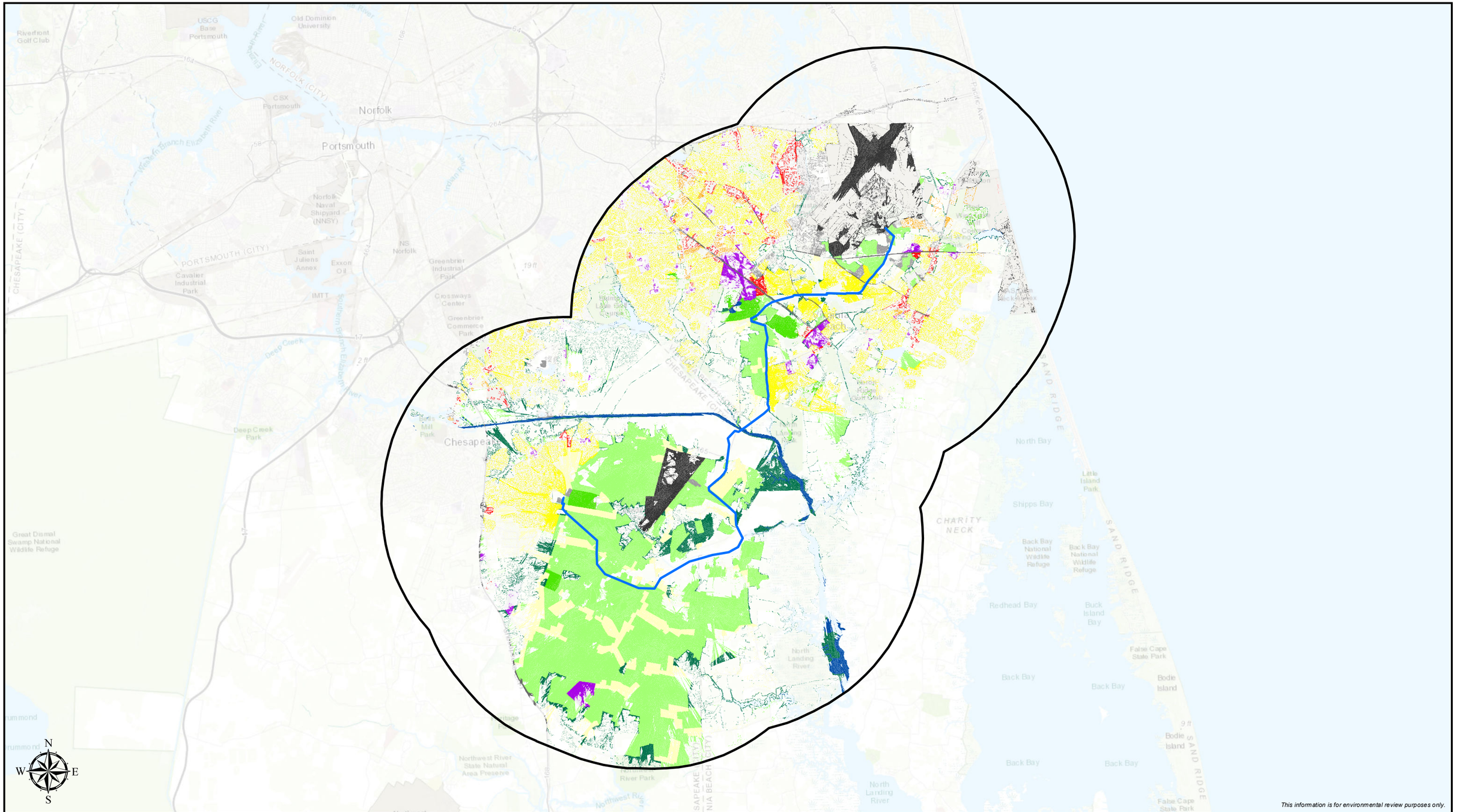


Figure I-1-1-8
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Landscape Character Areas and Viewshed, Harpers to Fentress Route 5

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Route_3_LCA.mxd | REVISED: 09/24/2021 | SCALE: 1:160,000 when printed at 11x17

