Ocean Wind 1
An Ørsted & PSEG project

Ocean Wind 1 Offshore Wind Farm Project

Historic Resources Visual Effects Analysis
Non-Technical Summary

Prepared by:

HDR Engineering, Inc.

SEARCH, Inc.

January 2023

Table of Contents

List of Tables

List of Figures

1. Introduction

On behalf of Ocean Wind LLC (Ocean Wind), SEARCH and HDR prepared a historic resources visual effects assessment (HRVEA) in support of the Construction and Operations Plan (COP) for the proposed Ocean Wind Offshore Wind Farm Project (OCW01, or Project). The purpose of the HRVEA is to evaluate the Project's potential visual effects on the qualities that make above-ground historic properties eligible for listing in National Register of Historic Places (NRHP). Per 36 Code of Federal Regulations (CFR) Part 800, above-ground historic properties are defined as districts, buildings, structures, objects, or sites that are listed in or determined eligible for listing in the NRHP or which have been designated as National Historic Landmarks (NHLs). The assessment was conducted to satisfy the federal regulatory requirements as outlined in the Bureau of Ocean Energy Management (BOEM) Offshore Renewable Energy Program's *Guidelines on Providing Archaeological and Historic Property Information Pursuant to 30 CFR 585*.

The proposed Project is an offshore wind farm expected to deliver competitively priced renewable energy and additional capacity to meet State and regional renewable energy demands and goals by 2024. The Wind Farm Area (WFA) covers 68,730 acres approximately 15 miles (mi) southeast of Atlantic City, New Jersey (**Figure 1**). The Project would include construction of up to 98 wind turbine generators (WTG) and associated foundations, up to three offshore substations, offshore and onshore buried cabling, up to two onshore substations, and overhead grid connections. Potential export cable landfalls are in Ocean City (5th Street, 13th Street, and 34th Street) and near Island Beach State Park (Island Beach State Park, Holtec property on Barnegat Bay, Bay Parkway, and Lighthouse Drive) in Ocean County, with potential onshore substations at either BL England in Cape May County, New Jersey or Oyster Creek in Ocean County, New Jersey. The HRVEA focuses on evaluating potential visual effects from visible offshore and onshore components of the Project, including the WTGs and the onshore substations.

