UNITED STATES COAST GUARD

Atlantic Coast Port Access Route Study

Final Report

Docket Number USCG-2011-0351

ACPARS Workgroup

08 JUL 2015

Executive Summary

The Atlantic Coast Port Access Route Study (ACPARS) Workgroup (WG) was chartered on 11 May 2011, and was given three objectives to complete within the limits of available resources: 1) Determine whether the Coast Guard should initiate actions to modify or create safety fairways, Traffic Separation Schemes (TSSs) or other routing measures; 2) Provide data, tools and/or methodology to assist in future determinations of waterways suitability for proposed projects; and 3) Develop, in the near term, Automatic Identification System (AIS) products and provide other support as necessary to assist Districts with all emerging coastal and offshore energy projects. The WG published an Interim Report dated 13 July 2013 with the status of efforts up to that date.[1] The WG concluded that modeling and analysis tools, as described in the Phase 3 section of the report, were critical to determine if routing measures are appropriate and to evaluate the changes in navigational safety risk resulting from different siting and routing scenarios.

The charter for the WG was extended pending completion of the modeling and analysis to be conducted by the Pacific Northwest National Laboratory (PNNL). The PNNL efforts concluded in the fall of 2014, but did not produce a model capable of accurately predicting changes in vessel routes and determining the resultant change in the risk to navigation safety. During this period, the WG continued gathering data and conducting stakeholder outreach. The availability and usability of processed AIS data has greatly improved, as has the ability to analyze the AIS data. The Coast Guard contracted the services of a Geographic Information System (GIS) analyst to support efforts to better characterize vessel traffic and further explore creating initial proposals for routing measures independent of the Phase 3 modeling and analysis. This enabled the Coast Guard to improve its understanding of vessel routes, beyond the understanding gleaned through generic heat maps.

Based on comments by the shipping industry and more recent literature on addressing shipping during marine spatial planning, the WG conducted additional research into the necessary sea space for vessels to maneuver in compliance with the International Regulations for Preventing Collisions at Sea. This research led to the development of recommended marine planning guidelines. In addition, an effort focused on determining the appropriate width of a navigation route was undertaken for alongshore towing operations. These efforts enabled the WG to identify navigation safety corridors along the Atlantic Coast that combine the width necessary for navigation and additional buffer areas based on the planning guidelines. The WG has also identified deep draft routes that it recommends be given priority consideration to navigation over other uses, which is consistent with the United Nations Convention of the Law of the Sea.

[1] http://www.uscg.mil/lantarea/acpars/docs/ACPARS_Interim_Report-Final_09AUG.pdf

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A. Purpose

The United States Coast Guard Deputy Commandant for Operations and the Commander, Atlantic Area jointly chartered the Atlantic Coast Port Access Route Study (ACPARS) team on 11 May 2011 (Enclosure 1). The team was chartered to address the potential navigational safety risks associated with the development of offshore renewable energy installations (primarily wind farms) and to support future marine spatial planning efforts. The team, referred to as the ACPARS workgroup (WG), was given three objectives to complete within the limits of available resources: 1) Determine whether the Coast Guard should initiate actions to modify or create safety fairways, Traffic Separation Schemes (TSSs) or other routing measures; 2) Provide data, tools and/or methodology to assist in future determinations of waterways suitability for proposed projects; and 3) Develop, in the near term, Automatic Identification System (AIS) products and provide other support as necessary to assist Districts with all emerging coastal and offshore energy projects.

B. Background

The ACPARS was initiated to study the navigational uses off the Atlantic Coast in support of the Department of Interior's (DOI) "Smart from the Start" initiative and provide data to support future Marine Planning (MP) efforts. The ACPARS study area includes the entire Atlantic Coast (Maine to Florida) and is not focused on the port areas from the sea buoy into the port like a typical port access route study. It is focused on those waters located seaward of the existing port approach systems within the Exclusive Economic Zone (EEZ). The intent of the ACPARS is to identify all current and anticipated new users of the Western Atlantic near coastal zone, and determine what impact the siting, construction and operation of proposed alternative energy facilities may have on existing near coastal users and whether routing measures should be modified or created to ensure the safety of navigation.

DOI's "Smart from the Start" wind energy initiative for the Atlantic Outer Continental Shelf (OCS) was launched in November 2010 "to accelerate siting, leasing and construction of new projects."[2] This initiative includes three key elements: (1) eliminating a redundant step from the "Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf" regulations; (2) identifying Wind Energy Areas (WEA) to be analyzed in an Environmental Assessment (EA) (prepared pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq.*)) for the purpose of supporting lease issuance and site assessment activities; and (3) proceeding on a parallel track to process offshore transmission proposals. The Bureau of Ocean Energy Management (BOEM) describes a WEA as an OCS area that appears to be suitable for commercial wind energy leasing. WEAs are delineated following deliberation and consultation with Intergovernmental Renewable Energy State Task Forces.[3]

