Unsolicited Right-of-Way/ Right-of-Use & Easement Grant Application

Redacted Version

New York/New Jersey Ocean Grid Project

Amended June 22, 2018

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1.0 INTRODUCTION

Anbaric Development Partners, LLC (ADP) submits this Unsolicited Right-of-Way and Right-of-Use and Easement Grant (ROW/RUE Grant) Application to the Bureau of Ocean Energy Management (BOEM) for the New York/New Jersey Ocean Grid Project (NY/NJ Ocean Grid or the Project), in accordance with BOEM's regulations governing ROW and RUE Grants related to renewable energy projects (30 C.F.R Part 585, Subpart C).

ADP requests a ROW/RUE Grant for potential routing of subsea transmission cables and siting of Offshore Collector Platforms (OCPs) for the NY/NJ Ocean Grid Project located on the Outer Continental Shelf (OCS) offshore of New York and New Jersey. This ROW/RUE Grant Application is supported by engineering and environmental analyses, initial stakeholder consultations, and Interconnection Requests filed (or in the process of being filed) with the New York Independent System Operator (NYISO) and PJM Interconnection (PJM). In accordance with BOEM's renewable energy program regulations (30 C.F.R § 585.305), this ROW/RUE Grant Application includes the following information:

(a) The area ADP is requesting for a ROW/RUE Grant;

(b) A general description of ADP's objectives and the facilities that ADP will use to achieve those objectives;

(c) A general schedule of proposed activities; and

(d) Pertinent information concerning environmental conditions in the Area of Interest (AOI).

1.1 Overview of NY/NJ Ocean Grid Project

ADP is proposing the NY/NJ Ocean Grid – a planned offshore transmission system to efficiently deliver offshore wind energy generation to the onshore electric grid. The States of New York and New Jersey, respectively, have plans to develop 2,400 and 3,500 MW of offshore wind by 2030. ADP understands that commercial offshore wind development at this scale will benefit substantially from the availability of a carefully planned, coordinated offshore transmission system, as an alternative to project-by-project generator lead transmission interconnections that only serve one project. Through the strategic selection of onshore Points of Interconnection (POI), careful planning to minimize the Project footprint and environmental impacts, and by building transmission at scale, the NY/NJ Ocean Grid will serve as foundational infrastructure in support of this developing regional offshore wind industry. In addition, the Project is consistent with the actions identified in the National Offshore Wind Strategy (DOI/DOE 2016), including reducing costs and technology risks, supporting effective stewardship, and increasing the understanding of the benefits and costs of offshore wind.

The NY/NJ Ocean Grid will consist of strategically sited OCPs, each connected to one or more high voltage subsea export cables to the onshore POIs. Each proposed OCP will be designed to handle 800 to 1,200 MW of offshore wind energy generation, with the ability to connect multiple offshore wind projects and accommodate phased development within the designated Wind Energy Areas (WEAs). The development and construction of the NY/NJ Ocean Grid increases optionality and may be built in phases to maximize economic efficiency, align with the build-out of the WEAs, and best meet reliability needs as the offshore industry grows. These benefits and optionality will not be realized by the alternative of one-off, project specific generator leads constructed by the offshore wind developers.

The NY/NJ Ocean Grid will capitalize on implementing new technology and innovation that will promote cost-effective offshore wind energy transmission and take advantage of newer transmission technology for greater and more efficient accommodation of intermittent generation from offshore wind resources. In addition, the Project will provide optionality and flexibility in adapting to rapidly advancing offshore wind generating technologies.

The Project will help to facilitate the most cost-effective and reliable regional offshore wind development on the OCS from Long Island, NY to Cape May, NJ. The southerly segments of the Project may also be able to accept additional offshore wind generating capacity planned to be built offshore of Delaware and Maryland if the need arises.

1.2 BOEM's ROW/RUE Grant Approval Process

Under the applicable regulations, after receiving an unsolicited ROW/RUE grant request, BOEM must first determine whether there is competitive interest (30 C.F.R.§ 585.306(a)). To do so, BOEM will publish a notice in the Federal Register describing the Project and will solicit public comment (30 C.F.R.§ 585.307). BOEM will then make a determination whether the grant may be awarded non-competitively and, if so, will publish a "Notice of Determination of No Competitive Interest" in the Federal Register.

Consistent with BOEM's regulations (30 C.F.R. § 385.303), ADP is seeking BOEM approval for the NY/NJ Ocean Grid in two stages. First, ADP, through this ROW/RUE Application, is requesting that BOEM issue a ROW/RUE Grant encompassing the areas in which the NY/NJ Ocean Grid Project will be sited. Second, ADP will later submit for BOEM approval a General Activities Plan (GAP) that describes the design and construction of the proposed transmission system. Under BOEM's regulations, ADP must submit a GAP within 12 months of issuance of the ROW/RUE Grant (30 C.F.R. § 585.640(b)). There will be appropriate environmental reviews under the National Environmental Policy Act (NEPA) at each of these stages. Because the requested ROW/RUE Grant does not authorize ADP to begin any level of construction activity prior to approval of a GAP, the potential environmental effects at the ROW/RUE Grant stage are limited (30 C.F.R. § 585.640(b)).

1.3 Applicant for Right-of-Way and Right-of-Use Grant

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Contact Person: Clarke Bruno, President, Transmission, ADP

1.4 Qualifications of Anbaric's Team

ADP meets the technical, financial, and legal qualifications for grant holders, as outlined in BOEM's regulations (30 C.F.R. § 585.107). ADP has submitted these qualification materials to BOEM under separate cover.

2.0 UNSOLICITED RIGHT-OF-WAY AND RIGHT-OF-USE & EASEMENT GRANT AREA REQUEST

This section describes the process that was used to define the AOI (lease blocks) for which ADP submits this unsolicited ROW/RUE grant application.

2.1 Selection of the ROW/RUE Grant Area

ADP has conducted a preliminary desktop siting and routing assessment to identify potential locations for OCPs and subsea cable routes that will serve to connect the NY/NJ Ocean Grid with existing onshore electric substations at preferred POIs. Subsea cable routes within state waters, sea-to-shore landfalls and land cable routes to the POIs were also addressed in the desktop assessment from routing and transmission capacity standpoints. However, these proposed facilities are located outside the OCS and are therefore not the subject of this Application.

The preliminary desktop assessment was based on available resource information and Geographic Information System (GIS) data sources. This information was used in the siting and routing process to identify possible environmental constraints, use conflicts, and cultural constraints associated with the proposed Project facilities. The purpose of this desktop assessment was to identify potential strategic locations for the OCPs and subsea cable routes.

ADP will continue to refine and verify the location of the proposed facilities through additional site assessment and field surveys, including High Resolution Geophysical (HRG), geotechnical, and benthic surveys, as well as marine archaeology assessments. The OCS blocks identified in this Application provide siting flexibility to support that refinement.

In general, the geographic focus of the Project Area included the portions of the OCS that contain the existing BOEM offshore wind commercial Lease Areas and Call Areas, designated as offshore WEAs. These WEAs include the Statoil Lease Area (Empire Wind) offshore New York, US Wind and Ørsted (Ocean Wind) Lease Areas offshore southern New Jersey, Garden State Offshore Energy (Skipjack) Lease Area offshore Delaware, and additional areas included in BOEM's New York Bight Call for Information and Nominations (83 Fed. Reg. 15602 (Apr. 11, 2018)).

To develop initial siting for the OCPs and associated subsea cable routes, both generalized siting criteria typical of such siting efforts and location-specific evaluation factors using publicly available information were used. This section describes the general criteria. Section 5 contains more information about the resources in the Project Area and data sources.

Identifying Potential Points of Interconnection

[redacted] the NY/NJ Ocean Grid will integrate offshore wind energy at a scale commensurate with each states' goals, and make efficient use of limited available injection capacity near each states' coasts.

Siting Offshore Collector Platforms

The following screening criteria were used for preliminary siting of the proposed OCPs:

- Proximity to WEAs including the existing commercial offshore WEAs and areas recently identified in BOEM's New York Bight Call for Information and Nominations;
- Maximum water depths of 150 feet (46 meters);
- Avoid variable seabed and subsurface geological conditions or hazards;
- Site at least 9 nautical miles (NM) (10.3 statute miles) from adjacent shoreline areas to reduce OCP visibility; and
- Minimize potential for conflicts with navigation and fishing uses and environmental hazards and resources.

Siting Subsea Cable Routes

The following screening criteria were used for preliminary siting of the subsea cable routes:

- Minimize overall cable length, potential environmental impacts, and need for mitigation;
- Minimize disturbances to beach and shoreline areas and sensitive coastal and marine environmental resources such as benthic habitats, fisheries, and marine mammals;
- Optimize the extent to which seabed conditions along the subsea cable routes will maximize the ability to install the cables using jet plow embedment at sufficient depths below the seabed to avoid use conflicts and minimize disturbance to benthic habitats;
- Minimize potential for conflicts with navigation and fishing uses;
- Minimize the potential use conflicts associated with crossing established vessel anchorages, mooring areas, and existing subsea infrastructure such as cables, pipelines, and municipal water intakes; and
- Avoid charted shipwrecks or other marine archaeological resources.

2.2 Requested Lease Blocks

Based on the desktop siting and routing assessment outlined in Section 2.1, ADP has identified the Project as shown on Figure 1. ADP requests an unsolicited ROW/RUE Grant for a total of 131 OCS lease blocks, as listed in Table 1. OCS lease blocks for which a RUE Grant is requested are indicated in bold text. BOEM regulations establish that the ROW Grant includes a 200-foot-wide corridor within the lease blocks (30 C.F.R. § 385.301(a)(2)). Therefore, the ultimate Project facilities will make up a small percentage of the actual OCS lease blocks for which the Grant is sought. ADP recognizes that the ROW/RUE Grant it seeks is subject to conditions, including that the United States may grant other rights, including ROW/RUE grants and easements related to offshore renewable energy transmission in the same area as long as any subsequent authorization does not unreasonably interfere with or impede activities or operations under ADP's Grant (30 C.F.R. § 385.302(b)). Given the small footprint of the future Project facilities within the ROW/RUE grant OCS lease blocks, the potential for interference is not expected.

Table 1. OCS Lease Blocks Requested for ROW/RUE Grant Easements

Block Number	Protraction Number	Block Number	Protraction Number	Block Number	Protraction Number	Block Number	Protraction Number
NJ18-02	6240	**NJ18-02**	**6882**	NK18-11	6540	NK18-12	6652
NJ18-02	6289	NJ18-02	6930	NK18-11	6939	NK18-12	6653
NJ18-02	6290	NJ18-02	6931	NK18-11	6940	NK18-12	6654
NJ18-02	6338	NJ18-02	6979	NK18-11	6989	NK18-12	6661
NJ18-02	6339	NJ18-02	6980	NK18-11	6990	NK18-12	6662
NJ18-02	6340	NJ18-02	6981	NK18-11	7039	NK18-12	6702
NJ18-02	6387	NJ18-02	7029	NK18-11	7040	NK18-12	6703
NJ18-02	6388	NJ18-02	7030	NK18-11	7089	NK18-12	6704
NJ18-02	6389	NJ18-02	7078	NK18-11	7090	**NK18-12**	**6711**
NJ18-02	6437	NJ18-02	7079	NK18-11	7140	NK18-12	6712
NJ18-02	6438	NJ18-02	7128	NK18-12	6457	NK18-12	6713
NJ18-02	6487	NJ18-02	7129	NK18-12	6458	NK18-12	6714
NJ18-02	6537	NJ18-03	6001	NK18-12	6501	**NK18-12**	**6715**
NJ18-02	6538	NJ18-03	6002	NK18-12	6505	NK18-12	6752
NJ18-02	6585	NJ18-03	6003	NK18-12	6506	NK18-12	6753
NJ18-02	6586	NJ18-03	6004	NK18-12	6507	NK18-12	6754
NJ18-02	**6587**	NJ18-03	6053	NK18-12	6508	NK18-12	6764
NJ18-02	6635	NJ18-03	6054	NK18-12	6509	NK18-12	6765
NJ18-02	6636	NJ18-03	6055	NK18-12	6551	NK18-12	6802
NJ18-02	6684	NJ18-03	6104	NK18-12	6552	NK18-12	6803
NJ18-02	6685	**NJ18-03**	**6105**	NK18-12	6555	**NK18-12**	**6804**
NJ18-02	6686	NJ18-03	6152	NK18-12	6558	NK18-12	6851
NJ18-02	6733	NJ18-03	6153	NK18-12	6559	NK18-12	6852
NJ18-02	6734	NJ18-03	6154	NK18-12	6560	NK18-12	6853
NJ18-02	6735	NJ18-03	6155	NK18-12	6561	NK18-12	6854
NJ18-02	6781	NJ18-03	6201	NK18-12	6562	NK18-12	6901
NJ18-02	6782	NJ18-03	6202	NK18-12	6601	NK18-12	6902
NJ18-02	6783	NJ18-03	6203	NK18-12	6602	NK18-12	6951
NJ18-02	6784	NJ18-03	6251	NK18-12	6604	NK18-12	7051
NJ18-02	6831	NJ18-05	6028	NK18-12	6605	NK18-12	7101
NJ18-02	6832	NJ18-05	6029	NK18-12	6610	NK18-12	7102
NJ18-02	6833	**NJ18-05**	**6078**	**NK18-12**	**6611**	NK18-12	7103
NJ18-02	6881	NJ18-05	6079	NK18-12	6612		

3.0 PROJECT DESCRIPTION OF THE NY/NJ OCEAN GRID PROJECT

This section describes the NY/NJ Ocean Grid Project, including the objectives, benefits, Project phasing, facilities, and schedule. This Application seeks only a ROW/RUE Grant for the Project. ADP will provide additional detail regarding Project configuration, facilities, and operations in its GAP submission and prior to BOEM's approval of any construction activities.

