Appendix H. Mitigation and Monitoring

The Draft Environmental Impact Statement (EIS) assesses the potential biological, socioeconomic, physical, and cultural impacts that could result from the construction, operations and maintenance (O&M), and conceptual decommissioning of the Coastal Virginia Offshore Wind Commercial Project (CVOW-C or Project) proposed by Coastal Virginia Offshore Wind (CVOW) in its Construction and Operations Plan (COP) (Dominion Energy 2022). The Project described in the COP and this Draft EIS would be approximately 2,500–3,000 megawatts (MW) in scale and sited 27 miles (23.75 nautical miles) off the Virginia Beach, Virginia Coastline within Lease Area OCS-A 0483. The Project is designed to serve demand for renewable energy in Virginia and North Carolina.

As part of the Project, CVOW has committed to implementing lessee-proposed measures (LPMs) to avoid, reduce, mitigate, or monitor impacts on the resources discussed in Chapter 3, *Affected Environment and Environmental Consequences*, of the Draft EIS. These APMs are described in Table H-1 of this appendix. The U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM) considers as part of the Proposed Action only those measures that CVOW has committed to in Section 4 of the COP (Dominion Energy 2022). Attachment H-1 to this appendix also includes mitigation CVOW has proposed as part of its *Unanticipated Discoveries Plan*, as described in COP Appendices F, G, and DD.

BOEM may select alternatives and require additional mitigation or monitoring measures to further protect and monitor these resources. Additional mitigation and monitoring measures may result from reviews under several environmental statutes (Clean Air Act, Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, and National Historic Preservation Act) that are described in Appendix A of the Draft EIS. Additional mitigation measures identified by BOEM, as well as those that may result from reviews under these statutes, are shown in Table H-2. Please note that not all of these mitigation measures are within BOEM's statutory and regulatory authority but could be adopted and imposed by other governmental entities. Table H-2 provides descriptions of these mitigation or monitoring measures, as well as those that BOEM has identified for analysis in the Draft EIS.

If BOEM decides to approve the COP, the Record of Decision (ROD) would state which of the mitigation and monitoring measures identified by BOEM in Table H-1 have been adopted, and if not, why they were not. As such, the ROD would inform terms and conditions of COP approval and would compel compliance with or execution of identified mitigation and monitoring measures (40 Code of Federal Regulations [CFR] 1505.3). CVOW would be required to certify compliance with certain terms and conditions, as required under 30 CFR 585.633(b). Furthermore, BOEM would periodically review the activities conducted under the approved COP. The frequency and extent of the review would be based on the significance of any changes in available information and on onshore or offshore conditions affecting, or affected by, the activities conducted under the COP.

Monitoring measures may be required to evaluate the effectiveness of a mitigation measure or to identify if resources are responding as predicted to impacts from the Proposed Action. Monitoring programs would be developed in coordination among BOEM and agencies with jurisdiction over the resource to be monitored. The information generated by monitoring may be used to (1) adapt how a mitigation measure identified in the COP or ROD is being implemented, (2) revise or develop new mitigation or monitoring measures required under the COP in accordance with 30 CFR 585.634(b) or develop measures for future projects, or (3) contribute to regional efforts for better understanding of the impacts and benefits resulting from offshore wind energy projects in the Atlantic (e.g., potential cumulative impact assessment tool). Unless specified, the proposed mitigation measures described below would not change the impact ratings on the affected resource, as described in Chapter 3, *Affected Environment and Environmental Consequences*, of the Draft EIS, but would further reduce expected impacts or inform the development of additional mitigation measures if required.

Table H-1 Lessee-proposed measures

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
Construction; Decommissioning	Offshore Project Area	Disturbance to seabed. Disturbance to objects along the seabed. Disturbance to onshore geology.	• Dominion Energy would identify the most appropriate locations, based on geologic conditions, for installation that would require the least disturbance to the seabed. By opting for locations that avoid the most challenging geology, Dominion Energy would be able to utilize the least-invasive tools for Project installation to the extent practicable. • Dominion Energy would implement appropriate avoidance buffers to avoid contact with any objects on the seabed, to the extent practicable. Objects that cannot be avoided would be further investigated and an appropriate mitigation would be implemented. For cable crossings, this would include optimization of the crossing geometry as well as engineering of the crossing and associated protection. For potential unexploded ordnance, this would include investigation of contacts and mitigation through micrositing if possible and further action and mitigation if necessary. • Dominion Energy would minimize disturbance to onshore geology during the installation of Onshore Project Components by optimizing routes along previously disturbed onshore locations to the extent practicable. • Dominion Energy would consider weather forecasts at all times during the construction stage, and would halt operations in the event that extreme weather events are likely to occur.	Physical and Oceanographic Conditions

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy would avoid and/or relocate boulders that are too close to the installation of the Offshore Export Cable. • The Project would site Offshore Project Components to avoid areas of steep and/or unstable seabed where determined to prove a challenge to specific Project features or installation methods during detailed design. • Dominion Energy would incorporate information on the location of mobile sediments and potential for scour into the design and installation of the Offshore Project Components. • The risk related to soft soils would be thoroughly considered when the jack-up vessel is deployed. • Dominion Energy has moved or eliminated some wind turbine generators (WTGs) locations near potential shallow gas from consideration for the Project. • The Project would implement an avoidance buffer around all wrecks, to the extent possible. Shipwrecks of cultural significance would be avoided in accordance to recommendations from the Project's QMA and are discussed in detail in COP Appendix F, Marine Archaeological Resources Assessment. • The Project would avoid identified debris during Project installation, to the extent possible. In the event that avoidance is not feasible, individual targets may be inspected by a remotely operated vehicle (ROV) to determine if the object poses a risk to operations and if it may be removed from the seabed.	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy will engage with asset owners in order to complete crossing agreements which will detail the conditions and methodology for each cable crossing. • Dominion Energy would microsite and re-route Offshore Project Components to avoid an unexploded ordnance (UXO) when feasible. If potential UXO cannot be avoided through micrositing, ROV investigations will be implemented in order to fully assess the UXO potential. If ROV investigations determine UXO is present, UXO mitigation will be considered by the Project, subject to agency approval. • The Offshore Export Cable Route Corridor has been reduced in width while crossing the Dam Neck Ocean Disposal Site (DNODS) in order to minimize the portion of the DNODS impacted by the Project. While seabed processes are likely to disperse dumped sediment through time, the accumulation of deposited dredge material overlying the buried cables could result in thermal and ampacity changes. This would be considered during the detailed design of the Offshore Project Components and installation works.	
O&M	Offshore Project Area	Disturbance to seabed. Disturbance to objects on the seabed.	• Operations would occur at locations of previously disturbed seabed to minimize the potential for disturbing new seabed whenever possible. • Whenever possible, operations and maintenance would occur at locations of previously disturbed seabed to minimize the potential for disturbing new objects along the seabed whenever possible. In addition, the Project would conduct routine geophysical	Physical and Oceanographic Conditions

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			surveys to monitor the status of the installed cable on the seabed as discussed in Section 3, *Description of Proposed Activity*.	
Construction; Decommissioning	Onshore Project Area	Short-term elevated in-air noise levels associated with vibratory pile driving at the cofferdam for Trenchless Installation exit at the Offshore Trenchless Installation Punch-Out location. Short-term elevated in-air noise levels associated with Trenchless Installation at the Cable Landing Location and the onshore cable crossing locations. Short-term elevated in-air noise levels associated with construction of the Onshore Export Cable Route, Switching Station, Interconnection Cable Route, and Onshore Substation.	• Trenchless Installation activities would occur during the daytime period unless a situation arises that would require operation to continue into the night or as deemed acceptable from the appropriate regulatory authority. • Dominion Energy would consult with the appropriate regulatory agency regarding nighttime work in the case of an emergency. In the case of nighttime operations, only the drill rig, power unit, and light banks would be used unless otherwise deemed acceptable from the appropriate regulatory authority. • If necessary, subject to regulatory requirements and stakeholder engagement, Dominion Energy would install moveable temporary noise barriers as close to the sound sources as possible, which have been shown to effectively reduce sound levels by 5 to 15 A-weighted decibels (dBA). • Dominion Energy would limit construction to the daytime period unless deemed acceptable from the appropriate regulatory authority. • Dominion Energy would ensure construction equipment is well maintained and vehicles using internal combustion engines equipped with mufflers would be routinely checked to ensure they are in good working order. • Dominion Energy would ensure construction equipment is located as far as possible from noise-sensitive areas.	In-Air Acoustic Environment

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• If noise issues are identified, Dominion Energy would install moveable temporary noise barriers as close to the sound sources as possible, which have been shown to effectively reduce sound levels by 5 to 15 dBA. • Dominion Energy would make a Project Communications Plan available to help actively address all noise-related issues in a timely manner.	
Construction; Decommissioning	Offshore Project Area	Short-term elevated in-air noise levels associated with impact pile driving of Wind Turbine Generator Foundation and Offshore Substation Jacket Foundations. Short-term elevated in-air noise levels associated with offshore support vessels.	• If the final design engineering requires sound mitigation measures, Dominion Energy would implement such measures within the Project footprint, as necessary.	In-Air Acoustic Environment
O&M	Onshore Project Area	Long-term elevated in-air sound levels associated with Switching Station and Onshore Substation. Short-term elevated in-air sound levels associated with operations and maintenance activities.	• If the final design engineering requires sound mitigation measures, Dominion Energy would implement such measures within the Project footprint, as necessary.	In-Air Acoustic Environment
O&M	Offshore Project Area	Long-term elevated in-air sound levels associated with the Wind Turbine Generators, Offshore Substation, and, as necessary, operation of sound signals.	No mitigation measures are expected for the Offshore Project area.	In-Air Acoustic Environment
Construction; Decommissioning	Offshore Project Area	Short-term increase in underwater noise levels associated with WTG Foundations and/or pin pile impact pile driving activities required for the installation of WTG and Offshore Substation Jacket Foundations.	• Noise mitigation requirements and methods have not been finalized at this stage of permitting; therefore, two levels (6 decibels [dB] and 10 dB) of reduction were applied to potentially mimic the use of noise mitigation options such as bubble curtains.	Underwater Acoustic Environment

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		Short-term increase in underwater noise levels associated with pile driving for cofferdam installation. Short-term increases in underwater noise levels associated with impact pile driving for goal post installation. Short-term increase in underwater noise levels associated with Offshore Export Cables and Inter-Array Cable laying activities. Short-term increase in underwater noise levels associated with Project-related vessels.	• The results of the analysis would be used to inform development of evaluation and mitigation measures that would be applied during construction and operations and maintenance (O&M) of the Project, in consultation with BOEM and National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries). • The Project would obtain necessary permits to address potential impacts on marine mammals, sea turtles and fisheries resources from underwater noise and would establish appropriate and practicable mitigation and monitoring measures through discussions with regulatory agencies.	
O&M	Offshore Project Area	Increase in underwater noise levels associated with WTG operations. Increase in intermittent underwater noise levels associated with Project O&M and Project-related vessels.	• No mitigation measures are expected to be needed during Project O&M to minimize underwater noise levels.	Underwater Acoustic Environment
Construction; Decommissioning	Onshore Project Area	Short-term increase in Project-related emissions.	• Most of the vessels and the onboard construction equipment would utilize diesel engines burning ultra-low sulfur fuel, while some larger construction vessels may use bunker fuel. • Onshore Project area construction activities would primarily utilize diesel-powered equipment, including horizontal directional drilling operations, trenching/duct bank construction, and cable pulling and termination. • Any fugitive dust generated during construction of the Onshore Project Components would be managed in	Air Quality

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			accordance with the Project's Fugitive Dust Control Plan.	
Construction; Decommissioning	Offshore Project Area	Short-term increase in Project-related emissions.	• Vessels constructed on or after January 1, 2016, would meet Tier III nitrogen oxides requirements when operating within the North American Emission Control Area (200 nautical miles [370.4 kilometers]) established by the International Maritime Organization. • Project-related vessels would use low sulfur diesel fuel where possible and be at or below the maximum fuel sulfur content requirement of 1,000 parts per million established per the requirements of 40 CFR 80.510(k); the COP (Dominion Energy 2022: Page 4-59 *Project Stage Location Impact Avoidance, Minimization and Mitigation*). • Project-related vessels would comply with applicable U.S. Environmental Protection Agency (USEPA) or equivalent emission standards. • The Project would provide BOEM with data on horsepower rating of all propulsion and auxiliary engines, duration of time operating in state waters, load factor, and fuel consumption for Project-related vessels to determine actual emissions from Project-related vessels, which would confirm that sufficient emissions offsets have been acquired. • The Project would provide vessel engines and emissions control equipment information to BOEM and the USEPA in accordance with the requirements set forth in the ROD and/or the issued Outer Continental Shelf air permit.	Air Quality

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
O&M	Offshore Project Area	Long-term increase in Project-related emissions.	• As detailed in COP Appendix N, *Air Emissions Calculations and Methodology*, operations and maintenance activities are assumed to include one service operations vessel and two crew transfer vessels over the operational life of the Project. • Operations and maintenance support vessels are assumed to operate out of a port located in the Hampton Roads area of Virginia (Portsmouth has been used for the purpose of estimating emissions). • Vessels constructed on or after January 1, 2016, would meet Tier III nitrogen oxides requirements when operating within the North American Emission Control Area (200 nautical miles [370.4 kilometers]) established by International Maritime Organization. • Project-related vessels would use ultra-low sulfur diesel fuel where possible and be at or below the maximum fuel sulfur content requirement of 1,000 parts per million established per the requirements of 40 CFR 80.510(k). • Project-related vessels would comply with applicable USEPA, or equivalent, emission standards. • The Project would provide BOEM with data on horsepower rating of all propulsion and auxiliary engines, duration of time operating in state waters, load factor, and fuel consumption for Project-related vessels to determine actual emissions from Project-related vessels, which would confirm that sufficient emissions offsets have been acquired.	Air Quality

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• The Project would provide vessel engines and emissions control equipment information to BOEM and the USEPA in accordance with the requirements set forth in the ROD and/or the issued Outer Continental Shelf air permit.	
O&M	Onshore Project Area	Long-term increase in Project-related emissions.	• Onshore emergency generators would comply with applicable emission standards in 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ.	Air Quality
Construction; Decommissioning	Offshore Project Area	Short-term disturbance of seabed sediment due to installation of the WTG Monopile Foundations and Offshore Substation Jacket Foundations, Inter-Array Cables, Offshore Export Cables, and site preparation for installation of scour protection. Short-term potential for inadvertent return of drilling fluids during horizontal directional drilling. Short-term potential for inadvertent return of drilling fluids during horizontal directional drilling. Short-term impacts due to accidental spills and/or releases offshore.	• Dominion Energy would develop and implement a horizontal directional drilling inadvertent release plan. Local pollution prevention and spill response procedures would be included in the Stormwater Pollution Prevention Plan (SWPPP) submitted to State agencies for the portions of the land-disturbing activity covered by the Virginia Pollutant Discharge Elimination System Construction General Permit. • Dominion Energy would manage accidental spills or releases of oils or other hazardous wastes through the Oil Spill Response Plan (Appendix Q). Project-related vessels would be subject to U.S. Coast Guard (USCG) wastewater and discharge regulations and	Water Quality

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
	Onshore Project Area	Short- term increase in erosion and runoff due to land disturbance. Short-term impacts due to dewatering trenches and excavations. Short-term potential for accidental releases from onshore construction vehicles or equipment.	would operate in compliance with oil spill prevention and response plans that meet USCG requirements. Specifically, all Project vessels would comply with USCG standards in U.S. territorial waters to legally discharge uncontaminated ballast and bilge water as well as standards regarding ballast water management. While outside the 3.0-nautical mile (5.6 kilometer) state-border/no-discharge zone (NDZ), vessels would deploy a USCG-certified marine sanitation device (MSD) with certifications displayed. While inside the 3.0 nautical mile (5.6 kilometer) state-border/NDZ, vessels would take normal vessel procedures to close off MSD-effluence discharge piping and redirect it to onboard "Zero-Discharge Tanks" for appropriate disposal either at dock or outside of an NDZ. Additionally, all vessels less than 79 feet (24 meters) would comply with the Small Vessel General Permit issued by USEPA on September 10, 2014, for compliance with National Pollutant Discharge Elimination System permitting. Prevention and response measures for accidental spills and releases are further described in Appendix Q, *Oil Spill Response Plan.* • Dominion Energy would avoid or minimize excavation dewatering in the location of the Battlefield Golf Club. • Dominion Energy would develop a SWPPP for construction activities that would conform with the Virginia Department of Environmental Quality Construction General Permit, Dominion Energy's approved Annual Standards and Specifications for Erosion and Sediment Control (ESC) and Stormwater	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Management (SWM) for Electric Transmission Line Development, and local pollution prevention and spill response procedures. The SWPPP would include steps that Dominion Energy must take to comply with the permit, including water quality requirements, and discuss the potential to encounter contaminated groundwater during excavation near the Battlefield Golf Club. The SWPPP would discuss how to protect surface water and groundwater quality if contaminated groundwater is encountered. • Dominion Energy would restrict access to only existing paved roads and approved access roads at wetland and stream crossings where possible. • Dominion Energy would restrict access through wetlands and waterbodies to identified construction sites, access roads, and work zones. • Dominion Energy would conduct onshore refueling and/or maintenance of construction equipment and vehicles outside resource areas to the extent practicable. • Dominion Energy would implement an inadvertent return plan with use of non-toxic drilling fluids for review and approval by the appropriate regulatory agencies.	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
O&M	Offshore Project Area	Long-term effects due to WTG Monopile Foundations and Offshore Substation Jacket Foundations and associated scour protection. Short-term change in water quality due to oil spills or accidental release of fluids from vessels required during operations.	• Dominion Energy would use scour protection as necessary around the WTG Monopile Foundations and Offshore Substation Jacket Foundations and cable protection mats to minimize effects of local sediment transport. • Dominion Energy would subject Project-related vessels to USCG wastewater and discharge regulations and ensure they operate in compliance with oil spill prevention and response plans that meet USCG requirements. Specifically, all Project vessels would comply with USCG standards in U.S. territorial waters to legally discharge uncontaminated ballast and bilge water as well as standards regarding ballast water management. While outside the 3.0 nautical mile (5.6 kilometer) state-border/NDZ, vessels would deploy a USCG-certified MSD with certifications displayed. While inside the 3.0-nautical mile (5.6-kilometer) state-border/NDZ, vessels would take normal vessel procedures to close off MSD-effluence discharge piping and redirect it to onboard “Zero -Discharge Tanks” for the appropriate disposal either at dock or outside of an NDZ. Additionally, all vessels less than 79 feet (24 meters) would comply with the Small Vessel General Permit issued by USEPA on September 10, 2014, for compliance with National Pollutant Discharge Elimination System permitting. Prevention and response measures for accidental spills and releases are further described in Appendix Q, *Oil Spill Response Plan*. • Dominion Energy would develop an SWM Plan and ESC Plan ESC in accordance with Dominion Energy’s approved Annual	Water Quality
	Onshore Project Area	Long-term effects due to stormwater runoff.		