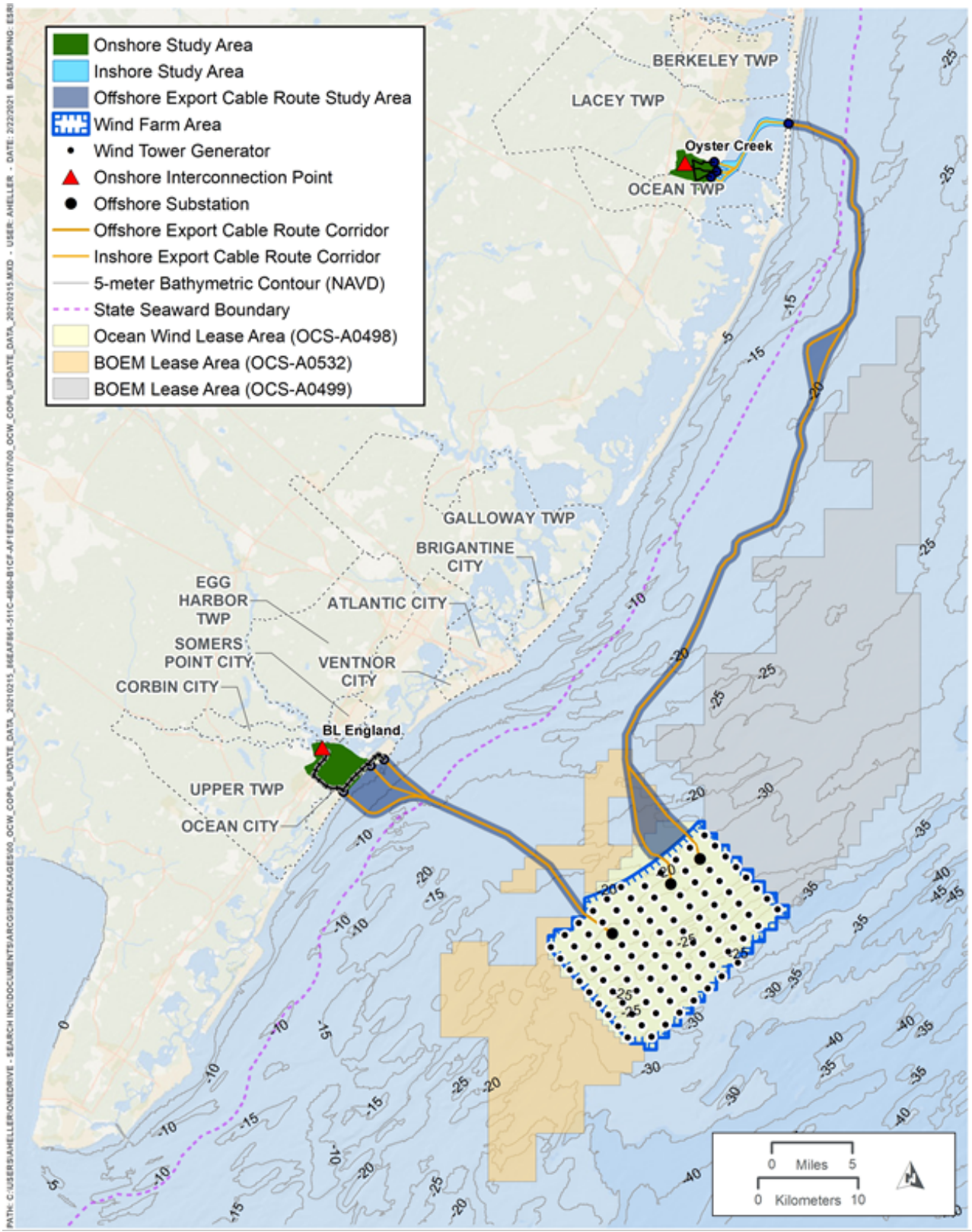

Figure 1. Project Location Map

The U.S. Department of the Interior (DOI) is charged with managing the Outer Continental Shelf (OCS) under the Outer Continental Shelf Lands Act (43 United States Code [USC] 1337). DOI delegated certain responsibilities for regulation of renewable energy projects on the OCS to BOEM, in the Energy Policy Act of 2005 (Public Law 109-58). BOEM's approval, approval with modification, or disapproval of the Ocean Wind COP constitutes an undertaking and activities proposed under the COP have the potential to affect historic properties—those properties included in or eligible for inclusion in National Register of Historic Places (NRHP)—under Section 106 of the National Historic Preservation Act (NHPA; 54 USC Part 306108) and the implementing regulations at 36 CFR Part 800. Additionally, the Project has the potential to affect properties designated as NHLs, which would require compliance with Section 110(f) of the NHPA. This report provides a description of the undertaking, delineation of a preliminary area of potential effects (PAPE) for visual effects to above-ground historic properties, and analyses and recommendations of visual effects to historic properties to assist BOEM with meeting its compliance requirements under Sections 106 and 110(f) of the NHPA.

2. Visual Effects Assessment

The assessment of potential visual effects to above-ground historic properties included three general steps. First, it included identification of a PAPE, in other words, the viewshed from which renewable energy structures, whether located offshore or onshore, would be visible. Second, within the PAPE, Ocean Wind conducted historic resources surveys to identify above-ground historic properties that are located within the viewshed of the Project. Third, Ocean Wind conducted a visual effects evaluation for those historic properties identified within the PAPE. These investigations were supported by fieldwork, background research, viewshed analyses, visibility studies, and visualizations created for the Project. The following sections expand on the methods to complete each step.

2.1 PAPE Development

Individual PAPEs were delineated for offshore infrastructure and the two proposed areas for permanent above-ground onshore infrastructure. The PAPE development methods differ depending on infrastructure type and siting as described in the following sections. In accordance with the requirements of the NHPA and its implementing regulations, BOEM will formally determine the Area of Potential Effects (APE) during the agency's Section 106 consultations.