3.1 Project Objectives and Benefits

Offshore wind is a nascent industry in the U.S., and now is the time to carefully plan and build the infrastructure that will support its long-term growth. The NY/NJ Ocean Grid will help New York and New Jersey meet their respective goals of developing 2,400 and 3,500 MW of offshore wind by 2030. Planned infrastructure offers advantages over radial transmission lines in terms of economies of scale, efficient use of interconnections, and reducing footprint and potential environmental impacts. As BOEM and the Department of Energy (DOE) have recognized, transmission has the potential to be a choke point that limits the successful integration of offshore wind power generation with the electric grid through the limited interconnection capacity available onshore. New York and New Jersey each have a limited number of onshore substations that can handle substantial volumes of offshore wind without triggering extensive onshore transmission upgrades. The NY/NJ Ocean Grid will connect to the onshore electric grid with a goal of maximizing the deliverability from the offshore while minimizing the need and cost for onshore upgrades. At the same time, this does not interfere with developers' leasehold interests in any way, given that the issuance of a ROW/RUE Grant does not affect lessees' ability to develop other transmission options.

By building to scale, a planned transmission system will minimize environmental impacts by reducing the environmental footprint of transmission. This will decrease impacts to barrier beaches, estuaries, marshes, and bays associated with multiple sea-to-shore landfalls for each offshore wind development.

The NY/NJ Ocean Grid will also provide options for states, regulators, and wind developers as they consider how to best connect offshore wind power to the grid. Nothing about the NY/NJ Ocean Grid will preclude offshore wind developers from building their own export cables but providing offshore wind developers the option to connect to a planned transmission system could speed development and lower the delivered costs to ratepayers.

3.2 Proposed Facilities

The proposed NY/NJ Ocean Grid Project is a planned offshore transmission system that will provide common offshore interconnection points for multiple commercial wind energy developments within the area of the New York Bight and off the New Jersey coast.

The full build-out of the Project will be capable of accommodating approximately 5,900 MW of capacity from commercial offshore wind projects connecting to the electric transmission grid in New York and New Jersey. The Project will consist of a series of OCPs located in proximity to WEAs on the OCS and subsea cables connecting the OCPs to onshore POIs to the NYISO and PJM transmission grids (see Figure 1).

The following sections provide a general description of the proposed facilities that will comprise the NY/NJ Ocean Grid.

Offshore Collector Platform

The Project's OCPs will be located in proximity to WEAs. Each OCP will include modular electrical technology to allow for flexibility and expansion of the system. The OCPs will function to accept a series of feeder subsea cables from one or more Electric Service Platforms (ESPs) constructed by the offshore wind developers within the WEAs. The ESPs within the WEAs will function as the collection point for the low-voltage inter-array cables originating from each of the Wind Turbine Generators (WTGs). Each OCP could be equipped with electrical transformers that would increase the AC voltage levels and/or power converters that would switch the current from AC to DC. In addition to the electric equipment and switch gear, each OCP will be equipped with protection and control systems, emergency power, and communications facilities. Each OCP will also be capable of supporting several subsea export cables that will connect the platform to the POIs located on the onshore transmission grid.

Typical OCP Platform

The actual size and dimensions of the OCP topside and the foundation type (i.e., jacket or monopile) will be dependent on a number of factors, including selection of either AC or DC technology, advances in technology, equipment layout, and physical oceanographic conditions at the site.

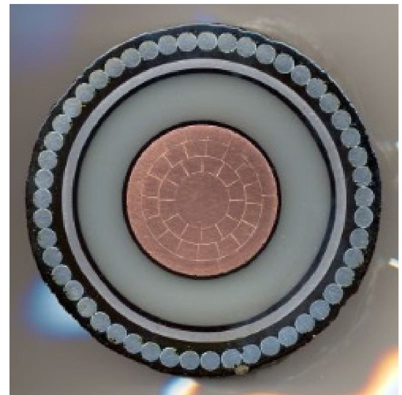
The areas requested in ADP's ROW/RUE Grant application would accommodate up to nine (9) OCPs, each with a design capacity to deliver between 800 and 1,200 MW along the subsea export cables to the onshore transmission grid.

A brief overview of the general locations of the OCPs based on the preliminary siting and desktop assessment described in Section 2 is provided below. The final siting of the OCPs will be refined based on more site-specific information gathered during additional site assessment and field surveys, including HRG, geotechnical, and benthic surveys, as well as marine archaeology assessments.

- **OCP 1:** OCP 1 is located 20.2 NM (23.3 statute miles) from the southern shoreline of Long Island, adjacent to the northern boundary between the existing Statoil NY WEA lease and the BOEM Hudson North call area. OCP 1 is located in approximately 131 feet (40 meters) of water.
- **OCP 2**: OCP 2 is located 17.5 NM (20.1 statute miles) from the southern shoreline of Long Island, on the northern boundary of the existing Statoil NY WEA lease approximately 8.3 NM (9.6 statute miles) to the west of OCP 1. OCP 2 is located in approximately 112 feet (34 meters) of water.
- **OCP 3**: OCP 3 is located 11.5 NM (13.2 statute miles) from the southern shoreline of Long Island, approximately 6.0 NM (6.9 statute miles) north of OCP 2 and the Statoil NY WEA lease, and 11.8 NM (13.6 statute miles) west of the BOEM Fairways South call area. OCP 3 is located in approximately 98 feet (30 meters) of water.
- **OCPs 4 and 5:** OCPs 4 and 5 are located 20.2 NM (23.3 statute miles) from the southern shoreline of Long Island and 13.5 NM (15.5 statute miles) from the shoreline of New Jersey, northwest of the BOEM Hudson South call area. OCPs 4 and 5 are located in approximately 98 feet (30 meters) of water.
- **OCP 6:** OCP 6 is located 21.2 NM (24.4 statute miles) from the shoreline of New Jersey, on the western boundary of the BOEM Hudson South call area. OCP 6 is located in approximately 112 feet (34 meters) of water.
- **OCP 7:** OCP 7 is located 9.4 NM (10.8 statute miles) from the shoreline of New Jersey, inshore of the US Wind Lease Area. OCP 7 is located in approximately 75 feet (23 meters) of water.
- **OCP 8:** OCP 8 is located 9.1 NM (10.5 statute miles) from the shoreline of New Jersey, inshore of the Ørsted Energy Lease Area. OCP 8 is located in approximately 62 feet (19 meters) of water.
- **OCP 9:** OCP 9 is located 11.0 NM (12.7 statute miles) from the shoreline of New Jersey, south of the Ørsted Energy Lease Area. OCP 9 is located in approximately 56 feet (17 meters) of water.

Subsea Cables

The primary component of the Project will be the subsea cables that will extend between the OCPs and to the landfalls near the onshore POIs (substations) selected in New York and New Jersey. At this stage of Project development, the technology of the subsea cables has not been finalized and may either be High Voltage Direct Current (HVDC) or High Voltage Alternating Current (HVAC). The selection of the most appropriate subsea cable technology will be based on a number of technical and economic factors, including the design capacity and construction schedules of the offshore wind farms, distance to POI, electric losses, and overall costs.



Example HVDC Subsea Cable

Examples of the types of subsea cable technologies under consideration are represented by HVDC and 3-core AC subsea cables shown in the images on the right.

Example 3-core AC Subsea Cable

Based on preliminary desktop siting and routing assessments as described in Section 2, the total length of subsea cable associated with the Project on the OCS could be up to approximately 185 NM (213 statute miles). The ultimate configuration of the system will depend on the desires of each state and on the commercial needs of the industry. The final routing of the subsea cables will be refined based on more site-specific information gathered during additional site assessment and field surveys, including HRG, geotechnical, and benthic surveys, as well as marine archaeology assessments.

Jet plow embedment is the preferred installation method for the subsea cables. Jet plow embedment simultaneously lays and buries the cable and ensures the placement of the cable at the target burial depth with minimum bottom disturbance and with the fluidized sediment settling back into the trench. The actual burial depth of the subsea cable will be determined based on seabed characteristics and discussions with the regulatory and resource agencies. The ease of installation, the lack of the need to dredge and remove sediments, and the minimal environmental impacts make jet plow embedment the preferred method of subsea cable installation.

[redacted]

The Project will include ancillary nearshore and onshore facilities that will be located outside of the OCS and therefore are not included within the areas subject to this Application. These facilities include the sea-to-shore landfall locations, land cable routes, and interconnections to the existing substations (the POIs) on the transmission grid. Depending on the subsea cable technology, an onshore converter station may also be required to transform the current from DC to AC before interconnection with the onshore electric grid.

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

[redacted] selection of the landfall locations and land cable routes will be refined based on more site-specific information collected during field surveys and discussions with local authorities, property owners, and stakeholders along the routes. ADP will continue to evaluate landfall locations and land cable routes that minimize interference with existing shoreline and recreational uses and avoid or, if not possible, minimize disturbances to sensitive environmental resources such as wetlands, waterbodies, protected habitats, and prime agricultural lands by utilizing previously disturbed areas. Specialized construction methods, such as Horizontal Directional Drilling (HDD) will be considered at the sea-to-shore landfall transition and at wetland crossings to avoid and minimize potential impacts.

3.3 Project Schedule

[redacted]

ADP is proposing a 12-month timeline for BOEM's review and approval of ADP's requested ROW/RUE Grant. As reflected in the proposed schedule, this provides sufficient time for BOEM to complete each step in the ROW/RUE Grant approval process, including the competitive interest determination and NEPA review and issuance of the Grant.

The schedule also will allow ADP's proposed planned transmission system to progress through the BOEM regulatory process in parallel with the review of wind energy development projects and planned transmission as an option for BOEM, the states, utilities, and developers.

The following preliminary Project schedule reflects the anticipated timeline of the initial phases of the proposed Project.

	2018				2019				2020				2021			
PROJECT PHASE	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q42	Q3	Q4	Q1	Q2	Q3	Q4
BOEM ROW/RUE Grant and Approvals																
Submission of ROW/RUE Grant Application		■														
BOEM Determination of No Competitive Interest			■													
BOEM ROW/RUE Grant EA and FONSI						■										
ROW/RUE Grant Issued						■										
[redacted]	[redacted]															

4.0 STAKEHOLDER OUTREACH

ADP has been actively meeting with and seeking input from key stakeholders and decision makers involved with offshore wind in New York and New Jersey since October 2017. Outreach to date has primarily focused on federal and state agencies, utilities, state and local governments, offshore wind developers with leases, community organizations, and environmental advocates. The goal of outreach has been to proactively obtain input on current Project plans and to discuss policy relating to offshore wind and specifically a planned transmission system. ADP's outreach will continue as the Project progresses, including during BOEM's review of this ROW/RUE Grant Application.

5.0 EXISTING ENVIRONMENTAL CONDITIONS IN AREA OF INTEREST

This section provides a general description of the existing environmental conditions (physical, biological, socioeconomic, and cultural) within the general Project Area and AOI. The Project Area represents the broader geographic region while the AOI represents the area within the requested lease blocks that are included in this ROW/RUE Grant Application. Information on these resources was compiled from publicly available data that was mined, reviewed, and used as part of the preliminary desktop siting and routing assessment process. This information included geospatial data available from national, regional, and state GIS portals and National Oceanographic and Atmospheric Administration (NOAA) navigation chart data. These data were compiled using GIS software to create a series of maps showing various resources (see Figures 2-11).

Resource characterizations of the general Project Area contained within other readily available sources (e.g., BOEM environmental studies) was used to supplement the information obtained during the preliminary desktop assessment.

ADP recognizes that BOEM will conduct appropriate NEPA review at both the ROW/RUE grant stage and the GAP review stage. This Application provides information on existing environmental conditions to support BOEM's environmental review of ADP's unsolicited request for a ROW/RUE Grant. Since the ROW/RUE Grant will not authorize any level of construction activity or significant disturbance, very limited environmental effects related to the ROW/RUE Grant are anticipated. As the Project is advanced, a more detailed characterization of the affected environment within the AOI will be completed. This will be facilitated by more site-specific research and comprehensive field surveys including HRG, geotechnical, benthic and surveys, as well as marine archaeology assessments. The findings from these surveys will assist in refining Project siting and to inform the engineering and design of the Project. These detailed materials will be provided to BOEM to support BOEM's environmental review of ADP's subsequent GAP proposal.

5.1 Physical Conditions

Physical Oceanography

Hydrography of the Project Area is generally sloping to the east and southeast with intermittent rises and troughs. As shown in Figure 2, charted water depths in the Project Area ranges between approximately 98 feet (30 meters) and 230 feet (70 meters) deep. Water depths at each of the OCPs vary from about 17 to 131 feet (40 meters) with an average depth of approximately 92 feet (28 meters) (Table 3). The maximum water depths are located where the AOI crosses the Hudson Canyon west of OCPs 4 and 5.

Table 3. Water Depth at Proposed OCP Locations

Offshore Collector Platform	Water Depth
OCP 1	131 ft (40 m)
OCP 2	112 ft (34 m)
OCP 3	98 ft (30 m)
OCP 4	98 ft (30 m)
OCP 5	98 ft (30 m)
OCP 6	112 ft (34 m)
OCP 7	75 ft (23 m)
OCP 8	62 ft (19 m)
OCP 9	56 ft (17 m)

Tidal characteristics of the Project Area are generally semi-diurnal (approximately twice each day). Between Nantucket, MA and Cape May, NJ, the tidal currents are generally rotary and shift direction, usually clockwise at a rate of 30 degrees per hour. Offshore, these tidal currents measure less than 0.3 knot, maintaining an approximately uniform velocity. Closer to the coast, in the vicinity of the large inland waterways, velocities can be expected to increase. Wind driven currents are considered the most impactful on navigation and may reach 1.5 knots under storm conditions (NOAA 2018).

Historic wave conditions for NOAA buoys 44091 (Barnegat, NJ) and 44025 (Long Island, NY) were reviewed through the National Data Buoy Center. For the data period of 2014 to 2017, buoy 44091 recorded its highest significant wave height, measured as the average of the highest one-third of the waves, of 27.3 feet (8.33 meters) on January 23, 2016. For the data period of 1991 to 2008, buoy 44025 recorded its highest significant wave height of 30.5 feet (9.3 meters) on December 11, 1992 (NOAA 2017a).