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Standards and Specifications for SWM and ESC for Electric Transmission Line Development, and local ordinances as applicable. Routinely inspect and clean on-site stormwater control features to remove debris or excess vegetation that may impede the designed functionality. The SWM plan would describe how the stormwater control facilities would be operated and maintained after construction is complete.	
Construction; Decommissioning	Onshore Project Area	Installation of permanent structures within wetlands, wetland transition areas, riparian areas, and protected watersheds. The permanent conversion of existing wetland cover types. The temporary removal of vegetation within wetlands, wetland transition areas, riparian buffers, and protected watershed features. Erosion of sediment from construction activities into adjacent wetlands and waterbodies. The potential for an inadvertent release of non-toxic drilling fluids to the surface during horizontal directional drilling (HDD) activities The potential for accidental releases from construction vehicles or equipment.	• Dominion Energy would collocate Onshore Project Components in existing rights-of-way (ROWs), existing roads, previously disturbed areas, and otherwise urbanized locations to the maximum extent practicable. • Dominion Energy would site permanent structures outside of protected watershed features and flood-prone areas to the maximum extent practicable. • Dominion Energy would use a combination of HDD and overhead routing to the best extent practicable to avoid and minimize impacts on natural resources. • Dominion Energy would purchase stream and wetland mitigation credits in the applicable service area of a mitigation bank or contribute to an approved in-lieu-of-fee program, such as the Virginia Aquatic Resources Trust Fund Program, prior to construction to mitigate unavoidable impacts on wetlands and waterbodies. • Dominion Energy would restrict access during construction to existing paved roads or access roads constructed for stream or waterbody crossings. Where necessary, access would also be restricted to avoid	Wetlands

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			alteration of soil properties (compaction) that may result in unintended impacts. • Dominion Energy would use temporary avoidance/minimization efforts for wetland access where avoidance is not possible. These efforts would include use of temporary timber mats, using 8- to 12-inch (20- to 30-centimeter)-thick timber, for heavy machinery movement and to avoid unintended impacts on wetlands such as soil compaction, damage to root systems, and development of ruts. • Dominion Energy would develop an invasive species control plan to prevent the spread of invasive species throughout the maintained ROWs and recently disturbed locations. Only agency-approved native species would be replanted, and all plans would be guided by desktop and on-the-ground evaluation of invasive species present in the area. • Dominion Energy would develop a compensatory mitigation plan, where permanent conversion of wetlands is unavoidable, to include on-site mitigation where practicable, off-site mitigation, or purchase of mitigation credits. This mitigation plan would be further refined as a component of the U.S. Army Corps of Engineers (USACE) permitting package. • Dominion Energy would restrict access through wetlands except where approved by regional and local regulatory entities. • Dominion Energy would develop and implement erosion and sediment control plans in compliance with Dominion Energy's Virginia Department of Environmental	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Quality-approved Standards and Specifications for Erosion and Sediment Control and Stormwater Management for Electric Transmission Line Development and appurtenant facilities such as substations and switching stations, as well as any additional requirements specific to the U.S. Department of Defense (DoD) lands (if applicable). • Dominion Energy would install temporary timber matting for access routes through wetlands to protect vegetation to reduce compaction, minimize ruts, and reduce soil discharge. • Dominion Energy would develop and implement an inadvertent release plan with use of non-toxic drilling fluids to be reviewed and approved by the appropriate regulatory agencies. • Dominion Energy would manage accidental spills or releases of oils through a spill prevention, control, and countermeasures plan for approval by the appropriate regulatory agency.	
O&M	Onshore Project Area	It is not anticipated that Project-related activities in association with O&M would result in new impacts on wetlands and waterbodies.	• Dominion Energy would take protective measures to prevent access to any active operation area including, but not limited to, security and safety fencing. • Dominion Energy would monitor revegetation throughout the life of the Project and leading up to decommissioning. Monitoring would comply with a restoration plan and invasive species control plan. Monitoring would serve as the primary measure for ensuring return of wetland, waterbody, and special area	Wetlands

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			functionality following completion of construction and during necessary O&M. • Dominion Energy would monitor mitigation efforts where appropriate and define via the approved permitting package. • Dominion Energy would assess and maintain stormwater control and treatment features on a regular interval, as specified in the SWPPP. This would include removal of debris and a determination of functionality.	
Construction; Decommissioning	Onshore Project Area	Vegetation removal associated with installation of all Onshore Project Components. The inadvertent release of drilling fluids to the surface during HDD activities within environmentally sensitive areas. Noise and light activities associated with construction equipment and other noise-generating activities associated with construction Impedance to local migration of terrestrial biota (such as reptiles and amphibians) from installation and placement of erosion- and sediment-control measures such as staggered silt fencing or stabilization matting. Accidental releases of petroleum products from construction vehicles or equipment. Potential for erosion into adjacent vegetation and wildlife habitat. Conversion of existing vegetation cover types (e.g., forested to herbaceous) where the onshore	• Dominion Energy would collocate Onshore Project Components in or adjacent to existing ROWs, existing roads, previously disturbed areas, and other urbanized locations to the maximum extent practicable. • Dominion Energy would seed and stabilize construction areas involving temporary vegetation clearing with an appropriate grass seed mix (in urban areas) or native seed mix (in natural areas) and in accordance with Virginia Erosion and Sediment Control Law and Regulations (Virginia Department of Environmental Quality [VDEQ] 2014) and the Virginia Erosion and Sediment Control Handbook (VDEQ 1992). • Dominion Energy would prepare and submit a mitigation planting plan to the City of Virginia Beach for approval to address unavoidable temporary impacts that would occur within sensitive ecological areas (such as within the Southern Rivers Watershed). The City of Virginia Beach may require native plantings. • Dominion Energy would plant or seed larval host plants and forage plants in the Interconnection Cable Routes after	Terrestrial Vegetation and Wildlife

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		routes are not collocated with existing road corridors or utility ROWs. Permanent fragmentation of habitat as a result of clearing, particularly of large contiguous forested wetland habitats. Colonization and establishment of invasive vegetation in formerly undisturbed areas due to clearing. Impacts to locally rare or sensitive species and natural communities.	construction efforts have been completed in order to avoid and minimize impacts on pollinator species. A list of regionally appropriate species as well as regional suppliers of native seed mixes are available from the U.S. Department of Agriculture Natural Resources Conservation Service (2020). • Dominion Energy would develop and implement an inadvertent release plan with use of non-toxic drilling fluids to be reviewed and approved by the appropriate regulatory entities. • Dominion Energy would coordinate with the U.S. Fish and Wildlife Service (USFWS), Virginia Department of Wildlife Resources (VDWR), and Virginia Natural Heritage Program to ensure potential impacts on threatened and endangered (T&E) species are avoided and minimized to the maximum extent practicable. • Dominion Energy would evaluate time-of-year restrictions for applicable T&E species via coordination with the USFWS, VD WR, and Virginia Natural Heritage Program. • Dominion Energy would limit lighting associated with construction vehicles and work zones when possible to reduce interaction with or disturbance of wildlife species such as bats and insectivorous birds. • Dominion Energy would initiate coordination with the VDWR and Virginia Natural Heritage Program to evaluate potential impacts on T&E reptile and amphibian species, including the canebrake rattlesnake.	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy would install staggered silt fencing in areas surrounding wetlands, waterbodies, and areas with the potential to contain T&E species, rare natural communities, and habitat for reptiles and amphibians. Staggered gaps would ensure reptiles and amphibians could continue to move relatively unrestricted through the Onshore Project area. This strategy would be employed on a site-specific basis following coordination with VDWR and the Virginia Natural Heritage Program. • Dominion Energy would, when applicable, employ snake-friendly erosion-control blankets containing natural or biodegradable fibers or loose-weave netting in areas surrounding wetlands, waterbodies, and areas with the potential to contain habitat for reptiles and amphibians. • Additional mitigation strategies would be adhered to in accordance with VDWR consultation regarding impacts on canebrake rattlesnake habitat if determined to be necessary. • Dominion Energy would restrict vehicular access to paved roads, approved road crossings, and designated construction areas. • Dominion Energy would manage accidental spills or releases of oils through a spill prevention, control, and countermeasures plan approved by the appropriate regulatory entity. • Dominion Energy would develop and implement erosion and sediment control plans in compliance with Dominion Energy's	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			VDEQ-approved Standards and Specifications for ESC and Stormwater Management (SWM) for Electric Transmission Line Development and appurtenant facilities such as substations and switching stations. • Dominion Energy would prepare and maintain a SWPPP in compliance with Virginia Pollution Discharge Elimination System VAR10 Construction General Permit. A permit would be required because the land-disturbing activity would exceed 1.0 acre (0.4 hectare). As a component of the permit, the SWPPP would be prepared and maintained throughout Project construction and retained for 3 years following construction completion as required by Virginia Law. • Dominion Energy would restrict construction access to existing paved roads or access roads constructed for stream or waterbody crossings. Where possible, restrict access to avoid alteration of soil properties (compaction) that may result in unintended impacts. • Dominion Energy would use temporary timber mats in wetlands, using 8- to 12-inch (20- to 30-centimeter)-thick timber, for heavy machinery movement and to avoid unintended impacts on wetland soils. • Dominion Energy would develop an invasive species control plan to prevent the spread of invasive vegetation into natural communities via maintained ROWs and recently disturbed locations. Replanting would be an approved use of native species only, and all plans	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			would be guided by desktop and on-site evaluation of invasive species present in the area. • Dominion Energy would develop and implement a landscape restoration plan in compliance with applicable local and regional ordinances, paying specific attention to re-seeding and replanting with native plant stock. • Dominion Energy would revegetate temporary access areas with native plants and/or an appropriate native seed mix. • Dominion Energy would develop standard best management practices (BMPs) to reduce the spread of invasive species to previously uncolonized areas that would be incorporated into the invasive species control plan and implemented during construction. Resources detailing BMPs to prevent the introduction and spread of invasive species are recommended by the U.S. Department of Agriculture National Invasive Species Information Center (NISIC), and a comprehensive guide was published by the University of Georgia in 2011 (USDA NISIC 2020; Moorhead et al. 2011). • Dominion Energy would coordinate with the USFWS, VDWR, and the Virginia Natural Heritage Program to avoid impacts on rare and T&E species or natural communities to the greatest extent practicable, and to identify additional minimization and mitigation measures if necessary. • Dominion Energy would develop and implement invasive species control and landscape restoration plans to prevent the	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			introduction and spread of invasive species and to facilitate restoration of disturbed habitats. • Dominion Energy would develop a compensatory mitigation plan, where permanent conversion of wetlands is unavoidable, to include on-site mitigation where practical, off-site mitigation, or purchase of mitigation credits or payment of an in-lieu fee mitigation as appropriate. This mitigation plan would be further refined as a component of the USACE permitting package.	
O&M	Onshore Project Area	Conversion of existing vegetation cover types as a result of permanent access roads, structures, and facilities in previously vegetated areas. Vegetation disturbance as a result of routine or periodic facility maintenance (e.g., invasive species control, herbicide applications, and mowing) throughout the lifetime of the facility. Noise or light disturbance associated with routine facility maintenance and activities (at permanent facilities such as substations) throughout the lifetime of the facility.	• Dominion Energy would implement an invasive species control plan to avoid the spread of invasive species for the lifetime of the Project, and provide the plan for agency review and approval, as applicable. • Dominion Energy would limit unauthorized access of Onshore Project personnel and vehicles beyond existing disturbed areas and approved access roads to the extent practicable. • Dominion Energy would plant and seed desirable noninvasive native species within the ROWs to reduce establishment of invasive woody vegetation requiring control. • Dominion Energy would adhere to all federal, state, and local laws and regulations pertaining to herbicide application. If herbicides are to be used in wetland habitats, use wetland-safe herbicide to avoid unintended impacts on sensitive wetland wildlife and vegetation. • During operations, the Project will be in compliance with relevant City of Virginia	Terrestrial Vegetation and Wildlife

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Beach and City of Chesapeake noise requirements. If the final design engineering requires sound mitigation measures, they will be implemented within the Project footprint, as necessary. • Dominion Energy would implement lighting-reduction measures, such as downward projecting lights, lights triggered by motion sensors, and limiting artificial light to the extent practicable, to avoid disruption to nocturnal avian and bat species. • Dominion Energy would take protective measures to prevent access to any active operation area including, but not limited to, security and safety fencing. • Dominion Energy would monitor revegetation throughout the life of the Onshore Project and leading up to decommissioning. Monitoring would comply with the approved landscape restoration plan and invasive species control plan, as required by the City of Virginia Beach and the City of Chesapeake, as well as an invasive species control plan. Monitoring would serve as the primary measure for ensuring return of natural habitat functionality following completion of construction and necessary operation. • Dominion Energy would employ vegetation control methods, including application of herbicides for maintenance of ROWs that would comply with all applicable federal, state, and local laws and regulations.	
Construction; Decommissioning	Offshore Project Area	Short-term attraction to, and potential collision with, Project-related vessels	• To mitigate impacts from lighting, Dominion Energy would use BMPs identified by BOEM COP guidelines (BOEM 2020) and would	Avian and Bat Species

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		and partially installed Offshore Project Components. Short-term disturbance of, and displacement from, offshore habitat.	comply with Federal Aviation Administration (FAA) and USCG requirements for lighting while, to the extent practicable, using lighting technology (e.g., low-intensity strobe lights) that minimize impacts on avian and bat species. • Dominion Energy would document any dead or injured birds or bats found on Project vessels or structures during the construction stage of the Project and would submit an annual report to BOEM and USFWS (any birds found with federal bands will be reported to the U.S. Geological Survey [USGS] Bird Band Laboratory).	
Construction; Decommissioning	Onshore Project Area	Disturbance of, and displacement from, onshore habitat.	• Dominion Energy would avoid potential effects to birds and bats by using trenchless installation techniques in coastal areas at the Cable Landing Location; collocating the Onshore Export Cable Route with existing roads as much as possible; and timing construction activities to avoid critical periods when endangered and threatened species may be affected to the extent practicable. • If either or both of the Harpers or Chicory Switching Stations are constructed, then they would be constructed within either previously developed areas associated with an existing golf course or small areas of mixed forest and woody wetland. Some tree and vegetation clearing will be required, but will be minimized to the extent practicable. • To the extent practicable, Dominion Energy would collocate the Interconnection Cable Route within or adjacent to existing transmission line corridors and ROWs as much as possible, timing construction	Avian and Bat Species

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			activities to avoid critical periods when endangered and threatened species may be affected. • Tree/vegetation clearing would avoid trees favorable for bat maternity roosting locations and would be conducted outside of the breeding/roosting season to avoid nesting birds and bat maternity roosting locations to the extent practicable. • Dominion Energy will conduct presence/absence surveys for bats (acoustic and/or mist-net) along the Onshore Project area, pursuant to discussions with VDWR, USFWS, and appropriate regulatory agencies beginning May 2022 and approval of a bat survey plan. • Dominion Energy conducted an eagle/osprey/raptor nest survey along the Interconnection Cable Route in March 2022 of the Onshore Project area, pursuant to discussions with VDWR, USFWS, and appropriate regulatory agencies. • Where surveys indicate the presence of species of conservation concern, Dominion Energy would work with the VDWR and USFWS to minimize potential impacts prior to construction. • Dominion Energy would maintain a minimum no-tree-clearing buffer of 150 feet (45 meters) around any known northern long-eared bat (*Myotis septentrionalis*) maternity roosts following the final 4(d) rule for the species (USFWS 2016). • Dominion Energy would develop avoidance and minimization measures in coordination with the VDWR, USFWS, and appropriate	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			regulatory agencies to ensure protection of threatened and endangered species or to address the potential for incidental take, that may occur within the Project Area. • Dominion Energy would ensure avoidance, minimization, and mitigation measures protective of wetlands, vegetation, and other wildlife species discussed in Section 4.2.1, *Wetlands and Waterbodies*, and Section 4.2.2, T*errestrial Vegetation and Wildlife*, also would be protective of bird and bat species and their habitats.	
O&M	Offshore Project Area	Long-term risk of collision with WTGs and Offshore Substations. Long-term displacement from the Lease Area due to presence of WTGs and Offshore Substations. Long-term attraction to and displacement from Project-related maintenance vessels.	• To mitigate the potential for collision with WTGs and Offshore Substations during O&M stage of the Project, Dominion Energy would use BMPs identified by BOEM COP guidelines (BOEM 2020) and comply with FAA and USCG requirements for lighting and, to the extent practicable, use lighting technology (e.g., low-intensity strobe lights, flashing red aviation lights) that minimize impacts on bat species. • To continue the advancement of the understanding of avian and bat activity in the offshore environment, Dominion Energy will continue operation of one Acoustic Thermographic Offshore Monitoring System two additional years to inform the development of the CVOW Commercial Project as the CVOW Pilot WTGs are installed adjacent to the west side of the CVOW Commercial lease. • Dominion Energy will provide Motus Wildlife Tracking tags to the USFWS, which is currently studying the movements of piping plovers in the region. The specific	Avian and Bat Species