DRAWN BY: JPB

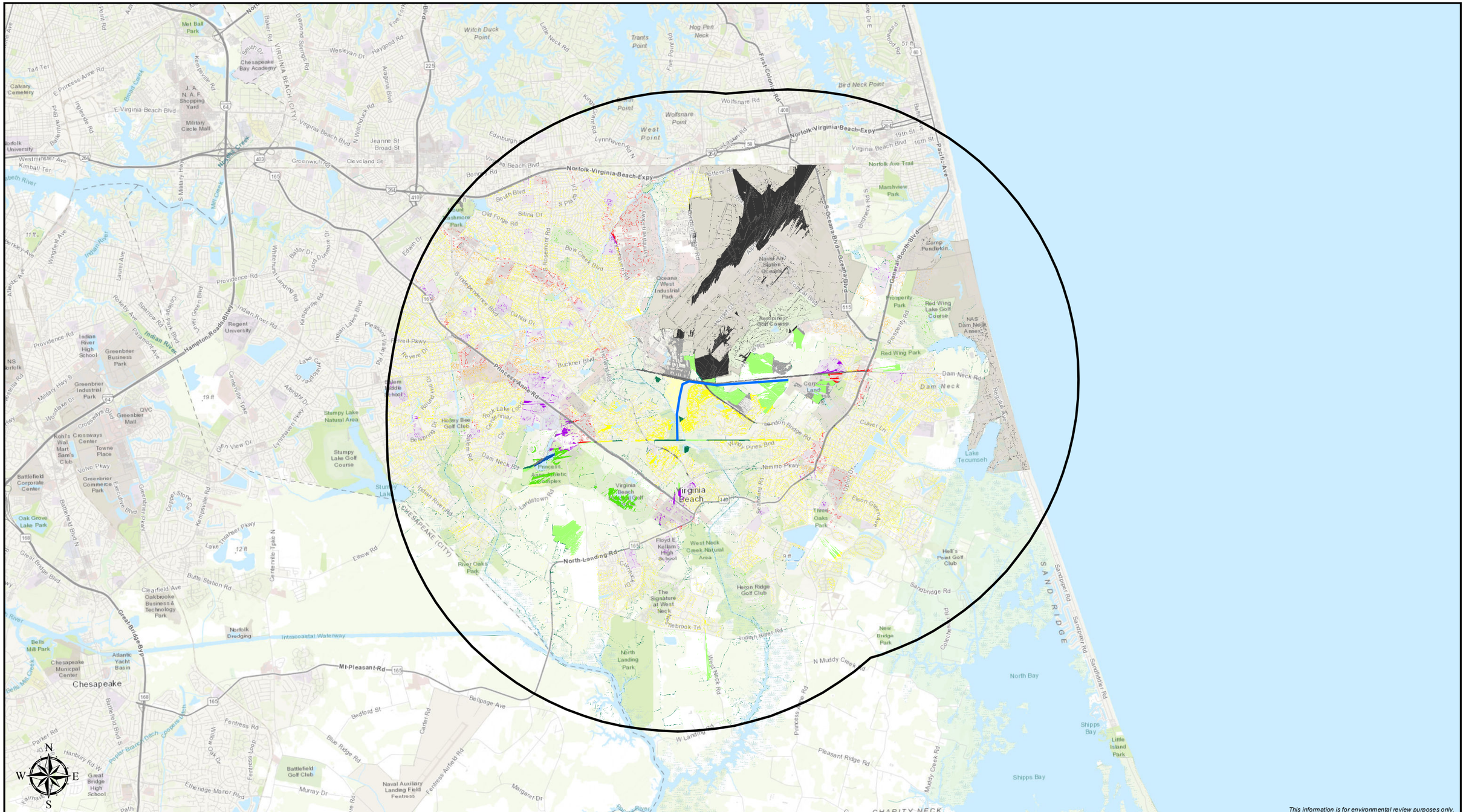