Geology and Sediment Type

Geology within the Project Area is characterized by gentle east and southeast slopes that ultimately end at a margin where the steeper continental slope begins. That margin, at the shelf-slope boundary, represents a low-stand shoreline that was approximately 393 feet (120 meters) lower than present. Approximately 20,000 years ago, the entirety of the Project Area would have been a subaerial environment dominated by sediment-laden braided rivers fed by the adjacent Wisconsin glacier. Following the glacial maximum, the glaciers began to recede, and various moraine complexes established the regional geomorphology of Long Island, NY, and the Cape and Islands of Massachusetts. As sea level rose with the melting glacial ice, coastal processes began to transgress and with successive depositional and erosional environments were preserved in part on the OCS. Because the OCS is a sediment starved environment, bedforms and underlying sediments may preserve the Pleistocene-Holocene regression and transgression (BOEM 2012a).

The Project Area seabed morphology consists largely of "…mid-flat formations (e.g. shelves, plateaus, flat terraces) interspersed with depressions, high-flat formations (e.g. banks, shoals, flats), and high-slope formations" (NYSERDA 2017a). Seabed sediment conditions vary due to sorting caused by waves, tidal currents, and storm events. Generally speaking, the finer sediments (fine sand and silts) are found in deeper water characterized by low-energy depositional environments. Shallower areas (e.g., high-flat formations) are characteristically coarser (e.g., sands). As shown in Figures 3A and 3B, the geologic conditions of the Project Area are characterized predominantly by mid-flat and upper flat formations, depressions, and varying amounts of sand. Lesser amounts of gravel, silt, and clay are found as well. Table 4 describes the seabed form and sediment type at each OCP location.

Table 4. Seabed Form and Sediment Type at Proposed OCP Locations

Offshore Collector Platform	USGS Seabed Form	Sediment Type
OCP 1	Mid Flat	Medium Sand
OCP 2	Mid Flat	Coarse Sand
OCP 3	Depression / Mid Flat	Medium to Coarse Sand
OCP 4	Upper Flat	Fine to Medium Sand
OCP 5	Upper Flat	Medium to Coarse Sand
OCP 6	Depression	Medium Sand
OCP 7	Depression	Coarse Sand
OCP 8	Mid Flat	Medium Sand
OCP 9	Depression / Mid Flat	Fine to Medium Sand

5.2 Biological Resources

Birds and Bats

Bird abundance in the New York Bight is concentrated along the New Jersey coast from Barnegat Bay to Delaware Bay (Kinlan et al. 2016; MDAT 2016). Bird abundance generally drops as distance from shore increases (BOEM 2012b; Kinlan et al. 2016; MDAT 2016). The Atlantic Flyway, a chief bird migration route, stretches along the eastern seaboard and includes the Project Area. Migratory land birds, including songbirds and shorebirds, may use the Project Area but are not expected to land on the water (BOEM 2016).

Species likely to occur within the Project Area are also generally found in nearshore environments from North Carolina to Massachusetts (BOEM 2016). Bird species that may be present in the Project Area include the double-crested cormorant (*Phalacrocorax auratus*), great black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*), and ring-billed gull (*Larus delwarensis*) (BOEM 2012b; BOEM 2016).

Birds may occur anywhere in the Project Area but are concentrated along coastal areas from OCPs 6 to 9 in southern New Jersey. Avian abundance in the Project Area is highest along the sea-to-shore transition to the Cardiff Substation and lowest along offshore areas in New York and northern New Jersey (Figure 4).

ESA-listed Bird and Bat Species

The Endangered Species Act (ESA) establishes a program for conserving species listed by the Secretaries of the Interior and Commerce as endangered or threatened species. NOAA Fisheries is responsible for listed marine and anadromous species and the U.S. Fish and Wildlife Service (USFWS) is responsible for listed terrestrial and inland fish species. Bird species listed under the ESA that may be found in the Project Area include piping plover (*Charadrius melodus*), red knot (*Calidris canutus*), and roseate tern (*Sterna dougallii*) (Table 5). Piping plover and red knot may fly over the Project Area during migration, while the roseate tern occurs in coastal habitats and is not expected to occur in marine waters (BOEM 2012b; BOEM 2016).

Little is known about the migration patterns of bats. Some bat species are thought to fly along the coast or open ocean while migrating (Cryan and Brown 2007 and Johnson et al. 2011, as cited in BOEM 2012b). Two species of ESA-listed non-migratory bats occur in New York and New Jersey: the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*M. septentrionalis*) (Table 5). These species may occur in coastal habitats along the Project Area but are not expected to occur offshore. No bats were detected more than 10.5 NM (12.1 statute miles) from shore during The New Jersey Ecological Baseline Study (NJDEP 2010). Bats are considered unlikely to occur in the offshore but may occur in coastal environments in the Project Area.

Table 5. Threatened and Endangered Bird and Bat Species that May be Present in the Project Area

Common Name	Scientific Name	Federal Status	Occurrence
Birds			
Piping plover	*Charadrius melodus*	Threatened	Potential during migration
Red knot	*Calidris canutus*	Threatened	Potential during migration
Roseate tern	*Sterna dougallii*	Endangered	Rare
Bats			
Indiana bat	*Myotis sodalis*	Endangered	Rare
Northern long-eared bat	*Myotis septentrionalis*	Threatened	Rare

Reference: BOEM 2012b; BOEM 2016

Benthic Resources

Benthic biota in the New York Bight is characterized as soft substrata subject to episodic sediment transport events. In a recent survey of areas offshore New York, benthic habitat was characterized by fine, soft unconsolidated substrates (i.e., sand or mud) dominated by mobile and sessile epifauna, mobile fauna, and infauna (NYSERDA 2017b). Common infauna and mobile epifauna associated with soft sediments of the New York Bight include sea stars, burrowing anemones, crabs, gastropods, and bivalves. Commonly encountered taxa included sand dollars, annelids, priapulids, echiuroids, holothurians, sponges, sea urchins, bryozoans, ophiuroids, anemones, hydroids, tunicates, mollusks, and sea pansies. Sand dollar (*Echinarachnius parma*) were observed at most survey stations, ranging from sparse to complete cover. No sensitive habitats, characterized by epifauna and flora attached to a hard bottom, were observed (NYSERDA 2017b).

As shown in Figure 5, artificial reefs are abundant along the New Jersey shoreline, and less so along the New York shoreline. No known seagrass beds have been mapped offshore New York and New Jersey. OCPs and subsea cables have been sited away from known artificial reefs and inshore seagrass beds.

Finfish & Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act and the 1996 Sustainable Fisheries Act mandate that NOAA identify and protect important marine and anadromous fish habitat. This essential fish habitat (EFH) is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity” (16 U.S.C. 1802(10)). The Magnuson-Stevens Act requires consultation with NOAA Fisheries for proposed activities that may adversely affect EFH. NOAA Fisheries designates EFH for most species in association with a grid of 10 x 10 minute squares, which covers all marine habitats along the United States coastline. NOAA Fisheries also designates EFH for estuarine waters (including estuaries, bays and rivers).

As shown in Figure 5, EFH occurs throughout the coastal and offshore portions of the Project Area, where the OCPs and the majority of the subsea cable routes are located. The number of species for which EFH has been designated within the Project Area varies by square and location, ranging from 2 species inshore to up to 15 species offshore for highly migratory species, and from 5 to 20 species per square for groundfish and shellfish depending upon location. Project Area-specific habitat conditions may indicate that EFH does not exist for some of the listed species or life stages in the Project Area. In preparation of a GAP, ADP will conduct a detailed assessment of EFH in the AOI.

ESA-listed Fish Species

Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) may be found in the Project Area. Sturgeon are anadromous fish (migrating from salt water to spawn in freshwater) that use the Delaware and Hudson River estuaries while migrating to or from their preferred spawning, nursery, and overwintering areas upriver. Sturgeon can also be found in nearshore ocean waters (CWNJ 2016; Dunton et al. 2010; NOAA Fisheries 2018a). Shortnose sturgeon occur primarily in fresh and estuarine waters and occasionally enter the coastal ocean. Shortnose sturgeon are not known to make long distance offshore migrations (NOAA Fisheries 2018a). Atlantic sturgeon migrate through Raritan Bay and Delaware Bay in the spring as they move from oceanic overwintering grounds to spawning sites in the Hudson River and Delaware River, and then migrate back through the area as they move to lower reaches of the estuary and out into the ocean in the late spring and early summer. In general, Atlantic sturgeon adults may be found in the Project Area year-round (NOAA Fisheries 2018a).

The recently ESA-listed giant manta ray (*Manta birostris*) and oceanic whitetip shark (*Carcharhinus logimanus*), both listed as threatened, may also be present in the Project Area, although are expected to be uncommon (NOAA Fisheries 2018a). The giant manta inhabits nearshore to pelagic temperate to subtropical waters, with New Jersey being the northernmost portion of its range on the U.S. East coast (Marshall et al. 2011; NOAA Fisheries 2018a). The oceanic whitetip shark inhabits deeper, offshore tropical and subtropical waters (NOAA Fisheries 2018a). Alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), and cusk (*Brosme brosme*) are proposed for listing under the ESA and may be found in the Project Area. However, cusk is generally found in deepwater marine environments (NOAA Fisheries 2018b).

Table 6. Threatened and Endangered Fish Species that May be Present in the Project Area

Common Name	Scientific Name	Federal Status	Occurrence
Atlantic sturgeon	*Acipenser oxyrinchus*	Endangered	Year-round in nearshore marine environments
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	Year-round in nearshore marine environments
Giant manta ray	*Manta birostris*	Threatened	Rare
Oceanic whitetip shark	*Carcharhinus logimanus*	Threatened	Rare
Alewife	*Alosa pseudoharengus*	Proposed	Year-round
Blueback herring	*Alosa aestivalis*	Proposed	Year-round
Cusk	*Brosme*	Proposed	Rare

Reference: NOAA Fisheries 2018a; NOAA Fisheries 2018b; NYSDEC 2018a; USFWS 2018a

Marine Mammals

Thirty-one species of marine mammals are present throughout the waters of the New York Bight, including baleen whales, sperm whales, beaked whales, a porpoise, dolphins, and seals (BOEM 2016). Marine mammal abundance is greatest along the continental shelf and the Hudson Canyon (Kinlan et al. 2016; MDAT 2016).

ESA-listed Marine Mammal Species

Six marine mammal species listed under the ESA occur in the New York Bight (Table 7) (BOEM 2016; NOAA Fisheries 2018a). Fin whales and humpback whales are the two most common ESA-listed marine mammals in the Project Area. Blue whales, sei whales, and sperm whales are considered rare in the Project Area. Blue whales are primarily found in deep water, while sei and sperm whales are primarily found near the edge of the continental shelf. North Atlantic right whales are uncommon but may be in the area year-round (BOEM 2016).

Of the six ESA-listed marine mammals, the North Atlantic right whale is the most endangered; the right whale has seen little to no recovery since it was listed as endangered in 1970 and continues to be one of the most endangered large whale species in the world (NOAA Fisheries 2004; NOAA Fisheries 2018a). Approximately 465 right whales are thought to inhabit the region (Waring et al. 2015 as cited in BOEM 2016). Right whales use coastal areas of the New York Bight for feeding and migration (BOEM 2016). Seasonal Management Areas (SMAs) for reducing ship strikes of North Atlantic right whales have been designated in the U.S. and Canada. All vessels greater than 65 ft (19.8 m) in overall length must operate at speeds of 10 knots or less within these areas during seasonal time periods.

Table 7. Threatened and Endangered Marine Mammals that May be Present in the Project Area

Common Name	Scientific Name	Federal Status	Occurrence
Fin whale	*Balaenoptera physalus*	Endangered	Common; year-round
Humpback whale	*Megaptera novaeangliae*	Threatened	Common; found within the continental shelf most of the year
Blue whale	*Balaenoptera musculus musculus*	Endangered	Rare
Sei whale	*Balaenoptera borealis*	Endangered	Rare
Sperm whale	*Physeter macrocephalus*	Endangered	Rare; cows and calves sighted within NY Bight
North Atlantic right whale	*Eubalaena glacialis*	Endangered	Uncommon; year-round

Reference: NOAA Fisheries 2018a; NOAA Fisheries 2018b; BOEM 2016

Non-ESA Listed Marine Mammal Species

The Marine Mammal Protection Act (MMPA), enacted in 1972, protects marine mammals by prohibiting the take of marine mammals in U.S. waters. The act also prohibits U.S. citizens from taking marine mammals in the high seas and prohibits the importation of marine mammals into the U.S. (USFWS 2018b).

Twenty-five species protected under the MMPA occur in the New York Bight, including twelve species of whales, nine species of dolphins and porpoises, and four species of pinnipeds (Table 8). At least four of the MMPA-protected species of whales, including common minke whale (*Balaenoptera acutorostrata*), long- (*Globicephala melas*) and short-finned (*G. macrorhynchus*) pilot whales, and pygmy sperm whales (*Kogia breviceps*), occur year-round. Other whale species are rare in the area or are more common in spring and summer. Several species of dolphins occur year-round, such as the bottlenose dolphin (*Tursiops truncates*) and striped dolphin (*Stenella coeruleoalba*). All four species of pinnipeds (i.e., seals) found in the New York Bight occur year-round (BOEM 2016).

