Appendix E Analysis of Incomplete and Unavailable Information

Contents

In accordance with Section 1502.21 of the Council of Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA), when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an Environmental Impact Statement (EIS) and when information is incomplete or unavailable, the agency shall make clear that such information is lacking. When incomplete or unavailable information was identified, the Bureau of Ocean Energy Management (BOEM) considered whether the information was relevant to the assessment of impacts and essential to its analysis of alternatives based upon the resource analyzed. If essential to a reasoned choice among the alternatives, BOEM considered whether it was possible to obtain the information and if the cost of obtaining it was exorbitant. If it could not be obtained or if the cost of obtaining it was exorbitant, BOEM applied acceptable scientific methodologies to inform the analysis in light of this incomplete or unavailable information. For example, conclusive information on many impacts of the offshore wind industry may not be available for years, and certainly not within the contemplated timeframe of this NEPA process. However, if this information is essential for a reasoned decision, subject matter experts have used the scientifically credible information available and generally accepted scientific methodologies to evaluate impacts on the resources while this information is unavailable.

E.1 Incomplete or Unavailable Information Analysis for Resource Areas

E.1.1 Air Quality

This EIS is missing air dispersion modeling results showing that actions will be under the National Ambient Air Quality Standards (NAAQS) thresholds. The Applicant submitted a standard Offshore and Coastal Dispersion (OCD) modeling protocol to the Maryland Department of the Environment (MDE) on September 16, 2022. MDE responded December 27, 2022, that an alternative modelling protocol should be used. All alternative modeling protocols require approval by the U.S. Environmental Protection Agency (USEPA) Region 3. On January 26, 2023, the Applicant, USEPA, and MDE met to discuss the alternative protocol review and approval process. The approval process, including receipt of data from USEPA, is expected to take approximately 2 months from submission.

Avoided emission calculations do not conform to updated USEPA Port Emission Inventory Guidance (EPA-420-D-22-011, April 2022). However, the Applicant has utilized the BOEM Offshore Wind Energy Facilities Emission Estimating Tool, Version 2.0 (BOEM 2021) (BOEM Tool), which calculates the avoided emissions by using the EPA's AVERT modeling tool to obtain emission factors for the regional mix of conventional energy sources.

This EIS does not include an analysis of the social cost of carbon both with individual GHG (CO2, CH4, N2O) and with CO2e. However, the Applicant provided GHG emissions (CO2, CH4, and CO2e) from Construction and O&M.

Although a quantitative emissions inventory analysis of the region, or regional modeling of pollutant concentrations, over the planned project life (25-35 years) would more accurately assess the overall impacts of the changes in emissions from the Project, any action alternative would lead to reduced emissions regionally and can only lead to a net improvement in regional air quality. Pending issuance of an Outer Continental Shelf (OCS) air quality permit and confirmation that air dispersion modeling results show that actions will be under the NAAQS thresholds, the differences among action alternatives with respect to direct emissions due to construction, operation and maintenance (O&M), and decommissioning of the Project are expected to be small.

E.1.2 Water Quality

No incomplete or unavailable information related to the analysis of impacts on water quality was identified.

E.1.3 Bats

There will always be some level of incomplete information on the distribution and habitat use of bats in the offshore portions of the Wind Development Area, as habitat use and distribution varies among seasons and species. Additionally, because U.S. offshore wind development is in its infancy, with only two offshore wind projects having been constructed at the time of this analysis, there is some level of uncertainty regarding the potential collision risk to individual bats that may be present within the offshore portions of the Wind Development Area. However, sufficient information on collision risk to bats observed at land-based U.S. wind projects exists and was used to analyze and corroborate the potential for this impact as a result of the proposed Project. In addition, as described in Section 3.5 of the EIS, the likelihood of a bat encountering an operating wind turbine generator (WTG) during migration is very low and, therefore, the differences among action alternatives with respect to bats for the Project are expected to be small. As such, the analysis provided in this EIS is sufficient to support sound scientific judgments and informed decision-making related distribution and use of the offshore portions of the Wind Development Area as well as to the potential for collision risk of bats. Therefore, BOEM does not believe that there is incomplete or unavailable information on bat resources that is essential to a reasoned choice among alternatives.