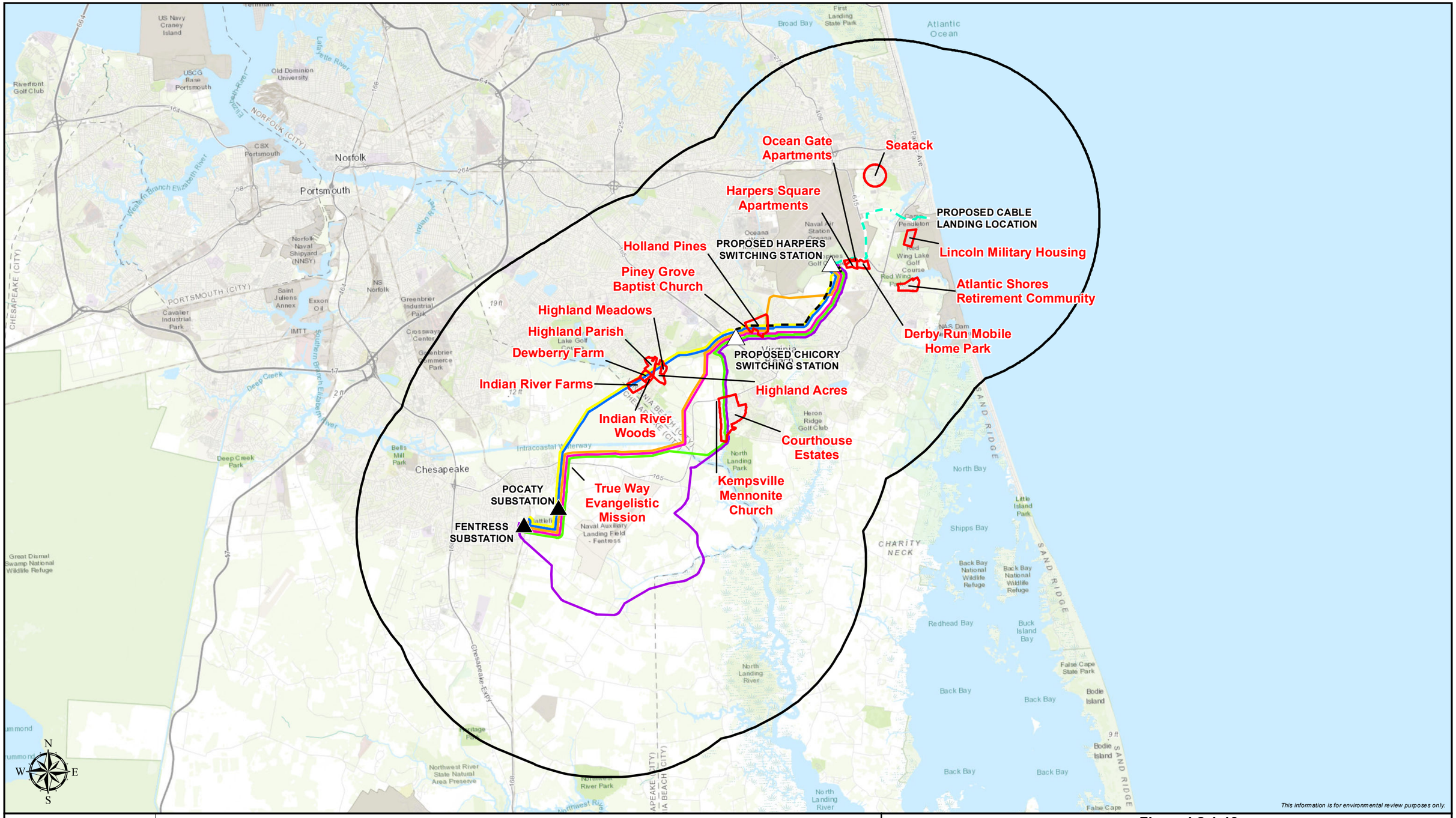