Table 8. MMPA-protected Marine Mammals that May be Present in the Project Area

Common Name	Scientific Name	Occurrence
Whales		
Common minke whale	*Balaenoptera acutorostrata*	Year-round
Dwarf sperm whale	*Kogia sima*	Primarily in deep continental shelf waters
False killer whale	*Pseudorca crassidens*	Rare
Killer whale	*Orcinus orca*	Uncommon or rare
Long-finned pilot whale	*Globicephala melas*	Year-round
Pygmy sperm whale	*Kogia breviceps*	Year-round
Short-finned pilot whale	*Globicephala macrorhynchus*	Year-round
Blainville's beaked whale	*Mesoplodon densirostris*	More common spring/summer
Cuvier's beaked whale	*Ziphius cavirostris*	More common spring/summer
Gervais' beaked whale	*Mesoplodon europaeus*	More common spring/summer
Sowerby's beaked whale	*Mesoplodon bidens*	More common spring/summer
True's beaked whale	*Mesoplodon mirus*	More common spring/summer
Dolphins and Porpoises		
Atlantic spotted dolphin	*Stenella frontalis*	Rare beyond shelf break
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Year-round; peak in fall
Bottlenose dolphin	*Tursiops truncates*	Year-round
Pan-tropical spotted dolphin	*Stenella attenuata*	Rare beyond shelf break
Risso's dolphin	*Grampus griseus*	Year-round; primarily on shelf
Short-beaked common dolphin	*Delphinus delphis*	Year-round; peaks in winter and spring
Striped dolphin	*Stenella coeruleoalba*	Year-round
White-beaked dolphin	*Lagenorhynchus albirostris*	Rare
Harbor porpoise	*Phocoena phocoena*	Year-round; peaks in spring and winter
Pinnipeds		
Gray seal	*Halichoerus grypus*	Year-round on Long Island
Harbor seal	*Phoca vitulina*	Year-round on Long Island
Harp seal	*Pagophilus groenlandicus*	Year-round on Long Island
Hooded seal	*Cystophora cristata*	Rare; year-round

Reference: BOEM 2016

As shown in Figure 6, marine mammal abundance is low throughout the Project Area. Marine mammal abundance is thought to be the highest near OCPs 4 and 5 located in close proximity to the Hudson Canyon. OCPs 4 and 5 are also located within a SMA for right whales at the mouth of New York Harbor. OCP 9 is located in near a SMA for right whales at the mouth of Delaware Bay. However, these SMAs are an indication of areas of high vessel traffic rather than areas of high right whale abundance.

Sea Turtles

Five federally-listed endangered or threatened sea turtle species have the potential to occur within the Project Area as transient species (Table 9) (BOEM 2016; NOAA Fisheries 2018a). The loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), kemp's ridley turtle (*Lepidochelys kempii*), and leatherback turtle (*Dermochelys coriacea*) are generally found in the coastal and offshore sections of the Project Area from spring to fall (BOEM 2016; NOAA Fisheries 2018a; NYSDEC 2018b). The hawksbill sea turtle (*Eretmochelys imbricata*) prefers warm, tropical and subtropical water and is unlikely to be found in the Project Area (BOEM 2016).

Table 9. Threatened and Endangered Sea Turtles that May be Present in the Project Area

Common Name	Scientific Name	Federal Status	Occurrence
Loggerhead turtle	*Caretta caretta*	Threatened	Offshore May to October
Green turtle	*Chelonia mydas*	Threatened	Common eastern side of Long Island form July to November
Kemp's ridley turtle	*Lepidochelys kempii*	Endangered	June to October
Leatherback turtle	*Dermochelys coriacea*	Endangered	Coastal waters May to November
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	Inhabits warm, tropical and subtropical water; unlikely to occur in NY Bight

Reference: BOEM 2016; NOAA Fisheries 2018a

5.3 Socioeconomic Resources

Commercial Fisheries and Recreational Fishing

The diverse finfish assemblages, squid, and shellfish present in the Project Area support both commercial and recreational fishing.

There are a number of fishery management plans administered by the Mid-Atlantic Fishery Management Council, which are in place for regulating and managing fisheries in the region. These include plans for summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), black sea bass (*Centropristis striata*), spiny dogfish (*Squalus acanthiasz*), Atlantic mackerel (*Scomber scombrus*), longfin squid (*Doryteuthis pealeii*), *Illex* squid (*Illex illecebrosus*), butterfish (*Peprilus triacanthus*), bluefish (*Pomatomus saltatrix*), Atlantic surf clam (*Spisula solidissima*), ocean quahog (*Arctica islandica*), golden tilefish (*Lopholatilus chamaelonticeps*), and blue tilefish (*Caulolatilus microps*).

From 2011 to 2016, commercial fisherman in New York and New Jersey earned a total of $1.37 billion of landings revenue, equating to approximately 1.08 billion pounds of fish. Approximately $320 million of this landings revenue came from New York fishermen and approximately $1.05 billion came from New Jersey fishermen (NOAA Fisheries 2017). The top commercial fisheries by dollar value in New York and New Jersey in 2016 are listed in Table 10.

Table 10. Top Commercial Fisheries by Dollar Value in 2016

Fishery	Scientific Name	Dollar Value	Metric Tons
New York			
Northern quahog	*Mercenaria mercenaria*	$11,951,812	985.7
Longfin squid	*Doryteuthis pealeii*	$7,812,296	2,852.5
Sea scallop	*Placopecten magellanicus*	$3,783,366	180.4
Golden tilefish	*Lopholatilus chamaelonticeps*	$2,972,175	336.3
Scup	*Stenotomus chrysops*	$2,896,708	1,589.5
New Jersey			
Sea scallop	Placopecten magellanicus	$123,369,150	4,758.8
Clams/bivalves	—	$16,275,260	8,222.5
Atlantic surf clam	*Spisula solidissima*	$9,969,824	7,480.9
Menhaden	*Brevoortia tyrannus*	$8,607,099	23,957.5
Longfin squid	*Doryteuthis pealeii*	$5,720,422	2,107.8

Reference: NOAA Fisheries 2017

Atlantic sea scallops are the most valuable fishery in New Jersey and one of the most valuable fisheries in New York based on landings value (Table 10). Areas of high sea scallop abundance in the Project Area are shown in Figure 7. None of the OCPs or subsea cable routes are located in these areas. Areas of abundance for other fisheries have not been evaluated, but commercial and recreational fishing are known to occur throughout the Project Area.

Along the southern shores of Long Island, NY, Montauk and Hampton Bays/Shinnecock are the major commercial fishing ports based on revenue (NOAA Fisheries 2018c). Commercial and recreational fishing along the southern shores of Long Island, NY also originate from Freeport, Oceanside, and Point Lookout (Nassau County) and Captree Island, Greenport, and Mattituck (Suffolk County).

Along the New Jersey shore, Cape May and Point Pleasant are the major commercial fishing ports based on revenue (NOAA Fisheries 2018c). Commercial and recreational fishing off New Jersey also originates from Belford/Middletown, Belmar, Brielle, and Highlands (Monmouth County); Barnegat Light/Long Beach Point, Pleasant Beach, Toms River and Waretown (Ocean County); Atlantic City (Atlantic County); and Avalon, Cape May Court House, Sea Isle City, and Wildwood (Cape May County).

Fishing vessel routes, as defined by data from vessels with automatic identification system (AIS) transponders, are shown in Figure 7. In the Project Area, the highest fishing vessel densities occur along the vessel routes in and out of port areas in the vicinity of OCPs 1, 6, 8, and 9 and along the subsea cable routes through New York Harbor. Patterns and densities of actual fishing activity are not readily observed in these data.

Additional data for recreational boaters includes routes for vessels engaged in activities that include fishing, relaxing, scenic enjoyment, swimming, and wildlife viewing (UCIMU et al. 2014). Of these activities, fishing is assumed to be the most common recreational activity. These data do not provide volumes of vessel activity, but are illustrated in Figure 7.

Navigation and Vessel Traffic

The following sections describe vessel and navigation routing systems located in the vicinity of the Project Area.

Shipping Lanes

Traffic Separation Schemes (TSS) are designated to help manage collision risk for commercial vessel traffic entering and existing major ports by creating traffic lanes and separation zones. Many if not all of the TSSs in the United States, including those serving U.S. ports along the Atlantic, were established under guidelines by the International Maritime Organization (IMO) set forth in the 1974 Safety Of Life At Sea (SOLAS) Convention. The guidelines and criteria developed by the IMO allows foreign-flagged vessels to operate in routing systems that are familiar regardless of the Port. Changes to the any routing system, including a TSS is possible; however, this would require the U.S. Coast Guard (USCG) to submit a proposal for a change to IMO.

Four TSS's are located in the vicinity of the Project Area: the Ambrose-Nantucket, the Hudson Canyon-Ambrose, the Barnegat-Ambrose, and the Five Fathom Bank to Cape Henlopen. Together, the Ambrose-Nantucket, Hudson Canyon-Ambrose, and Barnegat-Ambrose TSSs serve the Ports of New York and Jersey. The Five Fathom Bank to Cape Henlopen TSS serves the ports along the Delaware River. Each TSS has three key features: an inbound traffic lane, an outbound traffic lane, and a separation zone between them.

The USCG has developed Marine Policy Guidelines based on the Atlantic Coast Port Access Route Study (ACPARS). These guidelines recommend setbacks of 2 NM (2.3 statute miles) from the seaward boundary (outer edge) of a TSS and 5 NM (5.8 statute miles) from the entry/exit (terminations) of a TSS to reduce risk to maritime uses (USCG 2016). However, project risk is ultimately determined on a case by case basis and after review of a Navigation Safety Risk Assessment.

As shown in Figure 8, all of the OCPs are located outside of the traffic lanes within the TSSs. OCP 1 and 2 are located within the 2 NM (2.3 statute miles) outer boundary of a traffic lane, between the existing Statoil NY WEA lease and Ambrose to Nantucket traffic lane. OCP 3 is located within the separation zone of the Nantucket to Ambrose/Ambrose to Nantucket TSS, approximately 1 NM (1.2 statute miles) from the edge of the traffic lane. USCG has not specifically established setbacks within the separation zones of the TSS. OCP 6 is located within the 2 NM (2.3 statute miles) outer boundary of the Barnegat to Ambrose TSS. The subsea cable routes for OCPs 1 through 6 pass through at least one TSS. OCPs 4, 5, 7, 8, and 9 are located outside the TSSs and the USCG recommended 2 NM (2.3 statute miles) setback.

Safety Fairways

Safety fairways are regulated by the USCG to allow unobstructed approaches for vessels using U.S. ports. Two safety fairways exist in the vicinity of the Project Area to serve the Ambrose-Nantucket TSS. Each fairway serves as an extension of the inbound/outbound lanes of the TSS. Regulations under 33 CFR 166 outline that no structure, whether temporary or permanent, may be placed in a safety fairway. Temporary underwater obstacles may be permitted under certain conditions described for specific areas in 33 CFR 166, Subpart B.

OCP 1 is adjacent to a safety fairway; however, no OCP or subsea cable route is proposed to be located in a safety fairway (Figure 8).

Precautionary Areas

Traffic using the TSSs serving the Ports of New Jersey and New York enter and exit in an inshore area identified as the Precautionary Area. Mariners are urged to use extreme caution while transiting these areas because several traffic lanes intersect. Subsea cable routes passing through New York Harbor pass through the Precautionary Area (Figure 8).

Vessel Traffic

Vessel traffic is understood to exist along most of the Atlantic OCS with higher densities of use closest to the shore and within TSSs. While vessel traffic patterns are guided by use of routing systems, which include TSSs, safety fairways, two-way traffic lanes, recommended tracks, areas to be avoided, inshore traffic zones, precautionary areas, and deep-water routes, the master of each vessel may navigate freely upon the waters in the vicinity of the Project Area while operating between their ports of call. The presence of uncharted coastwise traffic routes, outside the USCG or IMO routing systems, are evident in annual summaries of vessel AIS data. These uncharted coastwise routes are commonly used by passenger vessels, fishing vessels, and tug and barge vessels and frequently connect ports along a straight-line. Along the New Jersey coast, a coastwise route utilized by the tug and barge fleet can be seen in the AIS data approximately 6 NM (6.9 statute miles) from shore (Figure 8).

The OCPs have been sited seaward of the existing uncharted coastwise shipping routes as reviewed in the AIS data to minimize potential conflicts. However, the subsea cable routes cross these routes (Figure 8).

Other Uses

Offshore Energy and Marine Infrastructure

The Project Area includes a number of designated offshore WEAs, including the Statoil Lease Area (Empire Wind) offshore New York, US Wind and Ørsted (Ocean Wind) Lease Areas offshore southern New Jersey, Garden State Offshore Energy (Skipjack) Lease Area offshore Delaware, and additional areas included in BOEM’s New York Bight Call for Information and Nominations (83 Fed. Reg. 15602 (Apr. 11, 2018)). The proposed OCPs and subsea cable routes are located proximate to but outside of the WEAs.

In the general vicinity of the Project Area, undersea cables are the most abundant offshore infrastructure feature currently developed in the Atlantic OCS (Figure 9). While many of these cables are charted by NOAA as being inactive (e.g., disused), some active telecommunication cables exist in the vicinity of the Project Area. In addition, buoys maintained by NOAA, USCG, and academic institutions are located throughout the Atlantic OCS in the general vicinity of the Project Area. Along the coast in New Jersey and New York state waters, pipelines convey wastewater, natural gas, and petroleum products. OCPs have been sited away from existing infrastructure, and cable crossings of existing infrastructure were minimized in routing.

Marine Minerals

From 2000 to 2016, New York used 35 million cubic yards of dredged sand for 15 beach nourishment projects, while from 2000 to 2015, New Jersey used approximately 59 million cubic yards (NYSERDA 2017a). A comprehensive data and literature review carried out for the New York State Energy and Research Development Authority (NYSERDA) Offshore Wind Master Plan identified 120 active, formerly active, or potential future mining borrow areas off the coast of New York (46 sites) and New Jersey (78 sites). While not currently permitted for use or lease by either the states or BOEM, the potential future mining borrow areas are located where the resource may become economically viable.

As shown in Figure 9, the existing state and federally permitted marine mineral sites mapped in coordination with the U.S. Army Corps of Engineers/New Jersey Department of Environmental Protection and BOEM are located near the coast. The cables for OCP 6 are located adjacent to active and proposed BOEM mineral lease areas.