E.1.4 Benthic Resources

Although there is uncertainty regarding the spatial and temporal distribution of benthic (faunal) resources and periods during which they might be especially vulnerable to disturbance, US Wind's surveys of benthic resources (COP Appendices II- B2, *Suspended Sediment Transport Modeling Study Offshore Submarine Cable* Installation; D4, *Lease Area and Offshore Export Cable Corridors Benthic Report, 2021*; D5, *Onshore Export Cable Corridors Benthic Report, 2022*; E1, *Information to Support Essential Fish Habitat* Assessment; K5, *Preliminary Cable Burial Risk Assessment*; and K7, *Preliminary Cable Burial Risk Assessment Export Cable Corridor*; US Wind 2022) and other broad-scale studies (Guida et al. 2017; Cutter et al. 2000; NOS 2015; BOEM 2011, 2012; Slacum et al. 2010; and Rutecki et al. 2014) provided a suitable basis for generally predicting the species, abundances, and distributions of benthic resources within the geographic analysis area. Uncertainty also exists regarding the impact of some impact-producing factors (IPFs) on benthic resources. For example, specific stimulus-response related to acoustics and EMF is not well studied, although there is some emerging information from benthic monitoring at European wind facilities and the Block Island Wind Farm in the United States that allows for a broad understanding of the impacts. Similarly, specific secondary impacts, such as changes in diets throughout the food chain resulting from habitat modification and synergistic behavioral impacts from multiple IPFs, are not fully known. Again, results of benthic monitoring at European wind facilities and the Block Island Wind Farm in the United States provide general knowledge of the overall impacts of these IPFs combined, if not individually. Therefore, the analysis provided in this EIS is sufficient to support sound scientific judgments and informed decision-making related to the overall impacts. For these reasons, BOEM does not believe that there is incomplete or unavailable information on benthic resources that is essential to a reasoned choice among alternatives.

E.1.5 Birds

Habitat use and distribution of marine birds varies between seasons, species, and years and, as a result, there will always be some level of incomplete information on the distribution and habitat use of marine birds in the offshore portions of the geographic analysis area. However, avian survey findings that cover the Project (see COP Volume II, Appendix II-N1; US Wind 2024) were used to inform the predictive models and analyze the potential adverse impacts on bird resources in the EIS. In addition, because U.S. offshore wind development is in its infancy, there will always be some level of uncertainty regarding the potential for collision risk and avoidance behaviors for some of the bird species that may be present within the offshore portions of the geographic analysis area. In place of this information, subject matter experts used the data and assumptions described below and, in the EIS, to create models to evaluate impacts, where it was determined that the information was essential for reasoned decision-making. Bird mortality data are available for onshore wind facilities and, based on a number of assumptions regarding their applicability to offshore environments, were used to inform the analysis of bird mortality associated with the offshore WTGs analyzed in the EIS. However, uncertainties exist regarding the use of the onshore bird mortality rate to estimate the offshore bird mortality rate due to differences in species groups present and life history and behavior of species as well as differences in the offshore marine environment compared to onshore habitats. Modeling is commonly used to predict the potential mortality rates for marine bird species in Europe and the United States (BOEM 2015, 2021). Due to inherent data limitations, these models often represent only a subset of species potentially present. However, the datasets used by both US Wind and BOEM to assess the potential for exposure of marine birds to the Wind Development Area represent the best available data and provide context at both local and regional scales. Additionally, because the U.S. offshore wind industry is in its infancy, there is uncertainty regarding the potential for fatal collisions and avoidance behavior for bird species present in the geographic analysis area. However, sufficient information on collision risk and avoidance behaviors observed in related species at European offshore wind projects is available and was used to analyze and corroborate the potential for these impacts as a result of the proposed Project (e.g., Petersen et al. 2006; Skov et al. 2018). As such, the analysis provided in the EIS is sufficient to support sound scientific judgments and informed decision-making related to distribution and use of the offshore portions of the geographic analysis area as well as to the potential for collision risk and avoidance behaviors in bird resources. Furthermore, the similarity between the layouts analyzed for the different action alternatives does not render any of this incomplete and unavailable information essential to a reasoned choice among alternatives. Therefore, BOEM does not believe that there is incomplete or unavailable information on avian resources that is essential to a reasoned choice among alternatives.