Figure I-2-1-9
Coastal Virginia Offshore Wind Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Landscape Character Areas and Viewshed, Harpers to Fentress Route 3 Segment

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\08\18_Viewsheds_DOM_CVOW_Viewshed_Dam_Neck_RV_LCA.mxd | REVISED: 09/24/2021 | SCALE: 1:100,000 when printed at 11x17 DRAWN BY: JPB



This information is for environmental review purposes only.

0 1 2
Miles

1:170,000

- Existing Substation
- Proposed Switching Station
- Cable Landing to Harpers
- Harpers to Fentress - Hybrid Underground Route
- Harpers to Fentress - Hybrid Overhead Route
- Harpers to Fentress Route 1
- Harpers to Fentress Route 2
- Harpers to Fentress Route 3
- Harpers to Fentress Route 4
- Harpers to Fentress Route 5
- Environmental Justice Communities/Neighborhoods/Receptors
- Five Mile Buffer

Figure I-2-1-10
Coastal Virginia Offshore Wind Commercial Project
Dominion Energy Virginia
Virginia Beach and Chesapeake, VA
Environmental Justice Communities, Neighborhoods, and Receptors within 1 mile of the Routes

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2022\04\28_EJ_Communities_DOM_CVOW_EJ_Communities.mxd | REVISED: 04/28/2022 | SCALE: 1:170,000 when printed at 11x17

DRAWN BY: JPB

PROPOSED CABLE LANDING LOCATION

PROPOSED HARPERS SWITCHING STATION

KOP 03

KOP 04a/04b

PROPOSED CHICORY SWITCHING STATION

KOP 05

KOP 11

KOP 12

KOP 13

KOP 14a/14b

KOP 06

KOP 07

KOP 08a/08c

KOP 15

KOP 17

POCATY SUB

KOP 10

FENTRESS SUB

KOP 09

This information is for environmental review purposes only.

0 1 2
Miles

1:100,000

Key Observation Point
Field of View
View Direction
Existing Substation
Proposed Switching Station

Cable Landing to Harpers
Harpers to Fentress - Hybrid Underground Route
Harpers to Fentress - Hybrid Overhead Route
Harpers to Fentress Route 1
Harpers to Fentress Route 2
Harpers to Fentress Route 3
Harpers to Fentress Route 4
Harpers to Fentress Route 5

Figure I-2-1-11
Coastal Virginia Offshore Wind Commercial Project
Dominion Virginia Power
Virginia Beach and Chesapeake, VA
Onshore Project Components - Key Observation Points

MPLS M:\Clients\D-F\DOM\Offshore_Wind_ArcGIS\2021\10\07_KOPs_DOM_CVOW_VIA_KOPs_Oct2021.mxd | REVISED: 10/11/2021 | SCALE: 1:100,000 when printed at 11x17

DRAWN BY: JPB

PHOTOSIMULATIONS

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-1
Photo Simulation KOP 3

Routes: 1, 2, 3, 4, 5

Date: 08/25/2021
Time 11:41 am
Viewing Direction: Northeast
Aspect Ratio: 3.6:1 Panoramic

- Proposed Landing Site to Harpers Road Substation
- Route 1
- Route 2
- Route 5
- Photo Simulation Location