2.1.1 Offshore Infrastructure PAPE

The Offshore Infrastructure PAPE was first informed by the theoretical limits of visibility of the WTGs. This information came from the Visual Impact Assessment (VIA), a separate study created for the Project. The VIA established a 40-mi radius from the boundary of the WFA within which the WTGs would be theoretically visible. Within the 40-mi radius, the VIA presented viewshed models to predict areas of likely visibility using Digital Terrain Models (i.e., bare earth conditions) and Digital Surface Models (representing vegetation, buildings, and other structures in the landscape). These models are helpful in narrowing down areas of theoretical visibility, but do not always reflect the human experience. For example, the models may show that the rooftop of a building is within the viewshed, but this is not representative of the experience for a typical viewer (who would not be on the roof). As such, Ocean Wind conducted additional computer-based analysis and fieldwork to refine the PAPE to only include areas from which a typical viewer would be able to view the Project. Generally, the Offshore Infrastructure PAPE extends from Wildwood in Cape May

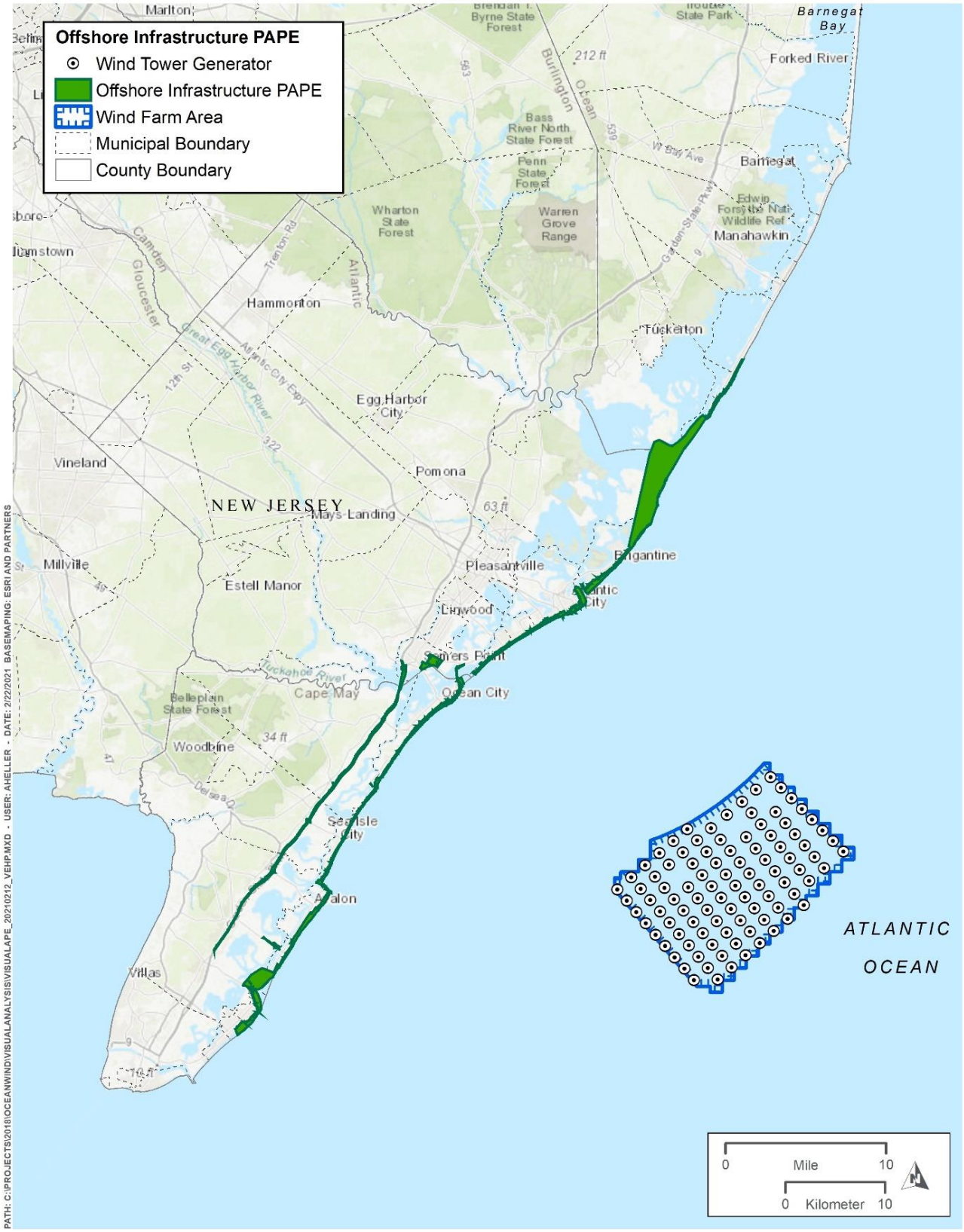

Figure 2. Offshore Infrastructure PAPE.

