Appendix E

Analysis of Incomplete and Unavailable Information

Appendix E: Analysis of Incomplete and Unavailable Information

In accordance with Section 1502.21 of the CEQ regulations implementing NEPA, when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an 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, 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 making 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 considered the best available scientific information and applied generally accepted scientific methodologies to inform the analysis.

E.1 Incomplete or Unavailable Information Analysis for Resource Areas

E.1.1 Physical Resources

E.1.1.1 Air Quality

Although a quantitative emissions inventory analysis of the region, or regional modeling of pollutant concentrations, over the Project's 30-year lifetime 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 a net improvement in regional air quality. The differences among action alternatives with respect to direct emissions due to construction and installation, O&M, and decommissioning of the Project are expected to be relatively small. As such, the analysis provided in this Draft EIS is sufficient to support sound scientific judgments and informed decision-making related to the use of the offshore portions of the WTA and offshore export cable route corridor. Therefore, BOEM does not believe that there is incomplete or unavailable information on air quality that is essential to making a reasoned choice among alternatives.

E.1.1.2 Water Quality

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

E.1.2 Biological Resources

E.1.2.1 Bats

There will always be some level of incomplete information on the distribution and habitat use of bats in the offshore portions of the WTA, 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 WTA. 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 3.5.1, *Bats,* the likelihood of a bat encountering an operating 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 Draft EIS is sufficient to support sound scientific judgments and informed decision-making related to distribution and use of the offshore portions of the WTA 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 making a reasoned choice among alternatives.

E.1.2.2 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, Atlantic Shores' surveys of benthic resources and other broad-scale studies (Guida et al. 2017; COP Volume II, Appendices II-G2 and II-G3; Atlantic Shores 2023) 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 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 BIWF 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 BIWF in the United States provide general knowledge of the overall impacts of these IPFs combined, if not individually. Therefore, the analysis provided in this Draft EIS, which is based on those results, is supported by the best available science, despite the fact that additional study would provide greater understanding to more fully support sound scientific judgments and informed decision-making related to the overall impacts of these factors on benthic resources. For these reasons, BOEM does not believe that there is incomplete or unavailable information on benthic resources that is essential to making a reasoned choice among alternatives.

E.1.2.3 Birds

Marine bird habitat use and distribution varies among seasons, species, and years, and, as such, 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, bird surveys conducted for the Project (COP Volume II, Appendix II-F2; Atlantic Shores 2023) were used to inform the predictive models and analyze the potential adverse impacts on bird resources in the Draft 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 herein and in the Draft 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 also used to inform the analysis of bird mortality associated with the offshore WTGs analyzed in the Draft 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, and although these models represent only a subset of species potentially present, the datasets used to assess the potential for exposure of marine birds to the WTA represent the best available data and provide context at both local and regional scales. Furthermore, 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. As such, the analysis provided in the Draft 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 making a reasoned choice among alternatives. Therefore, BOEM does not believe that there is incomplete or unavailable information regarding birds that is essential to making a reasoned choice among alternatives.

E.1.2.4 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 Draft EIS is sufficient to make a reasoned choice among the alternatives.

E.1.2.5 Finfish, Invertebrates, and Essential Fish Habitat

The scope of biological information from the combined Atlantic Shores' baseline Project area resource surveys (e.g., COP Volume II, Appendices II-G2, II-G3, and II-J2; Atlantic Shores 2023) and broad-scale studies (e.g., Guida et al. 2017) used in this Draft EIS provides reasonable spatiotemporal coverage and a suitable basis for general assessments of impacts on finfish, invertebrates, and EFH. It is practical to assume some level of uncertainty regarding the spatial and temporal distributions of finfish and invertebrates from these studies. It is further practical to assume that the impacts discussed in this Draft

EIS are subject to some level of uncertainty. While assessments and determinations were made based on the best available scientific and technical information, including studies by Atlantic Shores, some topics of study related to IPFs remain underdeveloped in existing information. For example, impacts from EMFs and impulsive sound pressure and particle motion are assessed from studies on select species, and existing information does not fully cover all species within the discussed geographic areas. Similarly, specific secondary impacts such as changes in diets throughout the food chain that could result in trophic- or community-level impacts are not well known for finfish and invertebrate communities. The currently available information in this Draft EIS nonetheless provides a reasonable and general understanding of the overall impacts of the combined IPFs, if not individually. Where applicable, the assessments in this Draft EIS drew information from available literature and the 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 have been drafted or published. These studies contribute to the broad understanding of the overall impacts from IPFs combined, if not individually.