E.1.6 Coastal Habitat and Fauna

Although the preferred habitats of terrestrial and coastal fauna are generally known, specific data on abundances and distributions within the geographic analysis area of various fauna within these habitats are likely to remain unknown without site-specific surveys. However, the species inventories and other general information about the area provide an adequate basis for evaluating the fauna likely to inhabit the onshore geographic analysis area. Additionally, the onshore activities proposed involve only common, industry-standard activities for which impacts are generally understood. Therefore, BOEM believes that the analysis provided in this EIS is sufficient to make a reasoned choice among the alternatives.

E.1.7 Finfish, Invertebrates, and Essential Fish Habitat

Although there is some uncertainty regarding the spatial and temporal distribution of finfish and invertebrate resources and periods during which they might be especially vulnerable to disturbance, US Wind's aquatic resource surveys (e.g., COP Appendices II- B2, *Suspended Sediment Transport Modeling Study Offshore Submarine Cable* Installation; D4, *Lease Area and Offshore Export Cable Corridors Benthic Report, 2021*; D5, *Onshore Export Cable Corridors Benthic Report, 2022*; E1, *Information to Support Essential Fish Habitat Assessment*; K5, *Preliminary Cable Burial Risk Assessment*; and K7, *Preliminary Cable Burial Risk Assessment Export Cable Corridor*; US Wind 2022) and other broad-scale studies (e.g., Guida et al. 2017; BOEM 2014; NMFS 2017; and NOAA 2021, 2022) provided a suitable basis for general predictions of finfish and invertebrate resources with respect to species, densities, and distributions within the geographic analysis area. Additional information related to Endangered Species Act (ESA)-listed species and essential fish habitat (EFH) will be addressed in the forthcoming Biological Assessment (BA) and EFH Assessment. While impacts on these specific finfish and invertebrate species are not anticipated to vary from the general impacts provided in the EIS, specific impact discussion for ESA-listed species and EFH will be provided in the BA and EFH Assessment.

Uncertainty also exists regarding the impact of some IPFs on invertebrate resources, such as the effects of electromagnetic fields (EMFs) and underwater noise (e.g., generated from pile driving). The available information on invertebrate sensitivity to EMF is equivocal (Hutchinson et al. 2020), and sensitivity to sound pressure and particle motion effects is not well understood for many species, nor are synergistic or antagonistic impacts from multiple IPFs. Similarly, specific secondary impacts such as changes in diets throughout the food chain resulting from habitat modification are not well known for finfish and invertebrates. Where applicable, the assessment drew upon information in the available literature and an increasing number of monitoring and research studies related to wind development, other undersea development, or artificial reefs in Europe and the United States, several of which were recently drafted or published. These monitoring studies help provide a broad understanding of the overall impacts of these IPFs combined, if not individually. In addition, the forthcoming BA and EFH Assessment will include monitoring that will provide additional data with respect to potential impacts of the IPFs.

For these reasons, the information provided in this EIS is sufficient to support sound scientific judgments and informed decision-making related to the overall impacts. Therefore, BOEM does not believe that there is incomplete or unavailable information on finfish, invertebrate, and EFH resources that is essential to a reasoned choice among alternatives.

E.1.8 Marine Mammals

The National Marine Fisheries Service (NMFS) has summarized the most current information about marine mammal population status, occurrence, and use of the region in its current and draft stock status report for the Atlantic OCS and Gulf of Mexico (Hayes et al. 2020, 2021, 2022; NMFS 2023). These studies provided a suitable basis for predicting the species, abundances, and distributions of marine mammals in the geographic analysis area. However, population trend data from NMFS are unavailable for 31 out of the 39 marine mammal stocks known to occur in waters in the vicinity of the Offshore Project area (see Table 3.5.6-1 in the EIS). Most species lacking population trend data are offshore species, such as blue whale, fin whale, and non-porpoise odontocetes (e.g., beaked whales and dolphins). As a result, there is uncertainty regarding how Project activities and cumulative effects may affect these populations. In addition to species distribution information, effects of some IPFs on marine mammals are also uncertain or ambiguous, as described below.

Potential effects of EMF have not been scaled to consider impacts on marine mammal populations or their prey in the geographic analysis area (Taormina et al. 2018). The widespread ranges of marine mammals and difficulty obtaining permits make experimental studies challenging. As a result, no controlled experimental scientific studies have been conducted that examine the effects of altered EMF on marine mammals. Scientific studies summarized by Normandeau et al. (2011) demonstrate that marine mammals are sensitive to, and can detect, small changes in magnetic fields (Section 3.5.6 of the EIS), but potential impacts would likely only occur within a few feet of cable segments. Thus, the current literature does not support a conclusion that EMF could lead to changes in behavior that would cause significant adverse effects on marine mammal populations.

