UNITED STATES COAST GUARD

Port Access Route Study: Seacoast of New Jersey Including Offshore Approaches to the Delaware Bay, Delaware

Draft Report

Docket Number USCG-2020-0172

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A. Executive Summary

The Port Access Route Study for the Seacoast of New Jersey (NJPARS) analyzes navigation routes to/from the approach to the Delaware River/Bay estuary and the seacoast ports of Delaware and New Jersey. The Fifth Coast Guard District reviewed ten years of search and rescue and marine casualty data in the study area, considered current routing measures, and the shipping safety fairways proposed under the Advanced Notice of Proposed Rulemaking (ANPRM) for Shipping Safety Fairways along the Atlantic Coast. The study area extends approximately 175 miles seaward from the baseline from Sandy Hook, New Jersey to Ocean City, Maryland.

The Fifth Coast Guard District will consider public comments on this draft report before submitting the final report of study to Coast Guard Headquarters Office of Navigation Systems (CG-NAV) for potential rulemakings and/or international resolutions.

This findings of this study support modification of International Maritime Organization (IMO) vessel routing measures to extend Traffic Separation Schemes (TSS), create a new two-way route, and create precautionary areas. In addition, the study concludes a modification to the ANPRM shipping safety fairways is supported. See Figure A.1 for a detailed illustration of these changes. The Fifth Coast Guard District finds these recommendations best promote safe navigation and preservation of the Marine Transportation System (MTS) as offshore development matures on the outer continental shelf.

The Fifth Coast Guard District published a Notice of Study announcing this Port Access Route Study in 2020 85 Fed. Reg. 26695 (May 5, 2020). Throughout the NJPARS, the Coast Guard coordinated with federal, state, and local agencies where appropriate and considered the views of maritime community representatives, environmental groups, and other interested stakeholders. To the extent practicable, the study reconciled the need for safe access routes with other reasonable waterway uses. The Fifth Coast Guard District identified potential conflicts involving alternative activities in the study area, such as Offshore Renewable Energy Installation (OREI), anchorage practices, fishing vessel activity, and offshore mineral exploration and mining. In addition to aiding the Coast Guard in establishing new or adjusting existing fairways or TSS's, the report considered whether safety zones, security zones, recommended routes, or regulated navigation areas should be created.

The Coast Guard also studied international entry and departure transit areas seaward of the recommended fairways in the U.S. Exclusive Economic Zone where related to the Delaware Bay entrance. These international entry and departure transit areas are integral to the safe, efficient, and unimpeded flow of ships and the safe and direct movement of ships and cargo between international origins and destinations.

Routing measures proposed in this analysis may involve new regulations or international resolutions. Required public notice of any proposed rule will incorporate input from all

stakeholders. The objective of coordinating fairways with existing and new routing measures is to facilitate safe navigation.

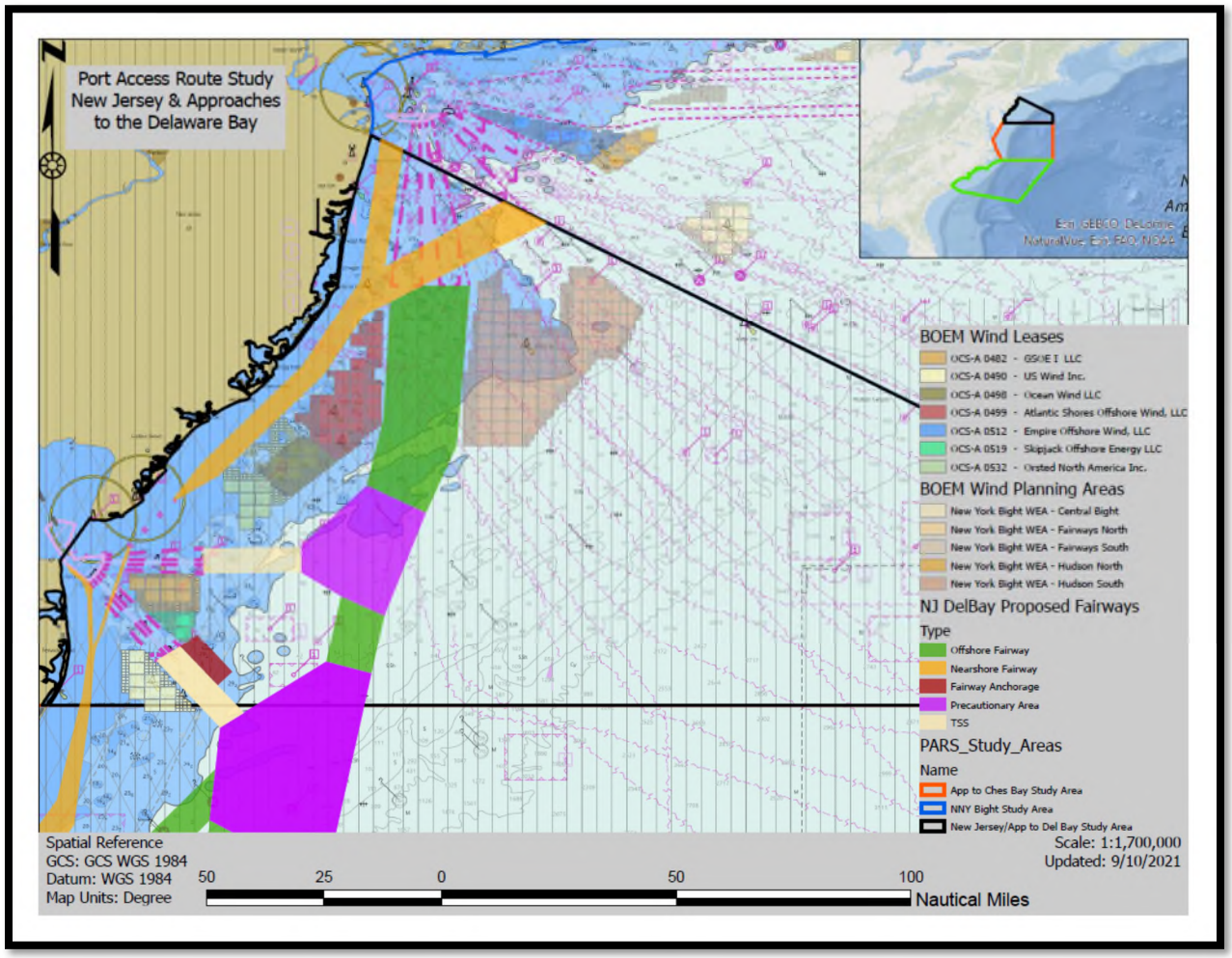

Figure A.1

B. Purpose and Authority

Under Section 70003 of Title 46 of the United States Code, the Commandant of the Coast Guard may designate necessary fairways and TSS to provide safe access routes for vessels proceeding to and from U.S. ports. The designation of fairways and TSSs recognizes the paramount right of navigation over all other uses in the designated areas.

Before establishing or adjusting fairways or TSSs, the Coast Guard must conduct a Port Access route Study (PARS), i.e., a study of potential traffic density and the need for safe access routes for vessels. Through the study process, the Coast Guard must coordinate with federal, state, and foreign state agencies (as appropriate) and consider the views of maritime community representatives, environmental groups, and other interested stakeholders. The primary purpose of this coordination is, to the extent practicable, to reconcile the need for safe access routes with other reasonable waterway uses.

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C. Background

Area of Analysis

Figure C.1 is the study area, an area bounded by a line connecting the following geographic points:

74°00 W	40°18′ N
71°16′ W	38°57′ N
71°16′ W	38°16′ N
75°07′ W	38° 16′ N

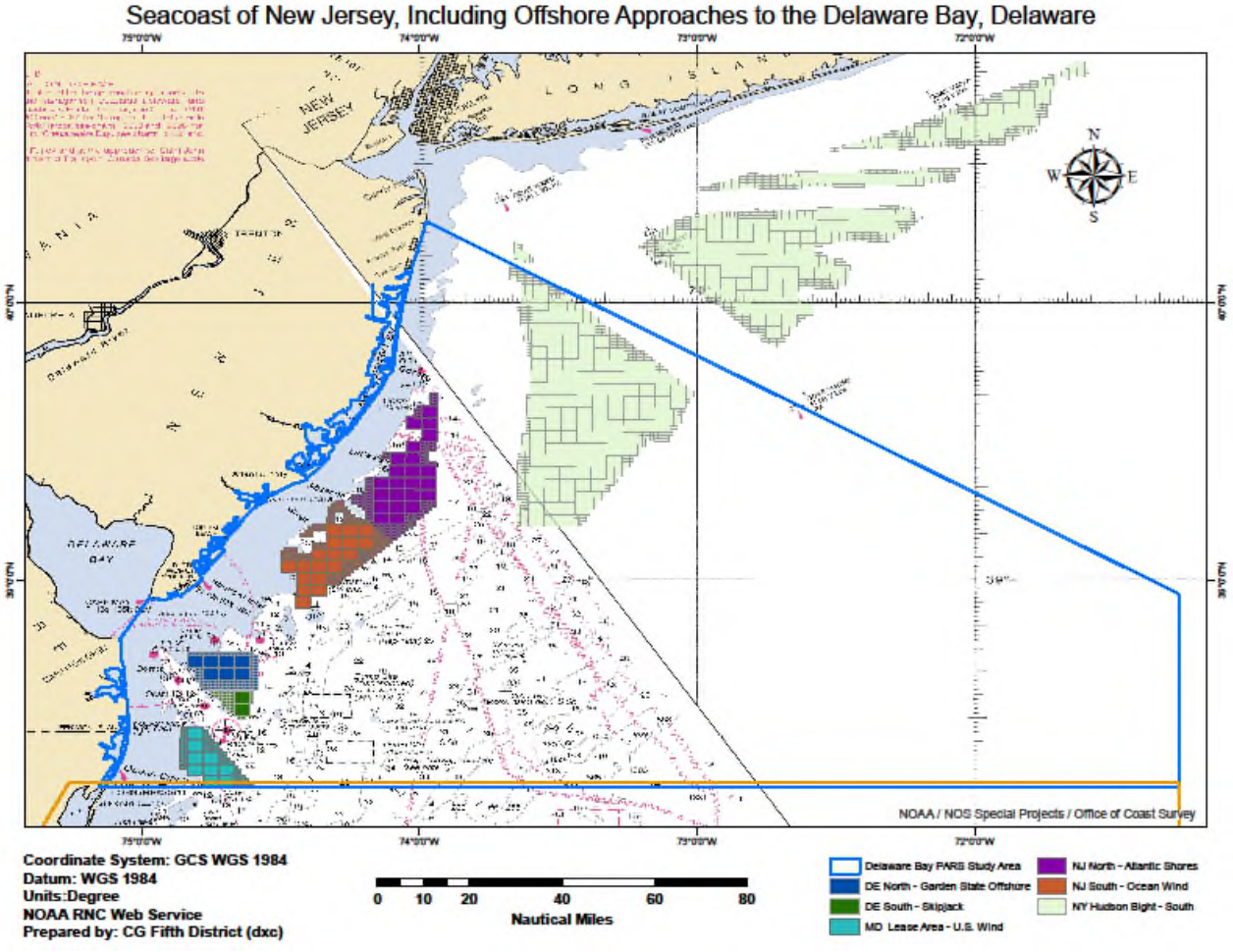

Figure C.1

Previous Studies

The Coast Guard last studied the approaches to the Delaware Bay in 1994 and published a Port Access Route Study of Delaware Bay Entrance, (60 Fed. Reg. 184 (Sep. 22, 1995)). The 1994 PARS responded to vessel near misses in the offshore approaches. The 1994 PARS established the current TSS and two-way route. These routing measures were published in Title 33 of the Code of Federal Regulations (CFR) Part 167 in 65 Fed. Reg. 12945 (Mar. 10, 2000).

In 2016, the Coast Guard published a notice of its Atlantic Coast Port Access Route Study (ACPARS), 81 Fed. Reg. 13307 (Mar. 14, 2016) that analyzed the Atlantic Coast waters seaward of existing port approaches within the U.S. Exclusive Economic Zone and announced the report as final in 2017. See final report, 82 Fed. Reg. 16510 (April 5, 2017). This multiyear study began in 2011, included public participation, and evaluated potential navigational safety risks associated with developing OREI. The ACPARS identified navigation safety corridors along the Atlantic Coast necessary to ensure safe navigation and recommended that they have priority consideration over other uses, consistent with the United Nations Convention of the Law of the Sea (see figure C.2). The ACPARS also identified coastal navigation routes and safety corridors of an appropriate width for seagoing tows, and clarified the necessary sea space for vessels to maneuver in compliance with the International Regulations for Preventing Collisions at Sea (COLREGS), which led to the development of marine planning guidelines.[1]

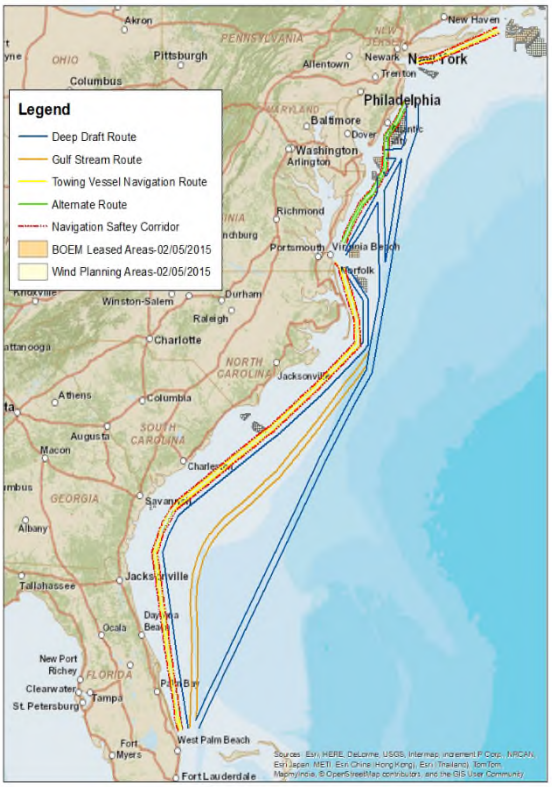

Figure C.2

The ACPARS did not consider detailed navigation routes to or from ports or international routes destined for the United States, which are integral to a safe and efficient transportation infrastructure.

In 2019, the Coast Guard announced a new study of routes used by ships to access ports on the Atlantic Coast of the United States. See Port Access Route Study, 84 Fed. Reg. 9541 (March 15, 2019). This new study of routes supplements and builds on the ACPARS by concentrating on the navigation routes to and from U.S. ports, and their interconnectedness to the Atlantic Coast

[1] U.S. Coast Guard. *Marine Planning Guidelines*, 2019.

routes. As part of the new study, the Coast Guard will conduct several PARS to examine East Coast ports that are economically significant and/or support military operations or critical national defense. This study examines the Seacoast of New Jersey including the approaches to the Delaware Bay, Delaware, and the interconnectedness to the Atlantic coast routes.

In 2020, the Coast Guard published an ANPRM (85 Fed. Reg. 37034 (June 19, 2020)) seeking public comment regarding the possible development of the navigation safety corridors identified in the ACPARS into shipping safety fairways. This rulemaking relates to this study in that it intends to implement the recommendations of the ACPARS, which this study supplements. Any routing measures proposed by this study may lead to future rulemakings or appropriate international agreements.

Study Methodology

This study was conducted in accordance with Appendix D of the Coast Guard's *Marine Planning to Operate and Maintain the Marine Transportation System (MTS) and Implement National Policy, Commandant Instruction 16003.2B.*

Consultations and Outreach Efforts

Throughout this study, the Coast Guard coordinated with other governmental agencies and considered the views of maritime community representatives, environmental groups, and interested stakeholders.

Prior to announcing the study, and with the intent to aid public review and participation, the Fifth Coast Guard District worked with the Mid-Atlantic Regional Council on the Ocean to make the study area available on the Mid-Atlantic Ocean Data Portal at http://portal.midatlanticocean.org/visualize/.

On May 12, 2020, Coast Guard Sector Delaware Bay issued Marine Safety Information Bulletin 01-16 announcing the study. This bulletin was distributed via e-mail to over 870 subscribers.

From May 5 to July 7, 2020, the Fifth Coast Guard District advertised the study in the Local Notice to Mariners, which is distributed to more than 5,000 subscribers and is publicly available on the Coast Guard Navigation Center's website, www.navcen.uscg.mil.