Marine Restricted Areas

Danger areas charted by NOAA are interspersed throughout the Atlantic OCS in the general vicinity of the Project Area. These areas are associated with historic wartime use and disposal of mines, depth charges and munitions, and carry charted warnings to avoid fishing, dragging, and laying cables. Danger areas may also be used for target practices or other hazardous operations and are therefore closed to the public on either a full-time or intermittent basis. The subsea cable route from OCP 4 to the Farragut and Gowanus Substations in New York Harbor pass through a danger area (Figure 10).

Portions of the Atlantic OCS have been impacted by the uncontrolled ocean disposal of municipal sewage sludge, industrial acids and wastes, unexploded ordnance (UXO), and explosives. OCPs and subsea cables routes have been sited to avoid the charted disposal areas and UXO (Figure 10).

Military Use Areas

The Department of Defense (DOD) has identified areas in the Atlantic OCS that may be used for military activities. The Project Area is located in the vicinity of the following DOD Operating Areas: the Virginia Capes Complex, the Atlantic City Complex, and the Narragansett Complex. Combined, these areas constitute three of the four locations available in the region for U.S. Navy training and testing events. Each of the range complexes consists of surface sea space and subsurface space. In addition, each complex also consists of special use airspace.

5.4 Cultural Resources

Marine archeological resources include pre-contact archeological sites and historic archeological sites (e.g., shipwrecks). The OCPs and subsea cable routes are located in regions of the OCS that may have been above sea level and available to humans during the last ice age. (Garrison et al. 2011, as cited in BOEM 2012b). Therefore, the Project Area may contain pre-contact archaeological sites from the last ice age.

The Project Area has a long history of intensive maritime activity with numerous wrecks and obstructions reported in NOAA’s Office of Coast Survey's Automated Wreck and Obstruction Information System database and charted within or in close proximity to the subsea cable routes (NOAA 2017b). Shipwrecks and other obstructions are concentrated along the New York and New Jersey coasts and within New York Harbor. The proposed locations for OCPs and subsea cable routes were sited to avoid known shipwrecks and other obstructions. Subsea cables routed through New York Harbor will require more refined siting to avoid a greater concentration of wrecks and other obstructions (Figure 11).

The presence/absence of pre-contact marine archaeological sites, which can be considered culturally important, was not investigated for this initial study.

5.5 Aesthetics

The distance at which a remote structure is visible is determined primarily by the height of the object, the elevation of the viewer, atmospheric conditions, and the curvature of the Earth. An object closer than the horizon is entirely visible to the observer, while objects beyond the horizon are partially or completely obscured by the surface of the planet. In preparation of a GAP, ADP will further assess and provide information to BOEM regarding potential visual impacts and relevant mitigation, if any. The requested ROW/RUE grant area was selected taking aesthetics into consideration.

The proposed OCP are primarily located near WEAs to minimize visual impacts. OCPs 3, 4, 5, 7, 8, and 9 are located within 15 NM (17 statute miles) of the nearest shoreline and may be visible from the shore, depending on design considerations. OCPs 1, 2, and 6 are located further than 15 NM (17 statute miles) from the nearest shoreline and are not expected to be visible from shore. OCP visibility and appearance will be influenced by final design (e.g., monopile vs. jacket foundation). All subsea cables will be buried and are not expected to have any visible effects.

5.5 Environmental Justice

Executive Order 12,898 instructs federal agencies to consider environmental justice issues in all agency decisions. It directs each federal agency to identify and address disproportionately high and adverse human health or environmental effects of the agency programs or actions on minority and low-income populations.

The following table presents data from the United States Census Bureau on the demographic composition of minority and low-income persons living within coastal communities adjacent to the Project Area. The following information was collected at the county level including percentage of minority population and low-income population by county.

Table 11. Percent of Minority Persons and Persons below Poverty for New York and New Jersey Coastal Counties adjacent to the Project Area

County, State	Minority Percentage of County (2016) [1,2]	Persons Below Poverty in County (2016) [3,4]
Queens, NY	74.4%	13.3%
Nassau, NY	39.2%	6.1%
Suffolk, NY	31.8%	7.6%
Monmouth, NJ	24.8%	7.1%
Ocean, NJ	15.3%	11.0%
Atlantic, NJ	42.7%	14.2%
Cape May, NJ	14.7%	11.9%

1 U.S. Census Bureau. 2016. QuickFacts: Race. https://www.census.gov/quickfacts/fact/map/US/RHI825216#viewtop

2 Percentage of Minority Persons in New Jersey was 44.2% and in New York was 44.2% based the 2010 U.S. Census

3 U.S. Census Bureau. 2016. Small Area Income and Poverty Estimates. https://www.census.gov/data-tools/demo/saipe/saipe.html?s_appName=saipe&map_yearSelector=2016&map_geoSelector=aa_c

4 Percentage of Poverty Rates (all ages) in New Jersey was 10.4% and in New York was 14.8% based the 2016 U.S. Census.

5.6 Summary of Existing Environmental Conditions

Based on the preliminary desktop siting and routing assessment and supplemental research, the potential environmental constraints and use conflicts within the AOI is minor. Adhering to the siting and routing criteria for the OCPs and subsea cables, most of the existing environmental, socioeconomic, and cultural resources of significance have been avoided. As previously indicated, ADP will continue to refine and verify the location of the proposed facilities through additional site assessment and field surveys, including HRG, geotechnical, and benthic surveys as well as marine archaeology assessments.

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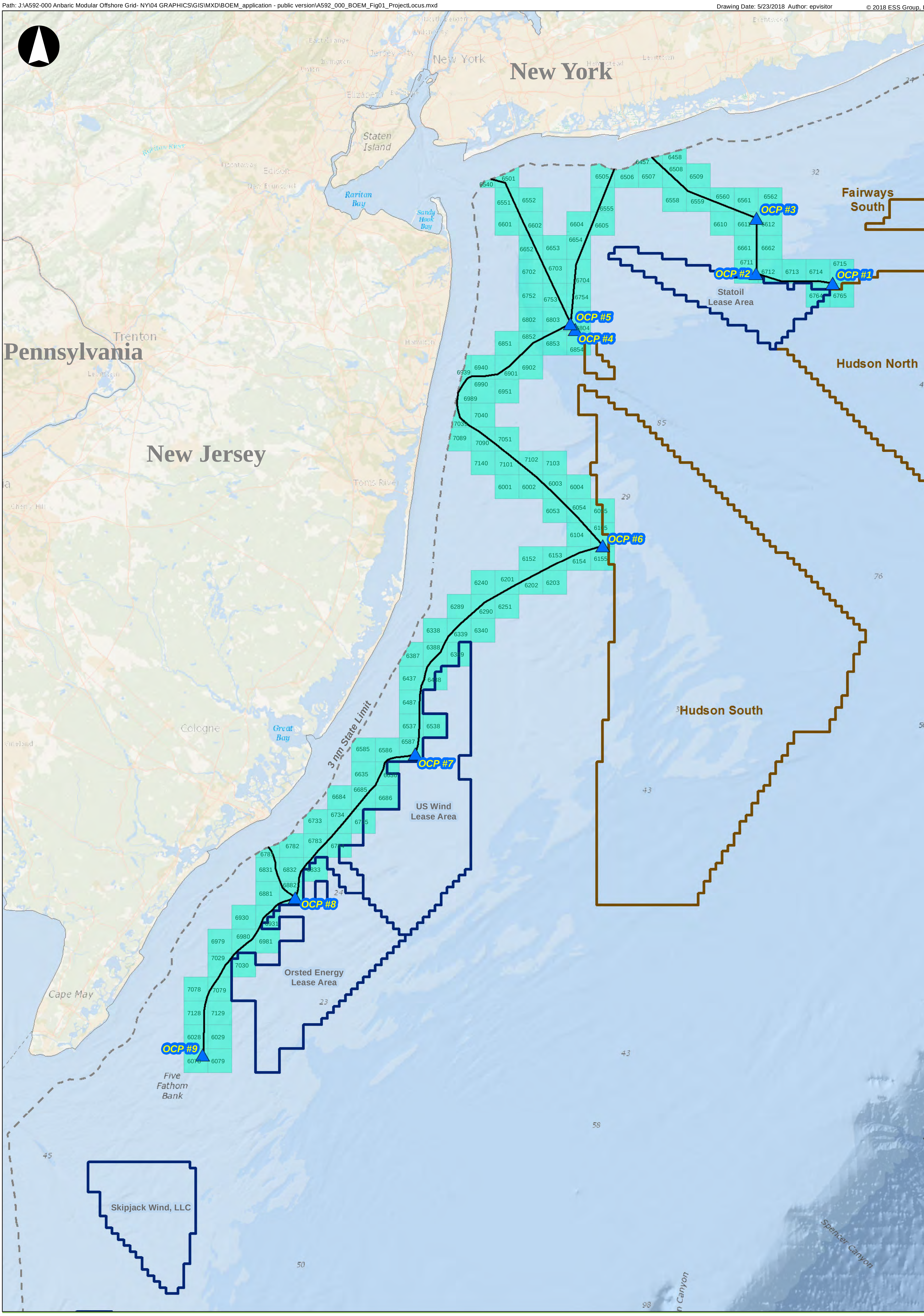

Anbaric Development Partners

New York and New Jersey

Source: 1) ESRI, World Ocean Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018

0 5 10 Miles

Proposed Offshore Collector Platform

Proposed Cable Route (Federal Jurisdiction)

BOEM Lease Area

BOEM Call Area

Requested OCS Lease Blocks

Project Location and Requested OCS Lease Blocks (Redacted version)

Figure 1

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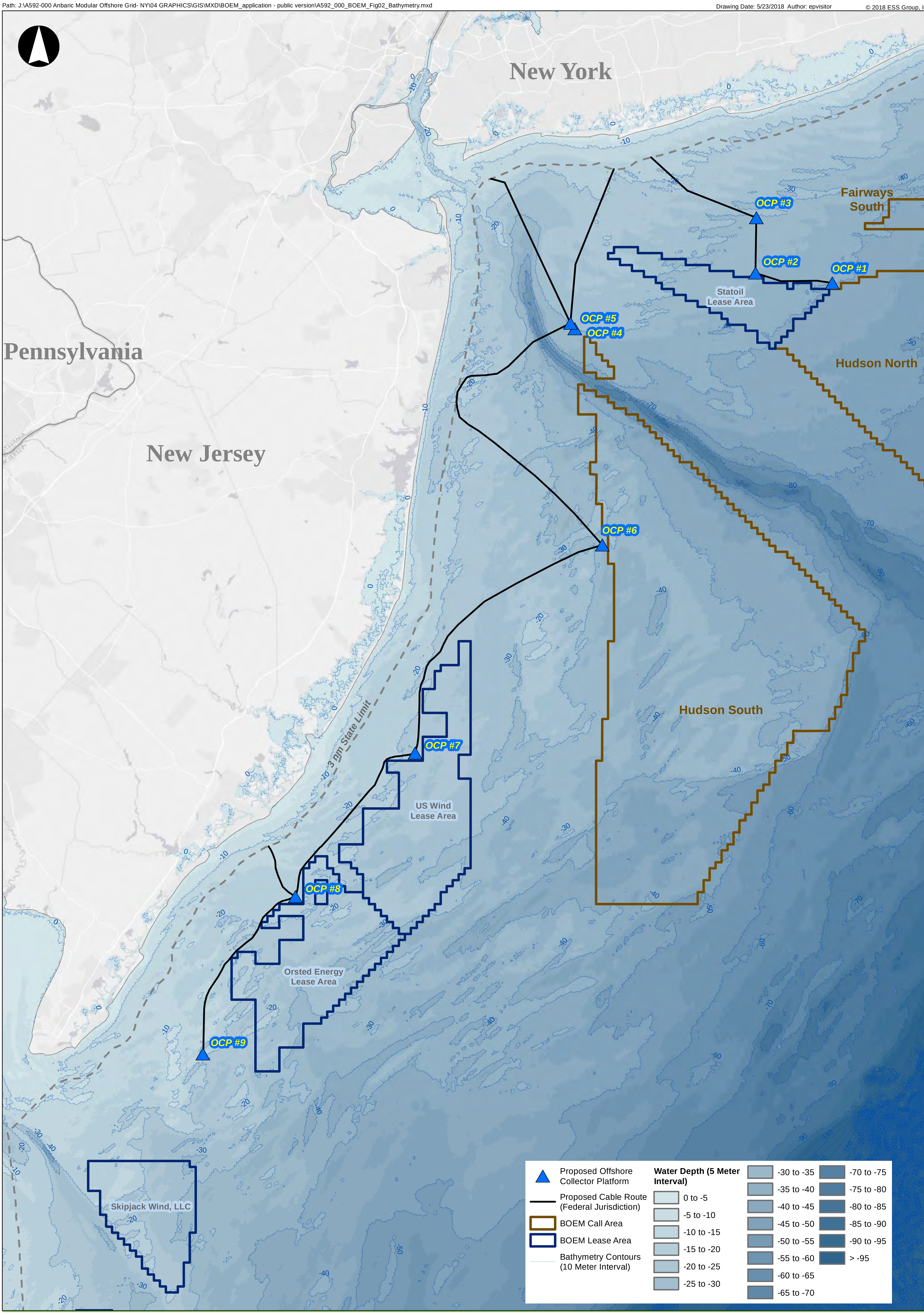

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Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas 2018
3) The Nature Conservancy, Bathymetry, 2010

0 5 10 Miles

Bathymetry (Redacted version)

