

CONSULTING SCIENTISTS,  
PLANNERS & ENGINEERS

## OFFSHORE WIND: ENVIRONMENTAL PERMITTING SUPPORT



**Epsilon**  
ASSOCIATES INC.

Founded in 1997, Epsilon Associates, Inc. specializes in securing environmental approvals for large-scale infrastructure and energy projects, including offshore wind development. Our experienced scientists, planners and engineers support public and private clients from offices located in metropolitan Boston, Albany, NY, and Washington, D.C.

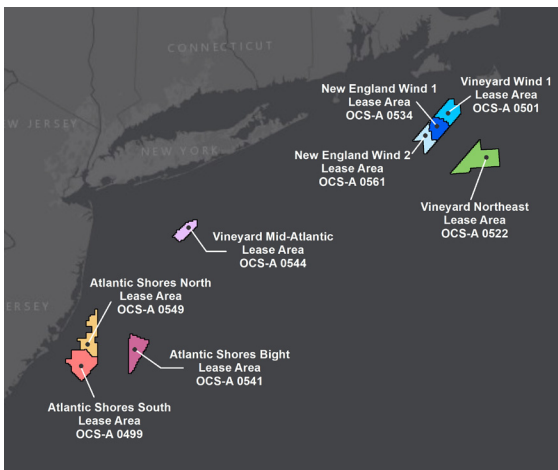
### A Pioneer and National Leader in Offshore Wind Permitting

**Epsilon has provided siting, licensing, permitting, environmental analyses and compliance work for numerous significant marine energy projects for over 25 years. This experience helps Epsilon obtain critical regulatory approvals for our clients on-time with few, if any, surprises.**

#### EXPERT FEDERAL, STATE, REGIONAL, AND LOCAL APPROVALS SUPPORT

- Developed the first Construction and Operations Plan (COP) filed with the Bureau of Ocean Energy Management (BOEM) for the current generation of utility-scale US offshore wind projects. Received Record of Decision in May 2021.
- Developed or in the process of developing six additional COPs following Vineyard Wind 1 for offshore wind projects located in waters offshore New England and the Mid-Atlantic (see Table 1).
- Obtained three Records of Decision for offshore wind projects.
- Over nine years of experience working closely with BOEM and offshore wind developers to guide projects through the federal permitting process.
- Offshore and onshore permitting expertise for major infrastructure projects, including offshore and coastal terminals, submarine cables and pipelines, offshore sand mining, onshore transmission, and regional electricity grid interconnections.
- Over 25 years of experience working with federal, state, regional, and local permitting on marine and coastal projects.

PROJECT NAME	LEASE AREA	EPSILON'S ROLE
Vineyard Wind 1	OCS-A 0501	COP Preparation + Federal, state, regional, and local permitting
New England Wind 1	OCS-A 0534	COP Preparation + Federal, state, regional, and local permitting
New England Wind 2	OCS-A 0561	COP Preparation + Federal, state, regional, and local permitting
Vineyard Northeast	OCS-A 0522	COP Preparation + Federal permitting
Atlantic Shores South	OCS-A 0499	COP Preparation + Federal permitting in partnership with EDR
Atlantic Shores North	OCS-A 0549	COP Preparation + Federal permitting in partnership with EDR
Vineyard Mid-Atlantic	OCS-A 0544	COP Preparation + Federal, state, regional, and local permitting
Atlantic Shores Bight	OCS-A 0541	COP Preparation + Federal permitting in partnership with EDR



FEATURED PROJECTS

**Vineyard Wind 1 (Lease Area OCS-A 0501):** Epsilon served as the lead environmental consultant supporting the 800 MW Vineyard Wind 1 Project, the first of the current generation of US offshore wind projects to file its COP with BOEM. Epsilon also led all state, regional, and local applications for this project. With the issuance of a Record of Decision in May 2021, the Vineyard Wind 1 project has received all required environmental permits and is beginning construction.

**New England Wind (Lease Area OCS-A 0534, Lease Area OCS-A 0561):** This development consists of two phases that will combined generate approximately 2,000 MW. Epsilon submitted a phased COP for New England Wind in 2020 and is also leading all federal, state, regional, and local permitting for both phases. New England Wind received a Record of Decision in 2024.

**Vineyard Northeast (Lease Area OCS-A 0522):** Epsilon is leading the federal permitting for this offshore wind development located over 46 km south of Nantucket. Vineyard Northeast is expected to generate over 2,600 MW of power.