Over the course of the study, the Fifth Coast Guard District received detailed input from the following port agents and military representatives: Maryland Port Administration, U.S. Navy Fleet Forces (USFF), National Weather Service, Maritime Exchange for the Delaware River and Bay, Delaware River Mariners Advisory Committee (MAC), and U.S. Army Corps of Engineers (USACE).

As the result of several requests to hold public meetings on this study, the Coast Guard published a Notice of Public Meeting, [See 85 Fed. Reg. 64507 (Oct. 13, 2020)] announcing two separate virtual public meetings. These meetings occurred on Thursday October 29, 2020, and Wednesday November 4, 2020, via video teleconference. Audio recordings of these meetings are in the docket for reference. The period for public comment was also re-opened for an additional 30 days.

On March 9, 2021, the Fifth Coast Guard District attended a roundtable discussion hosted by the MAC to discuss data analysis and possible routing measures. Attendees included representatives from Bureau of Ocean Energy Management (BOEM), National Oceanic and Atmospheric Administration (NOAA), United States Coast Guard (USCG), Delaware Pilots Association, American Waterways Operators (AWO), New Jersey Department of Environmental Protection, towing vessel operators, commercial fishing vessel operators, and OREI developers.

The Fifth Coast Guard District reviewed and discussed the data and analysis for this study with various key stakeholders. These include:

Delaware River Pilots Association
Federal Pilot, Captain William Broadley
Mariner's Advisory Committee
Maritime Exchange
Maryland Port Administration, Baltimore, MD
National Weather Service, Wakefield, VA
New Jersey Department of Environmental Protection
Recreational Fishing Alliance for New Jersey

Table C.1 provides and overview of the written comments received on the public record, broken into categories of similar comment, as well as the Coast Guard's response where appropriate.

Public Comment	Coast Guard Response
Comments of general support or concern	
American Waterways Operators (AWO) letter dated 2020 desires a nearshore route along the New Jersey coast from Cape May to New York as well as widening the towing fairways to 9 NM.	The Fifth Coast Guard District proposes a nearshore route along New Jersey coast connecting Delaware Bay to the New York harbor entrance. The width design accommodates current traffic density and ensures adequate water depth for safe transits.
AWO letter dated 2016 to the ACPARS desires a nearshore route along the New Jersey coast from Delaware Bay to New York and an offshore route through the U.S. Wind area.	The Fifth and First Coast Guard Districts recommend a nearshore route along New Jersey. Tug and tow traffic analyzed in Enclosure 1 suggests that this traffic will be adequately accommodated by the proposed modifications found in Section F of the report.
Letter from BOEM dated July 2020 requests the Fifth Coast Guard District consider existing and future leases in the traffic study and marine minerals program sand resource areas between three and 10 miles from shore.	The Fifth Coast Guard District believes that establishment of fairways or routing measures will not impede the marine minerals program resource areas. Section F provides extensive consideration to existing and future offshore leases.
The MAC suggests the fairway from Cape Charles to Montauk Point is too far offshore for tug and tow traffic.	The Fifth Coast Guard District proposes a modification to the nearshore fairway (Cape Charles to Montauk Point) to enable safe navigation of smaller tug and tow combinations.
Towboat and Harbor Carriers New York/New Jersey requests that a complete coastal route from New York Harbor to Atlantic City, NJ, be included and that an additional route from Atlantic City to Cape May, NJ, be included to connect to the two-way route provided for tug vessels.	The Fifth Coast Guard District proposes a modification to the nearshore fairway (Cape Charles to Montauk Point) to enable safe navigation of smaller tug and tow combinations.
The State of Maryland comments that the Cape Charles to Montauk tug extension will reduce the state's wind energy capacity and negatively impact Maryland's renewable priorities by interfering with the U.S. Wind lease.	The Fifth Coast Guard District proposes a modification to the nearshore fairway (Cape Charles to Montauk Point) to enable safe navigation of smaller tug and tow combinations closer to shore. This proposal resolves the overlap with the Maryland wind lease area.

Atlantic Shores Offshore Wind does not agree with fairways that impede upon current lease agreements.	The Fifth Coast Guard District proposes a minor modification to the nearshore fairway (Cape Charles to Montauk) to allow for safe navigation along the NJ seacoast and development of existing lease areas.
Virginia Maritime Association does not believe that 5 NM is a sufficient width for the Cape Charles to Montauk Point tug tow fairway.	The Fifth Coast Guard District updated current traffic density by a tug and tow addendum in Enclosure 1. Fairway widths proposed in this study adequately accommodate current traffic density and future growth considerations maintaining adequate water depth for safe transits.
World Shipping Council believes fairways support navigation safety and suggests current Automated Identification System (AIS) data is used to establish the fairways.	The Fifth Coast Guard District provides extensive AIS data and traffic analysis along with incident frequency modeling and analysis to support recommendations in this study.
American Wind Energy Association (AWEA) believes the fairways will interfere with offshore wind energy development and negatively affect individual state goals. This may negatively affect economic and job creation by reducing this development.	The Fifth Coast Guard District provides extensive AIS data and traffic analysis along with risk modeling and analysis to support recommendations in the PARS. The study makes every effort to ensure navigation safety in the area through appropriate mitigation measures while supporting OREI.
Waterspririt, NJ, a non-profit organization, expressed support for renewable energy and desires the CG be more proactive in sharing information with the public.	The Fifth Coast Guard District welcomes comments and suggestions for improved information and data transparency on this draft report.
Comments regarding wind development rights and priorities:	
EDP Renewables believes updated data should be used and 1 NM x 1 NM layout grid should not be standardized across the Mid-Atlantic.	The Fifth Coast Guard District does not intend to comment on OREI layout patterns in the context of the PARS. These are addressed on a case-by-case basis through the National Environmental Protection Act (NEPA) review process as a cooperating agency to BOEM.
U.S. Wind does not agree with fairways that impede upon current lease agreements.	The Fifth Coast Guard District provides extensive data from multiple sources including AIS and VMS to create the robust traffic analysis and risk modeling in support of the recommendations in Section F.

Atlantic Shores Offshore Wind feels that any post-leasing conflicts should be de-conflicted through the NEPA review process, not in fairway regulations.	The study provides extensive current AIS and VMS data, traffic analysis with risk modeling and analysis to support recommendations for fairway proposals in Section F.
Ocean Wind states that more time should be offered through public comment to address and share use of risk modeling and analysis in navigation modeling.	The Fifth Coast Guard District has provided extensive current AIS data and traffic analysis, along with incidence frequency modeling, to support recommendations in this study. The full analysis and detailed explanation of the program is labeled Enclosure 2. A comment period will enable public review and comment on the draft study.
U.S. Wind does not believe the Fifth Coast Guard District has done sufficient outreach with wind development companies and has focused outreach on the fishing community. The establishment of fairways should be abandoned and leases should be honored as awarded.	The Fifth Coast Guard District has held several public meetings and open discussion with stakeholders including OREI development companies, fishing liaisons and state agencies. The intent of creating fairways is to support navigation safety on the OCS with future OREI development.
Ørsted requests closer coordination between the Fifth Coast Guard District and wind companies on cable burying issues.	The Fifth Coast Guard District has held several public meetings and open discussion with stakeholders including OREI development companies, fishing liaisons and state agencies. The Fifth Coast Guard District collaborates closely with the USACE for cable burial requirements per regulations.
Comments regarding navigation safety:	
New Jersey Department of Environmental Protection (NJDEP) suggests more fishing and recreational vessel data should be gathered and a buffer area between adjacent wind fields should be considered if turbine layout is not uniform across adjacent leases.	The Fifth Coast Guard District studied commercial fishing AIS and VMS data to understand traffic patterns to/from ports in support of this study and has collaborated with the Recreational Fishing Alliance (RFA) to obtain non-reportable data from this community.
Lund Fisheries expressed concern regarding radar interference from turbines. The company is also concerned about a lack of fishing vessel data and suggests multiple data sources should be consulted in addition to AIS.	The Fifth Coast Guard District received data from the NMFS, as well as AIS, to ensure a complete traffic analysis. Radar interference is currently being researched by the Federal Wind Turbine Radar Interference Mitigation (WTRIM) group and the National Academies of Science, Engineering

	and Medicine. Further analysis is outside the scope of this study.
EDP Renewables believes that updated vessel traffic data should be used. The company also believes a 1 NM x 1 NM layouts with a 2 NM buffer from fairways should not be standardized across the Mid-Atlantic.	The Fifth Coast Guard District does not intend to comment on OREI layout patterns in the context of the NJPARS. These are addressed on a case by case basis through the NEPA review process. The Fifth Coast Guard District has received data from NMFS VMS, as well as AIS, for complete traffic analysis. The NJPARS will not specifically direct transit lanes or buffers but will encourage review under the NEPA process.
Garden State Seafood Association suggests using multiple data sources in addition to AIS. In addition, turbine spacing analysis from the Responsible Offshore Development Alliance (RODA) and the New York State Research and Development Authority (NYSERDA) should be considered when calculating width for safe transit of fishing vessels.	The Fifth Coast Guard District has received data from NMFS and AIS, as well as consulted with the Recreational Fishing Alliance (RFA), for a complete traffic analysis. Radar interference is being studied by other federal agencies and will be used in the NEPA review process as a cooperating agency to BOEM. Section F provides calculations to determine adequate space between turbines to ensure navigation safety based on fishing vessel size and frequency.
Clean Ocean Action suggests the Fifth Coast Guard District use future development studies, including Liquefied Natural Gas (LNG) ship activity, when considering navigation hazards and consequences of incidents.	The Fifth Coast Guard District has provided extensive current AIS data and traffic analysis, along with incident modeling and analysis, to support recommendations in this study. Sections E and F discuss recent and projected growth of vessel activity in this segment of the industry.
RODA suggests the creation of navigation lanes for commercial fishing vessels (CFV), using expanded data from NMFS, to model impacts of funneling vessel traffic around OREI, and how search and rescue will be impacted.	The Fifth Coast Guard District has received data from NMFS, as well as AIS, for a complete traffic analysis. The NJPARS will not specifically direct transit lanes or buffer areas, but will encourage review under the NEPA review process. USACE is the cooperating agency responsible for cable depth requirements. The NOAA and NMFS act as cooperating agencies to BOEM in the OREI NEPA process and will be consulted on fisheries impacts. Search and Rescue (SAR) in and around future OREI is being discussed and it is anticipated that policy will be set by Coast Guard Headquarters in
Lunds Fisheries suggests that the CFV fleet will be financially impacted by large OREI as well as by longer transit times and less fishing time.	
Captain Kirk Larson (CFV LINDSEY L) states that OREI will impact scallop fishing	

grounds and may cause interference with search and rescue.	the future. The Fifth Coast Guard District will follow this guidance as it is developed and released.
Lunds Fisheries reported concern over sub-surface cables damaging fishing gear, as well as a need for a 2 NM buffer from structures to ensure fishing safety. They also believe that there should be fishing transit lanes through the lease areas.	
The New York Department of State (NY-DOS) expressed concerns regarding future lease areas and their impact on safe navigation in the Hudson South Wind Energy Area (WEA).	The Fifth Coast Guard District has engaged with BOEM and studied the status of future lease areas in Section E.
Comments regarding impacts to wildlife and environment:	
Captain Kirk Larson (CFV LINDSEY L) states that WEAs will impact scallop fishing grounds.	The primary purpose of this study is to ensure safe navigation in conjunction with future vessel traffic and offshore development. The impact to fisheries is outside the scope of a PARS.
Clean Ocean Action expressed concern over marine mammals as well as potential oil spill frequency as a result of offshore wind energy development.	The comment is outside the scope of a PARS, which is to ensure safe navigation in conjunction with future vessel traffic and offshore development. The Coast Guard will review all environmental impacts through the NEPA process in subsequent rulemaking actions to establish fairways or routing measures.
Comments regarding fishing and recreational vessel navigation safety:	
The NJDEP suggests gathering more fishing and recreational vessel data and considering increased space between adjacent wind fields if turbine layout is not uniform.	The Fifth Coast Guard District has received data from NMFS, as well as AIS, for complete traffic analysis and has engaged with commercial fishing entities and the RFA to discuss safe space for transits though WEA.
Mid-Atlantic Fisheries Management Council expressed similar concerns to the NJDEP regarding the quantity and type of data from NMFS, and concern for safe fishing and transit through WEA.	The Fifth Coast Guard District has received data from NMFS, as well as AIS, for complete traffic analysis and has engaged with commercial fishing entities to discuss safe space for transits though WEA.

Table C.1

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D. Key Port and Waterway Features

Major Ports

The Delaware River and Bay Estuary is home to multiple major ports servicing a variety of commodities. In addition to port access along the river, it provides access to the Chesapeake and Delaware Canal linking the Delaware River to the Port of Baltimore, Maryland. Recent federal dredging by the USACE has deepened the river channel to a depth of 45 feet. This depth accommodates larger vessels anticipated by future global shipping trends. Key commodities for this segment of the MTS include:

- Containers
- Steel
- Autos
- Forest Products
- Dry Bulk
- Liquid Bulk

The Port of Philadelphia, Pennsylvania

The public terminals located in Pennsylvania are those owned by PhilaPort and include Packer Avenue Marine Terminal, Tioga Marine Terminal, Piers 38/40, 78/80 (Philadelphia Forest Product Center), 82/84, 96/98/100, and 122/124. These terminals handle containerized cargo, cocoa beans, paper, bulk liquid commodities, autos, steel, and miscellaneous break bulk cargoes. The public marine terminals in New Jersey are owned by the South Jersey Port Corporation (SJPC) and include the Balzano Marine Terminal, Broadway Terminal, Broadway Terminal Pier Five, the Paulsboro Marine Terminal, and the SJPC facilities at Salem, New Jersey. These terminals handle steel products, slag, forest products, cocoa beans, fruit, scrap, and dry bulk cargoes including salt, cement, and ores.

According to Sector Delaware Bay, Philadelphia, Pennsylvania, 90.4 million tons of cargo moved through the marine terminals located along the Delaware River. Additionally, the port accounts for $77.6 billion in annual economic impact and 135,000 jobs.[2]

Private terminals along the Delaware River include the Gloucester City Marine Terminal; OceanPort; Buckeye Wilmington; Penn Terminals at Eddystone (PA); marine terminals located in Bucks County, Pennsylvania; as well as all other private terminals on the Delaware River in Delaware, Pennsylvania, and New Jersey. The Bucks County, Pennsylvania, marine terminals include Kinder Morgan, Riverside Industrial Complex, and Port Contractors. These terminals

[2] Martin and Associates, *Recovery Priority Assessment of Seaport Operations for Delaware River Ports.* 2018.

are handling steel slab, steel coils, project cargo, salt, scrap, other miscellaneous break bulk, coal, cement, gypsum, other dry bulk cargo, and other liquid bulk cargo.[3]

Also included with private terminals are the petrochemical companies located along the Delaware River, which ship and receive crude oil and liquefied gases.[4] The Marcus Hook Industrial Complex (MHIC) is a terminal for Liquefied Petroleum Gas (LPG). MHIC has experienced an increase in the volume of product with a concomitant increase in vessel arrivals/departures, and forecasts this trend to continue into the future. Repauno Port and Rail Terminal is a new facility opened in 2020 that exports Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG). The increased cargo volume at these two terminals creates an increased need for offshore anchorage space for vessels awaiting a berth.

Paulsboro Marine Terminal

In 2005, the SJPC acquired a defunct tank farm in Paulsboro, New Jersey, and converted it into Paulsboro Marine Terminal. This terminal was engineered to accommodate offshore energy components. The facility is the site of EEW American Offshore Structures, a subsidiary of Germany's monopile manufacturer EEW Group. The facility plans to deliver monopiles for Ørsted's 1,100 MW project off the coast of Atlantic City, New Jersey (OCS A-0498).