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			deployment location will be determined in consultation with the USFWS. • Dominion Energy will purchase satellite tags to be attached to Rufa red knots (*Calidris canutus*; rufa subspecies). These tags will provide accurate data on Rufa red knot movements onshore, offshore, and flight heights that can be related to weather data. The deployment location will be determined in consultation with USFWS. • Dominion Energy will fund a research project to study the Whimbrel (*Numenius phaeopus*). This study will be implemented by The Nature Conservancy and Center for Conservation Biology, and will include purchasing satellite tags, The Nature Conservancy and Center for Conservation Biology staff time associated with project implementation including data analysis, seasonal staff capacity to implement field work, seasonal housing and travel costs, field supplies, and tagging technology. • Dominion Energy plans to upgrade the current Motus network/antennas on both CVOW Pilot WTG platforms to a “dual-mode” (166 and 434 megahertz [MHz]) system with one station prioritized for 434 MHz and the other prioritized for 166 MHz in accordance with the updated USFWS guidance document. This antenna upgrade will increase the monitoring range from approximately 2 kilometers to approximately 15 kilometers and will remain in place for two years, expected to begin in late spring 2022. • Dominion Energy would reduce perching opportunities on offshore structures to the	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			extent practicable and, where possible, in compliance with health and safety requirements for the WTGs and Offshore Substations. • Dominion Energy would develop a robust post-construction monitoring plan with clear goals, monitoring questions, and methods, including monitoring that focuses on areas of uncertainty such as bird and bat presence offshored, and would install automated radio telemetry receiver stations (i.e., Motus towers) on select offshore structures. • Dominion Energy would document any dead or injured birds or bats found on Project vessels or infrastructure (offshore and onshore) during construction, O&M, or decommissioning, in an annual report submitted to BOEM and USFWS (any birds found with federal bands would be reported to the USGS Bird Band Laboratory). • Dominion Energy would limit risks of long-term displacement of offshore bird species, to the extent practicable. • Potential impacts would be further minimized by reducing lighting on O&M vessels to the extent practicable.	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
O&M	Onshore Project Area	Long-term risk of collision with overhead Interconnection Cables. Long-term displacement from onshore habitat at Onshore Project Components.	Dominion Energy would reduce potential impacts of the overhead lines by complying with Avian Power Line Interaction Committee (https://www.aplic.org/) best practices to reduce collision and electrocution.	Avian and Bat Species
Construction; Decommissioning	Offshore Project Area	Disturbance of softbottom habitat. Disturbance, injury, or mortality of benthic and pelagic species. Change in water quality, including turbidity, sediment deposition, and chemical contamination. Entrainment of plankton and ichthyoplankton. Increase in underwater noise and vibration.	• Dominion Energy would further microsite within the Offshore Export Cable Route Corridor to avoid such habitats where feasible to minimize the probability of adverse interactions with sensitive benthic resources. • The release of non-toxic drilling muds during Trenchless Installation activities is possible but unlikely. Dominion Energy would develop and implement an Inadvertent Release Plan that would include pollution prevention measures and spill response procedures covered by the SWPPP. • Dominion Energy would commit to using a soft-start procedure and noise mitigation systems such as bubble curtain technologies to avoid or minimize impacts on marine mammals, sea turtles, fishes, and mobile invertebrates. During pile-driving activities, Dominion Energy will implement near-field and/or far-field noise mitigation systems to minimize underwater sound propagation. Examples of near-field noise mitigation systems include the Hydro Sound Damper, the Noise Mitigation Sleeve or the AdBm Noise Mitigation System. Dominion Energy is	Benthic Resources

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			committed to the use of a double big-bubble curtain for far-field noise mitigation.	
O&M	Offshore Project Area	Long-term conversion of softbottom to artificial hardbottom habitat and introduction of vertical infrastructure to the water column. Habitat creation for nonindigenous species such as invasive tunicate (*Didemnun vexilium*). Increase in shading and artificial lights. Increase in underwater noise and vibration. Change in water quality, including fuel and chemical spills. Introduction of Project-related electromagnetic fields (EMF).	• Dominion Energy does not expect the installation of hard structure to introduce nonindigenous species to the Project Area; however, existing species in the area may colonize or become associated with the structures once they are installed (e.g., lionfish). • As required by USCG for navigational safety, artificial lights would be installed on all Project structures. • Dominion Energy would develop and implement an Oil Spill Response Plan describing measures to avoid accidental spills and protocols to be implemented should a spill occur. Dominion Energy also would require all Project-related vessels to operate in accordance with laws regulating at-sea discharges of vessel -generated waste. • Dominion Energy would commit to burying Project-related cables wherever feasible to minimize detectable EMF.	Benthic Resources
Construction; Decommissioning	Offshore Project Area	Short-term disturbance of habitat. Short term loss of local prey species. Short-term introduction of marine debris. Short-term increase in risk of entanglement and entrapment. Short-term increase in underwater noise. Short-term increase in risk of ship strike due to the increase in vessel traffic.	• Dominion Energy has sited Offshore Project Components, including WTG Monopile and Offshore Substation Jacket Foundations and Offshore Export Cable Route Corridors, to avoid sensitive benthic habitats and minimize disturbance of benthic features to the extent practical. • Dominion Energy would implement practices to prevent Project personnel from commencing or continuing certain construction activities should marine mammals be observed within monitoring and	Marine Mammals

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		Short-term change in water quality, including oil spills.	exclusion zones based on required NOAA Fisheries monitoring and mitigation protocols and stipulations of the Lease. • During pile driving of WTG Monopile and Offshore Substation Jacket Foundations, Dominion Energy would apply monitoring and exclusion zones as appropriate to underwater noise assessments and impact thresholds. • Qualified NOAA Fisheries-approved Protected Species Observers, real-time monitoring systems, Passive Acoustic Monitoring systems, and reduced visibility monitoring tools (e.g., night vision, infrared, and/or thermal cameras) will be employed to enforce these zones. • Construction personnel will employ soft starts and shutdown procedures as appropriate to thresholds of noise-emitting survey equipment; soft starts will last 30 minutes at the onset of pile driving. • Dominion Energy would use commercially and technically available noise-reducing technologies as appropriate and will provide marine mammal sighting and reporting training for each specific stage of construction to emphasize individual responsibility for marine mammal awareness and protection. • Dominion Energy would ensure continued engagement with regulatory agencies regarding potential best practices. • All Project-related vessels larger than 65 feet (20 meters) will be required to abide by speed restrictions when transiting within the	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Seasonal Management Area (SMA) from November 1 to April 30. • Dominion Energy would conduct monitoring of NOAA's website for updates to Dynamic Management Area (DMA) locations. • All Project-related vessels will be required to comply with the Ship Strike Reduction Rule speed restrictions within the Mid-Atlantic U.S. SMA and any DMA that intersects the Study Area (10 knots [18.5 kilometers/hour] or less for vessels 65 feet [20 meters] or longer). • Dominion Energy would require Project-related vessels to maintain a distance of 328 feet (100 meters) or greater from all marine mammals and 1,640 feet (500 meters) from North Atlantic right whales. Vessels larger than 300 gross tons (305 metric tons) will receive whale sighting updates and vessel speed reminders when transiting North Atlantic right whale territory by reporting to the North Atlantic right whale Mandatory Ship Reporting System. • Project personnel, particularly marine mammal observers, will check the NOAA Fisheries website for DMA locations. • Dominion Energy would provide Project personnel with marine mammal sighting, take and harassment, and reporting training to emphasize individual responsibility for marine mammal awareness and protection. • Dominion Energy has also developed an Oil Spill Response Plan (COP Appendix Q; Dominion Energy 2022)), proposing measures to avoid inadvertent releases and spills and a protocol to be implemented	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			should an event occur. Project-related vessels will operate in accordance with laws regulating at-sea discharges of vessel-generated waste.	
O&M	Offshore Project Area	Modification of habitat. Project-related EMF. Project-related marine debris. Project-related underwater noise. Increase in risk for ship strike due to the increase in vessel traffic. Changes in water quality, including oil spills.	• Dominion Energy proposes to use heating, ventilation, and air conditioning (HVAC) cables for the Project; such cables emit EMF below levels documented to have adverse effects on fish or marine mammal behavior. • Dominion Energy would require all Project personnel to implement appropriate practices and protocols to prevent the release of marine debris. • Dominion Energy would implement several measures to avoid, minimize, and mitigate marine mammal physical disturbances, strikes, and collisions. • All Project-related vessels will be required to comply with the Ship Strike Reduction Rule speed restrictions within the Mid-Atlantic United States. SMA and any DMA that intersects the Project Area (10 knots [18.5 kilometers/hour] or less for vessels 65 feet [20 meters] or longer). • Dominion Energy would require Project-related vessels to maintain a distance of 328 feet (100 meters) or greater from all marine mammals and 1,640 feet (500 meters) from North Atlantic right whales. • Vessels larger than 300 gross tons (305 metric tons) will receive whale sighting updates and vessel speed reminders when transiting North Atlantic right whale territory by reporting to the North Atlantic right whale Mandatory Ship Reporting System.	Marine Mammals

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Project personnel, particularly marine mammal observers, will check the NOAA Fisheries website for DMA locations. • Dominion Energy would provide Project personnel with marine mammal sighting and reporting training to emphasize individual responsibility for marine mammal awareness and protection. • Dominion Energy has also developed an Oil Spill Response Plan (Appendix Q) proposing measures to avoid inadvertent releases and spills and a protocol to be implemented, should a potential vessel oil and fuel spill or contaminant release from resuspended sediments occur. • Project-related vessels will operate in accordance with laws regulating at-sea discharges of vessel-generated waste.	
Construction; Decommissioning	Offshore Project Area	Short-term disturbance of habitat. Short-term loss of local prey species. Short-term increase in construction-related lighting. Short-term introduction of marine debris. Short-term increase in risk of entanglement and entrapment. Short-term increase in underwater noise. Short-term increase in risk of ship strike due to the increase in vessel traffic. Short-term change in water quality, including oil spills.	• Dominion Energy has sited Offshore Project Components, including WTG and Offshore Substation Foundations and Offshore Export Cable Route Corridors, to avoid sensitive benthic habitats and minimize disturbance of benthic features to the extent practical. • Dominion Energy would require all offshore personnel and vessel contractors to implement appropriate debris control practices and protocols to prevent the accidental release of marine debris. All Project-related vessels would operate in accordance with regulations pertaining to at-sea discharge of vessel-generated waste. • Dominion Energy would implement the following measures as appropriate to avoid,	Sea turtles

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			minimize, and mitigate potential impacts of construction-related underwater noise: ○ Implement monitoring and exclusion zones where pile-driven foundations are installed, enforced by qualified NOAA Fisheries-approved Protected Species Observers. ○ Implement real-time monitoring systems. ○ Employ soft starts and shutdown procedures where technically feasible. ○ Employ soft starts for a duration of 30 minutes at the onset of pile-driving activities. ○ Use reduced visibility monitoring tools/technologies (e.g., night vision, infrared, and/or thermal cameras). ○ Use commercially and technically available noise-reducing technologies. ○ Provide sea turtle sighting and reporting procedures for appropriate Project-related personnel specific to construction and its potential impacts on sea turtles. • Dominion Energy would also ensure continued engagement with regulatory agencies regarding potential best practices. • Dominion Energy has developed an Oil Spill Response Plan (Appendix Q), detailing all proposed measures to avoid accidental spills and a protocol to be implemented should such an event occur. Additional information may be found in Section 4.4.12, *Public Health and Safety*. All Project-related vessels would operate in accordance with regulations pertaining to at-sea discharge of vessel-generated waste. • Dominion Energy would provide a full decommissioning plan to the appropriate	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			regulatory agencies for approval prior to decommissioning activities, and potential impacts will be re-evaluated at that time.	

Operations and Maintenance	Offshore Project Area	Modification of habitat.
		Project-related EMF.
		Project-related lighting.
		Project-related marine debris.
		Project-related underwater noise.
		Increase in risk for ship strike due to the increase in vessel traffic.
		Changes in water quality, including oil spills.
			• Dominion Energy has identified areas where sufficient cable burial is achievable, further buffering the pelagic environment from cable EMF, and cable protection would serve as an alternative barrier where sufficient cable burial is not feasible.
			• Dominion Energy would consult appropriate regulatory agencies regarding operational lighting requirements.
			• Dominion Energy would require all offshore personnel to implement appropriate practices and protocols to avoid and minimize the release of marine debris.
			• Dominion Energy would implement the following measures as appropriate to avoid, minimize, and mitigate potential vessel-related impacts:
			  ○ Vessel speed restrictions while transiting to and from the review area.
			  ○ Vessel collision avoidance measures for vessels working in or transiting to and from the Project area, including a 164 feet (50 meters) separation distance from all sea turtle species.
			• Dominion Energy has developed an Oil Spill Response Plan (Appendix Q) that details all measures proposed to avoid an inadvertent spill of vessel oil or fuel and a protocol to be implemented should such an event occur.
			• Dominion Energy would implement the following measures as appropriate to avoid, minimize, and mitigate potential impacts on water quality:
				Sea Turtles

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			○ Vessel operation in accordance with regulations pertaining to at-sea discharges of vessel-generated waste.	
Construction; Decommissioning	Offshore Project Area	Disturbance to submerged marine archaeological and cultural resources.	• Dominion Energy will develop an operations plan prior to construction, to ensure that construction activities adhere to the recommended avoidance buffers. • Design and construction methods, including micrositing opportunities, will continue to be evaluated in order to avoid or minimize the extent of seabed disturbance and adverse effects to historic properties. • Disturbance to known resources that cannot practicably be avoided would only occur with appropriate consultations (i.e., BOEM, State Historic Preservation Offices, Tribal Historic Preservation Officers) and approvals. • Additional archaeological investigation of resources that cannot be avoided may be needed to determine whether they are historic properties and to fully assess Project effects on them. • Dominion Energy would develop and implement an Unanticipated Discoveries Plan to avoid and mitigate impacts on unknown resources.	Cultural Resources
O&M	Offshore Project Area	Disturbance to submerged marine archaeological and cultural resources.	• Repairs and other future activities will only occur within previously disturbed portions of the area of potential effects (APE) which have been previously assessed by the QMA. • Adherence to the QMA recommended avoidance buffers would remain in effect during operations.	Cultural Resources

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
Construction; Decommissioning	Onshore Project Area	Short-term visual impacts during offshore construction activities. Short-term visual impacts during onshore construction activities.	• Dominion Energy would implement a Fugitive Dust Plan to minimize dust and visual pollution. The Onshore Project area would be maintained free of debris, trash, and waste to the extent possible during construction, and areas temporarily disturbed during construction would be restored to the conditions required by state and/or local permits.	Visual Resources
O&M	Onshore Project Area	Long-term visual effects from the presence of Onshore Project Components.	• Dominion Energy would evaluate vegetative screening to help screen views of the Onshore Substation and Switching Station and design the lighting of the Onshore Substation and Switching Station to reduce light pollution where feasible (e.g., downward lighting, motion-detecting sensors). • Dominion Energy would consult with the U.S. Navy, City of Virginia Beach, and the City of Chesapeake to evaluate color treatment and other visual impact mitigations for Switching Station and the Onshore Substation.	Visual Resources
Construction; Decommissioning	Onshore Project Area	Short-term increase in spending on construction materials and services and related economic activity in the region (Hamptons Road area) and state (Virginia). Short-term increase in construction-related employment and income in the region and state. Short-term increase in tax revenues for state and local governments. Short-term increase in the demand for housing. Potential short-term effects to property values.	• Project-related vessels transiting to the Lease Area would be consistent with existing vessel traffic off the coast of Virginia. • Dominion Energy would coordinate with local fire and police departments as needed throughout construction of the Project.	Demographics

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		Short-term increase in the demand for public services.		
O&M	Onshore Project Area	Long-term increase in spending on O&M and related economic activity in the region. Long-term increase in O&M-related employment and income in the region. Long-term increase in tax revenues for state and local governments. Long-term increase in demand for housing. Long-term increase in the demand for public services. Long-term change in property values due to O&M activities.	• Dominion Energy would coordinate with local fire and police departments as needed throughout operation of the Project.	Demographics
Construction; Decommissioning	Onshore Project Area	Short-term increase in construction vehicle traffic and activity. Temporary shortage of affordable temporary housing due to increased demand. Short-term increase in tax revenues for state and local governments. Short-term increase in construction-related employment and income in the region and state. Short-term increase in the demand for public services.	• Dominion Energy would coordinate with local fire and police departments as needed throughout construction of the Project. • The Project would use existing roads, ROWs, and infrastructure where possible. • Communications and outreach to foster the meaningful public participation of potential environmental justice communities is ongoing to better understand how communities may be affected and identify related mitigation measures.	Environmental Justice
O&M	Onshore Project Area	Decrease in availability of long-term housing due to in-migration of operations workers. Long-term presence of Offshore Project Components in the Lease	• Dominion Energy has attempted to site the Offshore Project area where it would have the least impact on commercial fishing. Further, the addition of Offshore Project Components (WTGs and scouring) would facilitate natural reef building which can	Environmental Justice

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		Area (e.g., wind turbine generators [WTGs] and Offshore Substations). Long-term presence of Onshore Project Components. An increase in O&M-related vehicle traffic. Long-term increase in local and regional government tax revenues. Long-term increase in O&M-related employment and income in the region. Long-term increase in the demand for public services.	increase overall species abundance and diversity. This may have positive benefits for the fishing industries in the area. • Dominion Energy is committed to coexistence with commercial and recreational fishing and is conducting extensive outreach and engagement with the fishing community as part of this Project, which will assist in identifying additional environmental justice populations that may rely on the Offshore Project area for fishing and who may require additional engagement. • Dominion Energy would coordinate with local fire and police departments as needed throughout the operations period of the Project.	
Construction; Decommissioning	Onshore Project Area	Short-term disruption to adjacent land uses at the Cable Landing Location and along the Onshore Export Cable Route and Interconnection Cable Route Corridors, including recreational uses associated with the SSMR property within the Onshore Export Cable Route Corridor. Direct disturbance during construction and installation of the Onshore Export Cable Route, Switching Station, Interconnection Cable Route, and Onshore Substation.	• A schedule showing the months when construction would occur is provided in Section 1, Table 1.1-3. • To avoid disruption of recreational uses, installation of the Onshore Export Cable would be coordinated with localities and stakeholders to avoid and minimize potential impacts on recreational and tourism uses to the extent practicable. Once construction is complete, the roads and parking lots would be restored to previous conditions. • To further minimize potential construction effects, adjacent landowners would be provided timely information regarding the planned construction activities and schedule, and work also would be coordinated with appropriate regulatory agencies. Dominion Energy would provide regular updates to the local community through social media, public	Land Use and Coastal Infrastructure

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			notices, and/or other appropriate communications tools. • Temporary safety zones would be implemented around construction activities to ensure the safety of the public. • Dominion Energy would provide regular updates to the local community through social media, public notices, and/or other appropriate communications tools. • Any additional temporary staging areas necessary to support onshore construction activities are anticipated to be located on either previously disturbed lands or within the area of disturbance for construction, to the extent practicable. • During construction, the Project would additionally involve temporary construction laydown area(s). The portion of the parcel not required for long-term operation of the Onshore Substation would be restored to previous conditions once construction is complete.	
O&M	Onshore Project Area	Long-term conversion of land for the access to facilities of Onshore Export Cable, Switching Station, Interconnection Cable Route, and the Onshore Substation.	• If necessary, permitting, regulatory actions, and other actions would be taken in the future for development of the Interconnection Route as part of the Preferred Alternative if direct land use displacement, land acquisitions, or re-zonings are required. • Dominion Energy intends to coordinate with permitting authorities and stakeholders to identify what, if any, land use may continue within land acquired for the Interconnection Route, as well as any additional mitigation measures that may be appropriate related to impacts on local land use and resources	Land Use and Coastal Infrastructure