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[2] DOI Press Release dated 23NOV2010, "Salazar Launches 'Smart from the Start' Initiative to Speed Offshore Wind Energy Development off the Atlantic Coast" http://www.doi.gov/news/pressreleases/Salazar-Launches-Smart-from-the-Start-Initiative-to-Speed-Offshore-Wind-Energy-Development-off-the-Atlantic-Coast.cfm

[3] Federal Register, Volume 77, No.23, February 3, 2012

To ensure safety of navigation, the Coast Guard needs to fully characterize the impacts of rerouting traffic, funneling traffic, and placement of structures that may obstruct navigation. Some of the impacts may include increased vessel traffic density, more restricted offshore vessel routing (seaward of pilotage areas), fixed navigation obstructions, underwater cable hazards, and other economic impacts. Analyzing the various impacts requires a thorough understanding of the interrelationships of shipping and other commercial uses, recreational uses, and port operations.

C. Statutory Authority and International Guidelines

1. Routing Measures

The Ports and Waterways Safety Act (PWSA) (33 U.S.C. § 1223(c)) directs the Secretary of the Department in which the Coast Guard resides, to designate necessary fairways and Traffic Separation Schemes (TSSs) to provide safe access routes for vessels proceeding to and from United States ports. The designation of fairways and TSSs recognizes the paramount right of navigation over all other uses in the designated areas, subject however, to certain preexisting rights granted through leases or permits.

The PWSA requires the Coast Guard to conduct a study of potential traffic density and assess the need for safe access routes for vessels, before establishing or adjusting fairways or TSSs. These studies are referred to as Port Access Route Studies (PARS). Through the study process the Coast Guard must coordinate with certain Federal and State agencies, and consider the views of maritime community representatives, environmental groups, and other interested stakeholders. A primary purpose of this coordination is, to the extent practicable, to reconcile the need for safe access routes with other reasonable waterway uses such as construction and operation of renewable energy facilities and other uses of the Atlantic Ocean in the study area.

The International Maritime Organization (IMO) is the only recognized international body for developing guidelines, criteria and regulations on an international level concerning certain routing measures and areas to be avoided by ships. IMO states the purpose of ships' routing is "to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where the freedom of movement of shipping is inhibited by restricted sea room, the existence of obstructions to navigation, limited depths or unfavorable meteorological conditions."[4] Guidelines for establishing routing measures and areas to be avoided are contained in the IMO "*Ships' Routeing*" publication.

2. Leasing of the Outer Continental Shelf

The Energy Policy Act of 2005 amended the Outer Continental Shelf Lands Act to authorize DOI to, in consultation with the Secretary of the Department in which the Coast Guard is operating and other relevant departments and agencies of the Federal Government, grant a lease, easement, or right-of-way on the Outer Continental Shelf (OCS) for alternate energy related uses of the OCS that produce or support production, transportation, or transmission of energy sources other than oil and gas (43 U.S.C. § 1337(p)(1)(C)).

[4] International Maritime Organization (IMO) Publication, "Ships' Routeing," 2013 Edition.

As the NEPA lead permitting agency, BOEM is responsible for the development and preparation of environmental impact documentation for such activities on the OCS. BOEM and the USCG have entered into a Memorandum of Agreement (MOA) to identify and clarify the roles and responsibilities of the agencies for the issuance of leases and approval of Site Assessment Plans (SAPs), General Activity Plans (GAPs) and Construction and Operations Plans (COPs) for offshore renewable energy installations (OREIs). Under the MOA, BOEM will utilize the USCG's expertise during the NEPA process and invite the USCG to be a Cooperating Agency during the preparation of NEPA documentation. The USCG will participate in the NEPA process as a subject matter expert for maritime safety, maritime security, maritime mobility (management of maritime traffic, commerce, and navigation), national defense, and protection of the marine environment. During BOEM's preparation of NEPA documentation, the USCG should participate at the earliest possible time.[5]

In addition to BOEM's authorities, both the Federal Energy Regulatory Commission (FERC) and the U.S. Army Corps of Engineers (USACE) play roles in the permitting and licensing on the OCS. FERC issues licenses under Part I of the Federal Power Act (FPA), 16 U.S.C. §§ 791a *et seq*, and for the construction and operation of hydrokinetic projects on the OCS, and will conduct any necessary analyses, including those under NEPA, related to those actions.

The USACE will be the lead permitting agency for projects located within state waters.[6] Section 10 (33 § USC 403) of the Rivers and Harbors Act of 1899 covers construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters. Activities requiring Section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the United States. The geographic jurisdiction of the Rivers and Harbors Act includes all navigable waters of the United States which are defined, in33 CFR Part 329 as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." This jurisdiction extends seaward to include all ocean waters within a zone three nautical miles from the coastline. However,the authority of the Secretary of the Army to prevent obstructions to navigation in navigable waters of the United States was extended to artificial islands, installations, and other devices located on the seabed, to the seaward limit of the outer continental shelf, by section 4(f) of the Outer Continental Shelf Lands Act of 1953 as amended (43 U.S.C. § 1333(e)). (See 33 CFR Part 322.).