County in the south to Beach Haven in Ocean County in the north, and includes the first developed block of the barrier islands and select inland areas with views across bays opening to the Atlantic Ocean.

The Offshore Infrastructure PAPE was refined to areas of actual visibility through desktop computer analyses, field observations, and results of the VIA analysis. The desktop analysis indicated that Project visibility is generally limited to nearshore areas not blocked by topography, vegetation, or buildings located within the first developed block on the shoreline, or the first row of buildings on the second developed block. As such, for the desktop analysis, Ocean Wind reviewed the first block on the shoreline plus one building on the second block. Using Google Street View, Ocean Wind explored these nearshore areas block by block to evaluate the likelihood that the Project would be visible and to corroborate the availability of open-sea views. Ocean Wind next performed field verification of selected locations within the Study Area to confirm the desktop analysis. In-person fieldwork allowed the opportunity to make notes about visibility at select locations. Areas with no visibility were removed from the Offshore Infrastructure PAPE. Finally, Ocean Wind used the results of the VIA to inform the extent of the PAPE. Specifically, a portion of the VIA report includes a review of representative viewpoints within the report's 40-mi study area. These representative viewpoints were selected to illustrate the visual change to the public landscape anticipated throughout the study area. The review is based on Project visibility and the degree of contrast (in form, line, color, and texture) anticipated with the surrounding seascape and landscape. Each viewpoint was given a rating on a scale of the following: faint, apparent, conspicuous, prominent, and dominant. Ultimately, the VIA found that viewpoints over 25 mi away were evaluated as faint, regardless of viewer elevation, weather conditions, or lighting conditions. At that distance, the relative size of the turbines (measured at arm's length) was less than 1/8 inch. Thus, the Project's Offshore Infrastructure PAPE was established with a maximum distance of 25 mi from the boundary of the WFA.

2.1.2 Onshore Infrastructure PAPE

Development of Onshore Infrastructure PAPEs for the Oyster Creek and BL England substations includes the land generally within a study area defined as a 0.25-mi radius around the substation parcel boundaries. It was expanded in areas with greater visibility due to less intervening vegetation or development. Viewshed distances were established using a computer-based viewshed analysis and field evaluations. The Study Area considers the height and character of the substation and overhead grid connection components, existing conditions in the immediate vicinity of each site, and land-use patterns in the area surrounding the sites. Visual PAPEs for onshore infrastructure were refined within the 0.25-mi study area at the BL England substation location (**Figure 3**). The Oyster Creek PAPE extends beyond 0.25 mi in some areas lacking vegetation that would typically block views (**Figure 4**). Overhead lines from the substation to points of interconnection also fall within the PAPE.