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			during construction and operations and maintenance.	
Construction; Decommissioning	Onshore Project Area	Short-term increase in Project-related construction vehicle traffic, including workforce commuting trips. Temporary modification of roadway traffic patterns due to lane closures, street closures, and travel restrictions (e.g., one-way traffic, alternating traffic).	• Dominion Energy would develop a Traffic Management Plan (TMP) in coordination with, and approved by, the affected federal, state, and local agencies as applicable to offset any anticipated traffic-related impacts associated with increased vehicle demand during construction. As part of the preparation of the TMP, Dominion Energy would coordinate with local and state transportation and public works departments to identify any planned roadway improvements that may impact traffic operations within the Transportation and Traffic geographic analysis area. The TMP would include, but not be limited to, the development of vehicular travel routes to and from the Project construction site; provision of highly visible markings, signage, and lighting of active construction sites; provision of sufficient on-site parking; and implementation of temporary, localized construction zones to minimize areas or sections of road closure. • Dominion Energy would provide regular updates to the local community through social media, public notices, and other appropriate communications methods and schedule construction activities to minimize impacts on the summer peak tourism season to the extent practicable where appropriate and as deemed necessary by local authorities.	Land Use and Coastal Infrastructure
O&M	Onshore Project Area	An increase in operation and maintenance vehicle traffic, including workforce commuting trips.	• Dominion Energy would develop a TMP that would offset any anticipated traffic-related impacts associated with increased vehicle	Land Use and Coastal Infrastructure

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			demand during construction in the same manner as described above for Project-related construction vehicle traffic.	
Construction; Decommissioning	Offshore and Onshore Project Area	Short-term displacement of marine users due to the establishment of safety zones around Project-related vessels and structures. Short-term displacement of recreational users onshore due to the establishment of safety zones around Project-related equipment and construction areas. Minor and temporary increases to local traffic during construction for the Onshore Project area.	• Dominion Energy would establish a Project-specific website to share information about the Project's construction progress with the community and to give guidance on the construction activities and how they may affect marine traffic in the area. Dominion Energy would also issue specific local notices to mariners (LNTMs) in coordination with USCG throughout the construction period. To ensure the safety of commercial and recreational mariners, temporary vessel restrictions may reduce access within the temporary Wind Turbine Generator work areas, the nearshore HDD area, and along the offshore installation corridor during construction. As appropriate, these areas would be marked and illuminated in accordance with USCG requirements and monitored by a security boat available to assist local mariners. • Dominion Energy would coordinate shoreline construction activities with localities and stakeholders to avoid and minimize conflicts with users to the extent practicable. In addition, Dominion Energy intends on coordinating construction activities with the Virginia SMR to avoid and minimize conflicts with recreational uses to the extent practicable. • To avoid disruption of recreational uses, installation of the Onshore Export Cable would be coordinated with localities and stakeholders to avoid and minimize potential impacts on recreational and tourism uses to	Recreation and Tourism

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			the extent practicable. Once construction is complete, the roads and parking lots would be restored to previous conditions. • Dominion Energy intends to coordinate construction activities to minimize impacts on the extent practicable and to provide regular updates to the local community through social media, public notices, and/or other appropriate communications tools. • Dominion Energy would not block roadways to the SMR vehicular traffic for long periods of time for onshore construction activities.	
O&M	Offshore and Onshore Project Area	Long-term modification of existing marine uses in the Offshore Project area. Long-term displacement of recreational activities in the Onshore Project area.	• Dominion Energy would notify recreational mariners of all non-emergency Project-related maintenance activities on its website and social media sites and work in accordance with the USCG requirements. When possible, Dominion Energy would schedule and plan maintenance activities to minimize impact and interruption to recreation and tourism activities in the Project Area. In order to maintain navigational safety for marine recreational users, Dominion Energy would place a radar beacon (RACON; radar responder) at the WTG site and light, individually mark, and maintain Private Aids to Navigation (PATON) per USCG Aids to Navigation (ATON) requirements. • When possible, Dominion Energy would schedule and plan maintenance activities to minimize impact and interruption to recreation and tourism activities in the Project Area.	Recreation and Tourism

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
Construction; Decommissioning	Offshore Project Area	Potential for temporary displacement of fishing activity. Potential for temporary disturbance to local commercial fish species. Potential for risk of gear entanglements on partially installed structures. Potential for increase in Project-related vessel traffic.	• Closures would be limited to discrete segments of the Offshore Project Components that would have restricted access on a temporary basis while construction is active. • Dominion Energy would work with fishermen and the head of marine construction operations to review operational planning and schedules in order to identity any areas where fishing operations may be temporarily displaced. Dominion Energy would also work with the USCG and make notices of area closures publicly available through LNTMs posted to Dominion Energy's website and social media. • Dominion Energy would work with those affected fishermen to minimize any potential impact. Dominion Energy would remain committed to coexistence with the commercial and recreational fishing industries. • Dominion Energy is planning to utilize underwater noise mitigation (e.g., bubble curtain or equivalent) to mitigate temporary impacts of pile driving on marine species. • The Fisheries Communications Plan (COP Appendix V; Dominion Energy 2022) developed for the Project, combined with the direct outreach activities anticipated during construction, would provide the fishing community with advance notice, prior to formal LNTM, describing the extent and duration of construction activities and locations of all fixed structures within the Offshore Project area, including partially installed structures within the safety zone.	Commercial and Recreational Fishing

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• For the safety of both mariners and Project technicians, Dominion Energy would establish safety zones around construction activities as applicable. Dominion Energy would notify all mariners via LNTM of the presence and location of partially installed structures. • Dominion Energy would ensure that all Project-related vessels follow appropriate navigational routes and communicate to other mariners via LNTM and/or radio communications to mitigate risks to the commercial and recreational fishing industries as well as other mariners.	
O&M	Offshore Project Area	Potential for loss of access to traditional fishing grounds, or temporary displacement of fishing activity during maintenance activities. Potential for modification of habitat and displacement of target commercial species. Potential for increased Project-related vessel traffic. Potential for positive beneficial increases in species diversity and abundance. Potential for impacts on marine radar/navigation instruments due to the presence of WTGs.	• Dominion Energy would continue to coordinate with existing commercial fishermen that utilize the Offshore Project area (largely using fixed gear [pots/traps and gillnets]) and emerging fisheries to ensure they can deploy and recover their gear safely during operations and maintenance. • Dominion will also ensure that the operation WTGs and Offshore Substations comply with USCG safety zones (should they become effective during the operational life of the Project) when offshore service vessels/crew transfer vessels are present and/or WTG technicians are aboard Project components, to ensure safe working conditions and safe vessel operation. • Dominion will also ensure that the operational wind turbine generators and Offshore Substations include adequate marking and lighting in accordance with USCG approved measures to ensure safe vessel operation.	Commercial and Recreational Fishing

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy is in the process of establishing partnerships with local and regional experts from institutions, including the Virginia Institute of Marine Science and the Virginia Aquarium to facilitate preparation of pre- and post-construction monitoring plans, driven by the stakeholders' interests and built upon existing data. • Dominion Energy would continue to ensure that all Project-related vessels follow appropriate navigational routes and other USCG "rules of the road," communicate via USCG LNTM, issue regular mariner updates and/or direct offshore radio communications to help mitigate risks to the commercial and recreational fishing industry as well as other mariners. • Dominion Energy would leverage its experience on this topic with the CVOW Pilot Project and would work with the USCG and the local fishing community to refine site-specific controls or settings that may help to mitigate potential interference of marine radar associated with the presence of Offshore Project Components.	
Construction; Decommissioning	Offshore Project Area	Temporary displacement of existing regional vessel traffic. Vessel allision risk with partially installed structures.	• Project-related vessel traffic would follow existing transit routes to the extent practicable and Dominion Energy would coordinate with USCG and local port authorities during the construction stage of the Project. • Project-related construction and vessel activities would be communicated to the maritime community by use of LNTMs in coordination with the USCG throughout the construction stage. This information would	Navigation

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			also be posted on Dominion Energy's social media pages and website. • The Project will require operational Automated Identification System (AIS) on all vessels associated with the construction, operation, and decommissioning of the Project, pursuant to USCG and AIS carriage requirements. AIS will be required to monitor the number of vessels and traffic patterns for analysis and compliance with vessel speed requirements. • To reduce the risks of vessel allision, Dominion Energy would mark potential hazards in coordination with USCG. • Dominion Energy would develop LNTMs that would include locations of partially installed structures. In addition, Dominion Energy would advise mariners of safety zones around all Offshore Project Components under construction and construction-related activities for the safety of mariners.	
O&M	Offshore Project Area	Long-term displacement of maritime vessels due to new fixed structures. Temporary diversion of maritime vessel traffic because of occasional O&M activities to the Offshore Project Components. Long-term vessel collision risk. Long-term vessel allision risk with WTGs and Offshore Substations.	• The WTG layout was designed to have a 397-foot (121-meter) buffer to the edges of the Lease Area to ensure that no structures would be outside of the Lease Area including the blades. • Dominion Energy would provide information to the USCG for publication in the LNTM, which provides schedules and locations for all O&M activities, and would continue to coordinate with the USCG. • All Offshore Project Components (i.e., infrastructure associated with the Project) would be charted on the relevant nautical charts (electronic and print) in conjunction with NOAA Fisheries. Dominion Energy	Navigation

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			would seek to have infrastructure charted prior to the start of the construction stage. This includes precise, planned Offshore Export Cable location information provided in spreadsheet and geographic information system formats. • Dominion Energy would follow all BOEM International Association of Marine Aids to Navigation and Lighthouse Authorities, and USCG lighting and marking requirements for each WTG.	
Construction; Decommissioning	Offshore Project Area	Short-term increase in Project-related vessel traffic due to the construction of Offshore Project Components. Short-term adjustments to military vessel traffic during offshore construction activities.	• Dominion Energy would schedule and track Project-related vessels to best manage congestion and traffic flow in coordination with the USCG, DoD, and other national security stakeholders. • Where practical, Project vessels would utilize transit lanes, fairways, and predetermined passage plans consistent with existing waterway uses. • Dominion Energy would continue to communicate and engage with key national security stakeholders, including the USCG, DoD, and others, to coordinate installation activities. • USCG would publish LNTMs and broadcast LNTMs to inform mariners and aviators of Project activities in the area. • Dominion Energy would publish an operations plan on the Project website to inform mariners and other interested parties on what work is being done in the Offshore Project area.	Other Uses

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy would establish and enforce safety zones around active construction areas. • Should USCG safety zone authorities not extend beyond 12 nautical miles (22 kilometers) at the time of construction, Dominion Energy would utilize a combination of safety vessels, LNTMs, and Convention on the International Regulations for Prevention of Collisions at Sea to promote both awareness of these activities and the safety of the construction equipment and personnel. Project vessels will also send and receive AIS signals for awareness and collision avoidance.	
Construction; Decommissioning	Onshore Project Area	Short-term disturbance at the Cable Landing Location and along the Onshore Export Cable Corridor.	• Once construction is complete, the lands, roads, and parking lots would be restored to previous conditions. • To minimize potential construction effects on DoD activities, DoD would be provided timely information.	Other Uses
O&M	Offshore Project Area	Long-term modification of existing waterway use. Long-term presence of new fixed structures (e.g., Offshore Project Components) in the Offshore Project area. Occasional diversion of national security maritime vessel traffic due to short-term inspection, repair, or replacement of Offshore Export Cables or Inter-Array Cables, and other such O&M activities.	• Dominion Energy may need to implement temporary safety zones (e.g., foundation locations and/or cable installation vessels) during O&M activities. • Dominion Energy would maintain regular communications and updates with all key national security stakeholders on timing and locations of maintenance activities in order to avoid, minimize, and mitigate impacts. • Dominion Energy would ensure that Wind Turbine Generators and Offshore Substations are properly marked and lighted in accordance with FAA Advisory Circular 70/7460-1M (FAA 2020), BOEM's Proposed Guidelines for Providing Information on	Other Uses

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Lighting and Marking of Structures Supporting Renewable Energy Development (BOEM 2021), the International Association of Marine Aids' (IALA's) Navigation and Lighthouse Authorities Recommendation O-139 on the Marking of Man-Made Offshore Structures (IALA 2013), and referencing COP Appendix T, *Obstruction Evaluation and Additional Analysis*. • Dominion Energy would provide as-built information to NOAA) National Ocean Service to support necessary updates to navigation charts in coordination with other stakeholders as needed. • Dominion Energy would work with USCG to facilitate training exercises within the Offshore Project area as requested. Dominion Energy would also provide regular communications and updates with key national security stakeholders on Project-related activities that may affect national security operations. • Dominion Energy would employ helicopters for O&M activities for the transfer of personnel and materials to the Offshore Project area. Dominion Energy would control Project vessel and helicopter movements through the Control Center to minimize vessel encounters during training operations in and near the Offshore Project area. • Dominion Project vessels will also send and receive AIS signals for awareness and collision avoidance. • Dominion Energy would communicate with key national stakeholders on the timing and location of O&M activities. Dominion Energy	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			would also follow the USCG establishment of safety zones around O&M activities.	
O&M	Offshore Project Area	Long-term conversion of land for the access to facilities (e.g., Cable Landing Location) in the Onshore Project area.	• Dominion Energy intends to coordinate with the SMR to identify what, if any, land use may continue within land acquired or leased for the Cable Landing Location, as well as any additional mitigation measures that may be appropriate related to impacts on DoD activities and resources during O&M.	Other Uses
Construction; Decommissioning	Offshore Project Area	Short-term restricted access to sand resources and dredge disposal sites due to the implementation of safety zones. Short-term disturbance to seafloor, including existing submarine cables during construction. Short-term increase in vessel traffic during construction. Short-term noise impacts during construction.	• Dominion Energy would provide advance notice of construction and maintenance activities through LNTMs and broadcast LNTMs as well as on the Project website. • Dominion Energy would monitor and control Project vessel movements to minimize impacts on sand-borrowing and dredge spoil dumping activities. • Because safety zones would be implemented during construction activities, marine users are expected to be outside of this potential area of effect and are, therefore, not anticipated to be affected by this temporary disturbance in the Offshore Project area, other than temporarily being restricted from accessing these areas during construction activities. • Installation of the Offshore Export Cables in proximity to the four existing submarine cables (BRUSA fiber optic cable, MAREA fiber optic cable, DUNANT fiber optic cable, and Commercial Virginia Offshore Wind Pilot Export Cable) would be coordinated with these asset owners to avoid impacts on any of these critical seabed assets. • Dominion Energy would schedule and track Project-related vessels to best manage	Other Uses

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			congestion and traffic flow in coordination with USCG and other maritime stakeholders. • All Dominion Project vessels will send and receive AIS signals for awareness and collision avoidance. • Where practical, Project vessels would utilize traffic separation schemes, fairways (should they be developed), and predetermined passage plans consistent with existing waterway uses. • The USCG would publish LNTMs and broadcast LNTMs to inform mariners of Project activities in the area. Additionally, a Project website with the operations plan would be updated so that mariners know what work is being done in the various offshore Project locations. • During pile driving of WTG Monopile Foundations, Dominion Energy would apply monitoring and exclusion zones as appropriate to underwater noise assessments and impact thresholds. • Construction personnel would employ soft starts and shutdown procedures as appropriate to thresholds of noise-emitting survey equipment; soft starts would last 30 minutes at the onset of pile driving. • Dominion Energy would use commercially and technically available noise-reducing technologies as appropriate and provide marine mammal sighting and reporting training for each specific stage of construction to emphasize individual responsibility for marine mammal awareness and protection.	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			• Dominion Energy would ensure continued engagement with regulatory agencies regarding potential best practices for noise mitigation.	
O&M	Offshore Project Area	Short-term restricted access in the vicinity of inspection, survey, maintenance, or repair. Long-term restricted access for inspection, maintenance, and repairs to existing cables.	• Should this activity be conducted near the Atlantic Ocean Channel and shipping lanes, Dominion Energy would schedule and control Project-related vessels to best manage congestion and traffic flow in coordination with USCG, as well as DoD exercises and training activities, as appropriate. • Dominion Energy has proactively sited the Offshore Export Cables to avoid active sand borrow sites and disposal sites to the extent practicable in an effort to avoid impacts. • Dominion Energy would work with the appropriate federal and state agencies to safeguard the export cable assets.	Other Uses
Construction; Decommissioning	Onshore and Offshore Project Area	Short-term interference with airspace and aviation radar systems due to the temporary presence of construction equipment onshore and offshore as well as transportation of Project Components to the Project Area.	• Notice Criteria check (14 CFR § 77.9) and/or additional airspace and aviation radar system assessment would be performed to determine whether there are potential airspace impacts and FAA filing is required during the storage or transit of Project materials and Offshore Project Components. FAA coordination for the onshore portion of the Project will occur following further detailed engineering of structures, when structure heights have been determined. It is also possible that the DoD would request to be informed through the Informal Review Process for the transit of large materials. Further coordination with the DoD will occur as a result of the findings of the Informal Review Process and any notifications	Other Uses

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			requested by the DoD will be applied to the Project as needed. • Dominion Energy would be in direct communication with applicable agencies and personnel to alert the appropriate parties to planned construction movements and actions. All WTG Components and construction equipment would be properly lighted and marked in accordance with FAA's Advisory Circular 70/7460-1M within FAA jurisdiction and beyond, or other methods as deemed required during consultation and as applicable.	
Operations	Onshore and Offshore Project Area	Long-term interference with regulated airspace due to the presence of fixed structures (Onshore and Offshore Project Components). Long-term interference with regulated aviation radar systems. Long-term interference with military radar operations. Long-term interference with high-frequency radar operations.	• Dominion Energy would coordinate with the FAA to make this required change to the airspace as necessary. In addition, all WTGs would be properly lighted and marked in accordance with FAA's Advisory Circular number 70/7460-1M within FAA jurisdiction and beyond. • Dominion Energy would continue to engage and coordinate with applicable military contacts to assess and address potential impacts as needed. • Dominion Energy would continue to engage and coordinate with applicable owners and operators of these high-frequency radar systems to assess and address potential impacts as needed.	Other Uses
Construction; Decommissioning	Offshore Project Area	Short-term change in Project-related vessel traffic. Short-term displacement of marine users due to the establishment of safety zones around Project-related vessels and structures.	• Dominion Energy would take measures to minimize impacts associated with construction vessels, including transiting within existing traffic lanes to the extent feasible, regular communication with stakeholders regarding Project activity, completing construction as quickly as is	Other Uses