The Port of Wilmington, Delaware

The Port of Wilmington is a full-service, deep-water port and marine terminal strategically located on 308 acres at the confluence of the Delaware and Christina Rivers. Located 63 miles from the Atlantic Ocean and opened in 1923, it is operated by Gulftainer USA Wilmington LLC (GT USA). Three cranes with five to 30-ton capacity enable the port to handle shipment of lumber, wood pulp, quebracho logs, cork, jute, burlap, lead, ore, fertilizer, and petroleum products. In 1995, the State of Delaware purchased the port from the City of Wilmington and created the Diamond State Port Corporation (DPSC) to manage and operate the port. On October 3, 2018, the DSPC handed over operation to GT USA. Since 1923, the Port of Wilmington has been a major Mid-Atlantic import/export gateway for a wide variety of maritime cargo including fresh fruit, containerized cargo (primarily bananas and pineapples inbound and forest paper and cardboard outbound), break bulk juice, steel, autos, dry bulk, and liquid bulk cargoes. The Port of Wilmington contains the largest dockside refrigerated complex and largest fumigation facility in the US.

GT USA Wilmington annually produces $436 million in business revenue; is responsible for $409 million in personal income for the State and the region; is responsible for 5,900 direct, indirect, and induced jobs; and generates $41 million in annual state and regional taxes.[5]

[3] Martin and Associates, *Recovery Priority Assessment of Seaport Operations for Delaware River Ports.* 2018.
[4] Ibid.
[5] https://www.portofwilmington.com/

New Jersey Wind Port

New Jersey intends to develop the first purpose-built wind port on the East Coast. The port will have no vertical restrictions, easy access to more than 50 percent of the available U.S. offshore wind lease areas, and be located on the eastern shore of the Delaware River in Salem County, New Jersey. The New Jersey Economic Development Authority is leading the development on behalf of the state.[6] At full build out the Port intends to support up to 1,500 permanent jobs. Construction is expected to start in 2021.

The Port of Baltimore, Maryland

The Port of Baltimore, Maryland, offers the deepest harbor in Maryland. The port is reached from the north via the Chesapeake and Delaware (C&D) Canal, which connects the Delaware River to the Chesapeake Bay, or from the south via the Chesapeake Bay. The C&D Canal is 450-feet wide and 35-feet deep and currently handles approximately 40 percent of shipping traffic in and out of the Port of Baltimore.[7]

Closer to the Midwest than any other East Coast port, Baltimore City also is within an overnight drive to where one-third of the nation's population resides. Handling port traffic are five public and 30 private terminals, as well as seven post-Panamax cranes and four super-post-Panamax cranes. Public terminals include Dundalk, Fairfield, North Locust Point, Seagirt, and South Locust Point.

In 2018, the Port of Baltimore handled a record 42.9 million tons of international cargo, valued at $59.7 billion, up from 38.2 million tons valued at $53.9 billion in 2017. In 2019, a record-setting 11 million tons of general cargo was handled by the Port's public terminals, eclipsing 2018's record-setting 10.9 million tons of general cargo. For total overall dollar value of cargo, Baltimore ranks ninth in the nation. Baltimore ranks 11th in the nation for international cargo tonnage. In 2018, the Port ranked second in the country for exporting coal, the Port's top export commodity, based on tonnage. The Port's coal exports had a record year in 2018, surpassing 21.5 million tons.[8]

Sparrows Point, Maryland

Maryland's first offshore wind staging center is being developed by Ørsted at Tradepoint Atlantic in Sparrow's Point, Maryland. The project includes $13.2 million port infrastructure

[6] New Jersey Economic Development Authority. *New Jersey Offshore Wind Fast Facts.* 2021. Found at NJOSW_FastFacts.pdf.
[7] U.S. Army Corps of Engineers, 2021. Found at https://www.nap.usace.army.mil/Missions/Civil-Works/Chesapeake-Delaware-Canal/
[8] Maryland Department of Transportation, 2018. Found at https://mpa.maryland.gov/Pages/cargo-stats.aspx.

upgrades to handle offshore wind components. The second phase includes developing an addition 50 acres of land to store and assemble components.[9]

Military Installations

The implementation of routing measures or fairways will not significantly impact military installations or operations within the study area.

U.S. Navy (USN)

The only U.S. Navy facility near the study area is Naval Weapons Station (NWS) Earle in Colts Neck, New Jersey. NWS Earle includes port facilities in Sandy Hook, New Jersey, outside of the study area.

U.S. Coast Guard

Several different Coast Guard commands and assets conduct operations in the study area. Commander, Fifth Coast Guard District, and Commander, Coast Guard Atlantic Area, are headquartered outside the study area. Their staffs, including a 24-hour command center, are located in the Portsmouth Federal Building in Portsmouth, Virginia.

Coast Guard commands and assets located in proximity to the study area, who conduct operations within the study area, are as follows:

<u>Commander, Fifth Coast Guard District</u>

Aid to Navigation Cutters and Construction Tenders homeported within the study area include:

- USCGC SLEDGE (75-foot length overall) – Baltimore, Maryland
- USCGC JAMES RANKIN (175-foot length overall) – Baltimore, Maryland
- USCGC WILLIAM TATE (175-foot length overall) – Philadelphia, Pennsylvania

Sentinel-class 154-foot fast response cutters that operate within the study area include:

- USCGC ANGELA MC SHAN – Cape May, New Jersey
- USCGC ROLLIN FRITCH – Cape May, New Jersey
- USCGC LAWRENCE LAWSON – Cape May, New Jersey

Operational units known as Sectors and Air Stations are sub-units of the Commander, Fifth Coast Guard District. Sectors oversee stations (which operate smaller vessels) and 87' patrol boats. Air Stations house aircraft and personnel.

[9] Ørsted Completes First Phase Of Building Offshore Wind Staging Center At Tradepoint Atlantic In Sparrows Point – CBS Baltimore (cbslocal.com).

Sector Delaware Bay

Sector Delaware Bay personnel are located in downtown Philadelphia, Pennsylvania. Sector Delaware Bay sub-units include:

- Six multi-mission boat stations (Atlantic City, Barnegat Light, Manasquan Inlet and Cape May in New Jersey; Indian River in Delaware; and Philadelphia in Pennsylvania)
- Three 87' patrol boats located at Station Cape May, New Jersey
- Two 65’ ice breaking tugs in Philadelphia, Pennsylvania
- Two Aids-To-Navigation Teams at Cape May, New Jersey and Philadelphia, Pennsylvania
- Sector Field Office in Atlantic City, New Jersey
- Marine Safety Detachment in Lewes, Delaware

Sector Maryland – National Capital Region (MD-NCR)

Sector Maryland – National Capital Region (MD-NCR) personnel are located on the Coast Guard Yard in Baltimore, Maryland. Sector MD-NCR sub-units include:

- Three Aids-To-Navigation Teams (Baltimore, Crisfield, and Potomac, Maryland)
- Eight multi-mission boat stations (Annapolis, Crisfield, Curtis Bay, Stillpond, Ocean City, Oxford, and St. Inigoes, Maryland and Washington D.C.)
- One 65’ ice breaking tug in Baltimore, Maryland

Air Station Atlantic City

Coast Guard Air Station Atlantic City opened in 1998 at the Atlantic City International Airport in Egg Harbor Township, New Jersey. It operates a fleet of ten MH-65D helicopters with two in a 30-minute response status to support a variety of Coast Guard missions. The MH-65D can deliver dewatering pumps to sinking vessels, hoist victims from the sea in its rescue basket, and can medically evacuate injured persons with a rescue litter for delivery to local hospitals for further treatment. The MH-65D’s radius of action extends out to 150 NM.

Military Operating Areas

Virginia Capes Operating Area (VACAPES OPAREA)

The VACAPES OPAREA is an expansive geographic region in coastal waters offshore Maryland, Virginia, and North Carolina and consists of specific air, surface, and subsurface operating space supporting a wide range of Atlantic Fleet and Naval Systems Command military test and training activities.

Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) located at Naval Air Station Oceana in Virginia Beach, Virginia, manages the VACAPES OPAREA.

FACSFAC VACAPES controls Special Use Airspace, which consists of Warning and Restricted Areas, Military Operating Areas, Air Traffic Control Assigned Airspace, and Surface and Subsurface Operating Areas. The VACAPES Complex includes the Navy's Surface Combat Systems Center (SCSC) on the Eastern Shore of Virginia and the Shipboard Electronic Systems Evaluation Facility (SESEF) located at the Navy's Joint Expeditionary Base Little Creek - Fort Story in Virginia Beach, Virginia. Both facilities support development, testing, and calibration of naval combat systems, sensors, and navigation equipment. SCSC operations include various offshore surface-to-surface and surface-to-air weapons employment, in particular, long-range missile tests. SESEF operations in sea space east of Virginia Beach, Virginia, include functional checks and measurement of shipboard tactical instrumentation systems. Accurate calibration and standardization require precise pre-planned timing, location, and uninterrupted movement of combatant vessels to complete onboard instrumentation assessments and analysis.

Navy and Marine Corps training occurs daily throughout the VACAPES OPAREA. Events and activities include small, unit-level training, as well as large, full-scale exercise and certification events consisting of Carrier and Expeditionary Strike Groups and accompanying air, surface, and submarine component tactical platforms and opposing force assets.

Testing and training throughout the VACAPES OPAREA includes a wide range of simulated, inert, and live fire weapons employment in support of all naval warfare missions and pre-deployment combat certification requirements.

Atlantic City Operating Area

The Atlantic City Operating Area (ACOA) is a subsurface, surface, and air operating area off the New Jersey Coast. Combined with the VACAPES OPAREA and other range complexes in the Northeast, it is a principal location for United States Naval training and testing. The ACOA also supports training and testing by United States Air Force units and nearby bases. The ACOA extends approximately 100 NM miles from the shoreline and encompasses several wind energy lease areas.

Offshore Renewable Energy Installations

The study area, shown in Figure D.1, includes five active OREI lease areas and a large WEA labeled as Hudson South. Details on the status of individual OREI projects and future lease areas in this report are subject to update as the projects proceed through the BOEM process. The Fifth Coast Guard District encourages the public to review the most updated status by visiting the public website for BOEM, https://www.boem.gov/renewable-energy/state-activities.

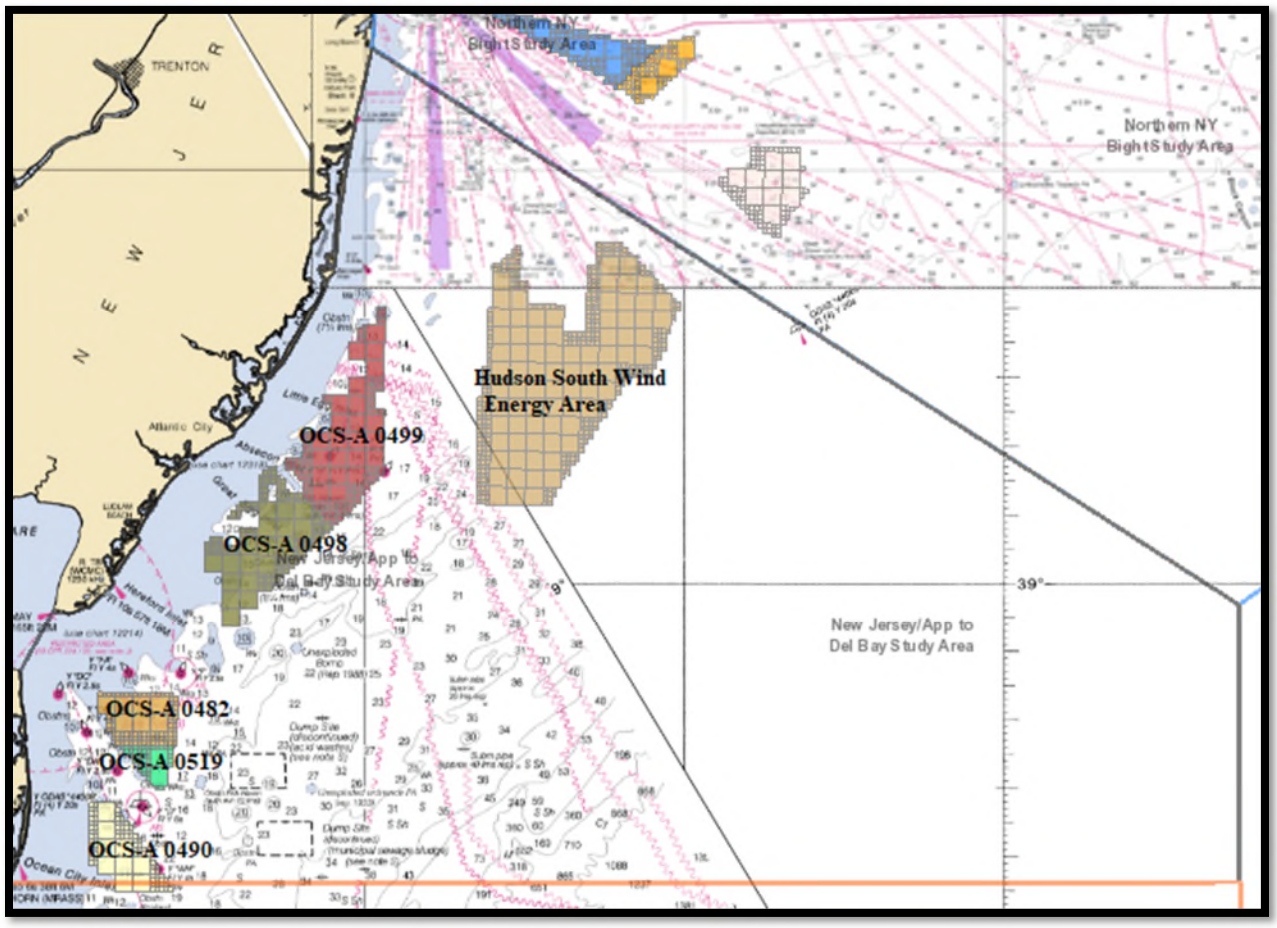

Figure D.1

U.S. Wind - OCS-A 0490

On Aug. 19, 2014, BOEM announced that U.S. Wind Inc. was the provisional winner of a lease for offshore energy development off the Maryland coast. U.S. Wind intends to install up to 125 - 12 megawatt turbines with up to four offshore transmission stations. On March 22, 2018, a Site Assessment Plan (SAP) was approved; however, a revised SAP submitted October 25, 2020, is still under review. A Construction and Operations Plan (COP) which includes the Navigation Safety Risk Assessment (NSRA) was submitted August 10, 2020.

Skipjack Offshore Energy - OCS-A 0519

On June 12, 2018, BOEM assigned the southern portion of lease OCS-A 0492 to Skipjack Offshore Energy at the request of Garden State Offshore Energy. This portion now carries a new lease number OCS-A 0519. In July 2019, a COP submitted to BOEM included plans to build up to 16 wind turbines, eight to 12 megawatts each. On May 5, 2020, BOEM hosted an interagency meeting with cooperating and participating agencies in order to provide an overview of the COP, review a purpose and need statement, and discuss a generic authorization timeline. BOEM planned to publish a Notice of Intent November 2020, with operations expected in 2024. The developer informed BOEM that they will be updating their COP in early 2022. The new expected operations date is 2026.

Garden State Offshore Energy I - OCS-A 0482

BOEM published a Notice of Determination of No Competitive Interest on April 12, 2011. On October 23, 2012, BOEM agreed to a commercial wind energy lease with Bluewater Wind Delaware. The lease was executed on November 16, 2012. On December 20, 2016, BOEM approved the assignment of 100 percent of the commercial lease to Garden State Offshore Energy. On December 6, 2019, the SAP was approved by BOEM. Site characterization activities are ongoing. The COP was originally due to BOEM by June 1, 2019; however, BOEM approved term extension on November 26, 2019, and the COP is now due in June of 2024.

Ocean Wind - OCS-A 0498

On August 15, 2019, the COP was approved. Ørsted plans to install up to 99 12-MW turbines capable of generating 1,110 MW. On May 17, 2018, BOEM approved the SAP. Accompanying facilities may include up to three offshore substations, and up to two onshore stations at Ocean City, New Jersey, and Barnegat Bay / Oyster Creek, New Jersey. On May 18, 2020, BOEM hosted an interagency meeting with cooperating and participating agencies in order to provide an overview of the COP, review a purpose and need statement, and discuss a generic authorization timeline. On March 30, 2021, a Notice of Intent to Prepare an Environmental Impact Statement was published. See 86 Fed. Reg. 16630 (March 30, 2021). The project is expected to be operational in 2024.

On June 30, 2021, New Jersey awarded an additional 1,100 megawatt bid to Ørsted. Ørsted indicated that this award will be fulfilled by a new project titled Ocean Wind Two coming online in three phases across 2028 and 2029.