[5] Memorandum of Agreement between the Bureau of Ocean Energy Management, Regulation and Enforcement – U.S. Department of Interior and the U.S. Coast Guard – U.S. Department of Homeland Security, "Offshore Renewable Energy Installations on the Outer Continental Shelf," 27 July 2011.
[6] Along the Atlantic Coast state waters extend to 3 NM.

3. Interference with Navigation

The United Nations Convention on the Law of the Sea (UNCLOS), Article 60, Paragraph 8 states "Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation." A similar provision is found in U.S. Law – The Outer Continental Shelf Lands Act (OCSLA) as amended by the Energy Policy Act of 2005 (EPAct), provides that the Secretary of the Interior shall ensure that any leases, easements or rights-of-way are carried out in a manner that prevents interference with reasonable uses of the exclusive economic zone, the high seas and the territorial seas; and in consideration oany other use of the sea or seabed, including use for a fishery, sealane, a potential site for a deepwater port, or navigation. [7]

D. Study Approach

A Coast Guard workgroup was chartered to conduct the Atlantic Coast Port Access Route Study. The WG is co-chaired by Deputy Commander, Atlantic Area (LANT-09) and the Director, Marine Transportation Systems (CG-5PW)[8]. The core group consists primarily of waterways management specialists from Coast Guard Headquarters, Coast Guard Atlantic Area, and Coast Guard Districts One, Five and Seven, but at times also includes other personnel from supporting offices throughout the Coast Guard, the National Oceanic and Atmospheric Administration (NOAA) and the Maritime Administration (MARAD) as needed. The WG created a Project Management Plan consisting of Four Phases that include:

1. Phase 1- Data Gathering. In Phase 1, includes gathering data on existing and future waterway usage.

a. Determining traditional shipping routes using available AIS data and any other available data on maritime traffic patterns;

b. Combining AIS and other available data, analyzing to determine existing shipping routes and displaying routes in a geospatial format;

c. Gathering additional data and information to identify existing and future waterways usage through public comments;

d. Conducting stakeholder outreach through industry organizations and port level committees; and,

e. Gathering Maritime Transportation System (MTS) information from other federal agencies.

[7] Energy Policy Act, Section 388- Alternative Energy-Related Uses on the Outer Continental Shelf
[8] CG-5PW was formerly CG-55

2. <u>Phase 2- Apply Suitability Criteria</u>. In Phase 2, use the shipping routes identified in Phase 1 and apply best available guidance (such as United Kingdom (UK) Maritime Guidance Note MGN-371) to identify areas within the study area that are:

a. Unsuitable for Offshore Renewable Energy Installations (OREIs) because of proximity to or location within existing routes;

b. Potentially suitable for OREIs but require further study and analysis to determine if mitigation measures can reduce the navigational safety risk to tolerable levels; or,

c. Potentially suitable for OREIs based on available data that suggest the navigational safety risk is acceptable without additional mitigation measures.

3. <u>Phase 3- Modeling and Analysis</u>. The WG recognized the need to conduct modeling and analysis to predict changes in traffic patterns and determine the change in navigational risk due to the complex interactions of the various factors that would impact navigational safety. The tasks to be accomplished in Phase 3 were beyond the technical capabilities and capacity of the WG and Coast Guard resources. Phase 3 would include:

a. Developing a Geospatial Information System (GIS) based model to predict traffic density and traffic patterns that incorporates the UK methodology[9] or equivalent, to determine the resultant navigational safety risk given alternative siting scenarios and mitigating measures. The model should be able to identify the individual and cumulative effects on the MTS along the Atlantic Coast;

b. Assessing the resultant navigational safety risk associated with potential wind development areas with and without changes to routing measures or other navigational safety measures (e.g. pilotage, separation distances, regulated navigation areas, etc.);

c. Conducting analyses of potential mitigating measures to determine if modifying existing or creating new routing measures, or implementing other navigational safety measures (e.g. pilotage, separation distances, regulated navigation areas, etc.) are necessary to reduce risk to within acceptable levels and to minimize overall impacts to the MTS;

d. Evaluating options for the creation of coastwise routing measures and make recommendations for the creation of a system of routing measures that ensure navigational safety remains within acceptable limits, while having the ability to accommodate multiple uses today and in the future; and,

e. Publishing findings and recommendations in an ACPARS Final Report.

[9] United Kingdom Maritime and Coastguard Agency(MCA) "Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI)," 2013.

4. <u>Phase 4- Implementation of Study Recommendations</u>.

a. Review the ACPARS Final Report from Phase 3 to determine:

(1) If additional information is needed;

(2) If changes to routing measures or creation of new routing measures are recommended; or,

(3) Whether other actions are necessary, such as documentation of traditional routes, changes in Coast Guard processes to determine suitability of proposed siting or updates to the Coast Guard Navigational Vessel Inspection Circular (NVIC) for Offshore Renewable Energy Infrastructure (OREI).

b. If no additional information is needed, issue a Notice of Study Results.

c. If additional information is needed, reopen the docket through a Federal Register notice and conduct outreach and public meetings as necessary.

d. Initiate the regulatory process to create or modify any routing measures.

e. Initiate International Maritime Organization (IMO) processes as applicable to establish or amend any routing measures.