**Atlantic Shores South (Lease Area OCS-A 0499):** Atlantic Shores South will be developed as two projects with a maximum of 136 wind turbine generators (WTG) with up to 10 offshore substations. Epsilon prepared the COP (in partnership with EDR), NMFS Letter of Authorization, and Outer Continental Shelf Air Permits, and supported other state and federal permits. Atlantic Shores received a Record of Decision in 2024.

**Vineyard Mid-Atlantic (Lease Area OCS-A 0544):** Epsilon is leading the federal, state, regional, and local permitting for this offshore wind development located approximately 38 km from Fire Island, New York. Vineyard Mid-Atlantic is expected to generate 2,000 MW of power.

THE EPSILON TEAM

Our team of energy transmission specialists, coastal scientists, marine biologists, and ecologists together offer the expertise that is essential for successfully navigating through the highly complex federal, state, regional, and local offshore wind development permitting process.



## NEW ENGLAND WIND

### CLIENT:

Park City Wind, LLC

### PROJECT LOCATION:

Offshore Martha's Vineyard and Nantucket, MA and Southern MA

### SERVICES PROVIDED (ONGOING):

BOEM Construction and Operations Plan

US EPA Air Permit

USACE Permit

MEPA

Energy Facilities Siting Board

Chapter 91

401 Water Quality Certification

Cape Cod Commission

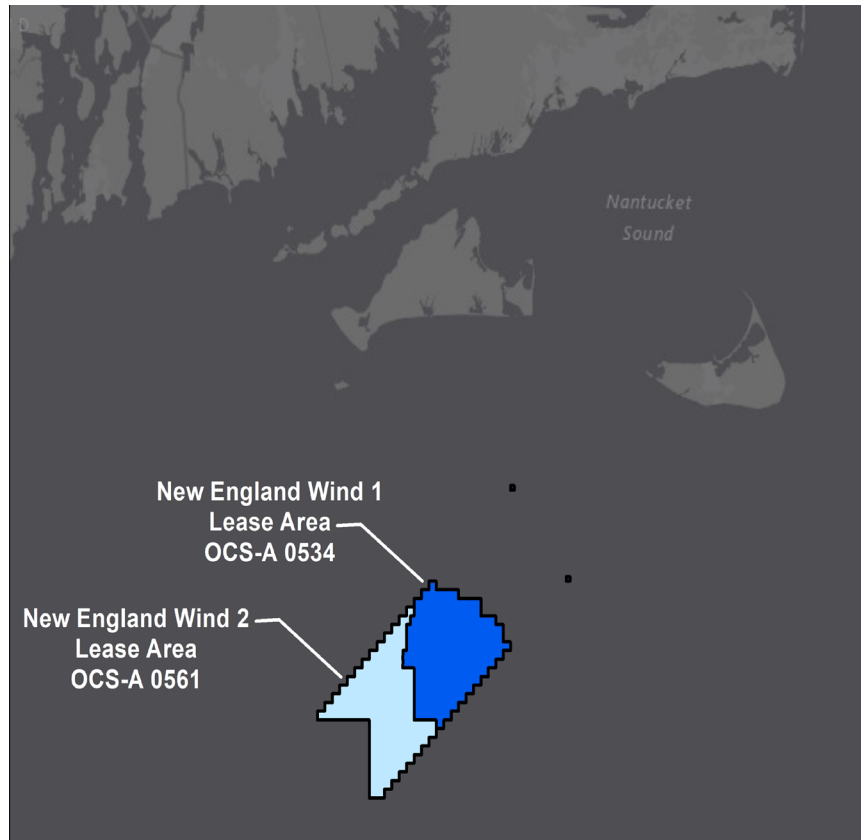
Martha's Vineyard Commission

Local Wetlands Permitting

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Epsilon is providing routing, licensing, and permitting services for the New England Wind Project.

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Epsilon Associates, Inc. led the comprehensive federal, state, regional, and local permitting efforts for the New England Wind project, which encompasses New England Wind 1 and New England Wind 2. The project aims to deliver approximately 2,000 MW of renewable energy to New England's grid, powering nearly 1 million homes. Epsilon served as the lead environmental consultant, preparing the project's Construction and Operations Plan (COP), submitted to the Bureau of Ocean Energy Management (BOEM). This COP outlined critical construction, operational, and decommissioning activities, including detailed impact assessments on physical, biological, and socioeconomic resources.

Epsilon prepared the Outer Continental Shelf (OCS) Air Permit applications, which regulate air emissions from offshore construction and operational activities, securing necessary approvals from the U.S. Environmental Protection Agency. Epsilon managed the preparation of the Incidental Take Authorization application to NMFS and obtained a Letter of Authorization that allows construction activities to proceed and stipulates thoughtful monitoring and mitigation measures to protect marine mammals. Epsilon also prepared two Army Corps of Engineers applications.