Atlantic Shores - OCS-A 0499

In December 2019, a SAP was submitted to BOEM. EDF Renewables and Shell New Energies are actively conducting site characterization activities and reviewing potential turbine sizing and layout. The site has the potential to generate up to 2.5 gigawatts. On June 30, 2021, Atlantic

Shores Offshore Wind was awarded a 1,510 megawatt bid to provide energy to New Jersey by the Board of Public Utilities. BOEM intends to issue the Notice of Intent August 2021 or later. The project is expected to be operational in two phases in 2027 and 2028.

New York Bight - Hudson South Wind Lease Area –

On March 29, 2021, BOEM announced its final WEA map of the New York Bight.[10] There are five distinct wind energy areas identified: Fairways North, Fairways South, Hudson North, Central Bight, and Hudson South. The Hudson South WEA lies entirely within the Fifth Coast Guard District area of responsibility and is the largest of five areas under consideration within New York Bight. On April 14 and April 16 in 2021, BOEM held virtual meetings of the Intergovernmental Renewable Energy Task Force for the New York Bight. On June 14, 2021, BOEM published a proposed sale notice for six lease areas within the Hudson South WEA.

Routing Measures

International Maritime Organization Routing Measures: Current IMO routing measures consist of a four-part system, including the following:

Precautionary Area	Area between TSS and Delaware Bay where ships must navigate with particular caution.
Eastern Approach TSS	Inbound and outbound traffic lanes with a separation zone in between.
Southeastern Approach TSS	Inbound and outbound traffic lanes with a separation zone in between.
Two-Way Route	Two-way traffic route recommended for use predominately by tug and tow traffic transiting to and from the northeast in order to separate such traffic from large, inbound vessel traffic.

Table D.1

It is not mandatory that deep draft vessels entering or departing from the Delaware Bay use these routes. A precautionary area for embarking and disembarking pilots is located adjacent to these routing measures.

Pilotage

Every foreign vessel and every vessel engaged in foreign commerce traversing the Delaware River and its navigable tributaries is required to use the services of a pilot licensed by either

[10] BOEM, *Announcement of Wind Energy Area Identification*. 2021. found at https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/NYBight-Wind-Energy-Areas-Summary.pdf

Pennsylvania[11] or Delaware[12] with two exceptions: (1) vessels engaged in coastwise trade or (2) vessels less than 100 gross tons.

Regulated Navigation Area

There are no Regulated Navigation Areas within the study area.

Danger Zones

There is one danger zone, the Coast Guard Rifle Range, in the study area adjacent to the shoreline at Cape May, New Jersey. The Fifth Coast Guard District concludes this danger zone will not impact the results of the study.

Proposed Shipping Safety Fairways

The Coast Guard ANPRM published in 2020 proposed shipping safety fairways along the Atlantic Coast from Florida to Maine. The fairway system detailed in the ANPRM is represented in all the traffic analysis conducted for this study. Although these fairways have not been formally approved and implemented, traffic densities within the proposed fairways were factored into the analysis conducted by this study. Figure D.2 illustrates the proposed fairways in the approaches to the Delaware Bay and along the NJ seacoast.

[11]Pennsylvania Department of State, *A guide to the Pennsylvania Navigation Commission*. 2019. Found at https://www.dos.pa.gov/Documents/Commission%20Guide.pdf

[12] Delaware Code Title 23, Chapter 1, Subchapter III Vessels and Pilots, 2021. Found at https://delcode.delaware.gov/title23/c001/sc03/index.html

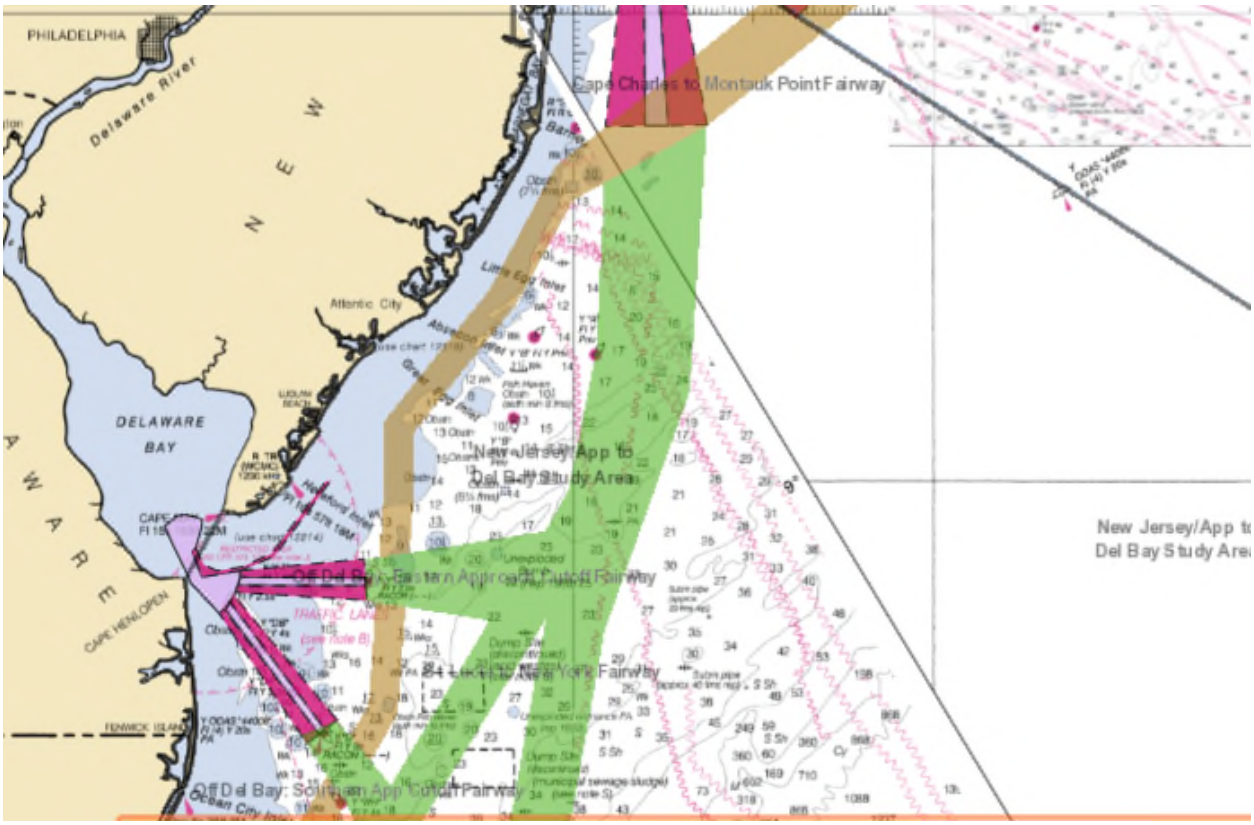

Figure D.2 – Shipping Safety Fairways from the ANPRM

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E. Maritime Data, Trends and Analysis

Meteorological Data

The implementation of routing measures or fairways will not mitigate weather related impacts to navigation safety. There are diurnal tides with high and low waters occurring at about the same time along the New Jersey seacoast. The currents have considerable velocity in the inlets along the seacoast and in the narrow channels connecting the inlets and the bays and sounds. Historical data from offshore weather buoys indicates a predominant current to flow in an easterly direction.[13] Seasonal heavy weather occurs in the late summer and mid-winter with high winds of 28 knots or more from the northwest through north from December through March. Hurricane season runs June 1 through November 30 with the highest threat of tropical heavy weather in September and October. The Delaware Bay entrance closed for heavy weather three times between 2012 and 2020. Figures E.1 and E.2 display average wind and wave heights from the NOAA weather buoy located off Cape May, New Jersey in the approach to the Delaware Bay. Figures E.3 through E.6 are historical charts of tropical cyclone activity from 2016 to2019 in the North Atlantic.

[13] U.S. Department of Commerce, National Buoy Data Center, *Historical Buoy Data from Station 44009.* 2021.