Figure 3. Onshore Infrastructure PAPE for BL England Substation Parcel

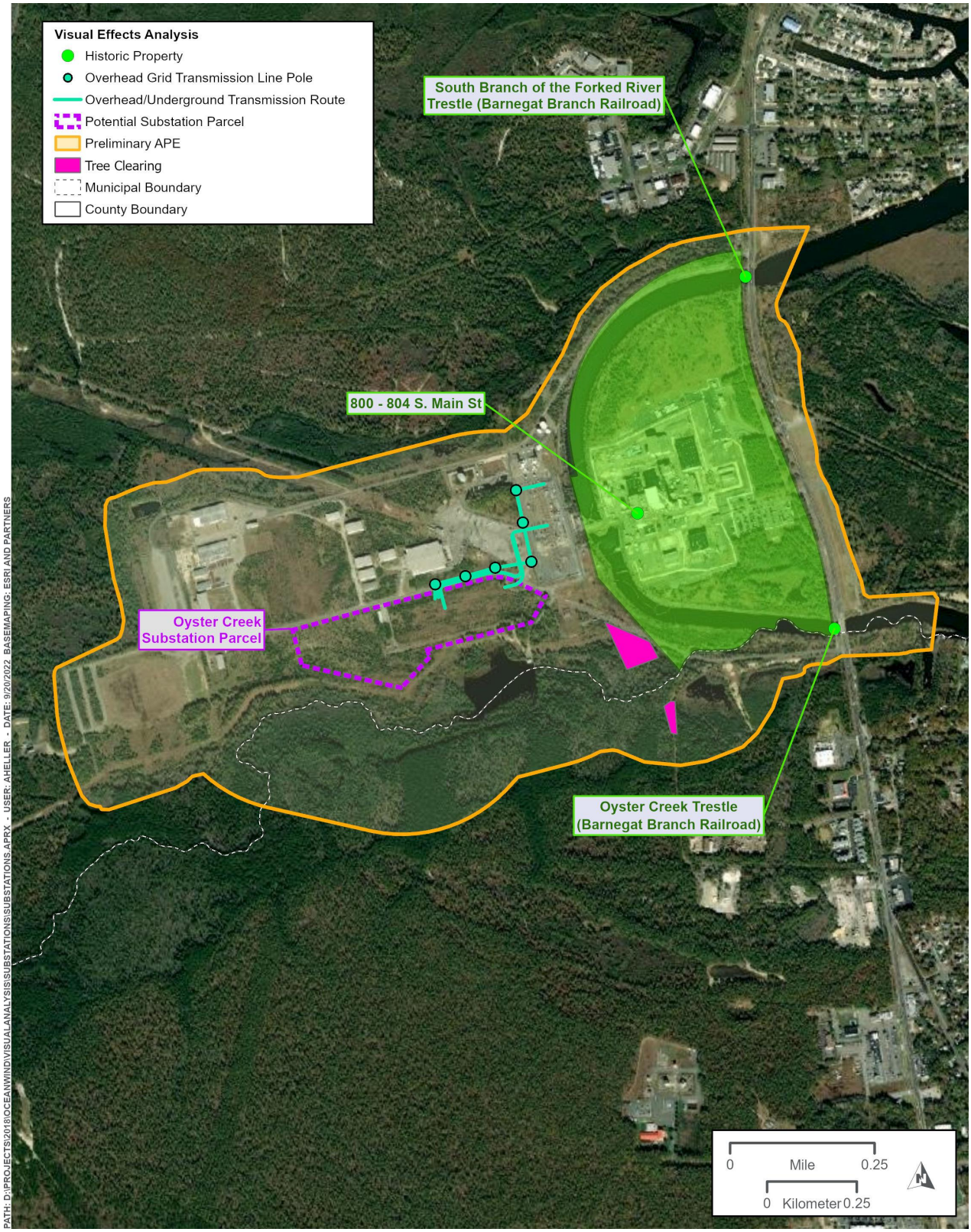

Figure 4. Onshore Infrastructure PAPE for Oyster Creek Substation Parcel

2.2 Historic Property Identification

Under Section 106 of the NHPA, a "historic property" is a resource that is either listed in the NRHP or eligible for listing. Ocean Wind reviewed each of the Project's PAPEs for the presence of historic properties, each of which would be subject to a visual effects analysis in the HRVEA. For all three PAPEs, Ocean Wind conducted a review of existing historic property records on file with the New Jersey Historic Preservation Office (NJ HPO) to compile a list of properties that were previously recognized as NRHP-eligible or NRHP-listed. Further, for all three PAPEs, Ocean Wind conducted a parcel review to identify structures at least 45 years old (built prior to 1977), and these were evaluated in accordance with the NJ HPOs *Guidelines for Architectural Survey*. Newly identified pre-1977 resources found NRHP-eligible were included in the visual effects evaluation in the HRVEA. The following sections summarize historic property identification in the PAPEs and detail specifics for identification methods modified for the Offshore Infrastructure PAPE.

2.2.1 Offshore Infrastructure PAPE Investigations

As mentioned, Ocean Wind reviewed the Offshore Infrastructure PAPE for the presence of previously identified NRHP-eligible and NRHP-listed properties, and for the presence of historic resource built prior to 1977. In an effort to focus the evaluation on those historic resources most vulnerable to setting changes, Ocean Wind consulted a 2012 BOEM study titled *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits, Volume I: Technical Report of Findings* (BOEM 2012). The study was completed in anticipation of impending offshore wind development in the United States and "was intended to provide a baseline of cultural information that will inform preliminary planning decisions regarding renewable energy development in the Atlantic Region." The document provides some guidance in identifying where a maritime setting and sea views may contribute to NRHP significance and become relevant considerations in an effects evaluation. While not explicitly defined in the document, "maritime setting" is broad category that would conservatively include most historic resources in the offshore infrastructure PAPE. However, resources with significant views to the sea are those with NRHP or survey documentation that specifically mentions sea views, or those that were determined to have significant sea views through additional research or site visits. The 2012 BOEM study reviewed a total of 9,600 cultural resources/historic properties, and found that 96 percent (9,175) had a significant maritime setting, but just 12 percent (1,108) had both a significant maritime setting and significant view to the sea (BOEM 2012:22). When planning a survey for historic property identification, Ocean Wind intended to identify and evaluate historic resources within the offshore infrastructure PAPE with a potentially significant sea view. For remaining resources in the offshore infrastructure PAPE, if the resource does not have a significant sea view, then, under Section 106 of the NHPA, viewshed changes on the distant horizon (i.e., the construction and operation of the WFA) could not result in an adverse effect on the resource.