The behavioral effects of anthropogenic noises on marine mammals are increasingly being studied. However, behavioral responses vary depending on a variety of factors such as life stage, previous experience, and current behavior (e.g., feeding, nursing), thus are therefore difficult to predict. In addition, the current NMFS disturbance criteria apply a single threshold for all marine mammals for impulsive noise sources and do not consider the overall duration, exposure, or frequency content of the sound to account for species-dependent hearing acuity. While elevated underwater sound could startle or displace animals, behavioral responses are not necessarily predictable from received levels alone (Southall et al. 2007).

In addition, research regarding the potential behavioral effects of pile-driving noise has generally focused on harbor porpoises and seals; studies that examine the behavioral responses of baleen whales to pile driving are absent from the literature. Of the available research, most studies conclude that, although pile-driving activities could cause avoidance behaviors or disruption of feeding activities, individuals would likely return to normal behaviors once the activity had stopped Brandt et al. 2011, Dahne et al. 2013, Benhemma-Le Gall et al. 2021). However, uncertainty remains regarding the long-term cumulative acoustic impacts associated with multiple pile-driving projects that may occur over several years. This also applies to other project activities (e.g., vessel traffic, high-resolution geophysical (HRG) surveys, geotechnical drilling, and dredging activities) that may elicit behavioral reactions in marine mammals. As a result, it is not possible to predict with certainty the potential long-term behavioral effects on marine mammals from the Project-related pile-driving or other activities, as well as ongoing concurrent and cumulative pile-driving and other activities.

This assessment used the best available information when considering behavioral effects related to underwater noise to address this uncertainty. The NMFS acoustic thresholds (NMFS 2022) were used to better characterize the impacts of underwater noise (see Section Table 3.5.6-4 in the EIS). For the assessment of large baleen whales, studies on other impulsive noises (e.g., seismic sources) were used to inform the potential behavioral reactions to pile-driving noise (McCauley et al. 1998; Johnson 2002; Richardson et al. 1986). Monitoring studies would provide insight into species-specific behavioral reactions to Project-generated underwater noise. Long-term monitoring of concurrent and multiple projects could inform the understanding of long-term effects and subsequent consequences from cumulative underwater noise activities on marine mammal populations.

There is a lack of research regarding the responses of large whale species to extensive networks of new structures due to the novelty of OSW development on the Atlantic OCS. Although new structures are anticipated from multiple offshore wind projects under the planned actions scenario (see Appendix D in EIS), it is expected that spacing will allow large whales to access areas within and between wind facilities. No physical obstruction of marine mammal migration routes or habitat areas are anticipated, but it is unknown if avoidance of offshore wind lease areas due to new structures would occur. Additionally, while there is some uncertainty regarding how hydrodynamic changes around foundations may affect prey availability, these changes are expected to have limited impacts on the local conditions

around WTG foundations. The potential consequences of these impacts on marine mammals of the Atlantic OCS are unknown. Monitoring studies would provide insight into species-specific avoidance behaviors and other potential behavioral reactions to Project structures. Given this, BOEM has asked the National Academies of Sciences, Engineering, and Medicine (NASEM) to further evaluate this issue, with particular emphasis on assessing potential impacts to NARW prey availability.

At present, this EIS has no basis to conclude that these IPFs, with the uncertainties as noted above, would result in significant adverse impacts on marine mammal populations.

BOEM determined that the overall costs of obtaining the missing information for or addressing these uncertainties are exorbitant, or the means to obtain it are unknown. Therefore, to address these gaps as described above, BOEM extrapolated or drew assumptions from known information for similar species and studies using acceptable scientific methodologies to inform the analysis considering this incomplete or unavailable information, as presented in Section 3.5.6 of the EIS and in the BA submitted to NMFS (BOEM 2023). The information and methods used to predict potential impacts on marine mammals represent the best available information, and the information provided in this EIS is sufficient to support sound scientific judgments and informed decision-making. Therefore, BOEM does not believe that there is incomplete or unavailable information on marine mammal resources that is essential to a reasoned choice among alternatives.