E. Status Summary

1. Phase 1 – Status of Data Gathering

a. Determine Traditional Shipping Routes Based on AIS:

Over time the publicly available AIS data and derivative products have greatly improved. The 2011 data has been processed and made available as density plots by vessel type on the Multipurpose Marine Cadastre (MarineCadastre.gov). In addition, analysis has been conducted using the 2009 dataset to quantify the amount of conflict for all of the wind energy areas and wind lease areas as of May 2013. Appendix IV is a summary of the results for each area being considered for development. Analysis was also conducted to evaluate additional options to the initial Call areas for Maryland and North Carolina, resulting in better informed recommendations to BOEM that attempt to preserve navigation safety, while maximizing area available for renewable energy development. See Appendices V and VI.

b. Stakeholder and Public Outreach:

The WG has continued to engage local, regional, national and international port and industry stakeholders. To achieve this, the WG has taken several approaches to gather input:

1) LANTAREA, Districts, and Sectors leveraged existing regional partnerships and relationships between local Coast Guard units and local port partners to encourage input to the study;

2) The WG continued outreach to the towing vessel community and initiated a Quality Action Team to develop recommended distances necessary for towing vessels to maneuver safely;

3) The WG participated in numerous conferences and industry forums for both the shipping and wind industry to exchange information and provide updates on the progress of the ACPARS;

4) The WG participated in regional outreach activities with the Mid-Atlantic Regional Portal Team and the Northeast Regional Portal team; and,

5) National level outreach was conducted by the Coast Guard Marine Transportation Systems Directorate (CG-5PW) to ensure partner agencies and national level organizations were engaged.

c. Gather Marine Transportation System Data:

As part of the data gathering phase, the WG explored the social and economic benefits of the many uses of the waters off the Atlantic Coast including maritime trade, commercial fishing, recreational fishing, tourism, and recreation. In understanding the many varied uses of the MTS, it is important to consider future trends, particularly as they pertain to balancing multiple uses. The WG identified three major areas that may impact future uses of the Atlantic Coast waters

including the expansion of the Panama Canal, the Maritime Administration's (MARAD) America's Marine Highway Program, and future exploitation of energy resources on the OCS. A description of the MTS and the potential effects of future trends were included in Appendix V of the Interim Report.

d. Planning Guidelines and Recommendations:

Additional information was gathered on planning standards and guidelines with respect to navigation and offshore structures. One of the key themes across standards and guidelines internationally, is the recognition that structures should not interfere with navigation based on the United Nations Convention on the Law of the Sea (UNCLOS).

A common approach in determining appropriate separation or buffer distances is accounting for the sea space necessary for a vessel to maneuver safely in accordance with the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS). The Confederation of European Shipmasters' Associations (CESMA) and the Shipping Advisory Board Northsea recommend minimum distances necessary for vessels to comply with the COLREGs, interpreted as the ability of a vessel to complete a full round turn. The World Shipping Council has submitted information from vessel masters to the BOEM and the Coast Guard providing distances it believes are required for maneuvers that may occur when a vessel encounters an emergency, such as emergency stopping, anchoring, or completing a 180º turn.

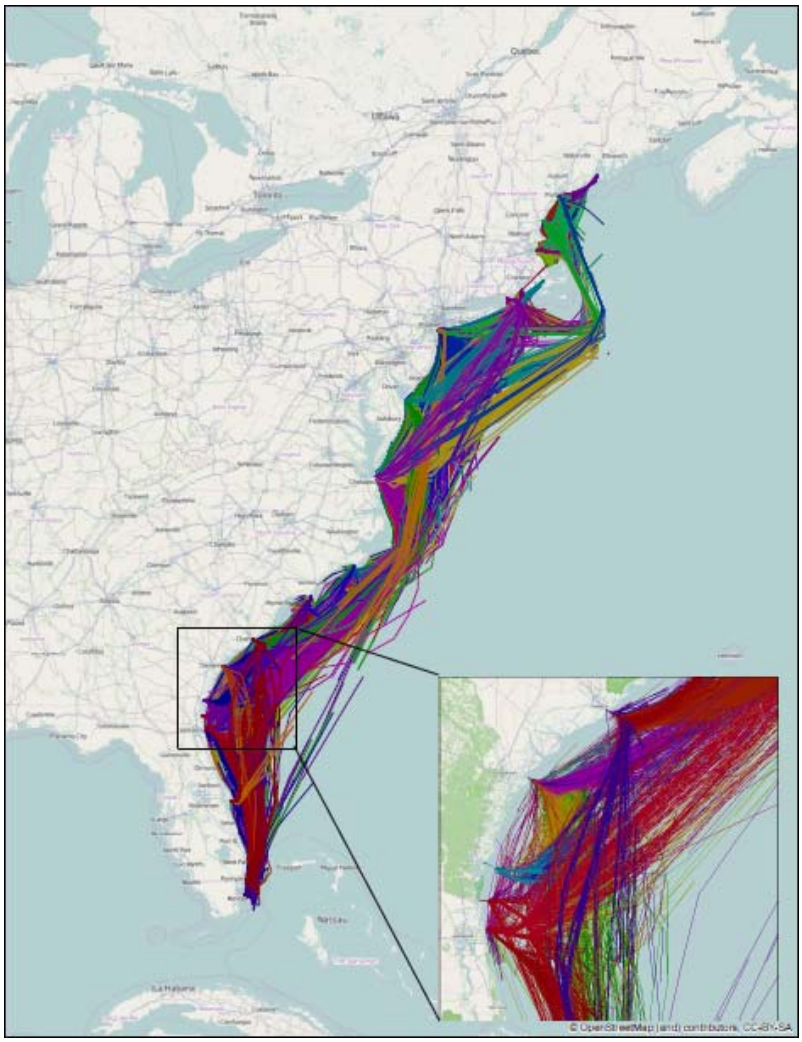
Recognizing that maneuvers performed by a tug towing a barge astern varied greatly from a standard commercial vessel, the Coast Guard and the American Waterways Operators (AWO) partnered to develop recommended safe distances for these operations along the Atlantic Coast. The results from the Coast Guard/AWO Quality Action Team are contained in enclosure (3).