Ocean Wind determined that orientation and types of architectural features present were useful filters to determine whether a resource may have significant sea views. Each resource's property type and its siting in relation to the ocean were also taken into account when establishing the potential significance of sea views. After identifying parcels in the PAPE that included historic resources that were at least 45 years old, Ocean Wind reviewed each parcel to determine if a sea view may be significant. Ocean Wind conducted fieldwork and architectural survey at those locations. Ultimately, Ocean Wind identified 385 buildings within the Offshore Infrastructure PAPE that met the criteria and required survey. Upon field observation, 84 of those resources did not meet the criteria for various reasons (some had been recently demolished, some did not have views, and some did not have architectural features indicating significant sea views). Ocean Wind completed survey documentation and evaluation for the remaining 301 historic resources within the Offshore Infrastructure PAPE. Of these, 175 were surveyed in Atlantic County, 120 were surveyed in Cape May County, and 6 were surveyed in Ocean County. Eleven NRHP-eligible properties were identified in Atlantic County, nine were identified in Cape May County, and none were identified in Ocean County. The 20 newly identified NRHP-eligible historic

properties were evaluated for visual effects in the HRVEA. The HRVEA evaluation also included 26 NRHP-listed and NRHP-eligible historic properties as identified during review of NJ HPO records. Finally, over the course of the Project, the NJ HPO recommended that Ocean Wind consider the historic significance of the Atlantic City Boardwalk, the Ocean City Boardwalk, and the Wildwood Boardwalk. These three boardwalks were presumed eligible for purposes of the Project and included in the HRVEA. Through review of existing records, historic resources survey, and consultation with the NJ HPO, a total of 49 historic properties were identified for review in the HRVEA. The 49 historic properties identified include 42 individual properties and seven historic districts.

2.2.2 Onshore Infrastructure PAPE Investigations

The BL England and Oyster Creek Onshore Infrastructure PAPEs were investigated for the presence of above-ground historic properties. The BL England and Oyster Creek development parcels were both sites of power generating facilities, both of which are decommissioned but have extant infrastructure that is at least 45 years old. As such, the existing power generating facilities were reviewed for potential historic significance. The BL England site was accessible for photos and recommended not eligible for NRHP listing. The Oyster Creek site was not accessible for photos. As a result, the Oyster Creek power-generating facility was presumed NRHP-eligible for purposes of the Project. Ocean Wind reviewed the Onshore Infrastructure PAPEs to determine the presence of historic resources not directly associated with the power generating facilities. The BL England PAPE included 30 historic resources, all of which were surveyed for the Project. The Oyster Creek PAPE included two NRHP-eligible bridges, both of which were resurveyed for the Project. Of the 32 resources surveyed for the Onshore Infrastructure PAPE investigation, four were determined NRHP-eligible. This included the two bridges in the Oyster Creek PAPE and two buildings in the BL England PAPE. After completion of the survey, the Project plans for BL England were modified and a revised PAPE was delineated. No new historic resources were added to the PAPE as a result of the change, but several resources identified as part of survey are outside of the revised PAPE. The two identified NRHP-eligible historic properties are among those outside of the revised PAPE. As a result, there are no historic properties in the Onshore Infrastructure PAPE for BL England. The two NRHP-eligible bridges and the presumed NRHP-eligible Oyster Creek generating station were reviewed for visual effects in the HRVEA.