E.1.9 Sea Turtles

There is incomplete information on the distribution and abundance of sea turtle species that occur in the Atlantic OCS and the Lease Area. The NMFS BA (BOEM 2023) provides a thorough overview of the available information about potential species occurrence and exposure to Project-related IPFs. The studies summarized therein provide a suitable basis for predicting potential species occurrence, relative abundance, and probable distribution of sea turtles in the geographic analysis area.

Some uncertainty exists about the effects of certain IPFs on sea turtles and their habitats. The effects of EMF on sea turtles are not completely understood. However, the available relevant information is summarized in the BOEM-sponsored report by Normandeau et al. (2011) and a more recent review by Bilinski (2021). Although the thresholds for EMF disturbing various sea turtle behaviors are not known, the evidence suggests that impacts may only occur on hatchlings over short distances, and no adverse effects on sea turtles have been documented to occur from the numerous submarine power cables around the world. In addition, no designated nesting beaches, critical habitat, or other biologically important habitats were identified in the offshore export cable corridor.

There is also uncertainty about sea turtle responses to proposed Project construction activities, and data are not available to evaluate potential changes to movements of juvenile and adult sea turtles due to elevated suspended sediments. However, although some exposure may occur, total suspended solid impacts would be limited in magnitude and duration and would occur within the range of exposures periodically experienced by these species. On this basis, any resulting impact on sea turtle behavior due to sediment plumes would likely be too small to be biologically meaningful, and no adverse impacts would be expected (NOAA 2020). Some potential exists for sea turtle displacement, but it is unclear if this would result in adverse impacts (e.g., because of lost foraging opportunities or increased exposure to potentially fatal vessel interactions). Additionally, it is currently unclear whether concurrent construction of multiple projects, increasing the extent and intensity of impacts over a shorter duration, or spreading out project construction with lower intensity impacts over multiple years would result in the least potential harm to sea turtles. There is also uncertainty regarding the cumulative acoustic impacts associated with pile-driving activities. It is unknown whether sea turtles affected by

construction activities would resume normal feeding, migrating, or breeding behaviors once daily pile-driving activities cease, or if secondary impacts would continue. Under the planned actions scenario, individual sea turtles may be exposed to acoustic impacts from multiple projects in a single day or from one or more projects over the course of multiple days. Although the consequences of these exposure scenarios have been analyzed with the best available information, some level of uncertainty remains due to the lack of observational data on species' responses to pile driving.

Some uncertainty exists regarding the potential for sea turtle responses to Federal Aviation Administration (FAA) hazard lights and navigation lighting associated with offshore wind development. US Wind would limit lighting on WTGs and offshore substations (OSSs) to minimum levels required by regulation for worker safety, navigation, and aviation. Although sea turtles' sensitivity to these minimal light levels is unknown, sea turtles do not appear to be adversely affected by oil and gas platform operations, which produce far more artificial light than offshore wind structures (BOEM 2019). The placement of new structures would be far from known nesting beaches, so no impacts on nesting female or hatchling sea turtles are anticipated.

Considerable uncertainty exists about how sea turtles would interact with the long-term changes in biological productivity and community structure resulting from the reef effect of offshore wind farms across the geographic analysis area. Artificial reef and hydrodynamic impacts could influence predator- prey interactions and foraging opportunities in ways that influence sea turtle behavior and distribution. Also, the extent of sea turtle entanglement on artificial reefs and shipwrecks is not captured in sea turtle stranding records and the significance and potential scale of sea turtle entanglement in lost fishing gear are not quantified. These impacts are expected to interact with the ongoing influence of climate change on sea turtle distribution and behavior over broad spatial scales, but the nature and significance of these interactions are not predictable. BOEM anticipates that ongoing monitoring of offshore energy structures will provide some useful insights into these synergistic effects.

BOEM considered the level of effort required to address the uncertainties described above for sea turtles and determined that the methods necessary to do so are lacking or the associated costs would be exorbitant. Therefore, where appropriate, BOEM inferred conclusions about the likelihood of potential biologically significant impacts from available information for similar species and situations to inform the analysis considering this incomplete or unavailable information. These methods are described in greater detail in Section 3.5.7 of the EIS, and in the BA submitted to NMFS (BOEM 2023). Therefore, the analysis provided is sufficient to support sound scientific judgments and informed decision-making about the proposed Project with respect to its impacts on sea turtles. For these reasons, BOEM does not believe that there is incomplete or unavailable information on turtles that is essential to a reasoned choice among alternatives.