2. Phase 2- Status of Applying Suitability Criteria

The original intent in Phase 2 was to make an analytical determination of existing shipping routes by analyzing the AIS data to determine routes that encompassed 95% of the traffic (+ or- 2 standard deviations) traveling in the same or opposing directions.[10] The WG would then apply the Red-Yellow-Green methodology[11] to make an initial determination of where there is high, medium, or low conflict for the entire study area. Due to the limitations in the ability to process and analyze the AIS data (as described in the Interim Report), this task was included in the Statement of Work (SOW) as part of the modeling and analysis effort conducted by Pacific Northwest National Lab (PNNL). The products produced from the task were port-to-port routes by vessel type.

[10] United Kingdom Department of Trade and Industry (DTI) Guidance on the Assessment of the Impact of Offshore Winds Farms: Methodology for Assessing the Impact of Wind Farms, p.97. www.bis.gov.uk/files/file22888.pdf

[11] See ACPARS Interim Report for a full description of the Red-Yellow-Green Methodology.



As part of the AIS analysis, PNNL produced a geo-database of vessel port-to-port routes that were further subdivided into the broad "vessel type" categories of cargo, tanker, and towing vessels. When all of the routes were layered together, the result essentially covered all of the offshore waters, which was not conducive to completing a Red-Yellow-Green assessment for the Atlantic Coast.

Figure 1 - PNNL Port to Port Layers

The R-Y-G methodology was developed using the UK MGN-371 as a reference. However, the methodology did not account for the more specific concerns near a Traffic Separation Scheme (TSS). The UK MGN-371 lists 5 NM as the minimum distance from the entrance/exit of a TSS and also states risk becomes low beyond 2 NM from the parallel boundary of a route, EXCEPT near a TSS. With a better understanding of the sea space necessary to maneuver safely, the Coast Guard decided to move forward with developing marine planning guidelines applicable to U.S. waters, and consistent with guidelines used internationally. The recommended Marine Planning Guidelines are contained in enclosure (2).

3. Phase 3- Status of Modeling and Analysis

a. Develop a GIS based model to predict changes in traffic patterns and determine navigational safety risk:

BOEM expressed an interest in funding the contract directly, using one of the Department of Energy (DOE) National Labs. The WG worked closely with BOEM staff to develop a detailed SOW and review/evaluate proposals. PNNL was selected by BOEM to conduct the modeling and analysis consisting of the following tasks:

1) Data Acquisition, Review, and Validation;
2) Geospatial Analysis;
3) Development of a GIS-based Model;
4) Numerical Modeling Assessment of Navigational Safety Risks from Offshore Wind Development; and,
5) Development and Analysis of Recommendations:

Members of the WG participated on both a Technical Committee and an Expert Panel to advise and assist PNNL as appropriate. During the model development, concerns and issues were raised regarding the approach being used for modeling vessel movements, and how vessel interactions with other vessels and stationary objects were simulated. The underlying approach for determining vessel movements did not accurately predict changes in vessel routes. The approach remained in place through completion of the PNNL project, and as a result, a useable model that accurately reflected vessel movements and vessel interactions was never realized.

b. Evaluate options for creation of routing measures:

The PNNL efforts did not result in the development and analysis of recommendations for routing measures along the Atlantic Coast. Establishment of routing measures requires a determination that navigational safety would be improved. In absence of a working model, the WG is unable to predict changes in vessel routes and determine the resultant change in navigation safety risk for any proposed routing measures. Creating routing measures where structures currently do not exist, would more likely result in an increase in risk due to vessels navigating in closer proximity to each other in a routing measure, than they would otherwise in an open ocean scenario. Therefore, to determine the balance of appropriate routing measures with proposed development would require the modeling and analysis tools.

c. Identification of Navigation Safety Corridors:

As an alternative to routing measures, the draft Planning Guidelines were used by a joint Coast Guard and AWO workgroup to determine recommended safe distances for towing vessels to operate along the Atlantic Coast.