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
		Short-term interference with access to nearshore and beach area. Short-term increases in turbidity and water quality. Short-term disturbance and displacement of local marine wildlife.	safely practicable, and limiting vessel activity to necessary transits. • Dominion Energy would continue to coordinate with appropriate personnel from the Navy to ensure construction activities do not conflict with training and testing activities within the Virginia Capes Range Complex, including transits to/from such activities. • Dominion Energy would minimize displacement of other marine users by establishing restricted zones in portions of the Offshore Project area only for the time required to complete the work. • Dominion Energy would provide frequent and regular updates of construction activity and implemented safety zones to the local marine community through the Project website, social media, and the LNTMs and by actively engaging other stakeholders. Impacts on other marine and coastal uses will be short term and localized. • Dominion Energy would minimize the size of safety areas and duration of exclusion to reduce impacts on other users of the area. Dominion Energy is committed to keeping the coastal community informed by providing advance notice of area restrictions and regular updates to the public via local news, on-site signage, social media, and other suitable information outlets. • All Dominion Energy vessel crews would be familiar with practices to avoid and minimize accidental spills as detailed in Dominion Energy's Marine Trash and Debris Prevention Training, Emergency Response	

Project Stage	Location	Impact	Avoidance, Minimization and Mitigation	Resource Area Mitigated
			Plan, and Oil Spill Response Plan (see Appendix Q). • Dominion Energy would avoid and minimize disturbance of wildlife, particularly endangered sea turtles and marine mammals. Avoidance, minimization, and mitigation measures include soft-start pile driving, dedicated marine mammal and sea turtle observers on vessels, and other activities.	
O&M	Offshore Project Area	Long-term modification of existing uses. Long-term changes in vessel traffic. Increase in diving, snorkeling, and other tourism in the wind farm in the Offshore Project area. Increase in recreational fishing (including tournaments) near the WTGs as artificial reefs become established on the Foundations.	• Dominion Energy would minimize and mitigate impacts on other users by notifying local marine users when any major repairs are planned and reducing any necessary restriction to the extent that safety precautions allow. The crew transfer and O&M vessels would use established transit lanes and will not substantially restrict other uses. No measurable impact of vessel traffic is expected.	Other Uses

Table H-2 Potential Mitigation and Monitoring Measures Analyzed

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
NHPA Section 106 Mitigation Measures				
1	C	Marine cultural resources avoidance or additional investigation	Dominion Energy must establish and comply with requirements for all protective buffers recommended by the Qualified Marine Archaeologist for each marine cultural resource (i.e., archaeological resource and ancient submerged landform feature) based on the size and dimension of the resource. Protective buffers extend outward from the maximum discernable limit of each resource and are intended to minimize the risk of disturbance during construction.	Cultural Resources – Marine Archaeological Resources
2	C	Ancient submerged landform feature monitoring program and post-review discovery plan	Dominion Energy must establish and implement a monitoring program and post-review discovery plan to review impacts of construction or any seabed-disturbing activities on ancient submerged landform feature locations if such landforms will not be avoided and will be impacted.	Cultural Resources – Marine Archaeological Resources
3	C	Terrestrial archaeological resource avoidance or additional investigation	Dominion Energy must avoid any identified terrestrial archaeological resource. If avoidance of a resource is not feasible, additional investigations must be conducted for the purpose of determining eligibility for listing in the NRHP. If any such resource is determined eligible for listing, Dominion Energy must conduct Phase III data recovery investigations for the purposes of resolving adverse effects in accordance with 36 CFR 800.6.	Cultural Resources – Terrestrial Archaeological Resources
4	C	Terrestrial archaeological resource monitoring program and post-review discovery plan	Dominion Energy must conduct archaeological monitoring during onshore construction in areas identified as having high or moderate archaeological sensitivity and must prepare and implement a terrestrial archaeological post-review discovery plan.	Cultural Resources – Terrestrial Archaeological Resources
5	Prior to C	Historic Property Treatment Plans	BOEM, with the assistance of Dominion Energy, will develop and implement one or multiple Historic Property Treatment Plans (HPTPs) to address impacts on historic properties that cannot be avoided. The HPTP(s) will be developed in consultation with property owners and consulting parties who have demonstrated interest in specific historic properties. The HPTP(s) will provide details and specifications for mitigation measures to resolve adverse visual effects, including cumulative effects,	Cultural Resources

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			on aboveground historic properties.	
BOEM-Proposed Mitigation and Monitoring Measures in the NMFS BA				
1	C, O&M, D	Incorporate LOA requirements	The measures required by the final MMPA LOA would be incorporated into COP approval, and BOEM and/or Bureau of Safety and Environmental Enforcement (BSEE) would monitor compliance with these measures.	Marine Mammals
2	C, O&M	PAM Plan	BOEM and USACE would ensure that Dominion Energy prepares a PAM Plan that describes all proposed equipment, deployment locations, detection review methodology and other procedures, and protocols related to the proposed uses of PAM for mitigation and long-term monitoring. This plan would be submitted to NMFS and BOEM for review and concurrence at least 120 days prior to the planned start of activities requiring PAM.	ESA-listed Fish, Marine Mammals, and Sea Turtles
3	C	Pile-Driving Monitoring Plan	BOEM would ensure that Dominion Energy prepare and submit a *Pile Driving Monitoring Plan* to NMFS for review and concurrence at least 90 days before start of pile driving. The plan would detail all plans and procedures for sound attenuation as well as for monitoring ESA-listed whales and sea turtles during all impact and vibratory pile driving. The plan would also describe how BOEM and Dominion Energy would determine the number of whales exposed to noise above the Level B harassment threshold during pile driving with the vibratory hammer to install the cofferdam at the sea to shore transition. Dominion Energy would obtain NMFS' concurrence with this plan prior to starting any pile driving.	ESA-listed whales and sea turtles
4	C	PSO coverage	BOEM and USACE would ensure that PSO coverage is sufficient to reliably detect marine mammals and sea turtles at the surface in the identified clearance and shutdown zones to execute any pile-driving delays or shutdown requirements. If, at any point prior to or during construction, the PSO coverage that is included as part of the Proposed Action is determined not to be sufficient to reliably detect ESA-listed whales and sea turtles within the clearance and shutdown zones, additional PSOs and/or platforms would be deployed. Determinations prior to construction would be based on review of the Pile Driving Monitoring Plan. Determinations during construction would be based on review of the weekly pile-driving reports and other information, as appropriate.	ESA-listed Fish, Marine Mammals, and Sea Turtles
5	C	Sound field verification	BOEM and USACE would ensure that if the clearance and/or shutdown zones are expanded due to the verification of sound fields from Project activities, PSO coverage is sufficient to reliably monitor the expanded clearance and/or shutdown zones. Additional observers would be deployed on additional platforms for every 1,500 meters that a clearance or shutdown zone is expanded beyond the distances modeled prior to verification.	ESA-listed Fish, Marine Mammals, and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
6	C	Shutdown zones	BOEM and USACE may consider reductions in the shutdown zones for sei, fin, or sperm whales based upon sound field verification of a minimum of three piles; however, BOEM/USACE would ensure that the shutdown zone for sei whales, fin whales, blue whales, and sperm whales is not reduced to less than 3,280 feet (1,000 meters), or 1,640 feet (500 meters) for sea turtles. No reductions in the clearance or shutdown zones for North Atlantic right whales would be considered regardless of the results of sound field verification of a minimum of three piles.	ESA-listed Marine Mammals
7	C	General project development	BOEM will require that Dominion Energy comply with all the Project Design Criteria and Best Management Practices for Protected Species at https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%2011222021.pdf that implement the integrated requirements for threatened and endangered species resulting from the June 29, 2021, programmatic consultation under the ESA, revised September 1, 2021. This requirement also applies to non-ESA-listed marine mammals that are found in that document. Consultation conditions occurring in state waters outside of BOEM jurisdiction may apply to co-action agencies issuing permits and authorizations under this consultation	ESA-listed Fish, Marine Mammals, and Sea Turtles
8	C	Monitoring zone for sea turtles	BOEM and USACE would ensure that Dominion Energy monitors the full extent of the area where noise would exceed the root-mean-square SPL 175 dB re 1 µPa behavioral disturbance threshold for turtles for the full duration of all pile-driving activities and for 30 minutes following the cessation of pile-driving activities, and record all observations in order to ensure that all take that occurs is documented.	Sea Turtles
9	C, O&M, D	Lookout for sea turtles and reporting	a. For all vessels operating north of the Virginia/North Carolina border, between June 1 and November 30, Dominion Energy would have a trained lookout posted on all vessel transits during all phases of the Project to observe for sea turtles. The trained lookout would communicate any sightings, in real time, to the captain. b. For all vessels operating south of the Virginia/North Carolina border, year-round, Dominion Energy would have a trained lookout posted on all vessel transits during all phases of the Project to observe for sea turtles. The trained lookout would communicate any sightings, in real time, to the captain. This requirement is in place year-round for any vessels transiting south of Virginia, as sea turtles are present year-round in those waters. c. The trained lookout would monitor https://seaturtlesightings.org/ prior to each trip and report any observations of sea turtles in the vicinity of the planned transit to all vessel operators/captains and lookouts on duty that day. d. The trained lookout would maintain a vigilant watch and monitor a Vessel Strike Avoidance Zone (1,640 feet [500 meters]) at all times to maintain minimum	Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			separation distances from ESA-listed species. Alternative monitoring technology (e.g., night vision, thermal cameras) would be available to ensure effective watch at night and in any other low visibility conditions. If the trained lookout is a vessel crew member, this would be their designated role and primary responsibility while the vessel is transiting. Any designated crew lookouts would receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements. e. If a sea turtle is sighted within 328 feet (100 meters) or less of the operating vessel's forward path, the vessel operator would slow down to 4 knots (7 kph) (unless unsafe to do so) and then proceed away from the turtle at a speed of 4 knots (7 kph) or less until there is a separation distance of at least 328 feet (100 meters) at which time the vessel may resume normal operations. If a sea turtle is sighted within 164 feet (50 meters) of the forward path of the operating vessel, the vessel operator would shift to neutral when safe to do so and then proceed away from the turtle at a speed of 4 knots (7 kph). The vessel may resume normal operations once it has passed the turtle. f. Vessel captains/operators would avoid transiting through areas of visible jellyfish aggregations or floating sargassum lines or mats. In the event that operational safety prevents avoidance of such areas, vessels would slow to 4 knots (7 kph)_while transiting through such areas. g. All vessel crew members would be briefed in the identification of sea turtles and in regulations and best practices for avoiding vessel collisions. Reference materials would be available aboard all Project vessels for identification of sea turtles. The expectation and process for reporting of sea turtles (including live, entangled, and dead individuals) would be clearly communicated and posted in highly visible locations aboard all Project vessels, so that there is an expectation for reporting to the designated vessel contact (such as the lookout or the vessel captain), as well as a communication channel and process for crew members to do so. h. The only exception is when the safety of the vessel or crew necessitates deviation from these requirements on an emergency basis. If any such incidents occur, they would be reported to NMFS within 24 hours. i. If a vessel is carrying a PSO or trained lookout for the purposes of maintaining watch for North Atlantic right whales, an additional lookout is not required, and this PSO or trained lookout would maintain watch for whales and sea turtles. j. Vessel transits to and from the Offshore Project area, that require PSOs, will	