E.1.10 Wetlands

No incomplete or unavailable information related to the analysis of impacts on wetlands was identified.

E.1.11 Commercial Fisheries and For-Hire Recreational Fishing

Fisheries are managed in the context of an incomplete understanding of fish stock dynamics and effects of environmental factors on fish populations. The commercial fisheries information used in this assessment has limitations. For example, vessel trip report data are only an approximation because this information is self-reported and may not account for all trips. The vessel trip report data also do not include all commercial fishing operations that may be affected by the Proposed Action and only represent vessel logbook data for species managed by the Greater Atlantic Regional Fisheries Office.

While these data include incidental catch of Atlantic menhaden, highly migratory species, or species managed by the NMFS Southeast Regional Office (e.g., wahoo and mahi mahi) when targeting other species, they are not a subset of total catch of these species within the Lease Area. Additionally, available historical data lack consistency, making comparisons challenging.

Vessel monitoring system (VMS) data are also limited, with a number of factors contributing to their limitations.

- VMS coverage is not universal for all fisheries, with some fisheries (e.g., summer flounder, scup, black sea bass, bluefish, American lobster, spiny dogfish, skate, whiting, and tilefish) not covered at all by VMS.
- There is limited historical coverage for most fisheries (e.g., monkfish is optional and elective on a yearly basis, 2005 or earlier for herring, 2006 for groundfish and scallops, 2008 for surfclams/ocean quahogs, 2014 for mackerel, and 2016 for longfin squid/butterfish).
- Trip declaration does not necessarily correspond to actual operation.
- Hourly position pings limit area resolution based on speed.
- Fishing time/location can be mis-estimated by operational assumptions (speed and direction) that are affected by externalities (weather, sea state, mechanical issues).
- Catch data are limited for there is no information on catch rates, retained catch composition is limited to target species and some bycatch species, and the data are not universal.
- Catch information is for the full trip, not sub-trips.
- Not all information is collected from all fisheries (gear type).

However, these data represent the best available data, and sufficient information exists to support the findings presented in this EIS.

A second limitation is that limited information is available regarding revenue exposure for for-hire recreational fishing in the Lease Area. NMFS completed a planning-level assessment of revenues from recreational party and charter vessels in the Lease Area (data which is presented in Section 3.6 of the EIS), but no information is available regarding recreational revenues from areas along the cable export route. However, BOEM does not believe that there is incomplete or unavailable information on commercial fisheries and for-hire recreational fishing resources that is essential to a reasoned choice among alternatives.

E.1.12 Cultural Resources

Due to the size of the offshore remote-sensing survey areas in the marine APE, the full extent or size of individual ancient submerged landforms cannot be defined. As such, differences among alternatives with respect to cultural resources cannot be fully known. However, US Wind has committed to avoiding and minimizing impacts to ancient submerged landforms and, if they cannot be avoided, BOEM will specify mitigation in the Record of Decision (ROD) to resolve adverse effects on the ancient submerged landforms. Archaeological surveys within the marine archaeology portion of the APE identified 18 shipwrecks, potential shipwrecks, or potential cultural resources in the Lease Area and in the vicinity of the Offshore Export Cable Route (Proposed Action and alternative routes), including 14 in federal waters and 4 in state waters (COP, Volume II, Appendix II-I1; R. Christopher Goodwin & Associates 2023a). However, these resources are assumed to be eligible, and US Wind will avoid all of the 18 shipwrecks, potential shipwrecks, and potential cultural resources as well as a 50-meter buffer around each resource. As a result, despite there being data gaps related to the specific nature of the

potential submerged archaeological resources, there is sufficient information available to avoid these resources, or to minimize or mitigate impacts if they cannot be avoided.

E.1.13 Demographics, Employment, and Economics

US Wind's economic analysis estimated the employment and outputs for the Proposed Action. In conjunction with available research and forecasts from other sources, this provided sufficient information for the evaluation of demographics, employment, and economics to support a reasoned choice among alternatives. There is some inherent uncertainty in forecasting how economic variables in various areas will evolve over time. However, the differences among action alternatives with respect to demographics, employment, and economics are not expected to be significant. Therefore, BOEM does not believe that there is specific incomplete or unavailable information on demographics, employment, and economics that is essential to a reasoned choice among alternatives.