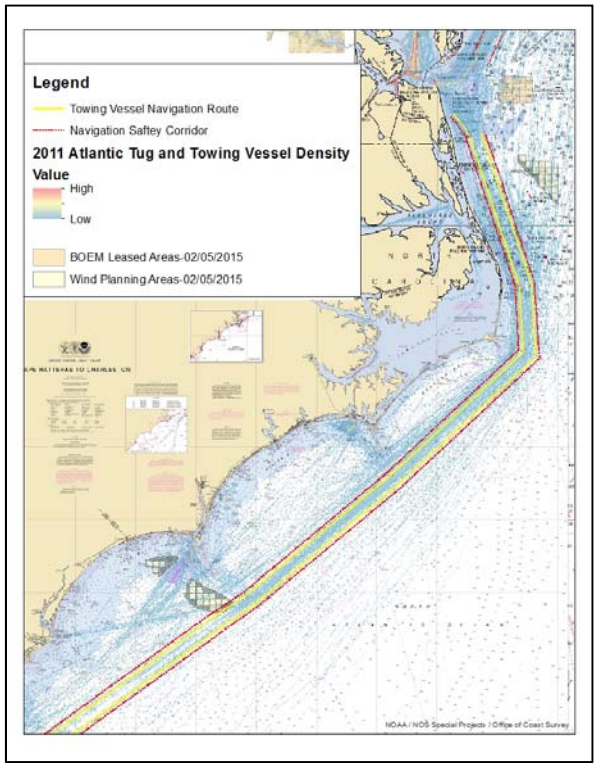


Figure 2 - Towing Vessel Navigation Route and Navigation Safety Corridor Off North Carolina Coast with 2011 Towing Vessel Density

The recommendations were then applied to the historic routes determined by AIS, to identify recommended Navigation Safety Corridors.

Recognizing that many wind energy areas have been previously established and in some cases leased, the WG identified an alternate route for consideration in the vicinity of the entrance to Delaware Bay. The alternate route has been informally reviewed by towing industry representatives who did not object to the recommendation.

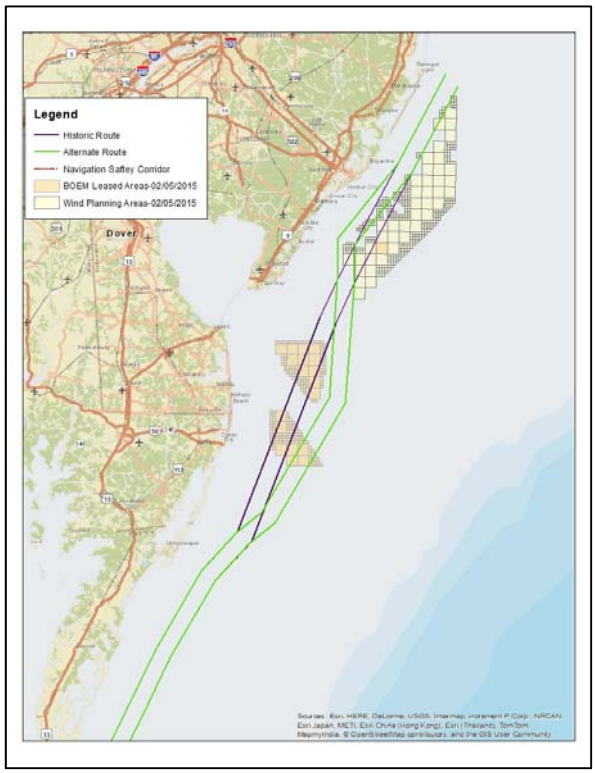


Figure 3 - Towing Vessel Historic and Alternate Navigation Routes

The WG also identified key alongshore routes utilized by deep draft vessels from New York/New Jersey to the Florida Straits. In lieu of a more detailed analysis of vessel speed, density, cross track error, etc., navigation corridors of 10 NM width were used to display the routes. See Appendix VII for more details and maps of the recommended navigation safety corridors.