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			maintain a speed commensurate with weather conditions and effectively detecting sea turtles prior to reaching the 328-foot (100-meter) avoidance measure.	
10	C, O&M, D	Sampling gear	All sampling gear would be hauled at least once every 30 days, and all gear would be removed from the water and stored on land between survey seasons to minimize risk of entanglement.	ESA-listed Fish, Marine Mammals, and Sea Turtles
11	C, O&M, D	Gear identification	To facilitate identification of gear on any entangled animals, all trap/pot gear used in the surveys would be uniquely marked to distinguish it from other commercial or recreational gear. Using black and yellow striped duct tape, place a 3-foot-long (0.9-meter-long) mark within 2 fathoms of a buoy. In addition, using black and white paint or duct tape, place three additional marks on the top, middle and bottom of the line. These gear marking colors are proposed as they are not gear markings used in other fisheries and are therefore distinct. Any changes in marking would not be made without notification and approval from NMFS.	ESA-listed Fish, Marine Mammals, and Sea Turtles
12	C, O&M, D	Lost survey gear	If any survey gear is lost, all reasonable efforts that do not compromise human safety would be undertaken to recover the gear. All lost gear would be reported to NMFS (mailto:nmfs.gar.incidental-take@noaa.gov) within 24 hours of the documented time of missing or lost gear. This report would include information on any markings on the gear and any efforts undertaken or planned to recover the gear.	ESA-listed Fish, Marine Mammals, and Sea Turtles
13	C, O&M, D	Marine debris awareness training	Dominion Energy would ensure that vessel operators, employees, and contractors engaged in offshore activities pursuant to the approved COP complete marine trash and debris awareness training annually. The training consists of two parts: (1) viewing a marine trash and debris training video or slide show (described below); and (2) receiving an explanation from management personnel that emphasizes their commitment to the requirements. The marine trash and debris training videos, training slide packs, and other marine debris related educational material may be obtained at https://www.bsee.gov/debris or by contacting BSEE. The training videos, slides, and related material may be downloaded directly from the website. Operators engaged in marine survey activities would continue to develop and use a marine trash and debris awareness training and certification process that reasonably assures that their employees and contractors are in fact trained. The training process would include the following elements: • Viewing of either a video or slide show by the personnel specified above; • An explanation from management personnel that emphasizes their commitment to the requirements;	ESA-listed Fish, Marine Mammals, and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			• Attendance measures (initial and annual); and • Recordkeeping and the availability of records for inspection by U.S. Department of the Interior (DOI). By January 31 of each year, Dominion Energy would submit to DOI an annual report that describes its marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year. Dominion Energy would send the reports via email to BOEM (at renewable_reporting@boem.gov) and to BSEE (at marinedebris@bsee.gov).	
14	C, O&M, D	Training	At least one of the survey staff onboard the trawl surveys and ventless trap surveys would have completed Northeast Fisheries Observer Program (NEFOP) observer training (within the last 5 years) or other training in protected species identification and safe handling (inclusive of taking genetic samples from Atlantic sturgeon). Reference materials for identification, disentanglement, safe handling, and genetic sampling procedures would be available on board each survey vessel. BOEM would ensure that Dominion Energy prepares a training plan that addresses how this requirement would be met and that the plan is submitted to NMFS in advance of any trawl or trap surveys. This requirement is in place for any trips where gear is set or hauled.	Atlantic Sturgeon
15	C, O&M, D	Sea turtle disentanglement	Vessels deploying fixed gear (e.g., pots/traps) would have adequate disentanglement equipment (i.e., knife and boathook) onboard. Any disentanglement would occur consistent with the Northeast Atlantic Coast Sea Turtle Disentanglement Network (STDN) Disentanglement Guidelines at https://www.reginfo.gov/public/do/DownloadDocument?objectID=102486501 and the procedures described in *Careful Release Protocols for Sea Turtle Release with Minimal Injury* (NOAA Technical Memorandum 580; https://repository.library.noaa.gov/view/noaa/3773).	Sea Turtles
16	C, O&M, D	Sea turtle/ESA-fish identification and data collection	Any sea turtles or ESA-fish caught and/or retrieved in any fisheries survey gear would first be identified to species or species group. Each ESA-listed species caught and/or retrieved would then be properly documented using appropriate equipment and data collection forms. Biological data, samples, and tagging would occur as outlined below. Live, uninjured animals should be returned to the water as quickly as possible after completing the required handling and documentation. a. The Sturgeon and Sea Turtle Take Standard Operating Procedures would be followed (https://media.fisheries.noaa.gov/dammigration/sturgeon_&_sea_turtle_take_sops_external.pdf).	ESA-listed Fish and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			b. Survey vessels would have a passive integrated transponder (PIT) tag reader onboard capable of reading 134.2 kHz and 125 kHz encrypted tags (e.g., Biomark GPR Plus Handheld PIT Tag Reader) and this reader would be used to scan any captured sea turtles and sturgeon for tags. Any recorded tags would be recorded on the take reporting form (see below). c. Genetic samples would be taken from all captured ESA-fish (alive or dead) to allow for identification of the Distinct Population Segment (DPS) of origin of captured individuals and tracking of the amount of incidental take. This would be done in accordance with the Procedures for Obtaining Sturgeon Fin Clips (https://media.fisheries.noaa.gov/dammigration/sturgeon_genetics_sampling_revised_june_2019.pdf). i. Fin clips would be sent to an NMFS-approved laboratory capable of performing genetic analysis and assignment to DPS of origin. To the extent authorized by law, BOEM is responsible for the cost of the genetic analysis. Arrangements would be made for shipping and analysis in advance of submission of any samples; these arrangements would be confirmed in writing to NMFS within 60 days of the receipt of this ITS. Results of genetic analysis, including assigned DPS of origin would be submitted to NMFS within 6 months of the sample collection. ii. Subsamples of all fin clips and accompanying metadata forms would be held and submitted to a tissue repository (e.g., the Atlantic Coast Sturgeon Tissue Research Repository) on a quarterly basis. The Sturgeon Genetic Sample Submission Form is available for download at: https://www.fisheries.noaa.gov/new-england-midatlantic/consultations/section-7-take-reporting-programmaticsgreater-atlantic). d. All captured sea turtles and ESA-fish would be documented with required measurements and photographs. The animal's condition and any marks or injuries would be described. This information would be entered as part of the record for each incidental take. A, NMFS Take Report Form would be filled out for each individual sturgeon and sea turtle (download at: https://media.fisheries.noaa.gov/2021-41507/Take%20Report%20Form%2007162021.pdf?null) and submitted to NMFS as described below.	
17	C, O&M, D	Sea turtle/ESA-fish handling and	Any sea turtles or ESA-fish caught and retrieved in gear used in fisheries surveys would be handled and resuscitated (if unresponsive) according to established protocols and whenever at-sea conditions are safe for those handling and	ESA-listed Fish and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
		resuscitation guidelines	resuscitating the animal(s) to do so. Specifically: a. Priority would be given to the handling and resuscitation of any sea turtles or ESA-fish that are captured in the gear being used, if conditions at sea are safe to do so. Handling times for these species should be minimized (i.e., kept to 15 minutes or less) to limit the amount of stress placed on the animals. b. All survey vessels would have copies of the sea turtle handling and resuscitation requirements found at 50 CFR 223.206(d)(1) prior to the commencement of any on-water activity (download at: https://media.fisheries.noaa.gov/dammigration/sea_turtle_handling_and_resuscitation_measures.pdf). These handling and resuscitation procedures would be carried out any time a sea turtle is incidentally captured and brought onboard the vessel during the Proposed Actions. c. If any sea turtles that appear injured, sick, or distressed, are caught and retrieved in fisheries survey gear, survey staff would immediately contact the Greater Atlantic Region Marine Animal Hotline at 866-755-6622 for further instructions and guidance on handling the animal, and potential coordination of transfer to a rehabilitation facility. If unable to contact the Hotline (e.g., due to distance from shore or lack of ability to communicate via phone), the USCG should be contacted via VHF marine radio on Channel 16. If required, hard-shelled sea turtles (i.e., non-leatherbacks) may be held on board for up to 24 hours following handling instructions provided by the Hotline, prior to transfer to a rehabilitation facility. d. Attempts would be made to resuscitate any ESA-fish that are unresponsive or comatose by providing a running source of water over the gills as described in the Sturgeon Resuscitation Guidelines (https://media.fisheries.noaa.gov/dammigration-miss/Resuscitation-Cards-120513.pdf). e. Provided that appropriate cold storage facilities are available on the survey vessel, following the report of a dead sea turtle or sturgeon to NMFS, and if NMFS requests, any dead sea turtle or ESA-fish would be retained on board the survey vessel for transfer to an appropriately permitted partner or facility on shore as safe to do so. f. Any live sea turtles or ESA-fish caught and retrieved in gear used in any fisheries survey would ultimately be released according to established protocols and whenever at-sea conditions are safe for those releasing the animal(s) to do so.	
18	C, O&M, D	Take notification	GARFO PRD would be notified as soon as possible of all observed takes of sea turtles and ESA-fish occurring as a result of any fisheries survey. Specifically:	ESA-listed Fish and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			a. GARFO PRD would be notified within 24 hours of any interaction with a sea turtle or ESA-fish (nmfs.gar.incidental-take@noaa.gov). The report would include at a minimum: (1) survey name and applicable information (e.g., vessel name, station number); (2) GPS coordinates describing the location of the interaction (in decimal degrees); (3) gear type involved (e.g., bottom trawl, gillnet, longline); (4) soak time, gear configuration and any other pertinent gear information; (5) time and date of the interaction; and (6) identification of the animal to the species level. Additionally, the email would transmit a copy of the NMFS Take Report Form (download at: https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%2007162021.pdf?null) and a link to or acknowledgement that a clear photograph or video of the animal was taken (multiple photographs are suggested, including at least one photograph of the head scutes). If reporting within 24 hours is not possible due to distance from shore or lack of ability to communicate via phone, fax, or email, reports would be submitted as soon as possible; late reports would be submitted with an explanation for the delay. b. At the end of each survey season, a report would be sent to NMFS that compiles all information on any observations and interactions with ESA-listed species. This report would also contain information on all survey activities that took place during the season including location of gear set, duration of soak/trawl, and total effort. The report on survey activities would be comprehensive of all activities, regardless of whether ESA-listed species were observed.	
19	C, O&M, D	Monthly/annual reporting requirements	BOEM would ensure that Dominion Energy implements the following reporting requirements necessary to document the amount or extent of take that occurs during all phases of the Proposed Action: a. All reports would be sent to: nmfs.gar.incidental-take@noaa.gov. b. During the construction phase and for the first year of operations, Dominion Energy would compile and submit monthly reports that include a summary of all Project activities carried out in the previous month, including vessel transits (number, type of vessel, and route), and piles installed, and all observations of ESA-listed species. Monthly reports are due on the 15th of the month for the previous month. c. Beginning in year 2 of operations, Dominion Energy would compile and submit annual reports that include a summary of all Project activities carried out in the previous year, including vessel transits (number, type of vessel, and route), repair and maintenance activities, survey activities, and all observations of ESA-listed species. These reports are due by April 1 of each year (i.e., the 2026 report is	ESA-listed Fish, Marine Mammals, and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			due by April 1, 2027). Upon mutual agreement of NMFS and BOEM, the frequency of reports can be changed.	
20	C, O&M, D	BOEM/NMFS meeting requirements for sea turtle take documentation	To facilitate monitoring of the incidental take exemption for sea turtles, through the first year of operations, BOEM and NMFS would meet twice annually to review sea turtle observation records. These meetings/conference calls would be held in September (to review observations through August of that year) and December (to review observations from September to November) and would use the best available information on sea turtle presence, distribution, and abundance, Project vessel activity, and observations to estimate the total number of sea turtle vessel strikes in the action area that are attributable to Project operations. These meetings would continue on an annual basis following year 1 of operations. Upon mutual agreement of NMFS and BOEM, the frequency of these meetings can be changed.	Sea Turtles
21	C, O&M, D	Data Collection BA BMPs	BOEM would ensure that all PDC and BMPs incorporated in the Atlantic Data Collection consultation for Offshore Wind Activities (June 2021) will be applied to activities associated with the construction, maintenance, and operations of the Dominion Energy Project as applicable.	ESA-listed Fish, Marine Mammals, and Sea Turtles
22	C	Alternative Monitoring Plan (AMP) for pile driving	Dominion Energy must not conduct pile-driving operations at any time when lighting or weather conditions (e.g., darkness, rain, fog, sea state) prevent visual monitoring of the full extent of the clearance and shutdown zones. Dominion Energy must submit an AMP to BOEM and NMFS for review and approval at least 6 months prior to the planned start of pile driving. This plan may include deploying additional observers; alternative monitoring technologies such as night vision, thermal, and infrared technologies; or use of PAM, and must demonstrate the ability and effectiveness to maintain all clearance and shutdown zones during daytime as outlined below in Part 1 and nighttime as outlined in Part 2 to BOEM's and NMFS's satisfaction. The AMP must include two stand-alone components as described below: • Part 1 – Daytime when lighting or weather (e.g., fog, rain, sea state) conditions prevent visual monitoring of the full extent of the clearance and shutdown zones. Daytime being defined as 1 hour after civil sunrise to 1.5 hours before civil sunset. • Part 2 – Nighttime inclusive of weather conditions (e.g., fog, rain, sea state). Nighttime being defined as 1.5 hours before civil sunset to 1 hour after civil sunrise.	ESA-listed Fish, Marine Mammals, and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			If a protected marine mammal or sea turtle is observed entering or found within the shutdown zones after impact pile driving has commenced, Dominion Energy would follow the shutdown procedures outlined in the Biological Assessment. Dominion Energy would notify BOEM and NMFS of any shutdown occurrence during piling-driving operations with 24 hours of the occurrence unless otherwise authorized by BOEM and NMFS. The AMP should include, but is not limited to, the following information: • Identification of night vision devices (e.g., mounted thermal/IR camera systems, handheld or wearable NVDs, IR spotlights), if proposed for use to detect protected marine mammal and sea turtle species. • The AMP must demonstrate (through empirical evidence) the capability of the proposed monitoring methodology to detect marine mammals and sea turtles within the full extent of the established clearance and shutdown zones (i.e., species can be detected at the same distances and with similar confidence) with the same effectiveness as daytime visual monitoring (i.e., same detection probability). Only devices and methods demonstrated as being capable of detecting marine mammals and sea turtles to the maximum extent of the clearance and shutdown zones will be acceptable. • Evidence and discussion of the efficacy (range and accuracy) of each device proposed for low visibility monitoring must include an assessment of the results of field studies (e.g., Thayer Mahan demonstration), as well as supporting documentation regarding the efficacy of all proposed alternative monitoring methods (e.g., best scientific data available). • Procedures and timeframes for notifying NMFS and BOEM of Dominion Energy's intent to pursue nighttime pile driving. • Reporting procedures, contacts, and timeframes. BOEM may request additional information, when appropriate, to assess the efficacy of the AMP.	
23	O	Periodic underwater surveys, reporting of monofilament and other fishing	Dominion Energy must monitor indirect impacts associated with charter and recreational fishing gear lost from expected increases in fishing around WTG foundations by surveying at least 10 of the WTGs located closest to shore in the Dominion Energy Lease Area (OCS-A 0483) annually. Survey design and effort may be modified with review and concurrence by DOI. Dominion Energy may conduct surveys by remotely operated vehicles, divers, or other means to determine the	ESA-listed Fish, Marine Mammals, and Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
		gear around WTG foundations	frequency and locations of marine debris. Dominion Energy must report the results of the surveys to BOEM (at renewable_reporting@boem.gov) and BSEE (at marinedebris@bsee.gov) in an annual report, submitted by April 30, for the preceding calendar year. Annual reports must be submitted in Microsoft Word format. Photographic and videographic materials must be provided on a portable drive in a lossless format such as TIFF or Motion JPEG 2000. Annual reports must include survey reports that include: the survey date, contact information of the operator, the location and pile identification number, photographic and/or video documentation of the survey and debris encountered, any animals sighted, and the disposition of any located debris (i.e., removed or left in place). Annual reports must also include claim data attributable to the Project from Dominion Energy corporate gear loss compensation policy and procedures. Required data and reports may be archived, analyzed, published, and disseminated by BOEM.	
24	C, O&M, D	PDC minimize vessel interactions with listed species (from high-resolution geophysical [HRG] programmatic)	All vessels associated with survey activities (transiting or actively surveying) must comply with the vessel strike avoidance measures specified below. The only exception is when the safety of the vessel or crew necessitates deviation from these requirements. • If any ESA-listed marine mammal is sighted within 1,640 feet (500 meters) of the forward path of a vessel, the vessel operator must steer a course away from the whale at <10 knots (18.5 kph) until the minimum separation distance has been established. Vessels may also shift to idle if feasible. If any ESA-listed marine mammal is sighted within 656 feet (200 meters) of the forward path of a vessel, the vessel operator must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 1,640 feet (500 meters). If stationary, the vessel must not engage engines until the large whale has moved beyond 1,640 feet (500 meters).	Marine Mammals
25	O&M	Operational Sound Field Verification Plan	BOEM would require Dominion Energy to develop an operational sound field verification plan to determine the operational noises emitted from the Offshore Project area. The plan would be reviewed and approved by BOEM and NMFS.	ESA-listed Fish, Marine Mammals, and Sea Turtles
BOEM-Proposed Measures from the Data Collection and Site Survey Activities for Renewable Energy on the Atlantic OCS BA				
1	C, O&M, D	Data Collection BA BMPs	BOEM will ensure that all Project Design Criteria and Best Management Practices incorporated in the Atlantic Data Collection consultation for Offshore Wind Activities (June 2021) will be applied to activities associated with the construction, maintenance, and operations of the CVOW Project as applicable.	ESA-listed Fish, Marine Mammals, Sea Turtles

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
NMFS-Proposed Measures to Minimize Impacts on Benthic Habitat				
1	C, O&M, D	Essential Fish Habitat	The measures required by the final Essential Fish Habitat consultation would be incorporated into COP approval, and BOEM and/or NMFS would monitor compliance with these measures.	Benthic Resources
2	C, O&M, D	Lionfish	BOEM would require Dominion Energy to develop a Lionfish Monitoring and Adaptive Management Plan.	Benthic Resources
BOEM- Proposed Bird and Bat Mitigation Measures				
1	C, O&M, D	Reporting	Report bird mortality annually during construction, operation, and decommissioning. The Lessee must submit an annual report covering each calendar year, due by January 31 of the following year, documenting any dead (or injured) birds or bats found on vessels and structures during construction, operations, and decommissioning. The report must be submitted to BOEM (at renewable_reporting@boem.gov) and BSEE (at OSWSubmittals@bsee.gov) and USFWS. The report must contain the following information: the name of species, date found, location, a picture to confirm species identity (if possible), and any other relevant information. Carcasses with federal or research bands must be reported to the USGS Bird Band Laboratory. Any occurrence of dead ESA birds or bats must be reported to BOEM, BSEE, and USFWS as soon as practicable (taking into account crew and vessel safety), but no later than 24 hours after the sighting, and if practicable, carefully collect the dead specimen and preserve the material in the best possible state.	Birds and Bats
2		Monitoring	Develop an avian and bat monitoring program during construction and operation. At least 45 calendar days before beginning surveys, the Lessee must complete, obtain concurrence from DOI, and adopt an Avian and Bat Monitoring Plan, including coordination with interested stakeholders. DOI will review the Avian and Bat Monitoring Plan and provide any comments on the plan within 30 calendar days of its submittal. The Lessee must resolve all comments on the Avian and Bat Monitoring Plan to DOI's satisfaction before implementing the plan. The Lessee may conclude that DOI has concurred in the Avian and Bat Monitoring Plan if DOI provides no comments on the plan within 30 calendar days of its submittal date. Under this condition the Lessee must allow for: 1. Monitoring. TBD. 2. Annual Monitoring Reports. The Lessee must submit to BOEM (at renewable_reporting@boem.gov) and BSEE (at OSWSubmittals@bsee.gov) a comprehensive report after each full year of monitoring (pre- and post-	Birds & Bats

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			construction) within 6 months of completion of the last avian survey. The report must include all data, analyses, and summaries regarding ESA-listed and non-ESA-listed birds and bats. DOI will use the annual monitoring reports to assess the need for reasonable revisions (based on subject matter expert analysis) to the Avian and Bat Monitoring Plan. DOI reserves the right to require reasonable revisions to the Avian and Bat Monitoring Plan and may require new technologies as they become available for use in offshore environments. 3. Post-Construction Quarterly Progress Reports. The Lessee must submit quarterly progress reports during the implementation of the Avian and Bat Monitoring Plan to BOEM (at renewable_reporting@boem.gov) and USFWS by the 15th day of the month following the end of each quarter during the first full year that the Project is operational. The progress reports must include a summary of all work performed, an explanation of overall progress, and any technical problems encountered 4. Monitoring Plan Revisions. Within 15 calendar days of submitting the annual monitoring report, the Lessee must meet with BOEM and USFWS to discuss the following: the monitoring results; the potential need for revisions to the Avian and Bat Monitoring Plan, including technical refinements or additional monitoring; and the potential need for any additional efforts to reduce impacts. If DOI determines after this discussion that revisions to the Avian and Bat Monitoring Plan are necessary, DOI may require the Lessee to modify the Avian and Bat Monitoring Plan. If the reported monitoring results deviate substantially from the impact analysis included in the Final EIS, the Lessee must transmit to DOI recommendations for new mitigation measures or monitoring methods. 5. Operational Reporting (Operations). The Lessee must submit to BOEM (at renewable_reporting@boem.gov) and BSEE (at OSWSubmittals@bsee.gov) an annual report with the following monthly operational data in tabular format: the proportion of time the turbines were operational (spinning) each month, the average monthly revolutions per minute (rpm) of spinning turbines, and the average pitch angle of blades (degrees relative to rotor plane). DOI will use this information as inputs for avian collision risk models to assess whether the results deviate substantially from the impact analysis included in the Final EIS. 6. Raw Data. The Lessee must store the raw data from all avian and bat surveys and monitoring activities according to accepted archiving practices. Such data must remain accessible to DOI and USFWS upon request for the duration of the Lease. The Lessee must work with BOEM to ensure the data are publicly	

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			available.	
3	C, O&M	Offshore structures	Use bird-deterrent devices during construction and operation. To minimize attracting birds to operating turbines, the Lessee must install bird-deterrent devices on turbines and the OSS. The location of bird-deterrent devices must be proposed by the Lessee based on BMPs applicable to the appropriate operation and safe installation of the devices. The Lessee must confirm the locations of bird-deterrent devices as part of the as-built documentation it must submit with the FDR.	Birds
BOEM-Proposed Measure for Reporting Incidental Take of Endangered or Threatened Species				
1	C, O&M, D	Reporting	Dominion Energy will report to BOEM and BSEE within 24-hours of confirmation any incidental take of an endangered or threatened species.	ESA-listed Fish, Marine Mammals, Sea Turtles
BOEM OCS Study 2020-039 – Radar Systems Mitigations to Operations				

1	O&M	Mitigation for ARSR-4 and ASR-8/9 radars	Dominion Energy will enter into a mitigation agreement with DoD for impacts on ARSR-4 and for ASR-8/9 radars. Possible mitigation measures might include the following:
			• Passive aircraft tracking using ADS-B or signal/transponder
			• Increasing aircraft altitude near radar
			• Sensitivity time control (range-dependent attenuation)
			• Range azimuth gating (ability to isolate/ignore signals from specific range-angle gates)
			• Track initiation inhibit, velocity editing, plot amplitude thresholding (limiting the amplitude of certain signals)
			• Modification mitigations for ARSR-4 and for ASR-8/9 systems:
			  ○ Utilizing the dual beams of the radar simultaneously
			  ○ In-fill radars
				Other Uses - Radar

2	O&M	Mitigation for oceanographic high-frequency radars	Dominion Energy will enter into a mitigation agreement with NOAA, to mitigate operational impacts on oceanographic high-frequency radars. Possible mitigation measures might include the following: • Data sharing from turbine operators to include the following: ○ Sharing real-time telemetry of surface currents and other oceanographic data measured at locations in the Projects with radar operators into the public domain	Other Uses - Radar

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
			○ Sharing time-series of blade rotation rates, nacelle bearing angles, and other information about the operational state of each of the Projects' turbines with radar operators to aid interference mitigation • Wind farm curtailment/curtailment agreement • Signal processing enhancements • Antenna modifications	
3	O&M	Mitigation for NEXRAD weather radar systems	Dominion Energy will enter into a mitigation agreement with NOAA, to mitigate operational impacts on NEXRAD weather radar systems. Possible mitigation measures might include the following: • Wind farm curtailment/curtailment agreement • Employing adaptive clutter filters • Changing the radar scan strategy to pass over areas with wind turbines • Using phased array radars to achieve a null in the antenna radiation pattern in the direction of the wind turbine • Curtailment	Other Uses - Radar
USACE-Proposed Measures				
1	C, O&M, D	Clean Water Act (CWA) 404; Section 10 of the Rivers and Harbors Act	Dominion Energy will comply with all mitigation required by USACE for CWA Section 404 and Section 10 impacts.	Wetlands
NPS- and BOEM-Proposed Measures				
1	C, O&M, D	Lighting	Dominion Energy will comply with BOEM's detailed Lighting and Marking Guidelines and NPS sustainable lighting best practices.	Cultural, Historic, and Archaeological Resources; ESA-listed Species; Recreation and Tourism; Scenic and Visual Resources

#	Proposed Project Phase	Mitigation & Monitoring Measures	Description	Resource Area Mitigated
BOEM-Proposed Measures for Fisheries Income Compensation				
1	C, O&M, D	Fisheries compensation	BOEM would require that Dominion Energy implement a compensation program for lost income for commercial and recreational fishermen and other eligible fishing interests for construction and operations consistent with BOEM's draft guidance for *Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 CFR 585* or as modified in response to public comment. This measure, if adopted, would reduce impacts from the impact-producing factor (IPF) presence of structures by compensating commercial and recreational fishing interests for lost income during construction and a minimum of 5 years post-construction. If adopted, this measure would reduce the negligible to major impact level from the presence of structures to negligible to moderate. This is because a compensation scheme will mitigate "indefinite" impacts to a level where the fishing community would have to adjust somewhat to account for disruptions due to impacts but income losses would be mitigated.	Commercial Fisheries and For-Hire Recreational Fishing

H.1. References

Bureau of Ocean Energy Management (BOEM). 2020. *BOEM Construction and Operations Plan (COP) Guidelines.*

Bureau of Ocean Energy Management (BOEM). 2021. *Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development*. April 28. Available: https://www.boem.gov/sites/default/files/documents/renewable-energy/2021-Lighting-and-Marking-Guidelines.pdf.