2.3 Effects Evaluation

Based on the results of the historic property identification, a total of 52 historic properties were reviewed for visual effects in the HRVEA (49 in the Offshore Infrastructure PAPE and 3 in the Onshore Infrastructure PAPEs). The visual effects analysis was conducted for BOEM's regulatory compliance under Section 106 of the NHPA and its implementing regulations in 36 CFR Part 800. Under Section 106, a federal agency determines whether an undertaking will have No Adverse Effect or an Adverse Effect on historic properties. To determine whether effects to historic properties are adverse or not, an agency shall apply the Criteria of Adverse Effects as defined in 36 CFR Part 800.5:

> *An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.*

36 CFR Part 800.5 also includes examples of adverse effects ranging from destruction to transfer, lease, or sale of a property out of Federal ownership. This visual effects analysis considers whether the Project has the potential to change the character-defining features of the property's setting that contribute to its historic significance and/or introduce visual elements that diminish the integrity of the property's significant historic features. Significant features are among the things considered in determining if a historic property is eligible for the NRHP. To be listed in or eligible for listing in the NRHP, a property must meet criteria of age and significance and also retain sufficient integrity to convey its significance. *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* provides guidance on evaluating eligibility. Generally, a property must be 50 years of age or older for NRHP eligibility, but in this case, a standard of 45 years was used to accommodate Project construction schedules. A property must meet one or more of the National Register significance Criteria for Evaluation A–D:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of significant persons in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded or may be likely to yield, information important in history or prehistory.

In addition to meeting the age and significance criteria, a property must retain sufficient historic integrity to convey its significance. A property's integrity is based on the property's physical features and how they relate to the property's significance. Integrity is characterized in seven aspects: association, location, setting, feeling, design, materials, and workmanship. A property does not need to retain high levels of integrity in every aspect, but rather those aspects that are key to conveying its significance.

Per the Criteria of Adverse Effect in 36 CFR Part 800.5, to be considered adverse, an effect must alter a characteristic of the property that qualifies the property for NRHP listing and the alteration must diminish the property's historic integrity, or those physical aspects that convey a property's significance. Therefore, Ocean Wind conducted research on each historic property to determine why the property is significant and which aspects of integrity are key to conveying significance of the property.

Visual effects have the potential to affect integrity of setting. In the case of the Project's offshore infrastructure, this would specifically include the seascape, as visible on the distant horizon. As presented in the 2012 *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, South Atlantic, and Florida Straits, Volume I: Technical Report of Findings*, the historic properties that are vulnerable to adverse visual effects related to the Project's offshore infrastructure are those for which a sea view is a character-defining feature supporting significance of the property. For example, proximity to the ocean may contribute to a property's significance as part of its maritime setting, but the view to or from that property with respect to the sea may not contribute. While a sea view may be a part of a property's setting, it may not contribute to its significance. For the historic properties within the Offshore Infrastructure PAPE, the Project's WTGs would be a new visual element in the seascape, with varying levels of visibility throughout PAPE. The introduction of modern visual elements, as proposed by the Project, to the setting or surroundings of a historic property alone is not enough for a determination of adverse effect.

The process for evaluating visual effects for Onshore Infrastructure was similar; however, the planned onshore components would not affect sea views and the evaluation considered separate setting features.

Potential adverse visual effects were identified for ten historic properties within the Offshore Infrastructure PAPE (**Table 1, Figure 5**), and no historic properties within the Onshore Infrastructure PAPEs. For those properties with adverse effect recommendations, a sea view is considered to be a character-defining feature supporting its NRHP significance and the Project would diminish the integrity of its sea view setting. Ocean Wind has proposed measures to avoid, minimize, and mitigate the anticipated adverse visual effects to historic properties. The final measures appropriate to resolve the effects of the Project to historic properties will be determined during the ongoing BOEM-led Section 106 consultations and presented in a Memorandum of Agreement executed prior to the Record of Decision.

Table 1. Adverse Effect Recommendations within the Offshore Infrastructure PAPE.