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

E.1.2.6 Marine Mammals

The biological information on marine mammals used in this Draft EIS is based on BOEM's (2021) BA on collections in the Atlantic OCS, NOAA Marine Mammal Stock Assessments, NJDEP Marine Mammal and Sea Turtle Studies (Geo-Marine 2010), Ocean Biodiversity Information System summaries, the NMFS Atlantic Marine Assessment, and Program for Protected Species. The scope of biological information provides considerable spatiotemporal coverage and a suitable basis for predicting species presence, abundances, and distributions of marine mammals in the geographic analysis area. It is practical to assume some level of uncertainty regarding population estimates and the spatial and temporal distributions of marine mammals from these studies. While population estimates for species assessed in this Draft EIS exist, population trends estimates are not available for six species.

Thus, it is practical to assume that the impacts discussed in this Draft EIS are subject to some level of uncertainty. Studies on potential effects of EMF on marine mammal individuals are underdeveloped, and population-scale impacts have not been assessed (Taormina et al. 2018). Although scientific studies summarized by Normandeau et al. (2011) demonstrate that marine mammals are sensitive to, and can detect, small changes in magnetic fields, potential impacts would likely only occur within a few feet of cable segments. The current information on EMF does not provide evidence to conclude that potential marine mammal changes in behavior from the presence of EMF would cause significant adverse individual- or population-level effects.

Changes in marine mammal behavior due to anthropogenic noises vary depending on a variety of factors such as life stage, previous experience, and natural behavior (e.g., feeding, nursing).

NMFS-provided impulsive sound disturbance criteria are based on a single threshold for all marine mammals and do not consider the overall duration, exposure, or frequency distribution of sound sources to account for species-dependent hearing acuity. While elevated underwater sound could startle or displace animals, behavioral responses are not necessarily predictable from source levels alone (Southall et al. 2007).

Research on marine mammal impacts from pile-driving noise are limited to studies on harbor porpoises and pinnipeds; research on baleen whale responses to pile driving is lacking. Most studies conclude that pile-driving noise could induce avoidance behavior or disrupt feeding activities, but behavior and activities would return to normal following cessation of pile driving. However, there is uncertainty regarding the long-term cumulative acoustic impacts associated with multiple pile-driving projects that may occur over a number of years. Long-term impacts of offshore wind–related noise including from vessel activity, HRG surveys, geotechnical drilling, and dredging on marine mammals are also uncertain. Because of this uncertainty, it is not possible to confidently predict long-term impacts of noise on marine mammals. 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.

Offshore WTGs produce continuous, non-impulsive underwater noise during operation, mostly in lower-frequency bands below 1,500 Hz. SPLs measured from WTGs within the size range likely to be utilized by this Project do not currently exist in the literature, and modeling scenarios are limited to two studies with a high degree of uncertainty. It is likely that source levels and frequencies emitted from the larger WTGs to be used for the Project would fall somewhere between those recorded for smaller-gear driven WTGs (e.g., 109 to 128 dB re 1 µPa SPL_{RMS} [at varying distances]) (Lindeboom et al. 2011; Pangerc et al. 2016; Tougaard et al. 2009) and those modeled in Stöber and Thomsen (2021) (e.g., 170 to 177 dB re 1 µPa SPL_{RMS}). Using the least-squares fits from Tougaard et al. (2020), SPLs from 11.5-MW turbines (in 20-meter-per-second, gale-force wind) would be expected to fall below the 120 dB re 1 µPa behavioral threshold within about 800 feet (245 meters). In lighter, 10-meter-per-second winds (approximately 20 knots), the predicted range to threshold would be only about 460 feet (140 meters). Effects related to the large WTGs to be used for the Project would include behavioral and masking effects. Masking of the low-frequency calls emitted from LFC and phocid pinnipeds in water would be more likely to occur. However, without further information regarding these larger WTGs, the extent of these effects is unknown.