Dominion Energy. 2022. *Construction and Operations Plan, Coastal Virginia Offshore Wind Commercial Project.* May 5.

Moorhead, D.J., K.A. Rawlins, C.W. Evans, C.E. Barlow, and C.T. Bargeron. 2011. *A Land Manager's Guide to Best Management Practices (BMPs) to Prevent the Introduction and Spread of Invasive Species*. The University of Georgia. Center for Invasive Species and Ecosystem Health, Tifton GA. BW-2011-03. 28 pp. Available: https://bugwoodcloud.org/mura/gist/assets/File/LMBMP.pdf. Accessed: October 13, 2020.

U.S. Department of Agriculture, National Invasive Species Information Center (USDA NISIC). 2020. "Invasive Species Resources." U.S. Department of Agriculture, National Invasive Species Information Center Available: https://www.invasivespeciesinfo.gov/resourcesindexed?f[0]=field_subject:239. Accessed: October 13, 2020.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NISIC). 2020. *Pollinator-Friendly Plants for the Northeast United States*. U.S. Department of Agriculture, Natural Resource Conservation Service. Available: https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/nypmctn11164.pdf. Accessed: October 8, 2020.

Virginia Department of Environmental Quality (VDEQ). 1992. *Virginia Erosion and Sediment Control Handbook*. Third Edition. Virginia Department of Environmental Quality. Available: https://www.deq.virginia.gov/programs/water/stormwatermanagement/publications/eschandbook.asp x. Accessed: October 12, 2020.

Virginia Department of Environmental Quality (VDEQ). 2014. *Virginia Erosion and Sediment Control Law and Regulations. Virginia Department of Environmental Quality, Richmond, Virginia.* Available: https://www.deq.virginia.gov/Portals/0/DEQ/Water/StormwaterManagement/Erosion_Sediment_Control_Handbook/ESC_Handbook_Law_Regulations.pdf. Accessed: October 12, 2020.

U.S. Fish and Wildlife Service (USFWS). 2016. *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions.* U.S. Fish and Wildlife Service. Midwest Regional Office. Bloomington, Minnesota.

This page intentionally left blank.

ATTACHMENT H-1
UNANTICIPATED DISCOVERIES PLAN

This page intentionally left blank.

CVOW-C
Unanticipated Discoveries Plan
Terrestrial Archaeological Resources

1. Introduction

Virginia Electric and Power Company, d/b/a Dominion Energy Virginia (Dominion Energy), is proposing the Dominion Coastal Virginia Offshore Wind (CVOW) Commercial Project (the Project), an offshore wind energy project within the area leased by Dominion Energy in the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf offshore Virginia (Lease No. OCS-A-0483) as well as in federal and state territorial waters of Virginia and onshore in the independent cities of Virginia Beach and Chesapeake, Virginia (Figure 1).

In consultation with the Bureau of Ocean Energy Management (BOEM) and the Virginia Department of Historic Resources (VDHR) Dominion Energy has developed this Unanticipated Discoveries Plan–Terrestrial (UDP-T) to provide a protocol for responding to the unplanned discovery of cultural resources, including archaeological deposits, human remains, and other evidence of past human activities, during the construction and operation of the onshore portion of the Project between the Cable Landing Location on the Atlantic Ocean shoreline of the City of Virginia Beach and Dominion Energy's existing Fentress substation in the City of Chesapeake, including portions located within Naval Air Station (NAS) Oceana and the Virginia National Guard State Military Reservation (SMR [formerly Camp Pendleton]).

1.1 Project Description

The proposed CVOW Project will erect up to 205 wind turbine generators over an area of 112,799 acres (45,658 hectares) situated approximately 27 statute miles (23.75 nautical miles, or 43.99 kilometers) off the Virginia Beach coastline. It will have a nameplate generating capacity of approximately 2.6 gigawatts of electrical energy. Energy generated by the Project will be collected via Inter-Array Cables from the individual wind turbine generators to one of three offshore substations and then transmitted to onshore consumers via nine Offshore Export Cables laid along the Offshore Export Cable Route Corridor within federal and state waters of the Commonwealth of Virginia. To bring the energy onshore at the Cable Landing Location, the Offshore Export Cables will be installed under the beach and dunes using a trenchless installation method (Direct Steerable Pipe Thrusting).

The Onshore Project Components will include, in addition to the Cable Landing Location, an Onshore Export Cable Route, a Switching Station, an Interconnection Cable Route, and an Onshore Substation (Figure 2).[1] Dominion Energy's preferred routing, subject to landowner permission and approval by the Virginia State Corporation Commission, situates the Cable Landing Location within a Proposed Parking Lot West of the Firing Range at the SMR. At the cable landing, the nine Offshore Export Cables will interconnect with 27 single-phase 230-kilovolt transmission lines that comprise the Onshore Export Cable.

[1] Note that while onshore electrical interconnections are commonly referred to a s "circuits," for consistency with terminology commonly associated with offshore wind projects, "cables" is used throughout.

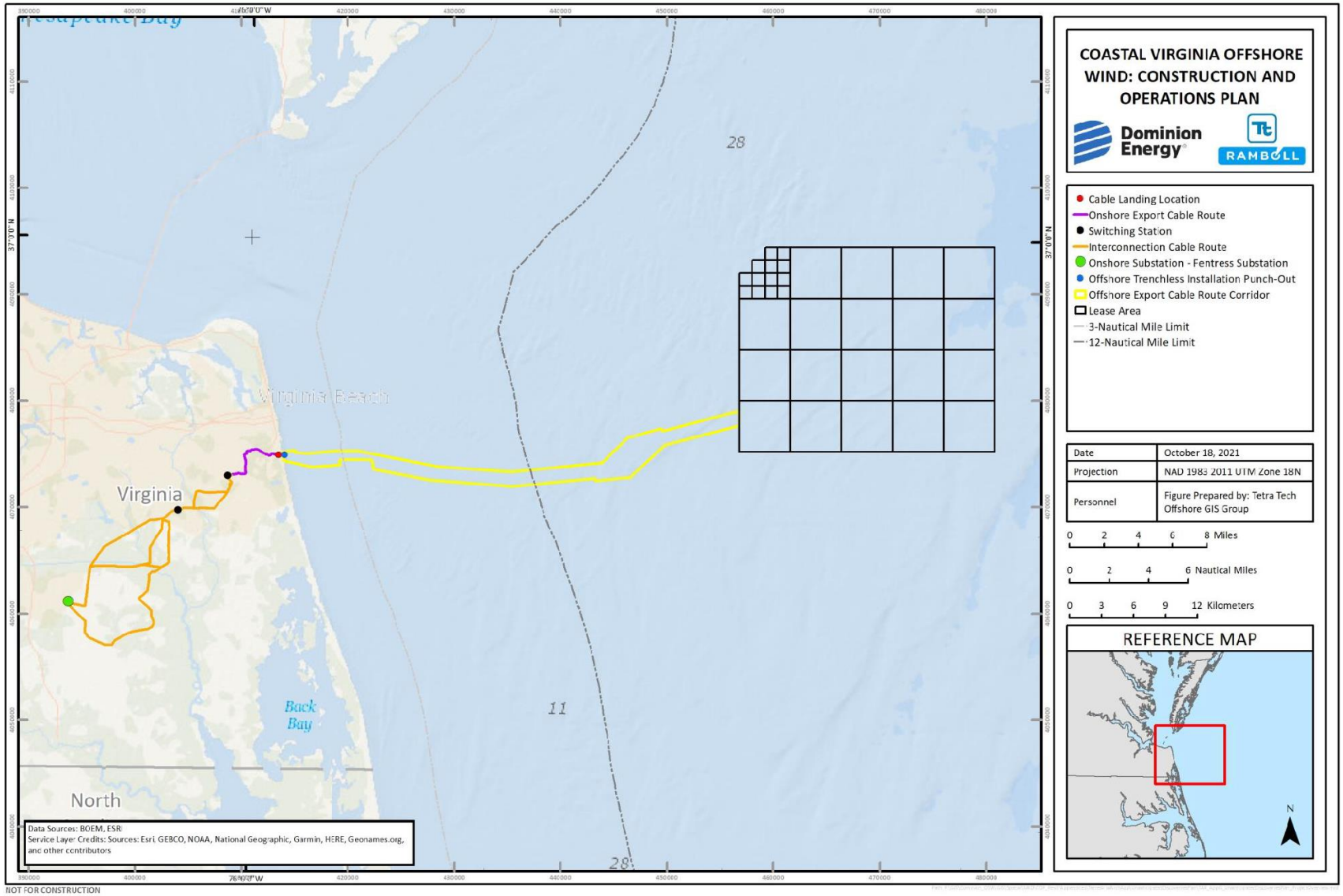

Figure 1 CVOW Commercial Project

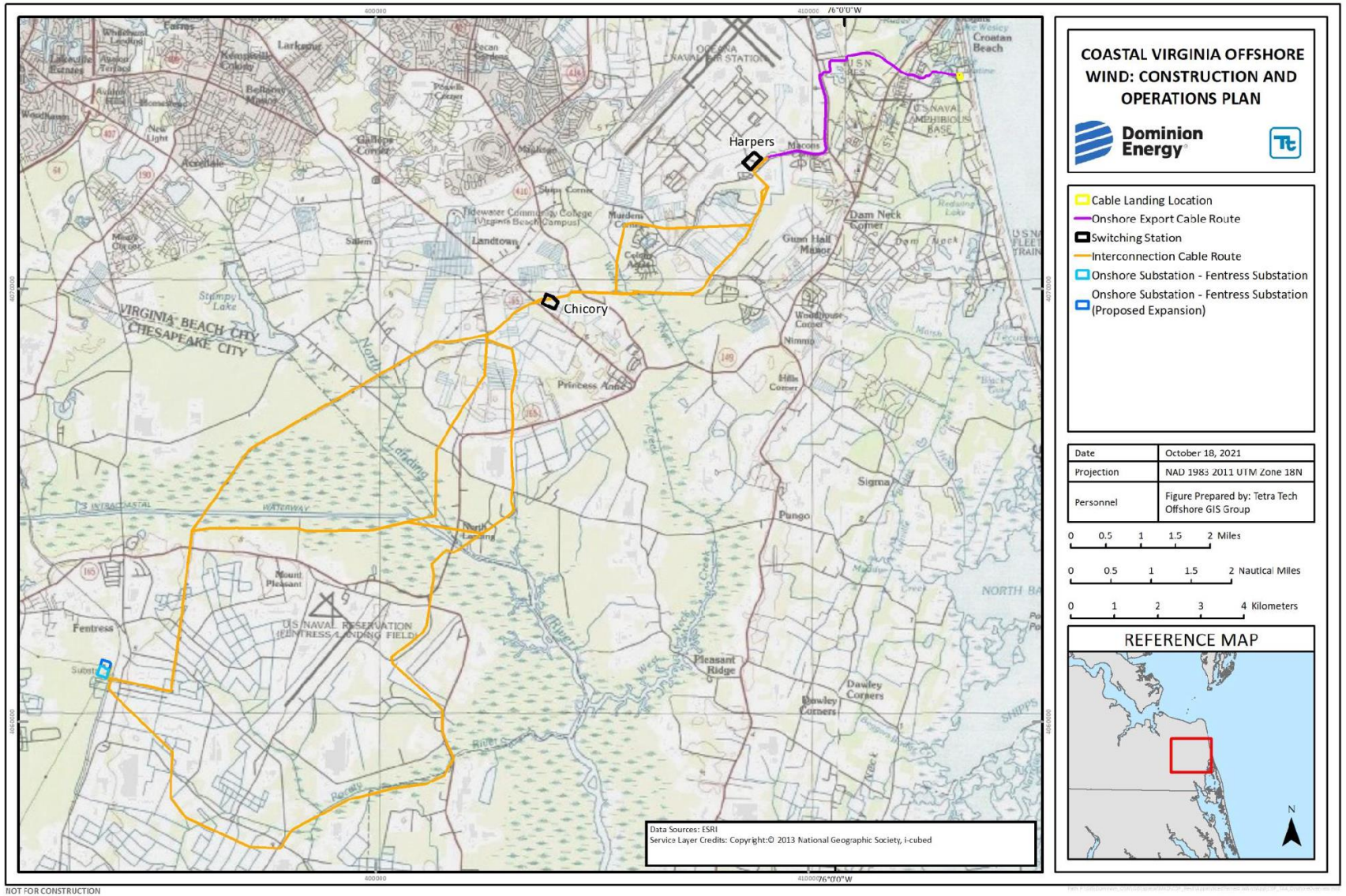

Figure 2 Onshore Project Components

As of April 2022, Dominion Energy is examining the feasibility and appropriateness of one Interconnection Cable Routes alternatives between the Common Location north of Harpers Road and the planned Onshore Substation, an expansion of the existing Fentress Substation in the City of Chesapeake, approximately 15 miles (24 kilometers) to the southwest of the Cable Landing Location. According to current planning, the Onshore Export Cable Route will traverse several miles underground beneath existing roads or through previously disturbed ground to the planned new Switching Station. A Switching Station will either be located north of Harpers Road (preferred) or north of Princess Anne Road. The Onshore Project Components under consideration include portions located within NAS Oceana and SMR properties.

The Switching Station will serve as the transition point where power transmitted by the Onshore Export Cable from the Cable Landing Location will be collected to the Interconnection Cable. The Interconnection Cable will connect the Switching Station with the Onshore Substation at Fentress, where the electricity from the offshore wind energy facility will be connected into the PJM power grid for distribution to consumers. The Interconnection Cable will consist of three 230-kilovolt circuits installed as either all overhead transmission facilities (preferred), or as a combination of overhead and underground (hybrid) transmission facilities. As of April 2022, Dominion Energy is evaluating one Overhead Interconnection Cable Route Alternatives and one Hybrid Interconnection Cable Route, both located within the same footprint.

1.2 Purpose of the Unanticipated Discoveries Plan—Terrestrial

The UDP-T applies to all Project construction and maintenance activities inshore of the mean high tide line. Under federal law, the mean high tide line marks the marine boundary of the lands beneath navigable waters of the United States (Submerged Lands Act of 1953, as amended, 43 United States Code [U.S.C.] § 1301(a)(2)), and from a practical point of view, it approximates the point at which terrestrial methods of archaeological investigation predominate over marine methods. The elevation of Mean High Water Datum is taken to be a convenient approximation of the "mean high tide line." As of September 2021, the National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational Oceanographic Products and Services lists the elevation of Mean High Water at Rudee Inlet, Virginia Beach, Virginia (Tidal Station 8639208), a location approximately 0.8 mile (1.3 kilometers) north of the Project's proposed Cable Landing Location as +0.92 feet (+0.281 meters) North American Vertical Datum of 1988, based upon the current National Tidal Datum Epoch, 1983-2001, now under revision (NOAA 2021).

2. Guidelines, Regulations, and Legislation for Unanticipated Cultural Resources and Human Remains

The UDP-T will be followed in the event that cultural resources and/or human remains are encountered during construction of the onshore Project components. The stipulations of the Plan as set forth below are in accordance with the current guidelines detailed in the following federal and state guidelines, regulations and legislation, as well as BOEM recommendation:

2.1 Federal

- Sections 106 and 110 of the National Historic Preservation Act, as amended (54 U.S.C. §§ 306108 and 306101 *et seq.*)

- Archaeological Resources Protection Act, as amended (16 U.S.C. §§ 470aa *et seq.*)
- Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (September 29, 1983, 48 Federal Register 44716-42)
- Advisory Council for Historic Preservation: Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (February 23, 2007)
- Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001 *et seq*.)
- As of October 2021, BOEM has not issued specific regulations or guidance for completing Section 106 compliance archaeological investigations in terrestrial areas; marine archaeological investigations are covered by BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* (2020)
- BOEM Project recommendation for an on-site Archaeological Monitor (AM) during construction activities
- U.S. Department of the Navy guidelines and requirements for portions of the Project located on NAS Oceana property

2.2 Commonwealth of Virginia

- Guidelines for Conducting Historic Resources Survey in Virginia, revised (VDHR 2017)
- Section 2305 of the Virginia Antiquities Act (Virginia Code Annotated [VCA] § 10.1-2305) "Permit required for the archaeological excavation of human remains"—provides a permit process for archaeological field investigations involving the removal of human remains and artifacts from graves. These permits are issued through VDHR's Office of Review and Compliance. The following state statutes pertain to human remains, graves, and cemeteries:
  - VCA § 8.01-44.6, action for injury to cemetery property
  - VCA § 15.2-2258, plat of proposed subdivision and site plans to be submitted for approval
  - VCA § 18.2-125, trespass at night upon any cemetery
  - VCA § 18.2-126, violation of sepulture; defilement of dead human body
  - VCA § 18.2-127, injuries to churches, church property, cemeteries, burial grounds, etc.
  - VCA § 33.1-241, roads not to be established through a cemetery or seminary of learning without owners' consent
  - VCA § 45.1-252, designating areas unsuitable for coal surface mining
  - VCA § 57-27.1, access to cemeteries located on private property; cause of action for injunctive relief
  - VCA § 57-36, abandoned cemeteries may be condemned; removal of bodies
  - VCA § 57-38.1, proceedings by landowner for removal of remains from abandoned family graveyard

- VCA § 57-38.2, proceedings by heir at law or descendant for removal of ancestor's remains from abandoned family cemetery
- VCA § 57-39, proceedings for removal of remains and sale of land vacated
- VCA § 57-39.1, improvement of abandoned and neglected graveyards

- Virginia Army National Guard guidelines and requirements for portions of the Project located on SMR property

2.3 Local

Both the City of Virginia Beach and the City of Chesapeake have active historic preservation commissions. Virginia Beach is a Certified Local Government under the National Park Service program; Chesapeake is not. Neither city has a local ordinance specifically addressing archaeological resources. Virginia Beach has a local historic preservation plan, which serves to establish the vision, goals, and actions for the City of Virginia Beach historical preservation program for the next 10 years to identify strategic areas for partnership with internal and external stakeholders. The plan is in the process of being revised. On October 8, 2021, Draft 4 of the plan was released (Commonwealth Preservation Group 2021; City of Virginia Beach 2001). Chesapeake does not have a local historic preservation plan. An archaeological survey for historic preservation planning purposes was completed in Virginia Beach in the northern part of city in 2018 (Blondino et al. 2018). An archaeological survey of Chesapeake was completed in 1999 (Underwood and Blanton 1999).