Figure 2

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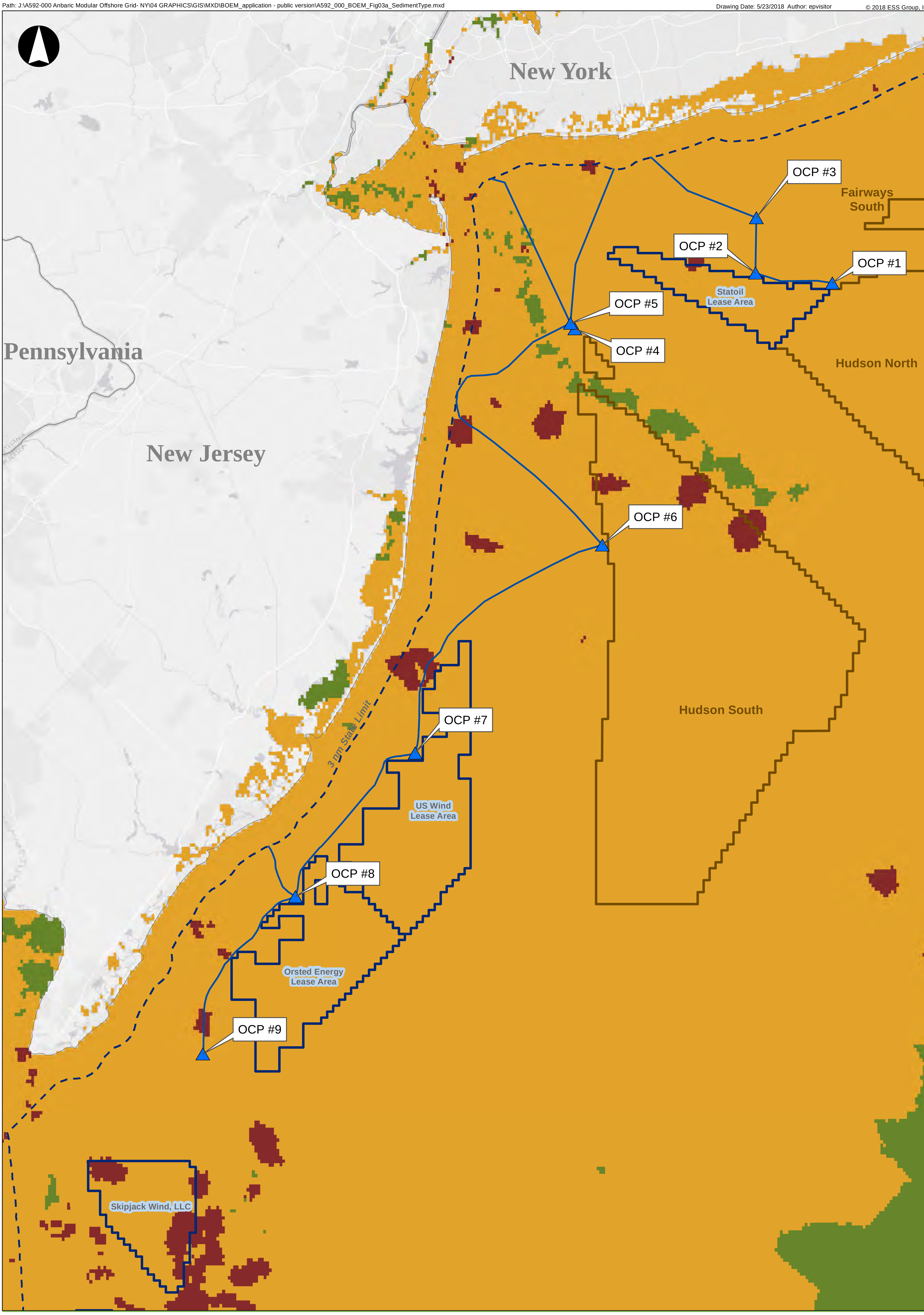

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Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) The Nature Conservancy, Sediments Grain Size, 2015

0 5 10 Miles

Proposed Offshore Collector Platform

Proposed Cable Route (Federal Jurisdiction)

BOEM Call Area

BOEM Lease Area

Silt

Sand

Gravel

Sediment Type
(Redacted version)

Figure 3A

Path: J:\A592-000 Anbaric Modular Offshore Grid- NY\04 GRAPHICS\GIS\MXD\BOEM_application - public version\A592_000_BOEM_Fig03b_SeabedForm.mxd

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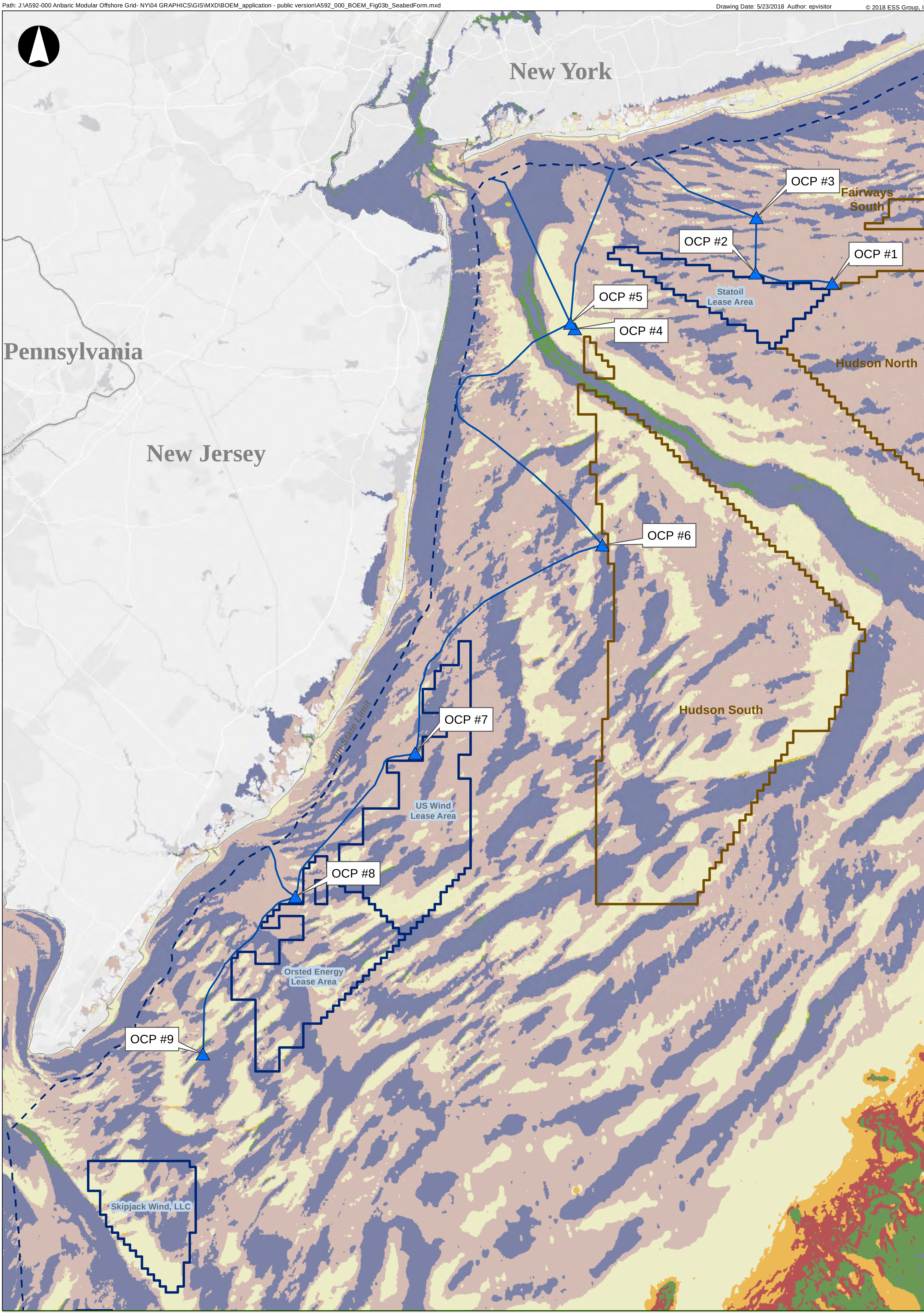

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New York and New Jersey

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) The Nature Conservancy, Seabed Forms, 2015

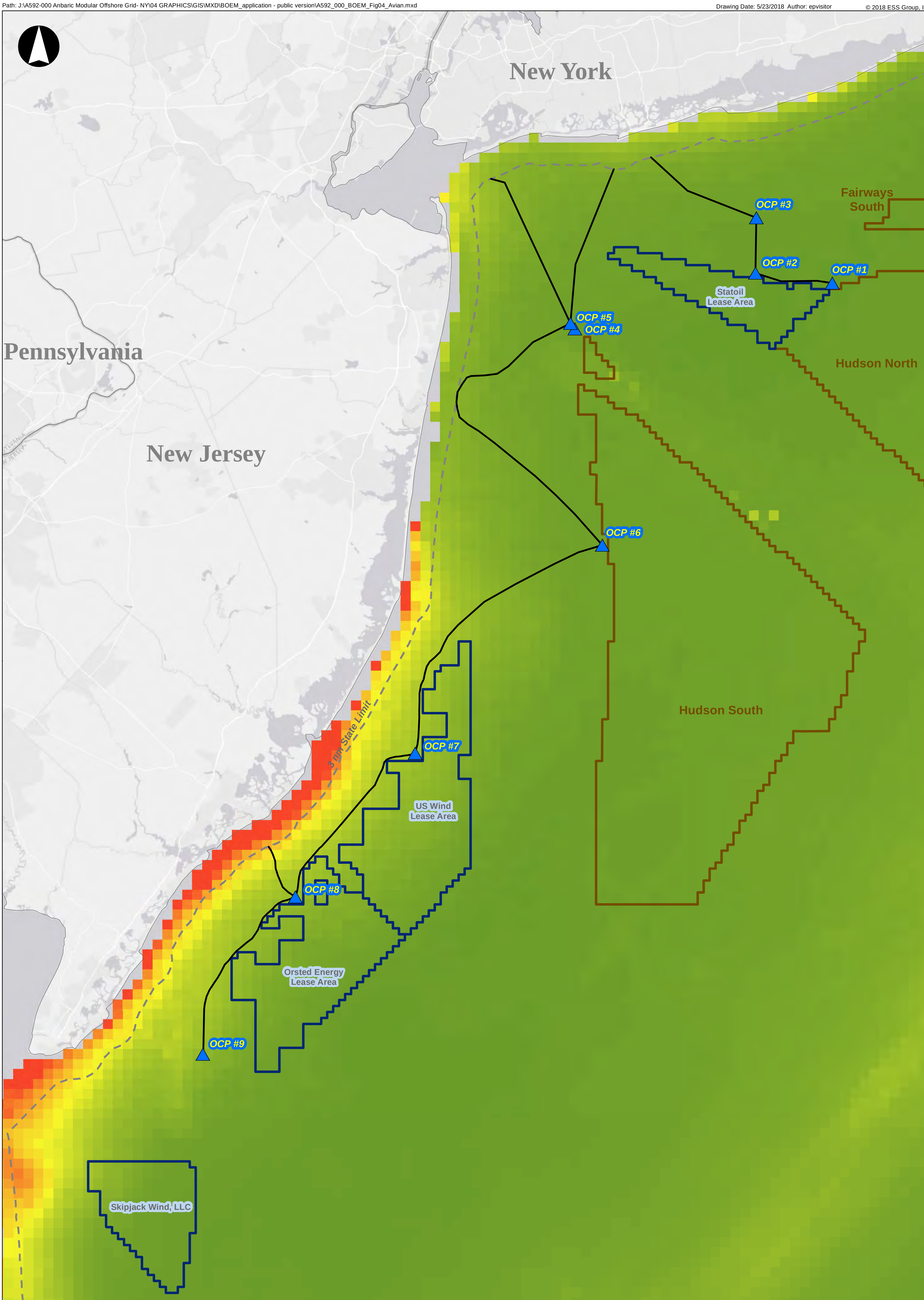
0 5 10 Miles

Proposed Offshore Collector Platform
Proposed Cable Route (Federal Jurisdiction)
BOEM Lease Area
BOEM Call Area

Seabed Forms
Depression
Mid Flat
Upper Flat
Low Slope
Scarp
Side Slope
Upper Slope

Seabed Form (Redacted version)

Figure 3B



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Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) Duke Univ., Avian Abundance, 2016

Avian (Redacted version)

Figure 4

Path: J:\A592-000 Anbaric Modular Offshore Grid- NY\04 GRAPHICS\GIS\MXD\BOEM_application - public version\A592_000_BOEM_Fig05_FishBenthic.mxd

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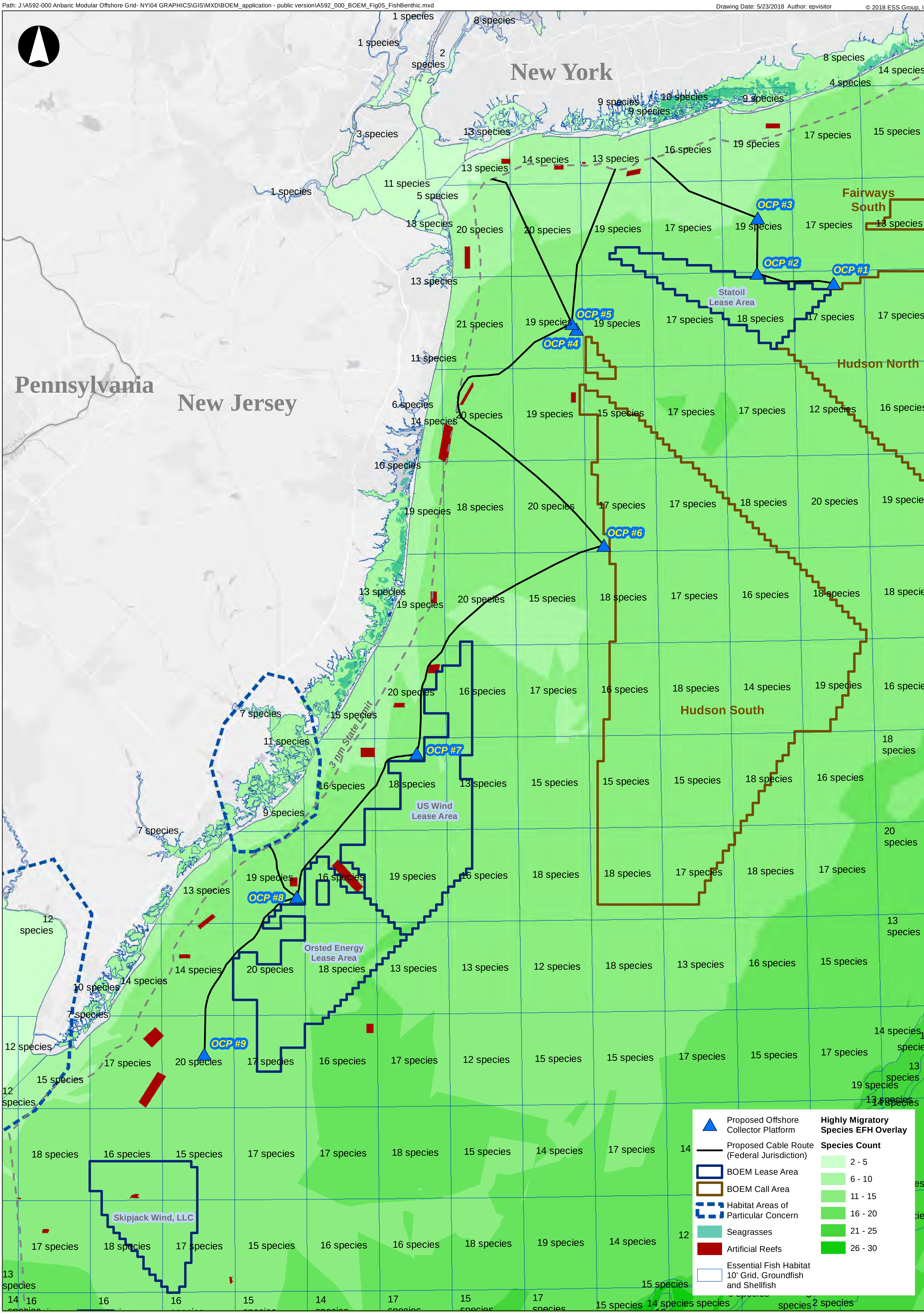