Research on responses of large whale species to extensive networks of structures is also lacking in the literature, partly due to the novelty of this type of development in the Atlantic OCS. Offshore wind structures are anticipated from multiple projects, but project coordination and regulatory planning is aimed at allowing sufficient and explicit structural spacing that would minimize disturbance to marine mammal distributions and migrations. No physical obstruction of marine mammal migration routes or habitat areas are anticipated; however, whether marine mammals would avoid structures remains unknown. Additionally, there is some uncertainty regarding changes in hydrodynamic patterns around new structures and how that would impact prey availability; however, changes in hydrodynamic

patterns are expected to be small-scale and have limited impacts. 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.

At present, this Draft EIS has no basis to conclude that IPFs would result in significant adverse impacts on marine mammal populations.

BOEM determined that the overall costs of obtaining missing information for addressing the uncertainties are exorbitant, or the means to obtain funding for those costs 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 in light of this incomplete or unavailable information, as presented in Section 3.5.6, *Marine Mammals*. The information and methods used to predict potential impacts on marine mammals represent the best available information, and the information presented in this Draft 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 making a reasoned choice among alternatives.

E.1.2.7 Sea Turtles

The biological information on sea turtles used in this Draft EIS is based on summaries of studies by the Northwest Atlantic Marine Ecoregional Assessment, the Northeast Fisheries Science Center, New York State Energy Research and Development Authority, and the North Atlantic Right Wale Consortium database. These resources provide the best available information on the occurrence and distributions of sea turtles. This information therefore provides a suitable basis for predicting potential species occurrence, relative abundance, and probable distribution of sea turtles in the geographic analysis area.

It is reasonable to assume some level of uncertainty regarding the effects of some 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 Normandeau et al. (2011) study. Evidence suggests that EMF impacts may only occur on hatchling turtles over short distances; however, specific impacts on behavior and EMF thresholds are not known. No adverse effects on sea turtles have been documented that can be attributable to EMFs from submarine power cables. Additionally, nesting beaches are not known to exist in the geographical analysis area.

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. Other uncertainties include unknown cumulative impacts of pile-driving noise. Impacts that may be cumulative include disruptions to normal feeding, migration, or breeding behavior and secondary impacts such as reduction in prey availability. Under the planned activities 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.

Some uncertainty exists regarding the potential for sea turtle responses to FAA hazard lights and navigation lighting associated with offshore wind development. Atlantic Shores would limit lighting on WTGs and 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. The placement of new structures would be far from nesting beaches, so no impacts on nesting female or hatchling sea turtles are anticipated.

Considerable uncertainty exists on how sea turtles would interact with long-term changes in biological productivity and community structure resulting from reef effect of offshore wind structures in 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 in this section 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 in light of this incomplete or unavailable information. These methods are described in Section 3.5.7, *Sea Turtles,* of the Draft EIS. 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 making a reasonable choice among alternatives.

E.1.2.8 Wetlands and Other Waters of the United States

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

E.1.3 Socioeconomic Conditions and Cultural Resources

E.1.3.1 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 and for-hire recreational fisheries data used in this assessment have limitations. For example, the vessel trip report (VTR) data only provide an approximation of commercial fisheries effort and landings because this information is self-reported and may not include all trips. The VTR 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. Additionally, available historical data lack consistency, making comparisons challenging.

VMS data are also limited, with a number of factors contributing to their limitations.

- VMS coverage is not universal for all fisheries, and some fisheries (summer flounder, scup, black sea bass, bluefish, American lobster, spiny dogfish, skate, whiting, and tilefish) are 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 as 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, this information represents the best available data and is sufficient to support the comparison of alternatives presented in this Draft EIS.

A second limitation is that recent annual revenue for for-hire recreational fishing in the Lease Area is not available. The economic analysis conducted by BOEM of for-hire recreational fishing vessels, as well as

for-hire and private-boat angler trips that might be affected by the overall New Jersey WEA, including the Lease Area, was conducted for the period of 2007–2012 (Kirkpatrick et al. 2017). Furthermore, BOEM's economic analysis treats the New Jersey WEA as one entity and does not include site-specific data for the individual offshore wind lease areas that comprise the New Jersey WEA. Although these data are presented in Section 3.6.1, *Commercial Fisheries and For-Hire Recreational Fishing*, and are used to support conclusions, updated data for the period of 2013 to the present are not available. BOEM supplemented the data from the economic analysis with data compiled by NMFS (2022) regarding the annual revenue (2009–2019) generated by for-hire recreational fishing in the Lease Area and the percentage of each permit holder's total trips coming from within the Lease Area during 2009–2019 to analyze differences in the importance of recreational fishing grounds in the Lease Area. Using both sets of data, BOEM does not believe that there is incomplete or unavailable information on commercial fisheries and for-hire recreational fishing resources that is essential to conducting a comparison among alternatives.