National Buoy Data Station 44099 located 26 NM southeast of Cape May, NJ

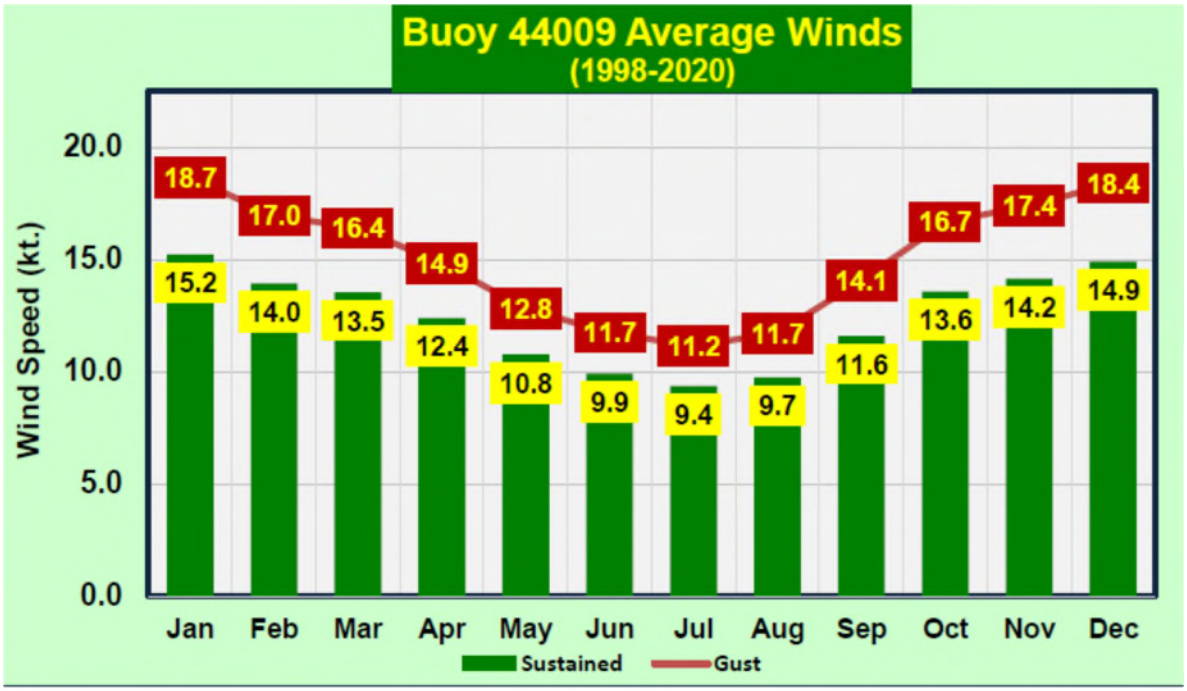

Figure E.1

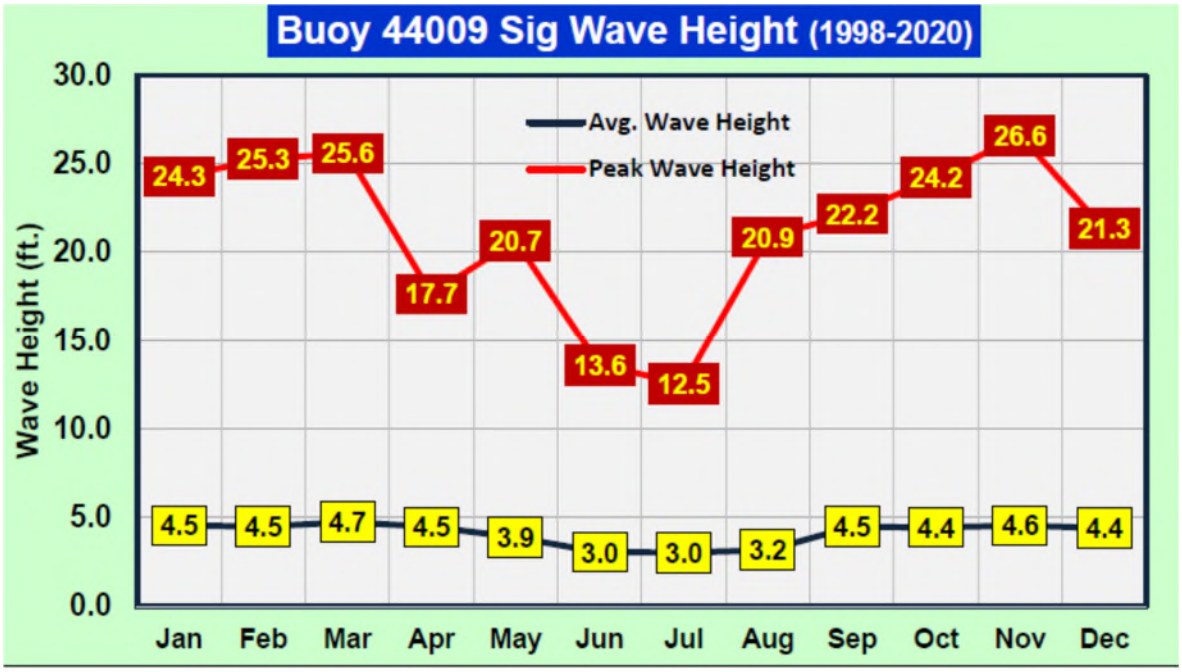

Figure E.2

Historical charts of North Atlantic Hurricane tracking 2016-2019

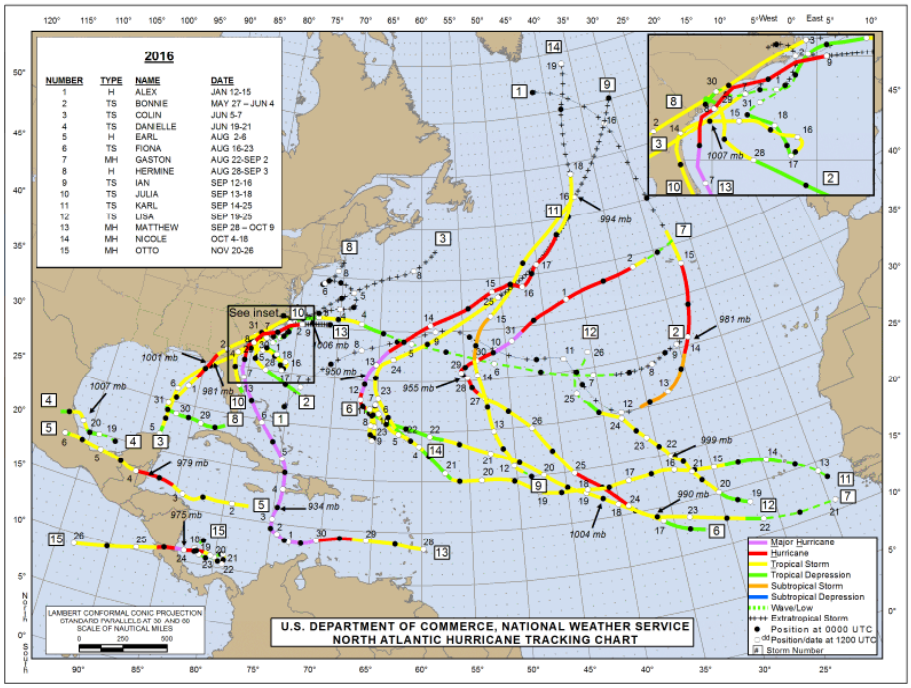

Figure E.3

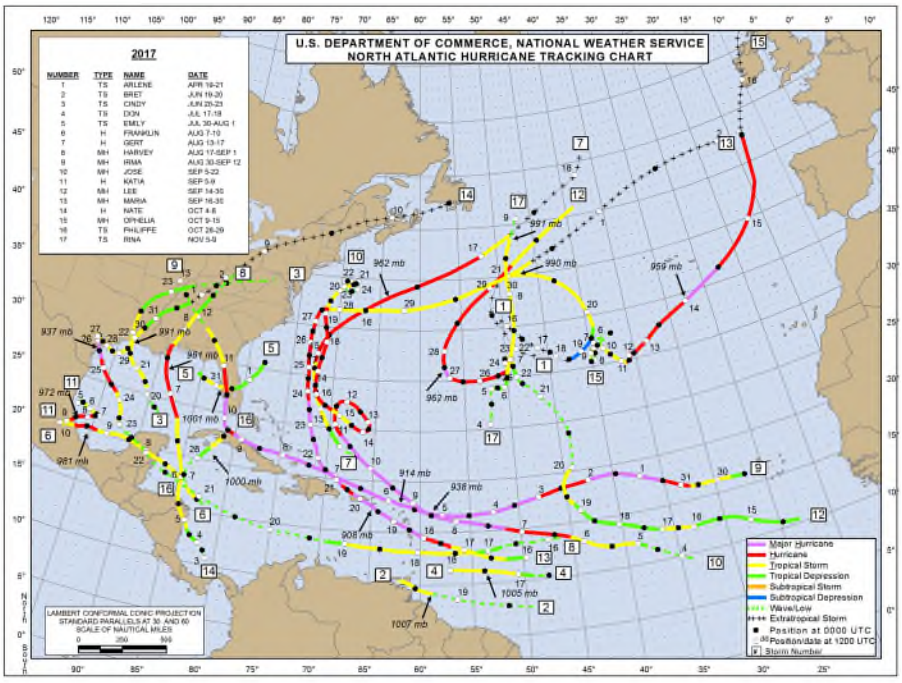

Figure E.4

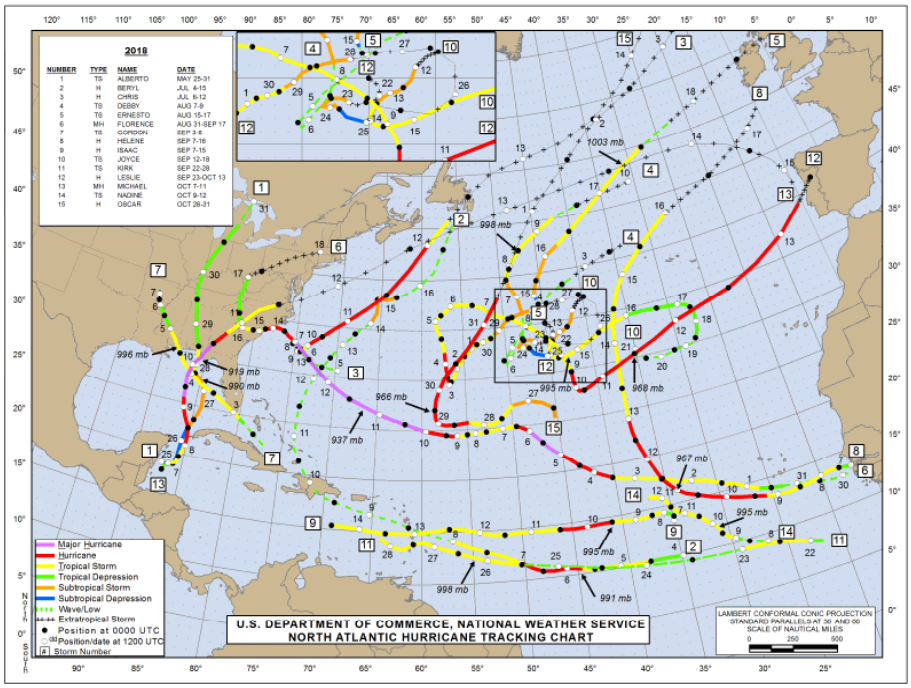

Figure E.5

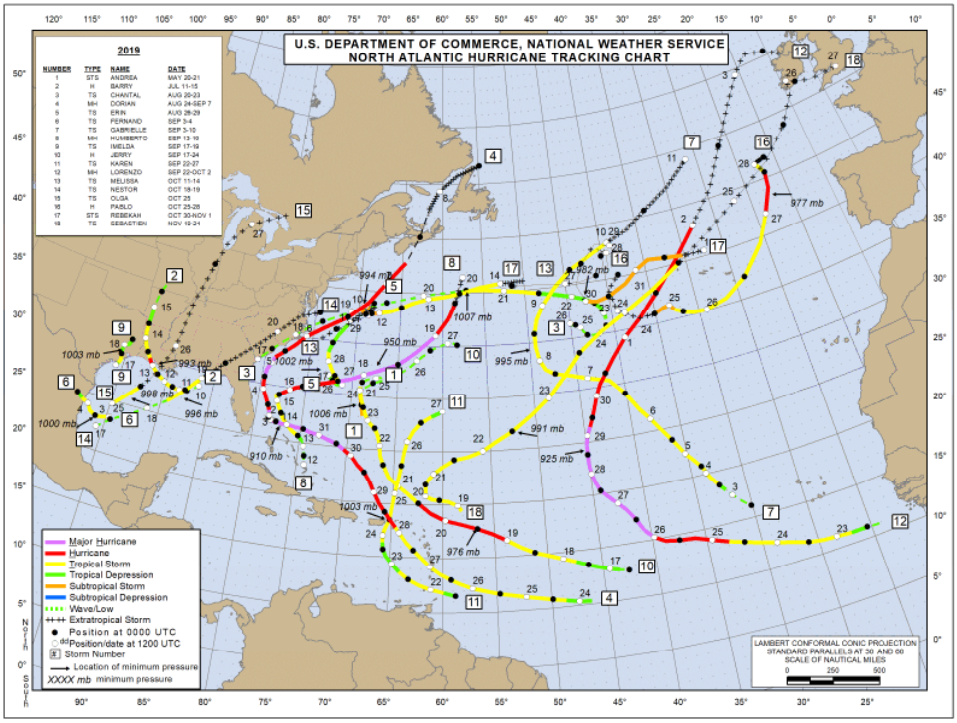

Figure E.6

Coast Guard Activity

Coast Guard activities within the study area include search and rescue, marine inspection, marine environmental response, maritime law enforcement, high value asset escorts, high interest vessel boardings, living marine resource enforcement, aids to navigation maintenance, and marine casualty/accident investigations. With an increase in activity due to the construction, operation, and maintenance of OREI, we anticipate a moderate increase in vessel traffic near the OREI, which could lead to increases in Coast Guard activities. The Fifth Coast Guard District does not anticipate these activities will affect study conclusions related to port access. Coast Guard missions will continue to occur despite any changes in the MTS, world shipping patterns, and future offshore development. The report acknowledges that mission policy guidance and practical operations parameters may change in the future.

Search and Rescue Activity Data

The District Command Center in Portsmouth, Virginia, coordinates search and rescue (SAR) cases offshore. Local units from the appropriate Sector and Air Station respond to these cases. Table E.1 breaks down case numbers per year contained within the study area. Cases were compiled from three separate Sectors: Delaware Bay, MD/NCR, and Virginia due to area of responsibility changes over the past ten years. Table E.2 separates annual cases by type of accident. Figure E.7 shows a scatter plot of these case locations.

SAR Activities	
2009	374
2010	355
2011	294
2012	238
2013	195
2014	219
2015	228
2016	263
2017	225
2018	274
2019	226
Grand Total	**2891**

Table E. 1

Case Type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Adrift	18	26	12	8	21	20	22	21	27	18
Allision							2	3		3
Beset	6	4	1	2	3	2	2	2	9	6
Capsize	12	13	11	14	6	6	11	9	11	16
Collision	6	8	5	5	3	2	3	2	4	3
Disabled	85	75	67	53	35	39	50	42	38	37
Distress	50	42	34	35	51	48	47	33	50	44
Escort			1					1	2	
Fire	15	5	5	7	5	7	5	13	9	6
Grounding	29	22	16	21	19	32	22	17	23	10
Medical	32	22	24	17	17	16	27	24	25	25
Person in Water	57	43	41	14	31	33	33	38	40	32
Taking on Water	45	34	22	21	29	23	39	19	33	24

Table E.2

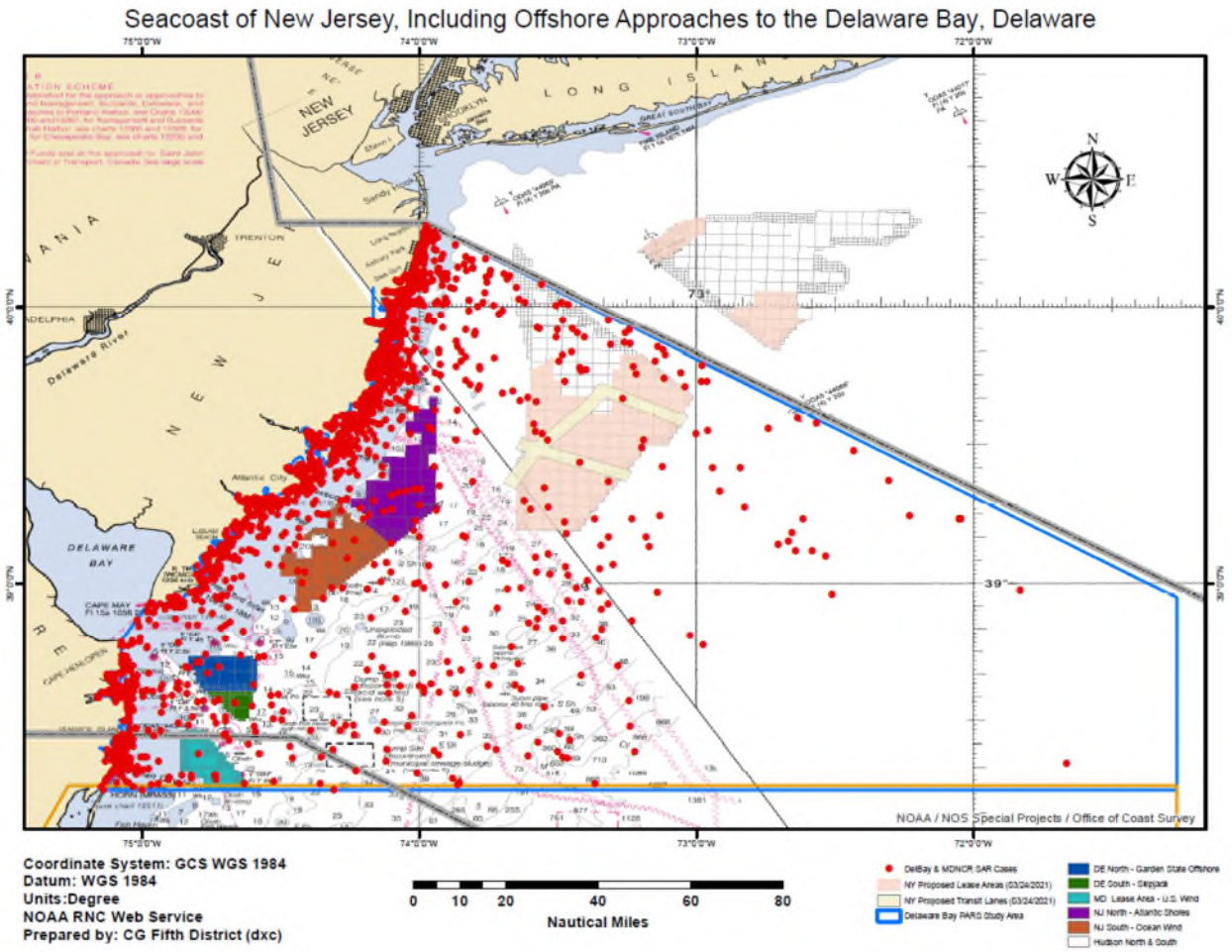

Figure E.7 – Scatter Plot of Search and Rescue Cases

Marine Casualty Data

Marine casualty cases initiate when a casualty or accident defined in 46 C.F.R. 4.03-1 occurs in federal waters. Sector personnel investigate and document case details in the Marine Information for Safety and Law Enforcement (MISLE) database. This study analyzed case files from Sectors Virginia, Delaware Bay and MD-NCR. Table E.3 shows case type annually and a corresponding scatter plot of these cases by casualty type is Figure E.8. The lack of standardization in data entry hampered data analysis. To refine the data and resolve the disparity, pollution cases, medical evacuation, law enforcement and personnel action case files were removed from the dataset as unrelated to the PARS. Remaining case files were plotted on a chart of the study area, categorized by initial event type (e.g. Fire, Flooding, Allision, etc). Case narratives were provided by Coast Guard Office of Investigations (CG-INV-2) to further determine if there were any casualty patterns in the data that provided guiding direction to the study focus with respect to port approach needs. Cases in and around the approaches to Delaware Bay and the proposed OREI leases were further analyzed as pertinent to the study. All of these cases involved a commercial fishing vessel (CFV) or a certificated small passenger vessel (SPV) for hire. This warrants careful consideration and review of the NSRAs for the OREI in the study area to ensure safe navigation in the adjacent OREI is appropriately mitigated. The Coast Guard considers CFV, SPV, and recreational vessel safety heavily throughout the NEPA review of the individual project as a cooperating agency to BOEM.

Case Title	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Allision	4		1	2			3	3		2
Capsize					1					
Collision			2	1	2	1	4	4	1	
Equipment Failure					1					
Fire										
Flooding – Initial				1		1				
Flooding – Progressive	1									
Fouling		1		2		2	1			1
Grounding	3	3	2	3		2	4	2		1
Loss of Electrical			1		1				1	1
Loss of Stability										
Loss/Reduction of Vessel Propulsion/Steering								1		
Material Failure	11	11	11	6	8	5	9	7	6	5
Taking on Water		2								

Table E.3

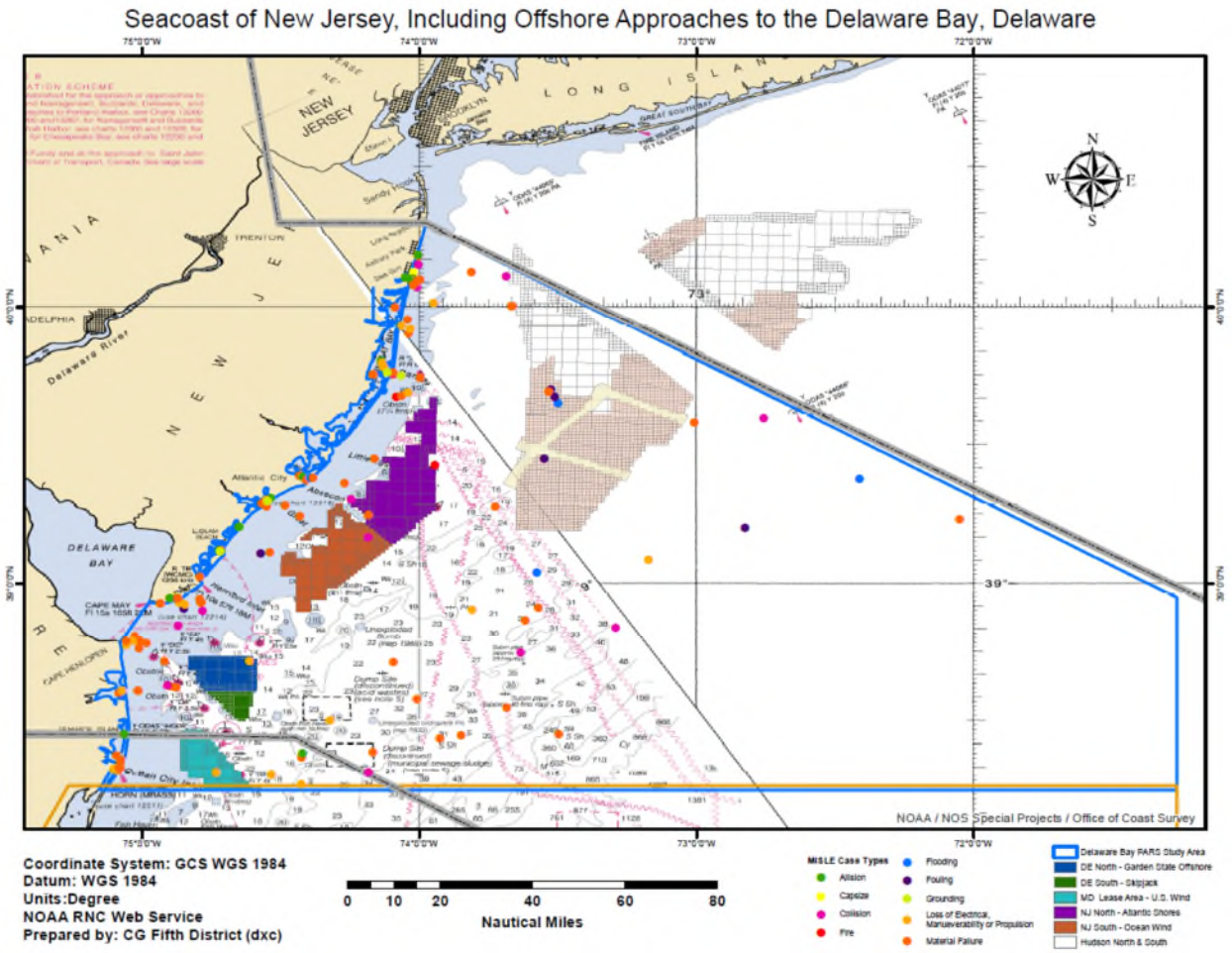

Figure E.8 – Scatter Plot of Marine Casualty Case Types

Commercial Fishing Vessel (CFV) Activity

Several in depth studies provided data to inform the study on the CFV activity within the area. The New York State Economic Research and Development Authority (NYSERDA) and the Responsible Offshore Development Association (RODA) hosted a workgroup in 2019, which resulted in a great level of detail on commercial fishing vessel transits through the study area.[14] This study consulted with local New Jersey CFV operators and confirmed the workgroup report.