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Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, Habitat Areas of Particular Concern, EFH, Seagrasses (2015), Artificial Reefs (2017)
4) NMFS, Highly Migratory Species, 2015
5) Rutgers, Submerged Aqu. Veg., 2009

0 5 10 Miles

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Fish & Benthic Habitat
(Redacted version)

Figure 5

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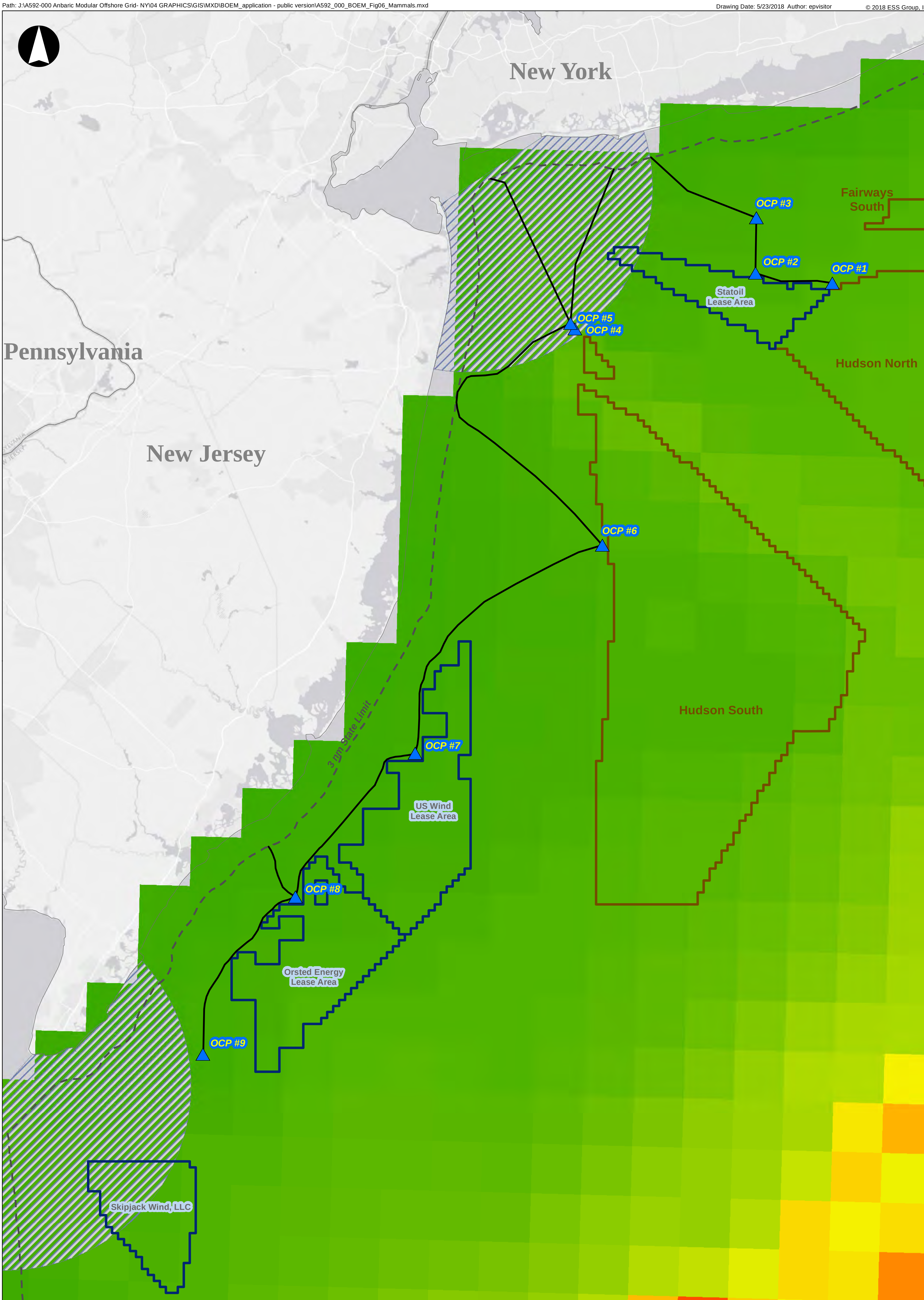

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New York and New Jersey

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, Coastal Critical Habitat (2017), Right Whale Critical Habitat (2016), Right Whale SMA (2013)
4) Duke Univ., Mammal Abundance, 2016

0 5 10 Miles

Proposed Offshore Collector Platform

Proposed Cable Route (Federal Jurisdiction)

BOEM Lease Area

BOEM Call Area

Right Whale Seasonal Management Area

Mammal Abundance
All ESA Listed

High : 11.3

Low : 0

Marine Mammals
(Redacted version)

Figure 6

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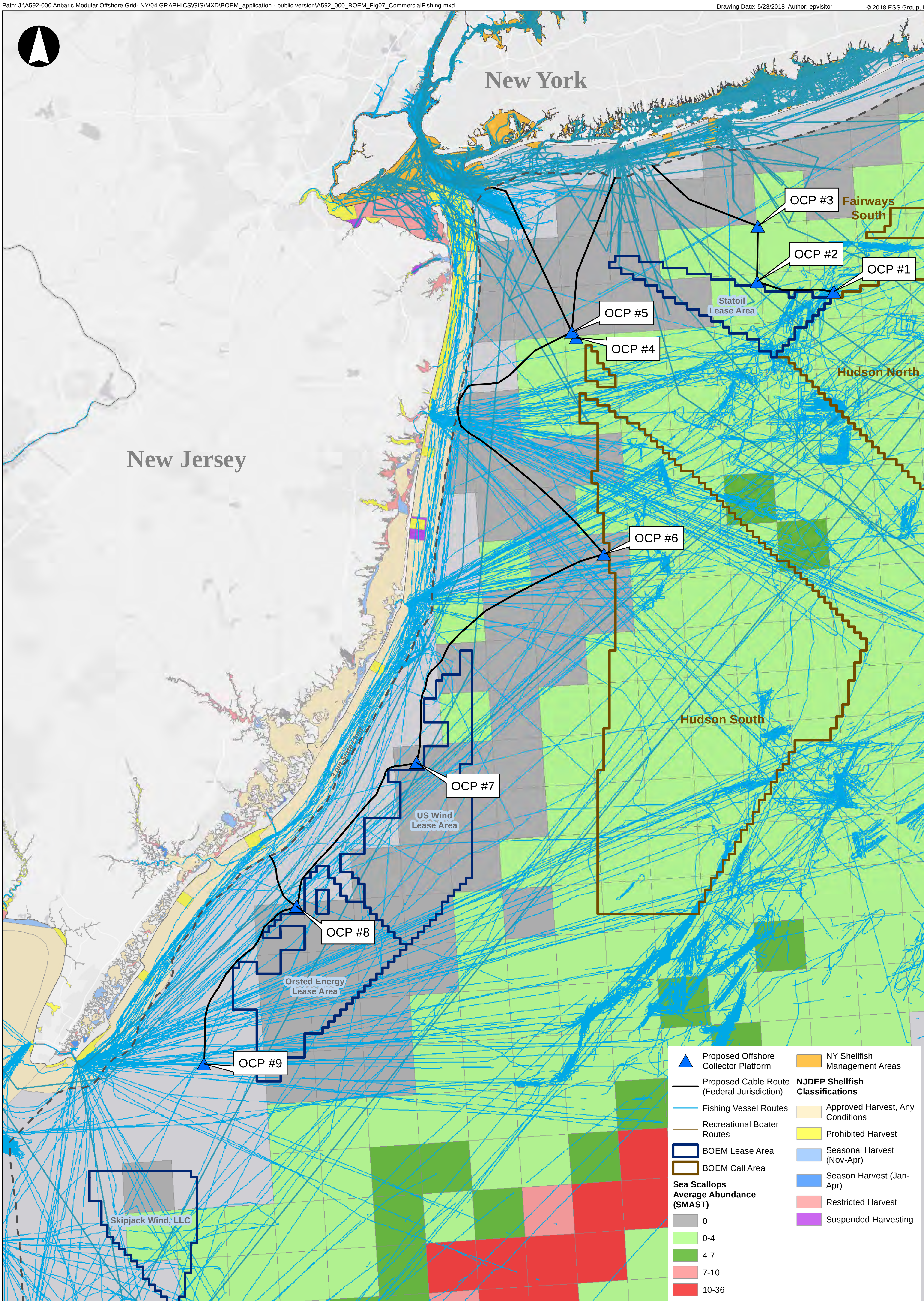

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New York and New Jersey

Commercial/Recreational Fishing & Shellfishing (Redacted version)

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) MARCO, Rec. Boater Routes, 2014
4) NJDEP, Shellfish, 2015
5) NOAA, Fishing Traffic, 2013
6) SMAST, Shellfish Abundance, 2012

0 5 10 Miles

Figure 7

Path: J:\A592-000 Anbaric Modular Offshore Grid- NY\04 GRAPHICS\GIS\MXD\BOEM_application - public version\A592_000_BOEM_Fig08_Navigation.mxd

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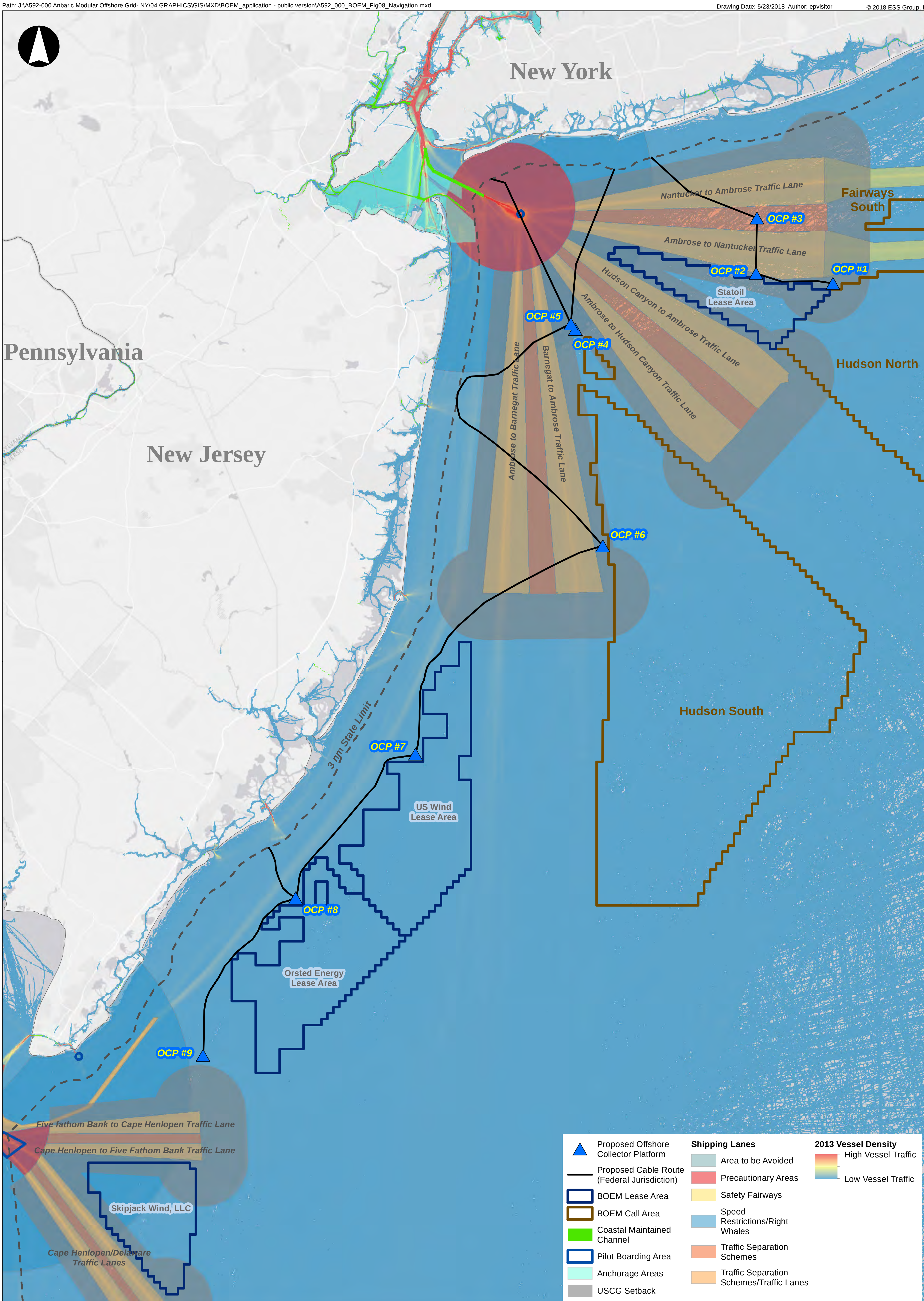