Existing
Conditions

Proposed
Conditions

Dominion Energy®
Actions Speak Louder

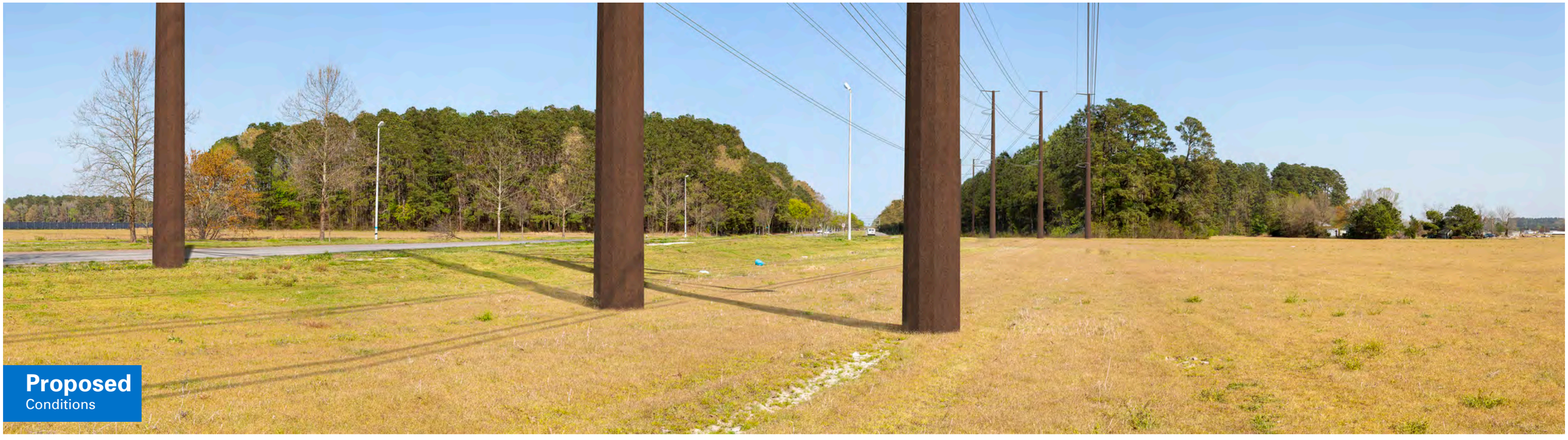
Coastal Virginia
Offshore Wind

Figure I-2-2-2
Photo Simulation KOP 4a

Route: 3

Date: 04/07/2021
Time 8:26 am
Viewing Direction: West
Aspect Ratio: 3.6:1 Panoramic

Route 3
Photo Simulation Location



Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-3
Photo Simulation KOP 4b

Route: 3

Date: 04/07/2021
Time 2:54 pm
Viewing Direction: East
Aspect Ratio: 3.6:1 Panoramic

Route 3

Photo Simulation Location

Dominion Energy®
Actions Speak Louder

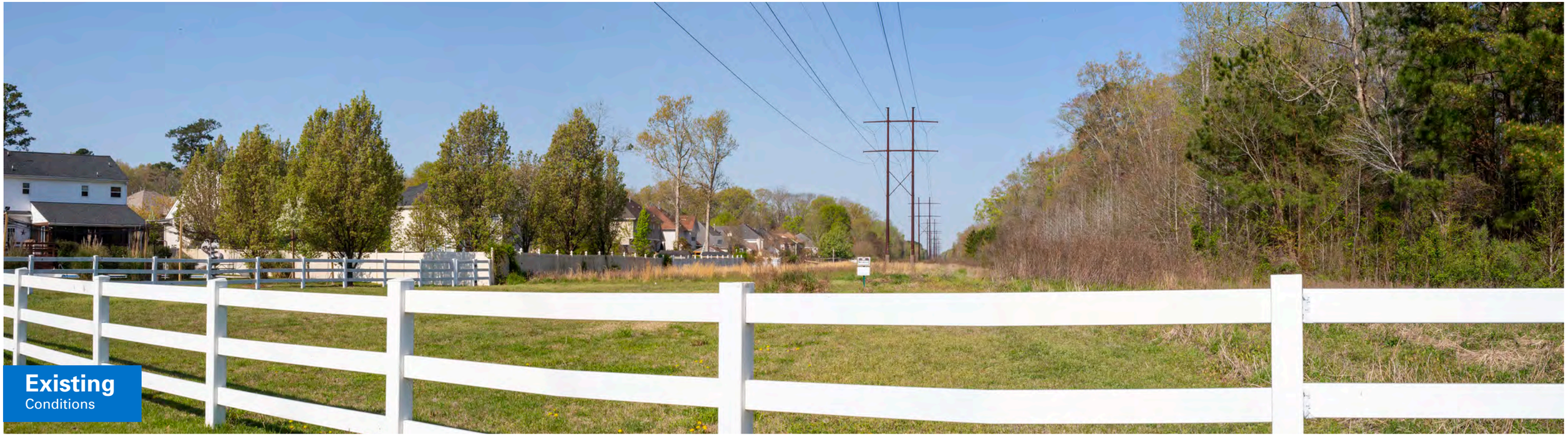
Coastal Virginia
Offshore Wind

Figure I-2-2-4
Photo Simulation KOP 5

Routes: 1, 2, 4, 5

Date: 04/07/2021
Time 8:42 am
Viewing Direction: West
Aspect Ratio: 3.6:1 Panoramic

Route 1
Route 2
Route 5
Photo Simulation Location



Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-5
Photo Simulation KOP 5

Route: 3

Date: 04/07/2021
Time 8:42 am
Viewing Direction: West
Aspect Ratio: 3.6:1 Panoramic