Current Activity
Submitted comments indicate robust fishing activity in the offshore canyons east of the New Jersey coast including major scallop, surf clam, and squid fisheries activity. Enclosure 1 provides detailed charts of vessel tracks, provided by NMFS, delineated by type of fishery. These charts were discussed with the Recreational Fishing Alliance (RFA) as a part of this study. This study confirmed significant activity along the seacoast of New Jersey and offshore in the study area; however, the Fifth Coast Guard District does not believe this data supports the establishment of any formal routing measures based on vessel size and frequency of transits.

Traffic patterns shown in Figure E.9 and E.10 illustrate fishing vessel tracks from VMS and AIS, respectively, to/from the major fishing ports along the New Jersey seacoast. Summarized below is transit data for individual inlets. This information may necessitate further review as a cooperating agency to BOEM under the NEPA process.

Cape May Inlet– Fishing vessels account for 44.6 percent of all transits across the inlet. The predominant heading(s) are 110/290.

Absecon Inlet – Fishing vessels account for 40.1 percent of all transits across the inlet. Predominant headings are in one of four major directions 000/180, 065/245, 090/270 or 135/315.

Barnegat Inlet – Fishing vessels account for 42.9 percent of all transits across the inlet. The predominant heading(s) are 090/270 or 000/180.

Manasquan Inlet – Fishing vessels account for 55.1 percent of all transits across the inlet. The predominant heading(s) are between 090/270 and 110/290.

[14] NYSERDA, RODA, *New York Bight Transit Lanes Surveys, Workshop and Outreach Summary*, 2020.

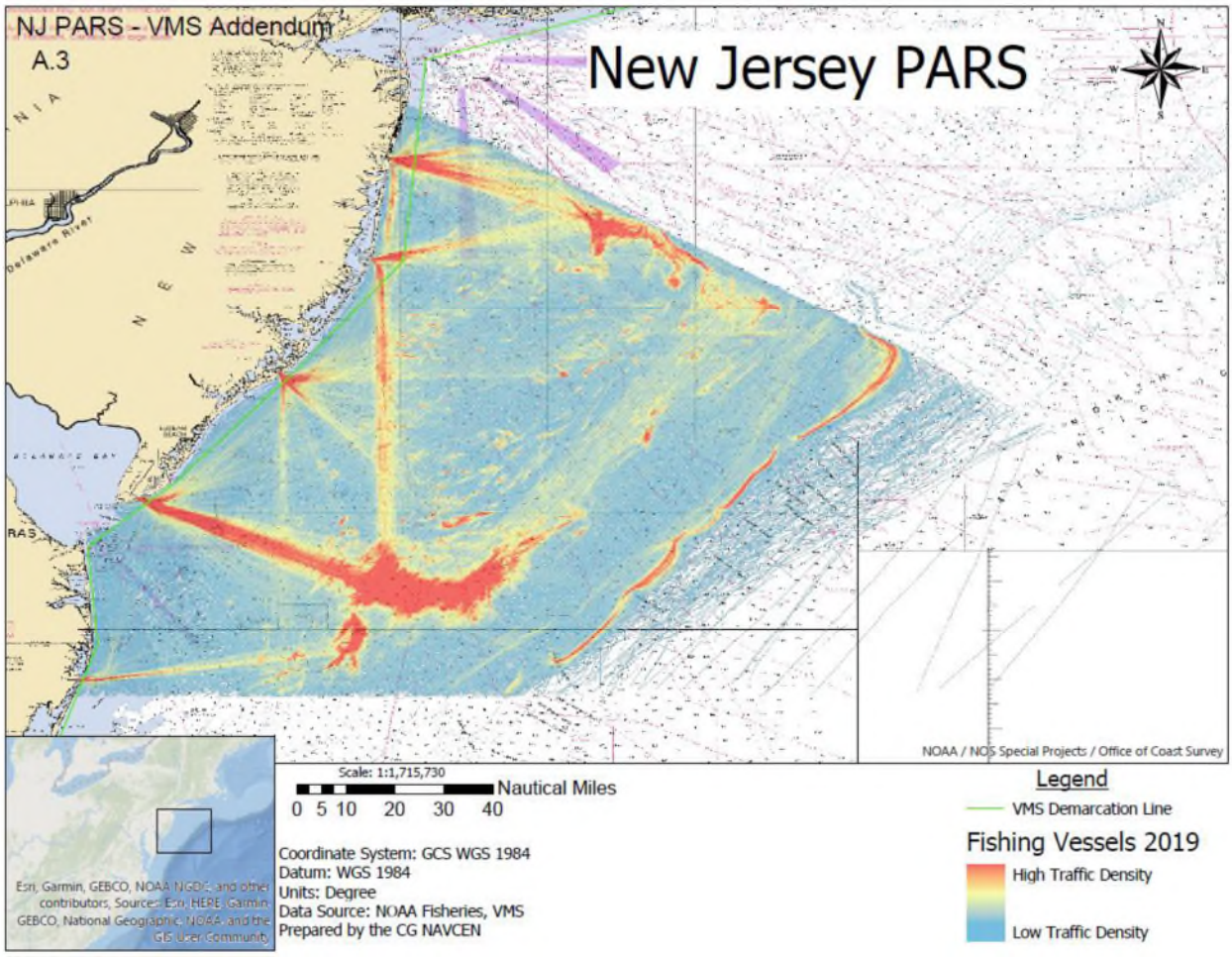

Figure E.9 – VMS transit data for 2019

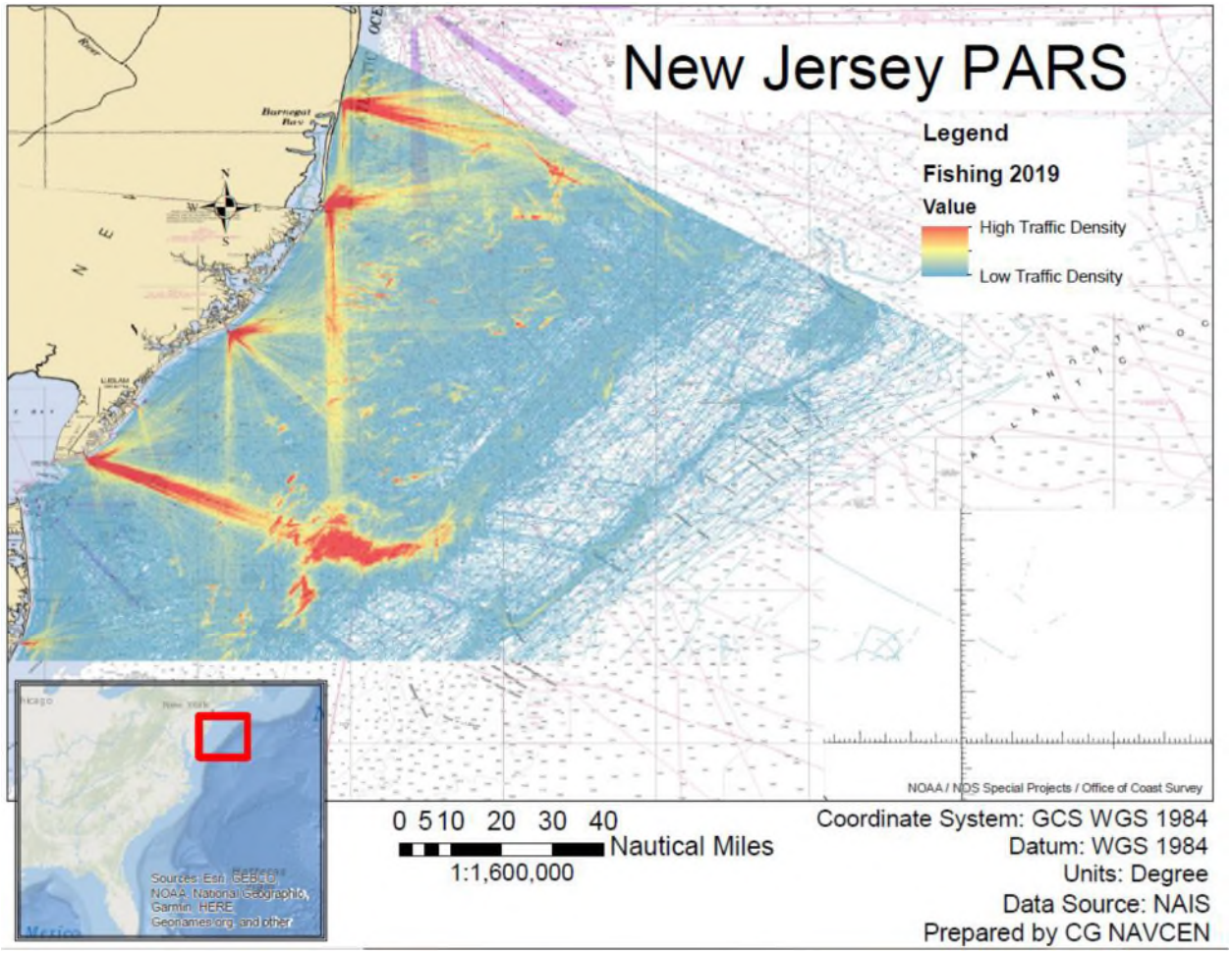

Figure E.10 – AIS transit data for 2019

NOAA Fisheries developed reports summarizing fishing activity (commercial and party/charter vessels) within each offshore wind lease area along the Atlantic Coast.[15] These reports provide detailed data on commercial and party/charter vessel activity within each OREI project area. Review of this report supports that Cape May, Absecon, Manasquan and Barnegat, New Jersey, account for the major CFV and party/charter vessel fleet activity along the New Jersey seacoast and in the study area.

NOAA comments to the ACPARS identified potential overlap of the proposed shipping safety fairways around artificial reefs, known as fish havens, undersea naval areas, and dangerous wrecks, creating potential conflicts. This study confirmed that fish havens off Cape May and Atlantic City have valid permits issued by the NJ DEP since 1959 and will remain into the future as charted bottom obstructions. Charted and permitted fish havens will remain an important

[15] NOAA. *Socioeconomic Impacts of Atlantic Offshore Wind Development.* 2021.

feature in the study area along the seacoast of New Jersey; however, the study reached inconclusive results on the impact to the shipping safety fairways, therefore does not propose any changes to avoid charted bottom obstructions. For example, Enclosure 1 indicates the CFV fleet out of Absecon Inlet (Atlantic City, New Jersey) avoids the offshore fish haven 'Atlantic City Reef' by transiting south of the charted reef with a heading 150/330. Contrarily, data also shows the CFV fleet from Cape May, New Jersey, transits directly across the 'Cape May fish haven' with no conflict. It is difficult to predict what will happen in the future as OREI are developed, therefore no adjustment is proposed due to these bottom features and fish havens.

Safe widths for transit lanes

Most vessels in the study area are 200 feet in length or less. To determine if routing measures or fairways through any designated WEAs are necessary, the Fifth Coast Guard District used the World Association for Waterborne Transport Infrastructure (PIANC), MarCom Working Group Report to calculate the minimum width needed for a transit lane based on length of vessels and frequency of transits. To provide adequate space for each vessel to safely transit, the calculation takes two times the ship's length multiplied by a factor based on the number of vessels using the route annually and includes an additional safety margin.[16] The calculation is this:

200 (vessel length in feet) * 2 (minimum safe distance) * 2 (multiplier for less than 4,400 vessels per year)

200 * 2 * 2 = 800 feet or 244 meters

The PIANC study discusses the need to account for a ship's ability to conduct a full round turn within the traffic lane in the event it must take action to avoid a collision. Using IMO Standards for Ship Manoeuverability (IMO resolution MSC.137 (76) and MSC/Circ. 1053), the diameter of a full round turn is approximately equal to six times the ship's length.

200 (vessel length in feet) * 6 = 1200 feet or 366 meters.

PIANC further discusses applying a 500-meter (1,640 feet) margin to the shipping lane to account for safety zones around wind turbines as referenced in Article 60 of the United Nations Convention on the Law of the Sea (UNCLOS). Of note, UNCLOS article 60 states the safety zone, "shall not exceed a distance of 500 meters," further the PIANC study states the safety zone, "is for 'protection of the structure' and is not meant as a safe distance for safe manoeuvring according to COLREGs".[17] A 500-meter distance may be excessive or overly conservative for vessels 200 feet in length or less, as these smaller vessels are capable of navigating New Jersey's coastal seaports, and are significantly more maneuverable and responsive than larger ships.

PIANC also adds a distance of 0.3 NM to account for any deviation a ship may take for evasive maneuvers to avoid a collision. The Fifth Coast Guard District considered this distance as an

[16] World Association for Waterborne Transport Infrastructure. *Interaction between offshore wind farms and maritime navigation.* 2018.
[17] Ibid, p.14.

unnecessary addition into the calculation since the distances between turbines will provide a reasonable escape route for a vessel 200 feet in length.

For comparison purposes, the minimum width for a transit lane for vessels up to 200 feet (75% of all vessels in data set) in length is calculated with various safety margins (500 meters, 250 meters and 0 meters) on both sides of the lane.

Minimum distance between vessel and offshore wind structure (meters/feet)	Traffic lane width (feet/NM)
500 / 1,640	6,480 / 1.08
250 / 820	4,840 / 0.80
0 / 0	3,200 / 0.53

Based on this, the Fifth Coast Guard District concludes the minimum width for a transit lane for vessels 200 feet in length should be between 0.53 and 1.08 NM, with 0.80 to 1.08 NM being preferred. Larger and less maneuverable vessels will likely avoid transiting within the lease area, therefore formal establishment of shipping safety fairways or other routing measures within a wind farm are not necessary.

To be clear, the Fifth Coast Guard District is not setting a minimum spacing requirement between offshore structures with these study calculations. The calculations have been included only to illustrate what would be considered safe navigation parameters for the majority of CFVs that transit to and from New Jersey inlets and offshore fishing grounds should they opt to transit through an OREI area.

Vessels engaged in fishing

Vessels engaged in fishing may require additional sea room for safe navigation; however, this study did not attempt to determine minimum safe distances for such activity. Potential impacts to fisheries and vessels engaged in fishing will be evaluated during BOEM's project specific environmental assessment process.

Hudson South Proposed Lease Areas

On June 11, 2021, BOEM announced the proposed sale of six lease areas within the Hudson South wind energy area of the New York Bight.

In advance of this proposed sale, the Fifth Coast Guard District conducted detailed analysis on traffic within the Hudson South wind energy area, including traffic within the proposed Cape Charles to Montauk Point Fairway. Enclosure 1 illustrates that the majority (over 70 percent) of vessels entering the Hudson South wind energy area and crossing the proposed fairway are fishing vessels.

As discussed previously, the study finds the minimum width for a transit lane between offshore structures for vessels 200 feet in length should be between 0.53 and 1.08 NM, with 0.80 to 1.08 NM being preferred. Larger and less maneuverable vessels will likely avoid transiting within the lease area, therefore formal establishment of shipping safety fairways or other routing measures within a wind farm are not necessary.

Several of the proposed lease areas are separated by areas referred to by BOEM as "transit corridors". The Coast Guard does not recognize a transit corridor as a defined routing measure or shipping safety fairway and is concerned that BOEM's use of the term may add confusion, be subject to interpretation as to its intent or its impact on the obligations between vessels navigating at sea.