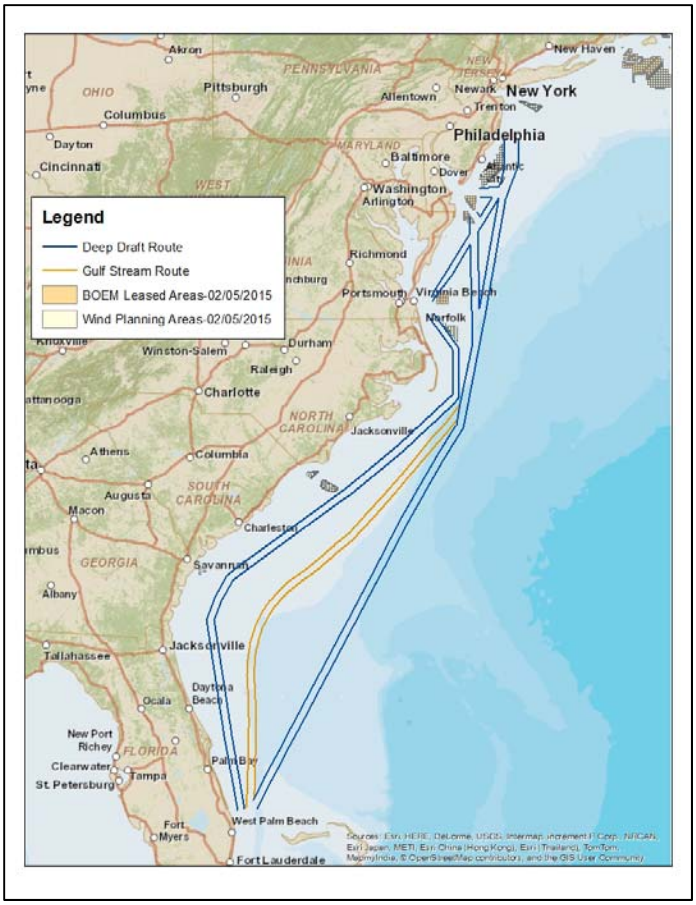


Figure 4 - Deep Draft Corridors

4. Phase 4- Status of Implementing Study Results.

Phase 4 Implementation of Study Results will be completed following the publication of the Notice of Study Results in the Federal Register and the receipt of public comments.

F. Summary and Conclusions

The WG was given three objectives in the initial charter. The first objective, to determine whether the Coast Guard should initiate actions to create or modify routing measures, cannot be met without further analysis. The WG determined that modeling and analysis beyond the capability of the WG is required to make these determinations. In absence of the modeling and analysis tool, the WG developed Planning Guidelines and applied those guidelines to recommend areas that should be given priority consideration for safe navigation. The second objective, to provide data, tools and/or methodology to assist in future determinations, was initially met with the R-Y-G Methodology, but the WG now recommends the use of the Planning Guidelines to make future recommendations. The third objective, to develop AIS products and support Districts with emerging coastal and offshore energy projects has been met through the use of contract support. AIS layers are now widely available through the Multi-purpose Marine Cadastre (MarineCadastre.gov), and several regional portals offer tools to visualize multiple data layers without technical training. Additional summaries and conclusions on specific topic areas are provided below.

1. Impact to Shipping

The placement of structures on the OCS, where previously no structures existed, increases risk of a vessel allision (with a fixed object), and may increase risk of collision between vessels and/or increase risk of a grounding. The risks will increase as a result of the density of vessel traffic being increased through funneling and decreased sea space for maneuverability. The density plots that have been created, provide estimations of the total number of vessels that transited through a particular aliquot over a one year period. What the WG is unable to determine with the analysis to date, is how often vessels pass within close range of each other, referred to as an encounter. The number of encounters would be a more accurate estimation of risk of a collision, than vessels per aliquot per year. Rerouting (displacing) traffic may also increase the weather related casualty risk to smaller vessels engaged in coastwise shipping by forcing them further offshore, where they will be subjected to larger sea states, and where their transits will be commingled with deep draft vessels moving at higher speeds.

2. Planning Guidelines

If the Planning Guidelines are used in all stages of the identification of wind energy areas, the risk of a project being found unacceptable due to navigation safety risk would be significantly lowered. The guidelines have the benefit of providing general guidelines as a starting point, while also explaining the various criteria necessary to determine whether the guidelines would be sufficient, whether they could be relaxed, or whether additional separation distance may be warranted based on site specific conditions. The Coast Guard continues to recommend that significant navigational conflicts be addressed in the Planning Phase of the leasing process. Although impacts related to the construction and operation of a wind farm would not be fully assessed until the Development Phase of the BOEM process, thoughtful and early application of the Planning Guidelines will result in a significant decrease in project risk.

3. Other Offshore Uses

Although the current emphasis off the Atlantic Coast is for offshore wind energy, it is also necessary to consider other exploration and exploitation activities that may occur in the study area in the future, such as hydrokinetics, aquaculture, or traditional oil, gas, and mineral extraction. The Administration's[12] and the Nation's desire for energy independence, all point to further exploration and exploitation of the vast energy potential available from the Atlantic OCS. This was further reinforced in a letter to President Barack Obama dated March 13, 2012 from the Outer Continental Shelf (OCS) Governors Coalition urging the Administration to speed up permitting and open new offshore areas for traditional and renewable energy projects. The current BOEM Draft Proposed Program released January 27, 2015 for the 2017-2022 program, includes an oil and gas lease sale in the Atlantic.[13]

4. Tug and Barge Routes

Many factors affect the routes vessels take, but generally they take the most direct and safe route. Smaller and slower moving vessels tend to transit closer to shore, whereas larger and faster moving vessels tend to transit in deeper water further offshore. Based on initial evaluations, the highest conflict between tug and barge routes and proposed WEAs occurs along the coastwise routes. Their routes vary based on weather, sea state, and depth of water necessary for the catenary to clear the bottom, when towing astern.