2.4 Archaeological Permits Checklist

If an unanticipated archaeological find is made or if human remains are found, one or more of the following permits may be required if archaeological excavation is necessary:

- Archaeological Resources Protection Act Permit (federal land, issued by federal agency responsible for land management)
- Permit for Archaeological Field Investigation on State-Controlled Land (Virginia's state and state-controlled land;[2] issued by VDHR)
- Permit for the Archaeological Excavation of Human Remains (removal of human remains from a grave in Virginia requires a court order or a permit issued by VDHR)
- Additional permits may be required, depending on circumstances

3. Training and Orientation

Dominion Energy's on-site Project Manager (PM) will be responsible for advising construction-contractor personnel on the procedures to follow in the event of an unanticipated discovery. Training will occur as part of the pre-construction on-site training program for foremen, company inspectors and

[2] State-controlled land "means any land owned by the Commonwealth or under the primary administrative jurisdiction of any state agency. 'State agency' shall not mean any locality or any board or authority organized under state law to perform local or regional functions. 'State-controlled land' includes state parks, state wildlife areas, state recreation areas, highway rights-of-way, and state-owned easements" (VCA § 10.1-2300).

construction supervisors. The PM will advise all operators of equipment involved in grading, stripping, or drilling activities to:

1. Stop work immediately if they observe indications of the presence of cultural artifacts, animal bones, or human remains.
2. Contact the AM and PM immediately.
3. Comply with unanticipated discovery procedures.
4. Treat human remains with dignity and respect.

3.1 Procedure When Potential Cultural Materials Are Observed

Cultural materials include man-made historic objects (prehistoric pottery or chipped stone tools and waste flakes) and historic period items (items that are approximately 50 years old or greater such as architectural debris, fragments of dishes, bottle glass, old farm equipment, etc.) and features (e.g., alignments, walls, floors, including those that are constructed of cobbles, rough or quarry-dressed masonry, brick, concrete, or other materials), or other remnants of cultural activity.

1. Stop work in the immediate vicinity of the observed potential cultural materials
2. Notify the AM and PM of the discovery.
3. If AM makes a determination that cultural materials are not man-made and historic, features, or other remnants of cultural activity that constitute an anticipated discovery, work will resume.
4. If AM makes a determination that an unanticipated discovery may have been made:
   (i) AM directs all ground-disturbing activities that may affect area of discovery to stop.
   (ii) AM will protect and secure the evidence in place by delineating the find with flagging or fencing.
   (iii) Project activities can continue outside of the delineated unanticipated find area.
   (iv) Make immediate notifications

The PM will notify the designated Dominion Energy contacts as soon as practicable by telephone with written confirmation via email, fax, or overnight mail. If the primary contact cannot be reached, notify the indicated alternate. Written notifications should be accompanied by photographs and maps or geographic coordinates of the find.

The **CONTACTS LIST** is at the end of this document.

Professional archaeologist will assess the find.

As soon as practicable, a professional archaeologist (PA)[3] will examine the location of the discovery.

1. If the PA determines that the discovery is not a cultural resource, the PA will promptly communicate the basis for this professional judgment to the PM. The PM will be allowed to remove the stop work

[3] A professional archaeologist, also called a Secretary of the Interior-qualified archaeologist, is one who meets the Secretary's qualifications to serve as a principal investigator of an archaeological study for purposes of federally sanctioned historic preservation (48 Federal Register 44739, September 29, 1983).

order with concurrence from the PM's management at Dominion Energy. This concurrence may be provided initially by telephone and will be followed by a concurrence email from Dominion Energy. The PA will document the communication with the PM by a letter report including photographs of the discovery to the PM, Dominion Energy, and Tetra Tech contacts within 14 business days.

2. If the PA determines that the discovery is a potentially significant cultural resource, the PA will immediately advise the PM who will make the appropriate notifications to Dominion Energy and Tetra Tech. Together the PA and the PM will then notify VDHR and BOEM by telephone and written confirmation by email, fax or overnight mail. In consultation with Dominion Energy, VDHR, and BOEM, the PA will develop a scope-of-work for evaluating the significance of the resource and evaluating potential Project effects on the resource. The written, draft scope-of-work will be prepared by the PA and submitted to the PM, Dominion Energy, within two business days of notifying the PM of the cultural resource determination. The PM will provide the scope-of-work to VDHR and BOEM following Dominion Energy review. Once approved by VDHR, work may commence immediately on the cultural resource investigations.
3. In accordance with construction or other permits or applicable regulations, additional parties such as federal or state land managers, may need to be notified, provided with copies of evaluative letter reports and/or field investigation plans, or afforded the opportunity to issue archaeological excavation permits.

Initiate consultation with VDHR.

1. Within 10 days of the notification of the cultural resource determination, the PM and PA will consult with Dominion Energy, VDHR, and BOEM by telephone and discuss the PA's results from the evaluation and opinion concerning the potential significance of the resource and possible eligibility of the resource for the National Register of Historic Places or Virginia Landmarks Register. As directed by Dominion Energy, the PM or PA may notify other interested parties about the unanticipated discovery.

   Other Interested Parties may include:

   - Local Historical Commissions
     - Chesapeake City Historic Preservation Commission
     - Virginia Beach Historic Preservation Commission
   - Native American Tribes
     - Absentee-Shawnee Tribe of Oklahoma
     - Cheroenhaka Nottoway Nation
     - Chickahominy Tribe
     - Delaware Nation
     - Delaware Tribe of Indians
     - Eastern Chickahominy Tribe
     - Eastern Shawnee Tribe of Oklahoma
     - Lenape Tribe of Delaware

- Mattaponi Tribe
- Meherrin Tribe
- Monacan Indian Nation
- Nansemond Tribe
- Narragansett Indian Tribe
- Nottoway Indian Tribe of Virginia
- Pamunkey Tribe
- Patawomeck Tribe of Virginia
- Rappahannock Indian Tribe
- Shinnecock Indian Nation
- Upper Mattaponi Tribe

It will be the responsibility of BOEM to identify which interested parties should be involved in any specific consultation and request the assistance of Dominion Energy in notifying them and inviting their participation in the consultation.

2. Once the scope-of-work is approved by VDHR, work may commence immediately on the cultural resource investigations. Dominion Energy assumes the VDHR and other consulting parties will provide an expedited 10-day review of scopes-of-work.
3. As soon as possible following the field investigation, the PA will provide the PM and Dominion Energy contacts with a written report describing the results of the fieldwork.
4. If the resource is believed to be significant and cannot be avoided by construction activities, the PA will prepare a proposal for data recovery for submission to the PM, Dominion Energy, VDHR, BOEM, and potentially other interested parties, such as federally recognized Native American tribes with a historical interest in the municipality or county in which the find is located. The data recovery proposal will be approved by the PM, Dominion Energy, VDHR, and BOEM. Following completion of the data recovery effort, work in the delineated area will be allowed to re-commence.
5. If the resource is believed to be significant and can be avoided by construction activities, the PA will prepare a proposal for avoidance measures (avoidance plan) for submission to PM, Dominion Energy. The avoidance plan may specify ongoing monitoring of construction activity by a PA in an area of sensitivity in the vicinity of the unanticipated find. Following review, the PM will provide the avoidance plan to VDHR and BOEM. Once VDHR and BOEM approve the avoidance plan, the Project work will be allowed to re-commence with implementation of the avoidance plan.
6. Dominion Energy will be responsible for all costs associated with the discovery, investigation, reporting, and curation of any unanticipated finds encountered during Project construction.

3.2 Procedure When Human Remains and/or Potentially Human Skeletal Materials Are Observed

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Disturbance of human remains, burial places, or burial offerings and other grave furnishings without authorization is a felony.

ESSENTIAL INSTRUCTIONS

Workers shall treat all human remains with dignity and respect.

In Virginia, it is a felony to remove human remains from a grave without a court order or appropriate permit.

Stop immediately and establish a buffer zone.

IMMEDIATELY STOP all ground-disturbing activities in the vicinity of a discovery of human remains or suspected human remains.

An initial buffer of at least 50 feet (15 meters) around the find location shall immediately be established, within which no construction or other ground-disturbing activities shall take place pending evaluation of the find. Be aware that additional discoveries of possible human remains could be made outside the initial buffer, so the boundary of buffer of no construction activities may need to be expanded pending further evaluation of the finds.

Immediately notify the Archaeological Monitor and Project Manager

Immediately notify the AM and PM about the find.

The Archaeological Monitor and Project Manager ensures that the find(s) are secured from disturbance and notifies additional personnel

If the AM believes that potentially human skeletal remains have been found, she or he will:

1. Protect and secure the evidence of the discovery.
2. Delineate the location of the find and the surrounding initial buffer area with flagging or safety fencing.
3. Immediately notify the designated contacts:
    - Dominion Energy
    - Local Law Enforcement
    - VDHR
    - BOEM
    - Navy, as applicable
    - SMR, as applicable

As directed by Dominion Energy, the PM or PA may notify other interested parties about the unanticipated discovery.

Local law enforcement will assess the find.

Local law enforcement will visit the discovery and evaluate whether it represents a crime scene. If determined to be a crime scene, no work will be undertaken in the area until written permission to resume is provided by the investigating agency.

The Professional Archaeologist assesses the find, if not of concern to law enforcement.

If law enforcement determines that the find is not of concern, the PA will examine the discovery as soon as practicable to determine if the remains are likely human and make a determination on its archaeological association as to aboriginal or non-aboriginal.

The Professional Archaeologist determines the find is non-human.

Non-human find with no significant archaeological association.

If skeletal remains are determined to be non-human and there is no archaeological association, the PA making the determination will promptly advise the PM. PM will advise Dominion Energy and of PA's assessment and with their concurrence, PM will give order for construction to resume in the delineated area. The PA will submit a letter report including photographs of the discovery site to the PM and Dominion Energy, contacts within 14 business days of the determination.

Non-human find with an archaeological association.

If the skeletal remains are non-human, but are associated with an archaeological site, follow the steps described in Section G-3.3.1.

The Professional Archaeologist determines the find represents human remains.

If the skeletal remains are human and not of interest to law enforcement, the PA will notify the PM, Dominion Energy, VDHR, and BOEM contacts. The disposition of unmarked burial sites, human skeletal remains, or burial artifacts shall proceed as follows:

1. Reasonable efforts will be made to restore the unmarked burial site, avoid disturbance to the human skeletal remains or burial artifacts, and preserve the remains in place;
2. Dominion Energy shall be responsible for prompt notification of the owner of any leased property on which an unmarked cemetery or grave or human remains are discovered during construction;
3. BOEM in coordination with VDHR and Dominion Energy will notify and consult with appropriate tribal leaders;
4. If the human skeletal remains must be removed, Dominion Energy and the PA shall obtain a court order from the County Circuit Court and a Permit for Archaeological Removal of Human Burials from VDHR;
5. All artifacts found in association with an unmarked burial site shall become the property of the Commonwealth of Virginia and VDHR shall be the custodian thereof. The disposition of the burial artifacts shall be made by VDHR in accordance with its regulations;
6. If disturbance to human remains or a burial place cannot be avoided, Dominion Energy and the PA will prepare a treatment plan, in consultation with VDHR, BOEM, and interested Indian tribes or related descendants, as appropriate, outlining measures for excavation, disinterment, study, and re-

interment. The treatment plan will discuss the curation of any artifacts recovered in the process of excavation and provide for appropriate final disposition of the remains in accordance with applicable laws; and

7. Dominion Energy will be responsible for all costs associated with the discovery, evaluation and agency consultation, excavation, investigation and study, disinterment, re-interment, reporting, and curation of any human remains and associated funerary items encountered during Project construction.

3.3 References

Blondino, J. R., M. Klein, and C. McCoy. 2018. *Archaeological Assessment of the Northern Portion of the City of Virginia Beach, Virginia.* Prepared for the Commonwealth of Virginia, Department of Historic Resources, Richmond, by Dovetail Cultural Resource Group I, Inc., Fredericksburg, VA. Redacted version available online at https://www.vbgov.com/government/departments/planning/boards-commissions- committees/Documents/VA%20Historical%20Preservation/VB%20Archaeological%20Assessment% 20Northern%20Half%202018.pdf.

BOEM (Bureau of Ocean Energy Management). 2020. *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585,* May 27, 2020. Office of Renewable Energy Programs, BOEM. Available online at https://www.boem.gov/sites/default/files/documents/about-boem/Archaeology%20and%20Historic%20Property%20Guidelines.pdf.

Commonwealth Preservation Group. 2021. *Virginia Beach Historic Preservation Strategic Plan, Draft 3: June 8, 2021*. Prepared for the City of Virginia Beach and the Virginia Department of Historic Resources. Available at https://www.vbgov.com/government/departments/planning/boards-commissions-committees/Documents/VA%20Historical%20Preservation/VB%20Preservation%20Plan%20Update%20-%20Draft%206.8.2021-%20By%20pages%20-%20reduced.pdf.

NOAA (National Oceanic and Atmospheric Administration). 2021. Tides & Currents: Datums for 8639207, Rudee Inlet VA. Available online at: https://tidesandcurrents.noaa.gov/datums.html?id=8639207. Accessed September 13, 2021.

Underwood, J. R., and D. B. Blanton. 1999. *Preserving Our Past, Protecting Our Future: An Assessment of Archaeological Resources in the City of Chesapeake, Virginia*. Prepared for the Virginia Department of Historic Resources, Richmond, and the City of Chesapeake Planning Department, by the William and Mary Center for Archaeological Research, Department of Anthropology, the College of William and Mary, Williamsburg, VA. Available online at https://www.cityofchesapeake.net/Assets/documents/departments/planning/preserving_out_past_protecting_our_future.pdf.

City of Virginia Beach. 1994. *Virginia Beach Historic Resources Management Plan*. Available online at https://www.vbgov.com/government/departments/planning/boards-commissions-committees/Documents/VA%20Historical%20Preservation/Update%202015%20HR%20Related%20Documents/HistoricResourcesManagmentPlan_web.pdf.

VDHR (Virginia Department of Historic Resources). 2017. *Guidelines for Conducting Historic Resources Survey in Virginia.* Revised edition. Available online at https://www.dhr.virginia.gov/wp-content/uploads/2018/06/SurveyManual_2017.pdf.

3.4 Contact List

The Contact List will be updated prior to construction and implementation of the UDP-T. The Contact List will be periodically updated while implemented to ensure contacts are up to date.

Dominion Energy On-Site Project Manager

TBD (Name)

(Title)

(Address)

(Address)

(Phone)

(email)

Contractor On-Site Manager/Foreman

TBD (Name)

(Title)

(Address)

(Address)

(Phone)

(email)

Dominion Contact

TBD (Name)

(Title)

(Address)

(Address)

(Phone)

(Email)

Alternate Dominion Contact

TBD (Name)

(Title)

(Address)

(Address)

(Phone)

(Email)

Tetra Tech Contact

Janelle Lavallee

Project Manager

451 Presumpscot Street

Portland, ME 04103

Phone: (973) 630-8371

Email: janelle.lavallee@tetratech.com

Alternate Tetra Tech Contact

Sarah Haugh

Cultural Resources Specialist, Archaeologist

451 Presumpscot Street

Portland, ME 04103

Phone: (978) 660-6883

Email: sarah.haugh@tetratech.com

VDHR Contact

Roger W. Kirchen
Director, Review & Compliance Division

2801 Kensington Avenue

Richmond, VA 23221

Phone: (804) 482-6091

Email: roger.kirchen@dhr.virginia.gov

Alternate VDHR Contact

TBD (Name)
(Title)

(Address)

(Address)

(Phone)

(Email)

BOEM Project Contact

Casey Reeves Project Coordinator (Address)

(Address)

(571) 393-4369

Casey.Reeves@boem.gov

BOEM Archaeology Contact

TBD (Name) (Title)

(Address)

(Address)

(Phone) Sarah.Stokely@boem.gov

Virginia Beach Police Department

2509 Princess Anne Road

Virginia Beach, VA 23456

(757) 385-4141

Chesapeake City Police Department

304 Albemarle Drive

Chesapeake, VA 23322

(757) 382-6161

Naval Air Station Oceana Police Department (U.S. Navy Property)

Oceana Naval Air Station

1750 Tomcat Blvd

Virginia Beach, VA

23460 (757) 433-3713

U.S. Navy Contact

Blake Waller

Natural Resources Specialist

Naval Facilities Engineering Command (NAVFAC)

(Address)

(Address)

(Phone)

(email)

State Military Reservation Camp Pendleton

Susan Smead

Cultural Resources Program Manager

VDMA/NGVA-FMO-ENV

Bldg. 1340 (Curation Facility), Fort Pickett Blackstone, VA 23824-6316

Phone: 434-298-6411

Fax: 434-298-6400

susan.e.smead.nfg@mail.mil

U.S. Army Corps of Engineers Contact

TBD (Name)

(Title)

(Address)

(Address)

(Phone)

(Fax)

(email)

City of Chesapeake, VA, Historic Preservation Commission

Staff Liaison: Jessica Cosmas

Parks, Recreation and Tourism

1224 Progressive Drive

Chesapeake, VA 23320

(757)-382-6411

jcosmas@cityofchesapeake.net

City of Virginia Beach, VA, Historic Preservation Commission

Staff Liaison: Mark Reed, Planner

2875 Sabre Street

Virginia Beach, VA 23452

(757)-385-8573

mreed@vbgov.com

This page intentionally left blank.