Route 3

Photo Simulation Location

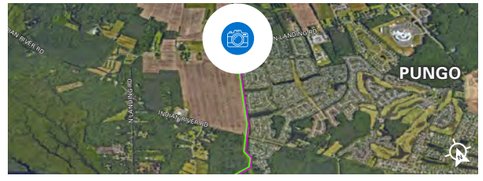
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-6
Photo Simulation KOP 6

Routes: 4, 5

Date: 04/07/2021
Time 9:11 am
Viewing Direction: South
Aspect Ratio: 2.1:1 Panoramic



Route 4
Route 5
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

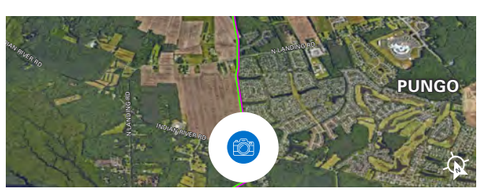
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-7
Photo Simulation KOP 7

Routes: 4, 5

Date: 04/07/2021
Time 9:27 am
Viewing Direction: North
Aspect Ratio: 3.6:1 Panoramic



Route 4
Route 5
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

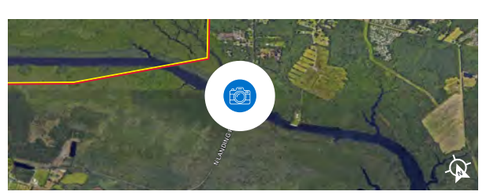
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-8
Photo Simulation KOP 8a

Routes: 2, 3

Date: 04/07/2021
Time 9:55 am
Viewing Direction: Northwest
Aspect Ratio: 3.6:1 Panoramic



Route 2
Route 3
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

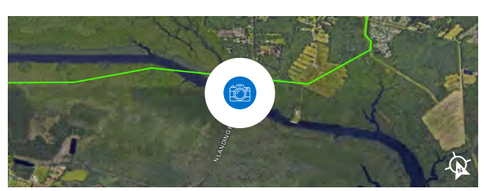
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-9
Photo Simulation KOP 8a

Route: 4

Date: 04/07/2021
Time 9:55 am
Viewing Direction: Northwest
Aspect Ratio: 3.6:1 Panoramic



Route 4
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-10
Photo Simulation KOP 8c

Route: 5

Date: 04/07/2021
Time 12:49 pm
Viewing Direction: East
Aspect Ratio: 3.6:1 Panoramic

Route 5

Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-11
Photo Simulation KOP 9

Route: 5

Date: 04/07/2021
Time 10:34 am
Viewing Direction: Northeast
Aspect Ratio: 3.6:1 Panoramic

Route 5
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

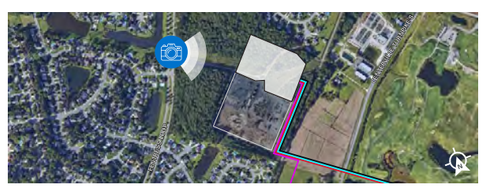
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-12
Photo Simulation KOP 10

Routes: 1, 2, 3, 4, 5, Hybrid

Date: 04/07/2021
Time 10:55 am
Viewing Direction: East
Aspect Ratio: 3.6:1 Panoramic



Route 1
Route 2
Route 5
Hybrid Route (Overhead)
Existing Fentress Substation
Proposed Substation Expansion
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-13
Photo Simulation KOP 11

Routes: 1, Hybrid

Date: 04/07/2021
Time 1:13 pm
Viewing Direction: South
Aspect Ratio: 3.6:1 Panoramic

Route 1
Hybrid Route (Overhead)
Hybrid Route (Underground)
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-14
Photo Simulation KOP 11

Routes: 2, 3

Date: 04/07/2021
Time 1:13 pm
Viewing Direction: South
Aspect Ratio: 3.6:1 Panoramic

Route 2
Route 3
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-15
Photo Simulation KOP 11

Routes: 4, 5

Date: 04/07/2021
Time 1:13 pm
Viewing Direction: South
Aspect Ratio: 3.6:1 Panoramic

Route 4
Route 5
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-16
Photo Simulation KOP 12

Routes: 1, Hybrid

Date: 04/07/2021
Time 1:44 pm
Viewing Direction: East
Aspect Ratio: 3.6:1 Panoramic