Name	Property Address	Effect Recommendation
Cape May County		
Ocean City Boardwalk	East 6th Street to East 14th Street, Ocean City	Adverse effect
Ocean City Music Pier	811 Boardwalk, Ocean City	Adverse effect
Atlantic County		
Brigantine Hotel	1400 Ocean Avenue, Brigantine City	Adverse effect
Atlantic City Boardwalk	South New Jersey Avenue to South Georgia Avenue	Adverse effect
Atlantic City Convention Hall	Boardwalk at Pacific Avenue	Adverse effect
Ritz-Carlton Hotel	2715 Boardwalk, Atlantic City	Adverse effect
Riviera Apartments	116 South Raleigh Avenue, Atlantic City	Adverse effect
Vassar Square Condominiums	4800 Boardwalk, Ventnor City	Adverse effect
114 South Harvard Avenue	114 South Harvard Avenue, Ventnor City	Adverse effect
Lucy the Margate Elephant	Decatur and Margate Avenues, Margate City	Adverse effect

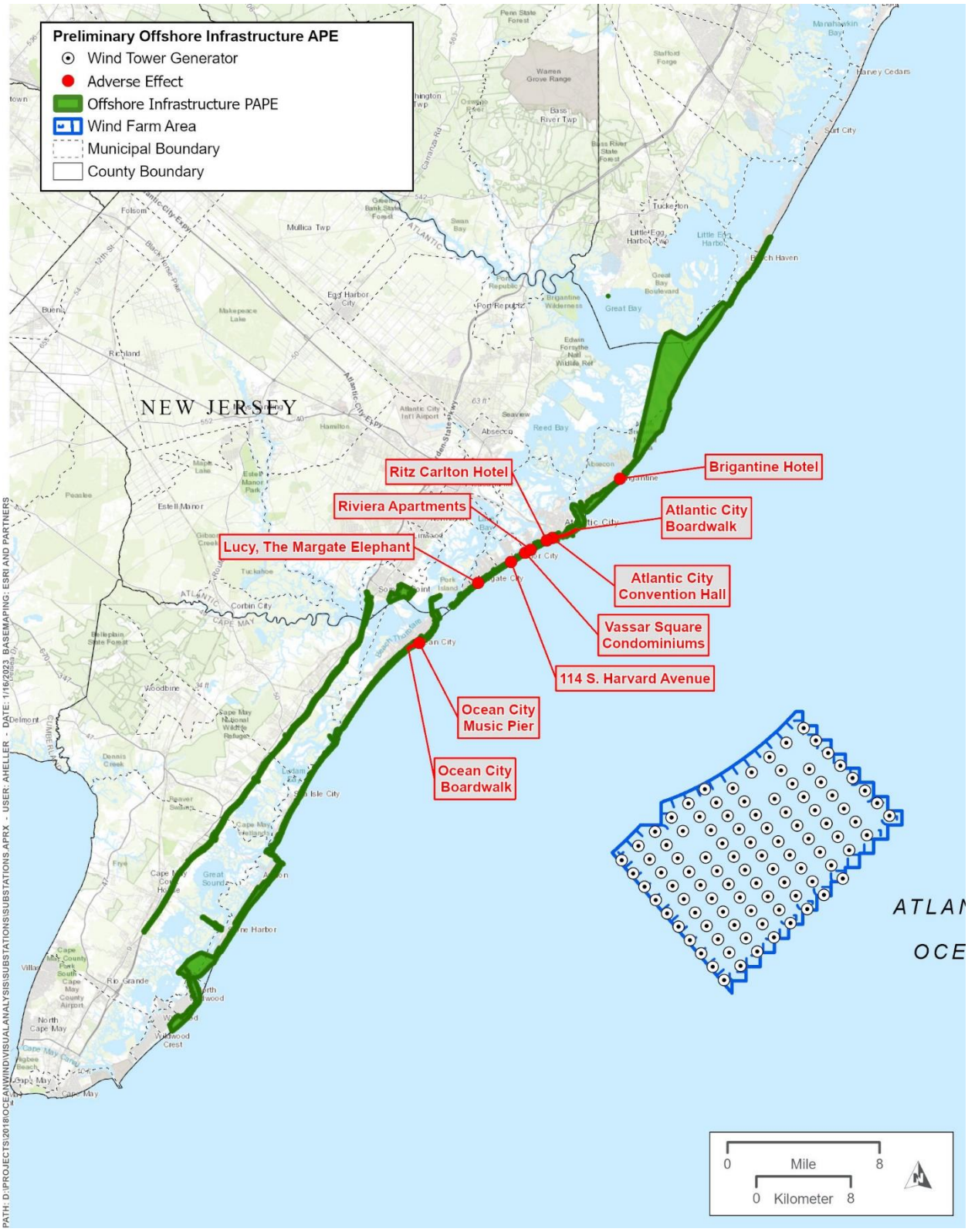

Figure 5. Location Map of Adverse Effect Recommendations.