Other proposed lease areas share a common border with no separation. When multiple lease areas share borders, the Coast Guard recommends a common turbine spacing and layout throughout adjoining wind projects. This will have the cumulative effect of presenting one wind farm with consistent straight-line routes for the mariner through the entire area. The common turbine layout will help facilitate navigation safety, consistent and continuous marking and lighting, search and rescue, and where necessary, other uses such as commercial fishing. In the absence of common spacing and orientation between adjacent projects, the Coast Guard recommends setbacks between shared borders to create gaps between projects. The space between projects should be greater than any turbine spacing within either wind farm to provide clear visual reference to easily distinguish them as two separate projects. A change in orientation or spacing without this separation will increase risk for surface and aerial navigation through the wind farms and could inhibit an aerial search within the wind farms. Spacing along the shared border and the subsequent impacts to navigation and Coast Guard missions should be addressed in each individual Navigation Safety Risk Assessment (NSRA) and Emergency Response Considerations for Search and Rescue.

Recreational Boating Activity

The Fifth Coast Guard District met virtually with NJDEP on February 24, 2021, to discuss how to fill gaps in fishing vessel data within small passenger vessel or charter vessel operations. A telephone call on March 12, 2021, with Recreational Fishing Alliance (RFA) members provided much needed information on this data. The Fifth Coast Guard District learned that most vessels represented by the RFA are less than 125 feet in length with the majority being between 30 and 50 feet. Most members are recreational fishing fleet and small charter boat operators (SPV and Uninspected Passenger Vessels). These operators provided more detail on smaller fishing and recreational vessel traffic in the study area.

Recreational anglers expressed a major concern regarding the seasonal (May to October) traffic convergence of recreational and commercial vessels in proposed OREI areas. The Cape May, New Jersey, CFV fleet currently transits through proposed OREI in the Delaware Bay entrance. Recreational reef fishing is mainly done by day boat operators and is seasonal. The RFA confirmed transit lines from New Jersey fishing ports to the 100-fathom curve offshore as

indicated in the NYSERDA – RODA report[18] are the primary focus of the study. As routing measures are not mandatory, nor do they apply to smaller recreational vessels, this concern will not be mitigated by the proposals in the study.

Recreational and CFV operators also expressed concern about radar interference. The Fifth Coast Guard District found this concern is being researched by two separate federal entities, the Wind Turbine Radar Interference Mitigation (WTRIM) Committee under the Department of Energy, and the National Academies of Science, Engineering and Medicine. Further analysis of this topic is outside the scope of a PARS.

The Fifth Coast Guard District will continue to review individual project designs under the NEPA process as cooperating agency to ensure compliance with NVIC 01-19. This should ensure safe spacing and layout design for recreational boater navigation safety.

Ferry Traffic

There is one ferry service in the study area providing vessel and passenger transits between Cape May, New Jersey, and Lewes, Delaware. The Cape May – Lewes ferry operates four vessels 365 days a year in all weather conditions. The ferry holds approximately 100 vehicles and takes approximately 85 minutes for the 17-mile transit. There are no dangers or concerns regarding the ferry vessel traffic.

Global Shipping Trends

General impact of the trend towards larger ships on ports

Industries are adapting their cargo to the container shipping method - containerization. Commodities such as malt, peat moss, fertilizers, timber, scrap and waste products are now largely containerized. It is likely that in the next decade 90 percent of the general global cargo will be shipped in containers. By using a container, a door-to-door concept can be more efficient. Cargo transported directly from the mill to the consignee, or even directly to the consumer, makes it more efficient and reduces the risk of damages.

The size of the largest vessels in the world's shipping fleets have more than doubled over the past two decades. In 2005, the largest container ships were just under 10,000 Twenty-foot Equivalent Units (TEU), a common container unit of measure. Today the vast majority of orders are for ships larger than 10,000 TEU and shipping lines are beginning to order 22,000 TEU ships.

Many of the older ships displaced by these large vessels were scrapped, but shipping lines are deploying 6,000-10,000 TEU vessels in different ways, leading to a cascading effect in which ships being replaced by larger vessels on the major trade lanes are being deployed in secondary trade routes. The trend towards larger ships affects all ports, big and small. Although the largest

[18] NYSERDA, RODA, *New York Bight Transit Lanes Surveys, Workshop and Outreach Summary*, 2020.

ships generally do not come to North America, U.S. ports are increasingly handling larger vessels. In many ports, larger ships are expected to lead to fewer port arrivals and departures. Alternatively, many other ports may experience a higher frequency of transits due to offshore lightering operations that improve port access where channel or cargo handling constraints preclude use of larger vessels.

The export of LNG and LPG has increased in recent years and is expected to increase into the future. The development of shale gas exploration, pipelines, and gas terminals in the Delaware River contribute to the conclusion that traffic will increase, as will the need for offshore anchorage space.

AIS Vessel Traffic Densities and Routes

The advent and compulsory use of AIS for maritime traffic has enhanced the ability to develop data-driven conclusions regarding vessel traffic densities and routes. Enclosure 1 includes a detailed analysis of the AIS data for years 2017-2019 for the study area.

The majority of large commercial vessels entering the Delaware Bay are cargo and tank vessels. These vessels follow common track lines entering and departing the port within the charted TSS. There are high concentrations of recreational and commercial fishing vessel traffic in and out of the coastal inlets of the New Jersey seacoast. While AIS is not compulsory for many fishing vessels, the use of its data coupled with NMFS VMS data, provides a largely complete picture of this type of traffic.

While transit counts give a broad idea of traffic composition over the total study area, they dilute the information because the study area is very large. A passage line analysis allows for more specific study of the major routes present. This is accomplished by counting the transits across a gate placed in the areas with the highest traffic density. A transit is counted every time a vessel crosses the passage line then enumerated and reported by vessel type. Passage lines were placed in areas that appeared to have a high traffic volume or because of their special geographic interest. Entrances and exits to inlets were of particular interest because of the likelihood of many vessel transits in these areas. Additionally, passage lines were also placed across the width of the traffic lanes approaching New York. In some instances where the traffic patterns varied notably between years, monthly breakdowns are provided. Further detailed analysis on the traffic to/from the Port of New York and New Jersey can be found in the Northern New York Bight PARS. See 85 Fed. Reg. 38907 (June 19, 2020).

Each map also illustrates the shipping safety fairways along the Atlantic Coast published in the Advanced Notice of Proposed Rulemaking. See 85 FR 37034 (Jun 19, 2020).

AIS Towing Vessel Traffic Analysis

Enclosure 3 is a detailed analysis of tug and tow vessel traffic along the east coast between North Carolina and New York. The analysis, conducted by Coast Guard NAVCEN, provides data in

response to comments received from the AWO. The AWO requests a fairway wide enough for three vessels to pass safely (nine NM). AIS data shows an average of less than two vessels per day in 2019 in the offshore fairway proposal. Additionally the data suggests more transits west (inshore off Maryland) of OCS-A 0490 (U.S. Wind). Using a closest point of approach at two NM, a five NM wide corridor along the NJ seacoast provides space for safe navigation of coastwise traffic. Casualty analysis and discussions with a federal pilot and towing vessel operators during public meetings support this option. The Fifth Coast Guard District concludes a move of the coastwise fairway Cape Charles to Montauk Point westward at a width as proposed by the ANPRM, along the Maryland / Delaware coast, supports these traffic patterns. Local towing operators supported this modification during a roundtable held on March 9, 2021.

The AWO expressed need for an additional fairway offshore to accommodate Articulated Tug and Barge Units (ATB) that operate in unlimited ocean service, similar to deep draft vessels but at lower speeds. The ANPRM for Shipping Safety Fairways Along the Atlantic Coast does not limit vessel types in any fairway.[19] Additionally, significant research was conducted by the Towing Safety Advisory Committee (TSAC) and published in a report in 2018.[20] The TSAC reported ATBs operate in unlimited ocean service and have operated in transoceanic or intercontinental service for many years. This supports our conclusion that ATBs are safe in the fairway identified in the ANPRM as "St. Lucie to New York". The conclusions of this study propose a balanced approach to all waterway needs at the entrance to the Delaware River and Bay.

AIS Anchoring Data

In 2019, the Fifth Coast Guard District published a Notice of Inquiry (NOI) to discuss the need to establish anchorage areas in the approaches to the Delaware Bay. See 84 Fed. Reg. 230 (November 29, 2019). Further study of this need led the Fifth Coast Guard District to separate the offshore and inshore anchorage areas into two separate rulemakings. Enclosure 4 is the CG NAVCEN analysis of historical anchoring patterns in the study area to further inform our conclusions on anchorage space and location requirements for the future maritime traffic into the Delaware Bay.

This data and associated graphics show a conflict between OCS-A 0519 (Skipjack) and historical anchoring areas. The Fifth Coast Guard District is committed to ensuring the navigation safety and needs of the MTS in the offshore approaches to major ports. Data shown in Figure E.11 and consultations with local maritime operators and stakeholders confirm the need for a fairway anchorage adjacent to the southeastern TSS. Section F includes careful consideration of these conflicting waterway needs and the rights of existing lease holders and OCS activities.

[19] U.S. Coast Guard, ANPRM, *Shipping Safety Fairways.* 2020.
[20] U.S. Coast Guard, *Towing Safety Advisory Committee Task 15-02 Final Report*. 2018.

Figure E.11 – 2019 anchoring details

Navigational Safety Incident Frequency Methodology

International Association of Lighthouse and Maritime Authorities (IALA) Waterway Risk Assessment Program (IWRAP) – IWRAP is a modeling tool developed by the IALA to assess maritime risk. Using IWRAP, based on information about traffic volume and composition, route geometry and bathymetry, the frequency of collisions, allisions, and groundings in the study area is estimated. Three separate cases were modeled (Alpha, Bravo, and Charlie) to illustrate and calculate the frequency of incidents based on changes in future traffic movements. Full details and analysis are found in Enclosure 2.

Existing Case (Alpha) – In the Alpha case, waterway characteristics are entered and AIS data is imported to determine collision frequencies with no structures in place. Established traffic legs or routes were drawn and entered into the IWRAP. Bell shaped curves on either side of the leg illustrate the probability that vessels of a certain size and type will transit within the defined distance either side of the leg. The distance from the leg is illustrated by the length of the line perpendicular to the traffic leg. Green curves illustrate inbound traffic and blue curves illustrate outbound traffic. The existing case shows no significant change to traffic patterns from the 2011 ACPARS.

Future Case (Bravo and Charlie) – Two cases were created to assess future changes in incident frequency. These cases validate the proposed Atlantic Coast shipping safety fairways.

In the Bravo case, traffic was not re-routed to proposed shipping safety fairways, but existing routes were analyzed with the proposed OREI development in place. The frequency of an allision with a fixed structure increases in this case, as structures exist where none were present

in the Alpha case. The collision frequency remains the same as the Alpha case because there are no assumed vessel route changes.

In the Charlie case, traffic routes into proposed routes around the OREIs. This enabled us to analyze shifting vessel traffic patterns and incident frequency change resulting from the possible routing measures, recommended routes, and shipping safety fairways proposed by this study. In this case, the forecasted frequency of allision with the fixed structures increases from the Alpha case, but is lower than the Bravo case. The frequency of vessel-to-vessel collisions increases as the vessels converge into a smaller amount of sea space.

Impact of Offshore Renewable Energy Installations – This study concludes that deep draft traffic is expected to avoid transits through the OREIs along the Seacoast of New Jersey and in the approach to the Delaware River and Bay as examined in the Charlie case. This conclusion is supported by mariners and harbor pilots, and is consistent with the practice around OREI in European waters. The increased density results in a known increase in the possibility of a vessel-to-vessel collision. The Fifth Coast Guard District proposes a combination of fairways and routing measures in Section F to mitigate this increase.

Shipping Safety Fairways, like those in the ANPRM, ensure adequate sea space for ships to avoid collision under normal conditions. See 85 Fed. Reg. 37034 (June 19, 2020). The Fifth Coast Guard District concludes the recommended TSS extension, fairways, additional precautionary areas, and two-way route in Section F preserve space and lower the risk of vessel collision. This facilitates co-existence between OREI and maritime traffic in a safe manner with little impact to vessel routes.

F. Recommendations and Conclusions

Recommendations:

The Fifth Coast Guard District recommends a combination of IMO resolutions (modified TSS, two-way routes, and additional precautionary areas) and modifications to the ANPRM for shipping safety fairways. It is the conclusion, based on data contained in this study, that this combination of measures provides a balanced approach to marine planning and ensures future safety of navigation. A fairway anchorage adjacent to the southeastern TSS is also recommended to accommodate increased vessel traffic and preserve adequate space from future offshore development. The Fifth Coast Guard District discussed these suggestions with local stakeholders as described in the Section C of this study.

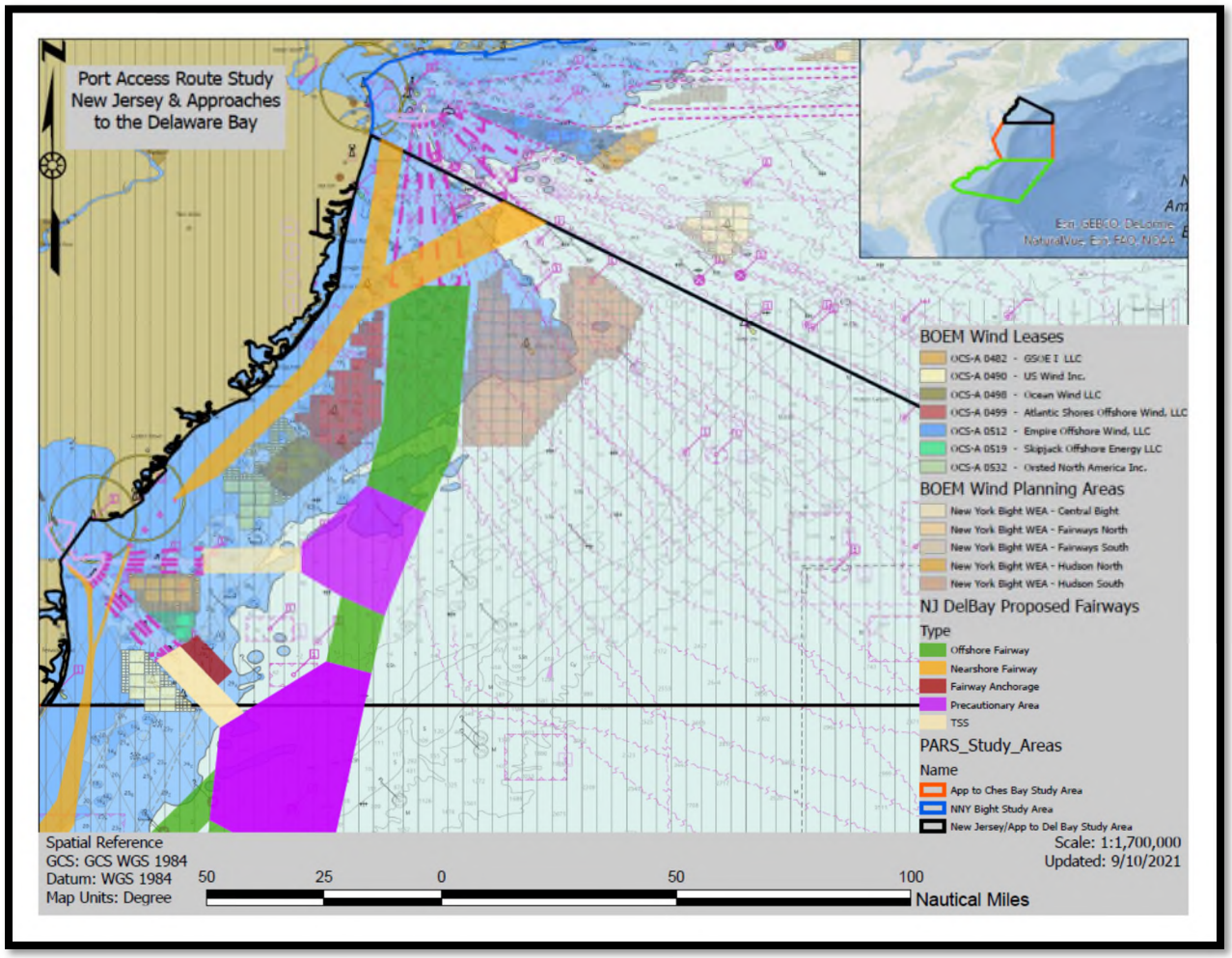

Figure A.1

The Fifth Coast Guard District referenced multiple sources in these conclusions and recommendations:

Marine Guidance Note 654 (MGN 654)

Guidance from the United Kingdom recommends calculating the appropriate routes to account for a 20^{o} cross track error. This error should consider overall length of the route, vessel maneuvering characteristics, weather factors including current and wind information, overall bridge awareness, and readiness of engines and anchors in constrained areas. Data in this study shows the predominant current and winds generally set vessels to the east. The route length between the two OREI equals 38 NM. Using the 20^{o} cross track error, the Fifth Coast Guard District calculates a recommended route width of 13 NM.[21] Considering prudent seamanship and a heightened state of maneuvering, emergency anchoring readiness, and bridge and engine readiness in port approaches, the report concludes a 13-mile wide TSS is excessive. Current offshore leases in the area also prohibit such a drastic change.