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0 5 10
Miles

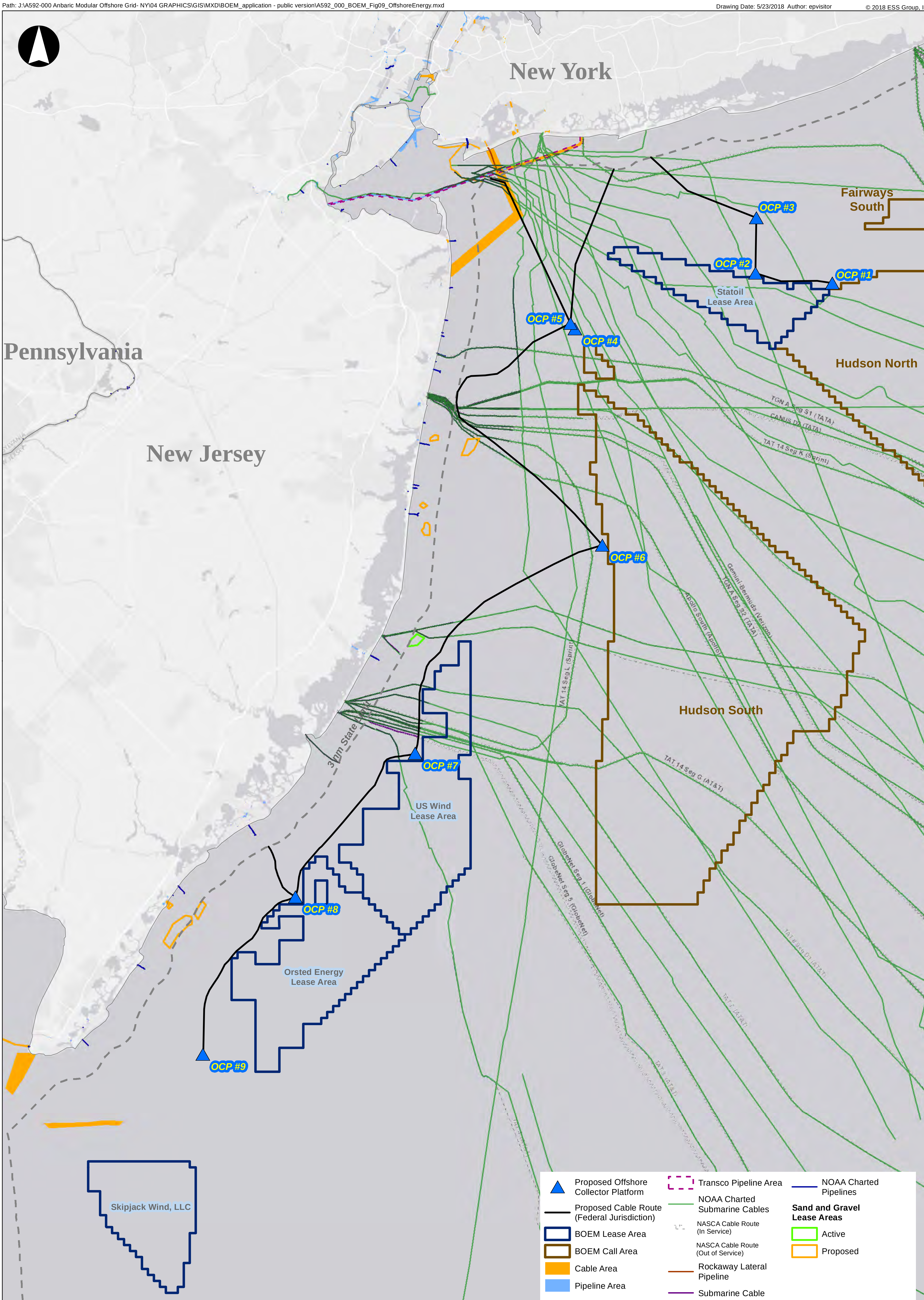
Anbaric Development Partners

New York and New Jersey

Navigation & Vessel Traffic
(Redacted version)

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, Vessel Density (2013), Pilot Boarding Areas (2014), Shipping Lanes (2015), Coastal Channels (2013)
4) USCG, Anchorage Areas, 2017, ACPARS (2016)

Figure 8



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New York and New Jersey

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, ENC Data, 2018
4) NASCA/MarineCadastre, Submarine Cables, 2017
5) BOEM, Sand and Gravel Areas, 2017

0 5 10 Miles

Offshore Energy & Marine Infrastructure (Redacted version)

Figure 9

Path: J:\A592-000 Anbaric Modular Offshore Grid- NY\04 GRAPHICS\GIS\MXD\BOEM_application - public version\A592_000_BOEM_Fig10_Restricted.mxd

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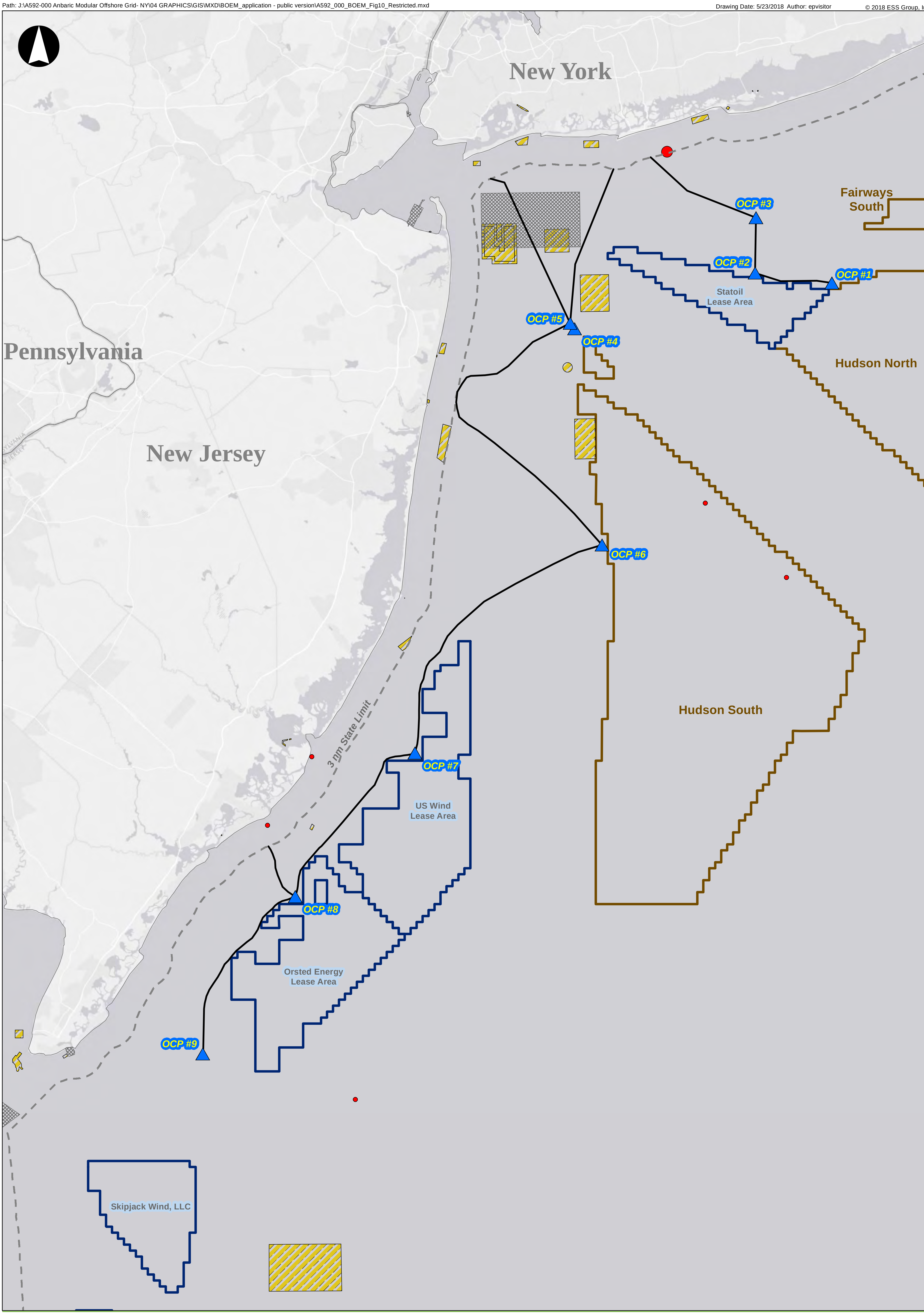

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Anbaric Development Partners

New York and New Jersey

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, Wrecks and Obstructions Data (2011, 2018), AWOIS (2016), ENC Data (2018)

0 5 10 Miles

Proposed Offshore Collector Platform

Proposed Cable Route (Federal Jurisdiction)

Danger Zones/Restricted Areas

Ocean Disposal Sites

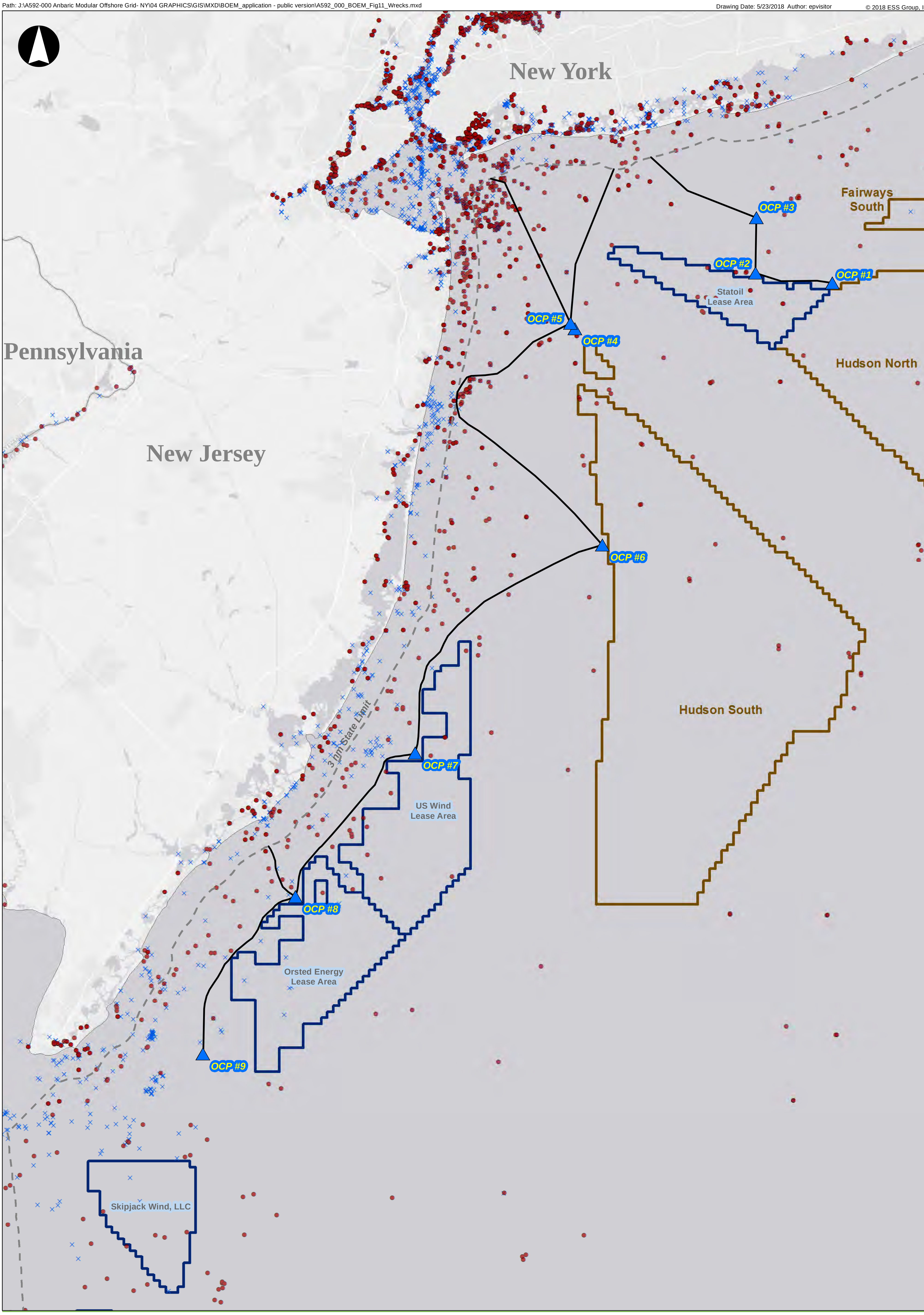
Unexploded Ordnances

BOEM Lease Area

BOEM Call Area

Marine Restricted Areas (Redacted version)

Figure 10



Anbaric Development Partners

New York and New Jersey

Source: 1) ESRI, World Gray Base, 2018
2) BOEM, Lease Areas and Call Areas, 2018
3) NOAA, Wrecks and Obstructions Data (2011, 2018), AWOIS (2016), ENC Data (2018)

- Proposed Offshore Collector Platform
- Wreck
- Obstruction
- Proposed Cable Route (Federal Jurisdiction)
- BOEM Lease Area
- BOEM Call Area

0 5 10 Miles

Wrecks & Obstructions (Redacted version)

Figure 11