E.1.3.2 Cultural Resources

BOEM requires detailed information regarding the nature and location of historic properties that may be affected by an applicant's proposed activity in order to conduct review of the plan under Section 106 of the NHPA (54 USC 306108). The assessment of effects from the proposed Project on historic properties is reliant on the identification and analysis of cultural resources in the geographic area in which these activities are proposed to take place (referred to as the Area of Potential Effects [APE]). BOEM has determined there is sufficient information on cultural resources in the APE for the proposed Project that allows for the assessment of impacts, analysis and comparison of alternatives, and preliminary completion of a determination of effect on historic properties. However, BOEM has identified areas of presently unavailable information that would better inform and increase the specificity of the analysis.

For the Terrestrial Archaeological Resource Assessment (TARA), BOEM requires a complete inventory of terrestrial archaeological resources in the terrestrial APE to assess Project impacts and complete the analysis of alternatives based on specific historic properties. Atlantic Shores will be using a process of phased identification and evaluation of historic properties as defined in 36 CFR 800.4(b)(2) to provide BOEM with the full completion of historic property identification in the terrestrial APE. This includes completion of Phase IB terrestrial archaeological survey in presently unsurveyed areas. Any thus-far known terrestrial archaeological resources identified as being located in the APE are provided in the TARA report (COP Volume II, Appendix II-P1; Atlantic Shores 2023); however, additional terrestrial archaeological surveys completed for the proposed Project may lead to the identification of additional terrestrial archaeological resources. BOEM anticipates Atlantic Shores will submit a revised version of the TARA report reflecting the full completion of historic property identification in the terrestrial APE for consideration in the Final EIS.

In conclusion, BOEM has determined there is sufficient information on cultural resources in the geographic analysis area and APE for the analysis in this Draft EIS to support a reasoned choice among alternatives. BOEM anticipates receiving additional information that would better inform the analysis

through Atlantic Shores' phased identification process as defined in 36 CFR 800.4(b)(2) and ongoing consultation.

E.1.3.3 Demographics, Employment, and Economics

Atlantic Shores' economic analysis estimated the employment and outputs for the Proposed Action. 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.1.3.4 Environmental Justice

The analysis of disproportionately high and adverse effects on minority and low-income populations is tiered to the assessment of impacts on other resources analyzed in this Draft EIS. As a result, incomplete or unavailable information related to other resources, as described in this appendix, also affect the completeness of the analysis of impacts for environmental justice. As discussed in other sections, BOEM has determined that incomplete and unavailable information for other resources on which the analysis of environmental justice impacts rely was either not relevant to the assessment of reasonably foreseeable high and adverse effects; 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 was exorbitant or the means to do so were unknown. Therefore, BOEM does not believe that there is incomplete or unavailable information for environmental justice that is essential to a reasoned choice among alternatives.

E.1.3.5 Land Use and Coastal Infrastructure

No incomplete or unavailable information related to the analysis of impacts on land use and coastal infrastructure was identified.

E.1.3.6 Navigation and Vessel Traffic

The navigation and vessel traffic impact analysis in the Draft EIS is based on 3 years' (2017-2019, inclusive) 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 (10.8 meters) 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. As such, the AIS traffic volumes were increased by 100 percent for fishing and recreational craft (COP Volume II, Appendix II-S; Atlantic Shores 2023).

The combination of the described AIS and VMS data 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, *Navigation and Vessel Traffic*, WTG and OSS structures could potentially interfere with marine radars. The impacts of WTGs on marine vessel radars are situation-dependent, and interference can be mitigated through active and passive measures (National Academies 2022). 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 (USCG 2020). Based on the foregoing, BOEM does not believe that there is incomplete or unavailable information on navigation and vessel traffic that is essential to making a reasoned choice among alternatives

E.1.3.7 Other Uses (Marine Minerals, Military Use, Aviation, Scientific Research, and Surveys)

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

E.1.3.8 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 affects the completeness of the analysis of impacts on recreation and 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 Draft 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.1.3.9 Visual Resources

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

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