MGN 654 further recommends a distance between structures and a routing measure of 2 NM creates low risk and one NM creates medium risk of allision. The Fifth Coast Guard District concludes a width of 4.8 NM is sufficient for port approaches with consideration that at least 2 NM distance should be maintained between the edge of the TSSs and any offshore structure.

Guidelines for Ship's Routing

The IMO suggests ship transit counts be considered when determining size of routing measures that are bound on both sides by offshore development.[22] AIS data shows an average of 8,188 vessel transits across the Delaware Bay Entrance Pilot Area annually. Given this density data, the Fifth Coast Guard District used a factor of three (vessels abeam one another) for these calculations.[23]

North Sea Shipping Advisory Board

Using the Dutch maritime spatial planning guidance, vessel size is the predominant factor in calculating safe space between shipping routes and offshore structures.[24] As larger vessels are calling more frequently and predicted to continue, the study used 1,000 feet as the length for calculations. This calculation results in two ship lengths or 2,000 feet x three (factor based on total transit count) as adequate for safe transit based on density = 6,000 feet or 1.0 NM.

The World Association for Waterborne Transport Infrastructure

[21] Maritime and Coastguard Agency. *Marine guidance note 654*. 2021.
[22] International Maritime Organization, *General provision on ships routeing.* 2019.
[23] Shipping Advisory Board North Sea, *The shipping industry and marine spatial planning – A professional approach.* 2013.
[24] Ibid.

The World Association for Waterborne Transport Infrastructure (PIANC) strives for 2 NM between wind farms and shipping routes as the minimum recommended distance between shipping lanes and offshore wind farms.[25]

In summary, the Fifth Coast Guard District concludes the current width of the TSS and fairways is satisfactory to safely manage traffic within the routes; however, the distance from the TSS edge to the lease edge should be increased. Using a route width of 5 NM, leaves a remaining distance from route edge to lease edge at less than 0.5 NM (1,000 yards). The Fifth Coast Guard District recommends, as a cooperating agency to BOEM, under the NEPA review for individual OREI projects, a layout design that facilitates a 2 NM distance between the boundary of a TSS or any other route and offshore structures.

International Maritime Organization Routing Measures

Precautionary Area: The Fifth Coast Guard District recommends establishing additional precautionary areas where a wide variety of vessel traffic converges east of the proposed OREIs. Precautionary areas, defined in Appendix A, highlight areas where ships and fairways converge that require particular caution in navigation. The Fifth Coast Guard District expects navigation safety will be improved with such a safety measure in offshore locations where multiple navigation tracks cross in the approaches to the Delaware Bay around planned OREI.

Vessel traffic patterns support the fairways proposed in the ACPARS ANPRM. This study also illustrates a high level of fishing vessel activity in the sea space. Charting a precautionary area encourages a heightened level of awareness by large commercial operators, towing vessel operators, CFV operators, and recreational boaters alike. Precautionary areas do not prohibit fishing activity within the area, but with the heightened awareness by all vessel operators, the Fifth Coast Guard District concludes this will improve navigation safety for all. Table F.1 lists the coordinate points for the two proposed new precautionary areas in the study area.

Traffic Separation Scheme(s): The Fifth Coast Guard District, with consensus from major stakeholders as described in Section C, recommends extending both existing TSSs to comport with Coast Guard Marine Planning Guidelines found in COMDTINST 16003.2B. The proposed extensions allow for a 5 NM buffer between the terminus of each TSS and any proposed OREI. Coordinates for these adjustments are listed in Table F.1. The convergence of international traffic into a TSS creates a natural funnel. The Fifth Coast Guard District recommends the TSS extensions to prevent a terminus between two proposed OREI thereby avoiding this natural convergence in a space with fixed structures on both sides. This provides a balanced approach to waterway use and improves the safety of navigation within the maritime transportation system.

[25] World Association for Waterborne Transport Infrastructure. *Interaction between offshore wind farms and maritime navigation.* 2018.

Traffic analysis in Enclosure 1 illustrates the largest vessels (over 1250 feet in length) trending toward a higher frequency of transits at the entrance to the Delaware Bay, up from 32 vessels annually in 2017 to 382 vessels in 2019. This includes a trend upward for LPG exports as outlined in Section D. The increased frequency of larger vessels may explain the overall drop in total number of vessel transits in the area. The Fifth Coast Guard District recommends extending both TSSs to ensure navigation safety of these high consequence vessels calling on the port with increased frequency.

Two-way route: The Fifth Coast Guard District recommends establishing a new two-way route along the Delaware seacoast for safe transits into and across the mouth of the Delaware Bay by coastwise vessels, including tug, and tow operators. These routes, identified in Enclosure 3 (Tug and Tow Coastwise Traffic Analysis), will complement and add safety to the existing two-way route established in 1995 in the approach to the Delaware Bay offshore New Jersey. Coordinates for these recommendations are listed in Table F.1.

ACPARS Shipping Safety Fairways

Chesapeake Bay to Delaware Bay Eastern Approach Cutoff Fairway: This study confirmed a Chesapeake Bay to Delaware Bay connector route is warranted, however the angle of approach to the Delaware Bay, when modified as in the PARS for the approaches to the Chesapeake Bay, see 85 Fed. Reg. 119 (June 19, 2020), opens up sea space for crossing vessels in the southern portion of this PARS area. This modification provides additional space for offshore anchoring in the approach to the Delaware Bay. Maritime stakeholder comments in public meetings and historic data illustrated in Enclosure 4 (NJPARS Anchorage Analysis) support the need for anchorage space. Traffic analysis provided in Enclosure 1 supports that this modification will not significantly change current patterns and ensures existing routes are maintained and preserved. Coordinates for these recommendations are listed in Table F.1.

Delaware Bay Connector Fairway: As a result of our recommendation to modify the Chesapeake to Delaware Bay Eastern Approach Cutoff Fairway and establish a precautionary area, the Fifth Coast Guard District finds a modification to the Delaware Bay Connector Fairway necessary. Coordinates for these recommendations are listed in Table F.1.

Cape Charles to Montauk Point Fairway: Modifying the Cape Charles to Montauk Point fairway westward along the DELMARVA peninsula is supported by current traffic and vessel operators as described in Section C. Additional analysis of coastwise tug and barge traffic between North Carolina and New Jersey in Enclosure 3 supports this modification as well. The Fifth Coast Guard District recommends this transition into a two-way route described above in the immediate vicinity of the Delaware Bay TSS. Traffic analysis of tug and tow transits in the Fifth Coast Guard District, found in Enclosure 3, support a single shipping safety fairway offshore the Delaware Bay entrance for north/south traffic (Chesapeake Bay to Delaware Bay Connector Fairway). A shipping safety fairway does not limit vessel traffic nor prohibit fishing within. The Fifth Coast Guard District concludes a single nearshore fairway and a single

offshore fairway provide adequate space for safe navigation on the OCS. Coordinates for these recommendations are listed in Table F.1.

New Jersey to New York Connector Fairway: The Fifth Coast Guard District, in coordination with the First Coast Guard District, concludes an additional fairway in the space between Ocean Wind and Atlantic Shores Offshore Wind (OCS-A 0498 and 0499) and the New Jersey Seacoast between the Delaware Bay and the approaches to New York harbor will increase the safety of vessel navigation. The report proposes a shift of the Cape Charles to Montauk Point Fairway westward to accommodate existing leases Ocean Wind and U.S. Wind (OCS-A 0498 and 0490). Coordinates for this recommendation are listed in Table F.1. The Fifth Coast Guard District recommends a NEPA review for individual OREI projects consider layout designs that facilitate space from the lease edge in order to maintain adequate space between the boundary of any routing measure or fairway and offshore structures to manage navigation safety.

Fairway Anchorage

The Fifth Coast Guard District recommends establishment of a fairway anchorage under 33 CFR part 166 to meet future needs for safe anchorage areas around OREIs. This area, defined in Table F.1, is currently in use for anchoring and bunkering and is supported by stakeholder outreach as described in Section C.

Recommendation	Detailed description
IMO Precautionary Area (South)	38.4260052 N 74.13690201 W 38.38444745 N 73.97741578 W 37.64828247 N 74.14209416 W 37.86698907 N 74.54958358 W 38.19448863 N 74.51228606 W
IMO Precautionary Area (North)	39.05123314 N 73.99370226 W 38.95490454 N 73.78441968 W 38.59173491 N 73.93104607 W 38.6610783 N 74.08428671 W 38.74555125 N 74.22661548 W 38.83492709 N 74.22738457 W
IMO Eastern Approach TSS	38.83019742 N 74.57666542 W 38.83492709 N 74.22738457 W 38.74555125 N 74.22661548 W 38.74080813 N 74.57309356 W
IMO Southeastern Approach TSS	38.48000 N 74.655 W 38.24532946 N 74.42971755 W 38.19448863 N 74.51228606 W 38.4296465 N 74.7379657 W
IMO Two-Way Route	38.48065175 N 74.96188839 W 38.83239368 N 74.8417595 W 38.83666757 N 74.82883512 W 38.47160634 N 74.95350788 W
ACPARS Cape Charles to Montauk Point Fairway	38.7721977 N 75.05368416 W 38.7138604 N 74.98211632 W 38.69172569 N 74.96320443 W 38.65935689 N 74.96699452 W 38.42334128 N 74.96074106 W 38.29350596 N 74.97030189 W 38.2711782 N 74.97371702 W 38.2711738 N 75.0107032 W 38.30070401 N 75.00229729 W 38.42568333 N 74.98561346 W 38.47230549 N 74.97851665 W 38.65890164 N 74.98362118 W

	38.71005117 N 38.75003135 N	75.00111582 W 75.04822051 W
Fairways Anchorage	38.52295009 N 38.3904375 N 38.34238273 N	74.59417796 W 74.47024984 W 74.52288816 W

Table F.1

USCG-2020-0172 Port Access Route Study: Seacoast of New Jersey including offshore approaches to the Delaware Bay

2021

Conclusions:

The Fifth Coast Guard District concludes the potential increased frequency of collision or allision expected in the future as shipping traffic maneuvers around offshore developments is best mitigated by a combination of IMO resolutions (a new two-way route, new precautionary areas and TSS modifications) and shipping safety fairways found above. The Fifth Coast Guard District recommends Coast Guard Headquarters incorporate these alternatives into the ANPRM for fairways and propose appropriate IMO resolution. Data and analysis provided in Enclosures 1 through 3 suggest a need for mitigation. The Fifth Coast Guard District deems this combination provides a balanced approach to marine planning and promotes future safety of navigation.

Alternative Suggestions:

The Fifth Coast Guard District assessed additional alternatives proposed by public comments and stakeholder outreach.

Alternative 1: Extend the Ambrose to Barnegat TSS in the approach to New York/New Jersey.

Assessment: The Fifth Coast Guard District does not recommend this alternative. In collaboration with the First Coast Guard District, this study finds the proposed fairway south of the Ambrose to Barnegat TSS is sufficient to preserve sea space in the southern approach to the Port of New York/New Jersey. The proposed ACPARS shipping safety fairway in this area provides adequate width at 10 NM to achieve sufficient traffic separation without a formal routing measure.

Alternative 2: Establish fairways within the OREI of the New Jersey seacoast to facilitate direct and safe transits for small vessel traffic from New Jersey seaports.

Assessment: The Fifth Coast Guard District studied small vessel traffic to and from the New Jersey seaports in this study. Section E of this report provides extensive reasoning and analysis. The Fifth Coast Guard District concludes the formal establishment of shipping safety fairways or other routing measures within existing lease areas is not necessary. The Coast Guard will continue to discuss and collaborate in the OREI review process with the analysis and data provided in this study to support and inform future decisions and recommendations to BOEM.

Alternative 3: Establish a designated offshore route east of the TSS for towing vessel traffic.

Assessment: This alternative, proposed by the AWO was suggested to allow for designated routes to accommodate articulated or integrated tug-barge units that prefer to transit offshore the entrance to the Delaware Bay. Stakeholders expressed a need for separate space to avoid other deep draft traffic offshore. The Fifth Coast Guard District agrees with the TSAC assessment that these type of vessels maneuver similarly to larger deep draft vessels, though at a slower speed. The ACPARS fairways are designed for any vessel traffic use. The St. Lucie to New York fairway and the Chesapeake Bay to Delaware Bay Connector fairway are deemed sufficient for

this type of traffic in the future. Historical accident data does not support a need for separate fairways to accommodate both vessel types.

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G. Appendices

1. Definitions

Allision: a collision between a moving vessel and a fixed or anchored object.

***Area to be Avoided*:** an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ships.

Automated Identification System: automatic tracking system that supplements marine radar and is used as a method of collision avoidance and to distinguish and plot vessel traffic patterns.

Baseline: defined by the United Nations Convention of the Law of the Sea as the line along the low water line of a coastal state.

Fairway or shipping safety fairway: a lane or corridor in which no artificial island or fixed structure, whether temporary or permanent, will be permitted as per 33 CFR 166.105(a).

Navigation Safety Corridor: Coast Guard term used to describe regular vessel traffic pattern derived from density plots using AIS information.

Offshore Renewable Energy Installation: an energy development project designed offshore to harness either wind or hydrokinetic energy for onshore consumers.

Port Approaches: navigation routes followed by vessels entering or departing from port to a primary transit route.

Precautionary area: an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.

Recommended Route: a route of undefined width, for the convenience of vessels in transit, which is often marked by centerline buoys.

Regulated Navigation Area (RNA): a water area within a defined boundary for which regulations for vessels navigating within the area have been established under 33 CFR 165.

Routing System: any system of one or more routes or routing measures aimed at reducing the risk of casualties; including traffic separation schemes, two-way routes, recommended tracks, areas to be avoided, no anchoring areas, inshore traffic zones, roundabouts, precautionary areas and deep-water routes.

Territorial Sea: a sea zone prescribed by the United Nations Convention of the Law of the Sea (UNCLOS) stretching from the baseline out to 12 NM over which the coastal state has sovereignty.

Traffic Separation Scheme (TSS): a routing measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes; or other options that may be available to facilitate safe navigation.

Two-Way Route: a route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.

Wind Energy Areas: designated areas within the U.S. EEZ which are reserved for leasing to energy companies for the purpose of developing offshore wind turbine fields to harness wind energy.

2. Table of Abbreviations

ACOE	Army Corps of Engineers	NOAA	National Oceanic and Atmospheric Administration
ACPARS	Atlantic Coast Port Access Route Study	NWS	National Weather Service
AIS	Automatic Identification System	NYDOS	New York Department of State
ATBA	Area to be avoided	NYSERDA	New York State Energy Research and Development Authority
ATON	Aid to Navigation	OCS	Outer Continental Shelf
AWO	American Waterways Operators	OREI	Offshore Renewable Energy Installation
BOEM	Bureau of Ocean Energy Management	OSS	Offshore Sub Station
BSEE	Bureau of Safety and Environmental Enforcement	PIANC	Permanent International Association of Navigation Congresses
CFR	Code of Federal Regulations	RNA	Regulated Navigation Area
CFV	Commercial Fishing Vessel	RODA	Responsible Offshore Development Alliance
COP	Construction and Operations Plan	SAP	Site Assessment Plan
DELMARVA	Delaware-Virginia-Maryland	SAR	Search and Rescue
EEZ	Exclusive Economic Zone	TSS	Traffic Separation Scheme
IMO	International Maritime Organization	UK	United Kingdom
MAC	Mariners Advisory Committee	USCG	United States Coast Guard
MARCO	Mid-Atlantic Regional Council of the Ocean	VMS	Vessel Monitoring System
MGN	Marine Guidance Note	WEA	Wind Energy Area
NMFS	National Marine Fisheries Service	WSC	World Shipping Council

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I. Enclosures to USCG-2020-0172