Route 1
Hybrid Route (Overhead)
Photo Simulation Location

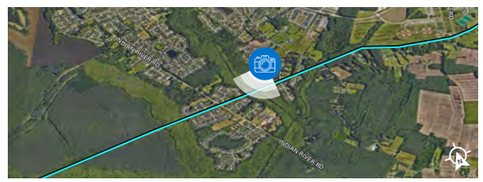
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-17
Photo Simulation KOP 13

Routes: 1, Hybrid

Date: 04/07/2021
Time 2:08 pm
Viewing Direction: Southwest
Aspect Ratio: 3.6:1 Panoramic



Route 1
Hybrid Route (Overhead)
Photo Simulation Location

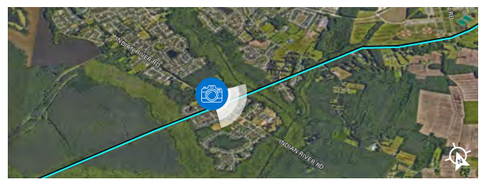
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-18
Photo Simulation KOP 14a

Routes: 1, Hybrid

Date: 08/25/2021
Time 2:30 pm
Viewing Direction: Southeast
Aspect Ratio: 3.6:1 Panoramic



Route 1
Hybrid Route (Overhead)
Photo Simulation Location

Existing
Conditions

Proposed
Conditions

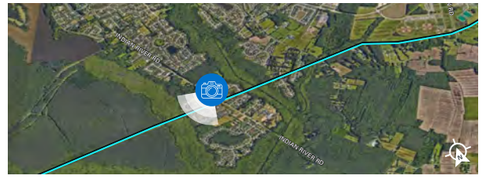
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-19
Photo Simulation KOP 14b

Routes: 1, Hybrid

Date: 08/25/2021
Time 2:30 pm
Viewing Direction: Southwest
Aspect Ratio: 3.6:1 Panoramic



Route 1
Hybrid Route (Overhead)
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-20
Photo Simulation KOP 15

Routes: 2, 3, 4

Date: 04/07/2021
Time 12:35 pm
Viewing Direction: North
Aspect Ratio: 3.6:1 Panoramic

Route 2
Route 3
Route 4
Photo Simulation Location

Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-21
Photo Simulation KOP 17

Routes: 1, 2, 3, 4, Hybrid

Date: 04/07/2021
Time 12:13 pm
Viewing Direction: South
Aspect Ratio: 3.6:1 Panoramic

- Route 1
- Route 2
- Route 3
- Route 4
- Hybrid Route (Overhead)
- Photo Simulation Location

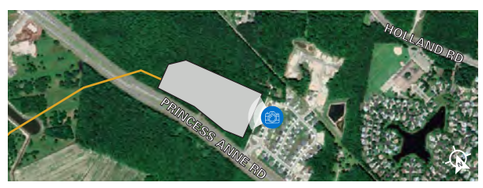
Dominion Energy®
Actions Speak Louder

Coastal Virginia
Offshore Wind

Figure I-2-2-22
Photo Simulation KOP 18

Route: Hybrid

Date: 09/21/2021
Time 11:25 am
Viewing Direction: West
Aspect Ratio: 3.6:1 Panoramic



- Chicory Substation Site
- Photo Simulation Location
- Hybrid Route

ERM has over 160 offices across the following countries and territories worldwide

Argentina
Australia
Belgium
Brazil
Canada
Chile
China
Colombia
France
Germany
Ghana
Guyana
Hong Kong
India
Indonesia
Ireland
Italy
Japan
Kazakhstan
Kenya
Malaysia
Mexico
Mozambique
Myanmar
The Netherlands
New Zealand
Norway
Panama
Peru
Poland
Portugal
Puerto Rico
Romania
Russia
Senegal
Singapore
South Africa
South Korea
Spain
Sweden
Switzerland
Taiwan
Tanzania
Thailand
UAE
UK
US
Vietnam

ERM's Annapolis Office:

ERM
180 Admiral Cochrane Drive
Suite 400
Annapolis, MD 21401

T: +1 410 266 0006
F: +1 443 458 6609

www.erm.com

The business of sustainability