E.1.14 Environmental Justice

Evaluations of impacts on environmental justice communities rely on the assessment of impacts on other resources. As a result, incomplete or unavailable information related to other resources, as described in this document, also affects the completeness of the analysis of impacts on environmental justice communities.

As discussed in other sections, BOEM has determined that incomplete and unavailable resource information for environmental justice or for other resources on which environmental justice communities rely was either not relevant to assess reasonably foreseeable significant adverse impacts, was not essential to a reasoned choice among alternatives, alternative data or methods could be used to predict potential impacts and provided the best available information, or the overall costs of obtaining the information were exorbitant or the means to do so were unknown. Therefore, the information provided in the EIS is sufficient to support sound scientific judgments and informed decision-making related to the proposed uses of the onshore and offshore portions of the geographic analysis area. Furthermore, the differences among action alternatives with respect to environmental justice are not expected to be significant.

E.1.15 Land Use and Coastal Infrastructure

Available data on land use and coastal infrastructure is generally adequate. Information sources on Ocean City Harbor, where the Applicant plans to establish a shorebase, are limited and consist primarily of aerial photographs and the most recent Worcester County Comprehensive Plan, from 2006. Worcester County's 2006 planning policies called for supporting and retaining marine commercial activities within the harbor area and there is no indication that the policies have changed (Worcester County Government 2006). Although there is a need for updated information on coastal infrastructure specifically for Ocean City Harbor, Maryland, BOEM believes that the information available is sufficient to make a reasoned choice among alternatives. BOEM does not believe that there is incomplete or unavailable information essential to the analysis of impacts on land use and coastal infrastructure.

E.1.16 Navigation and Vessel Traffic

The navigation and vessel traffic impact analysis in the EIS is based on one year's (January 1, 2019 to December 31, 2019) automatic identification system (AIS) data from vessels required to carry AIS (i.e., those 65 feet [19.8 meters] or greater in length), as well as VMS data (to infer commercial fishing and recreational vessel transits). Fishing vessels at least 65 feet long were not required to carry AIS until March 2015 (80 Federal Register 5282); therefore, AIS data prior to March 2015 are more limited than data available after March 2015. To account for some gaps in the data due to limitations of the AIS carriage requirements, additional vessel transits were added to the risk modeling to account for both current and future traffic not represented in the data. For example, the number of non-AIS commercial fishing transits was estimated by increasing the number of tracks in AIS data by 50 percent to account for vessel transits not indicated in the data (i.e., those less than 65 feet in length) (COP Appendix II-K1; US Wind 2024).

The combination of AIS and VMS data described above with informed assumptions about smaller vessel numbers represents the best available vessel traffic data and is sufficient to enable BOEM to make a reasoned choice among alternatives.

As stated in Section 3.6.6 of the EIS, WTG and OSS structures could potentially interfere with marine radars. Marine radars have varied capabilities and the ability of radar equipment to properly detect objects is dependent on radar type, equipment placement, and operator proficiency; however, trained radar operators, properly installed and adjusted vessel equipment, marked wind turbines, and the use of AIS all would enable safe navigation with minimal loss of radar detection (NASEM 2022). BOEM does not believe that there is incomplete or unavailable information on navigation and vessel traffic that is essential to a reasoned choice among alternatives.

E.1.17 Other Uses

There is no incomplete or unavailable information related to the analysis of impacts on other uses.

E.1.18 Recreation and Tourism

Evaluations of impacts on recreation and tourism rely on the assessment of impacts on other resources. As a result, incomplete or unavailable information related to other resources, as described in this document, also affect the completeness of the analysis of impacts on recreational tourism. BOEM has determined that incomplete and unavailable resource information for recreation and tourism or for other resources on which the analysis of recreation and tourism impacts rely was either not relevant to reasonably foreseeable significant adverse impacts, was not essential to a reasoned choice among alternatives, alternative data or methods could be used to predict potential impacts and provided the best available information, or the overall costs of obtaining the information were exorbitant or the means to do so were unknown. Therefore, the information provided in the EIS is sufficient to support sound scientific judgments and informed decision-making related to the proposed uses of the onshore and offshore portions of the geographic analysis area.

E.1.19 Visual Resources

No incomplete or unavailable information related to the analysis of impacts on scenic and visual resources was identified.

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