In many cases proposed WEAs such as at the entrance to Delaware Bay, if fully developed, would displace tugs and barges forcing them to transit further inshore or offshore from their traditional routes. The offshore route would take them approximately 35 miles offshore and into routes used by larger deep draft vessels. This is much farther than they would normally transit, especially the smaller units. The inshore route would cross the entrance to the bay at the convergence of the TSSs and pilot boarding areas, increasing traffic density and creating complex crossing situations.

Through the application of the Planning Guidelines and consideration of alternate routes, alongshore towing and wind energy development can coexist with some modifications to existing wind energy/lease areas. The remaining areas would provide suitable opportunity for large scale wind development. The proposed alternate route for alongshore towing in the Mid-Atlantic is shown in Appendix VII.

[12] http://www.whitehouse.gov/sites/default/files/email-files/fact_sheet_obama_administration_92s_all_of_the_above_a_windows_approach_to_american_energy.pdf
[13] http://www.boem.gov/Five-Year-Program/

5. Deep Draft Routes

Deep draft vessels travelling on coastwise routes appear to have less of a conflict with proposed WEAs. However, the coastwise routes are located in prime areas suitable for the next round of wind development in deeper water. It appears the biggest conflicts with deep draft vessels will occur at the entrances to major port areas where wind farms are proposed at or near harbor approaches. If sited further offshore, and away from port entrances, conflicts will be less of a navigation safety risk issue. Appendix VII documents some of the major alongshore routes and some of the existing connections to major port areas.

6. Cumulative Impacts of Wind Farms

One of the primary objectives of conducting a PARS for the entire Atlantic Coast was assessing the cumulative impacts of multiple winds farms on the marine transportation system. As wind farms are developed, vessel traffic will be displaced and may also be funneled into smaller areas, increasing vessel density with a concurrent increase in risk of collision, loss of property, loss of life, and environmental damage. Evaluating the cumulative impacts is also important to understand the cascading effects of how one wind farm may change the routes and approaches to the next port or the next wind development area. Predicting how vessels would alter routes given new obstructions can be described in a qualitative manner; however, analytically determining cumulative impacts, and quantifying the resultant change in navigational risk remains beyond the capability of the WG.

7. Establishment of Routing Measures

The customary system of historic routes used by vessels transiting the Atlantic Seaboard is very complex. Minor localized changes can be evaluated using local knowledge, stakeholder input and basic risk assessment tools employed during a PARS. However, the scope of the ACPARS far exceeds that of a typical PARS. Evaluating the positive and negative impacts to navigation from significant changes, such as creating a routing system for the entire Atlantic Coast, is well beyond the capabilities of the WG. The predictability and organization provided by routing measures needs to be balanced against increased risk due to increasing vessel density and mixing previously segregated traffic. It is the opinion of the WG, and one supported in public comments from both the offshore wind industry and the maritime shipping industry, that routing measures should not be created without a full evaluation of the impacts.

G. Recommendations

1. The Coast Guard should continue to partner with BOEM to accomplish the modeling and analysis necessary to evaluate the impact of proposed wind energy areas on navigation safety, and evaluate the effectiveness of mitigating measures to maximize the areas available for offshore renewable energy installations. Although initially envisioned to inform identification of initial wind energy areas, modeling and analysis tools would still provide an invaluable capability to analytically predict changes in vessel traffic patterns and to evaluate impacts across the marine transportation. This would include evaluating cascading and changes in distance travelled that would translate to additional costs, increased emissions and time delays/disruptions to supply chain logistics.

2. The ACPARS Workgroup should transition to a standing marine planning workgroup to share information, ideas and provide assistance to one another as policy, knowledge and expertise matures. Continued interaction will promote consistency and efficiencies in carrying out Coast Guard responsibilities.

3. The Coast Guard should continue its participation in BOEM Renewable Energy State Task Forces and evaluate areas proposed for development using the best available information and applying the planning guidelines to provide sound recommendations.

4. The Coast Guard should also continue outreach efforts with affected states and federal agencies, the marine shipping industry, the wind energy industry and the general public. This may include participation in stakeholder outreach activities, public meetings, workshops and industry meetings and conferences.

5. The ACPARS Final Report should be published in the Federal Register for public comment on the Planning Guidelines and the proposed navigation corridors.

6. The identified navigation corridors (see Appendix VII) should be applied during marine planning activities and incorporated into Regional Ocean Plans to ensure appropriate consideration is given to shipping early in the siting process. In addition, the Coast Guard should consider developing these navigation corridors into official shipping safety fairways or other appropriate vessel routing measures.

7. The Coast Guard should incorporate the Planning Guidelines (see Enclosure 2) as policy into appropriate publications or documents. These could include Commandant Instructions, manuals, Navigation and Vessel Inspection Circulars (NVIC) and policy letters or any combination. The scope of the publications should also be expanded beyond renewable energy to include guidelines for the siting of any structures in the offshore environment.