Additionally, Epsilon spearheaded state, regional, and local permitting processes for offshore export cables, providing routing and licensing services to ensure the seamless transmission of electricity to the West Barnstable Substation. New England Wind is anticipated to reduce carbon emissions by nearly 4 million tons annually and create significant economic benefits, including 9,200 full-time jobs and \$8 billion in direct investment.

Epsilon's ability to obtain all required federal, state, regional, and local authorizations reflects the firm's extensive expertise in offshore wind development.



## ATLANTIC SHORES SOUTH

**CLIENT:**  
Atlantic Shores Offshore Wind LLC

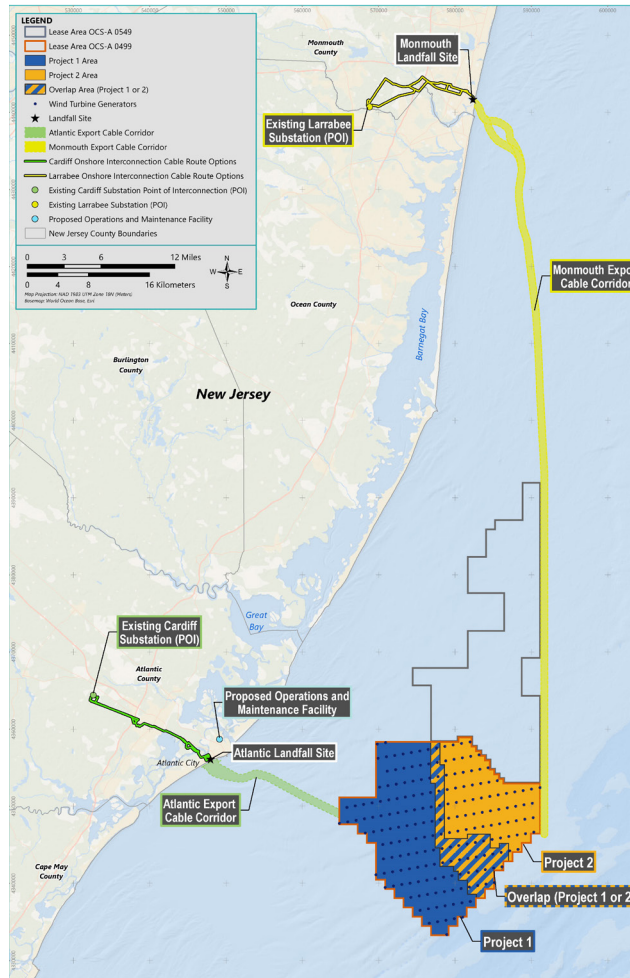
**PROJECT LOCATION:**  
Offshore New Jersey, between Atlantic City and Barnegat Light

**SERVICES PROVIDED:**  
BOEM Construction and Operations Plan Preparation  
NMFS Letter of Authorization  
Outer Continental Shelf Air Permits  
State and Federal Environmental Permitting Assistance

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Epsilon is an integral part of the team acquiring the state and federal permits for Atlantic Shores South.

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Atlantic Shores South is the proposal by Atlantic Shores Offshore Wind LLC to develop offshore renewable wind energy facilities in Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0499. At its closest point, the wind turbine area (WTA) is approximately 8.7 miles (14 kilometers) from the New Jersey shoreline. The wind lease area will cover a total area of approximately 286 square miles.

Atlantic Shores South will be developed as two projects with a maximum of 136 wind turbine generators (WTG) and up to 10 offshore substations. The lease area layout is designed to maximize offshore renewable wind energy production while minimizing effects on existing marine uses. Epsilon is assisting in writing the Letter of Authorization to the National Marine Fisheries Service (NMFS), which is responsible for monitoring and protecting marine resources.

Combined, the projects will deliver a total of approximately 1,510 MW of clean energy and will help both the U.S. and New Jersey achieve their renewable energy goals, diversify the State's electricity supply, increase electricity reliability, and reduce greenhouse gas emissions.

Epsilon is an integral part of the team acquiring the state and federal permits for both phases of Atlantic Shores South. Epsilon worked extensively on the BOEM Construction and Operations Plan, NMFS Marine Mammal Protection Act Letter of Authorization and EPA OCS Air Permit, all of which were approved in 2024.



## VINEYARD WIND 1

**CLIENT:**  
Vineyard Wind 1, LLC

**PROJECT LOCATION:**  
Barnstable, Mass. and offshore Martha's Vineyard and Nantucket, Mass.

**SERVICES PROVIDED:**  
BOEM Construction and Operations Plan  
US EPA Air Permit

USACE Permit

MEPA

Energy Facilities Siting Board

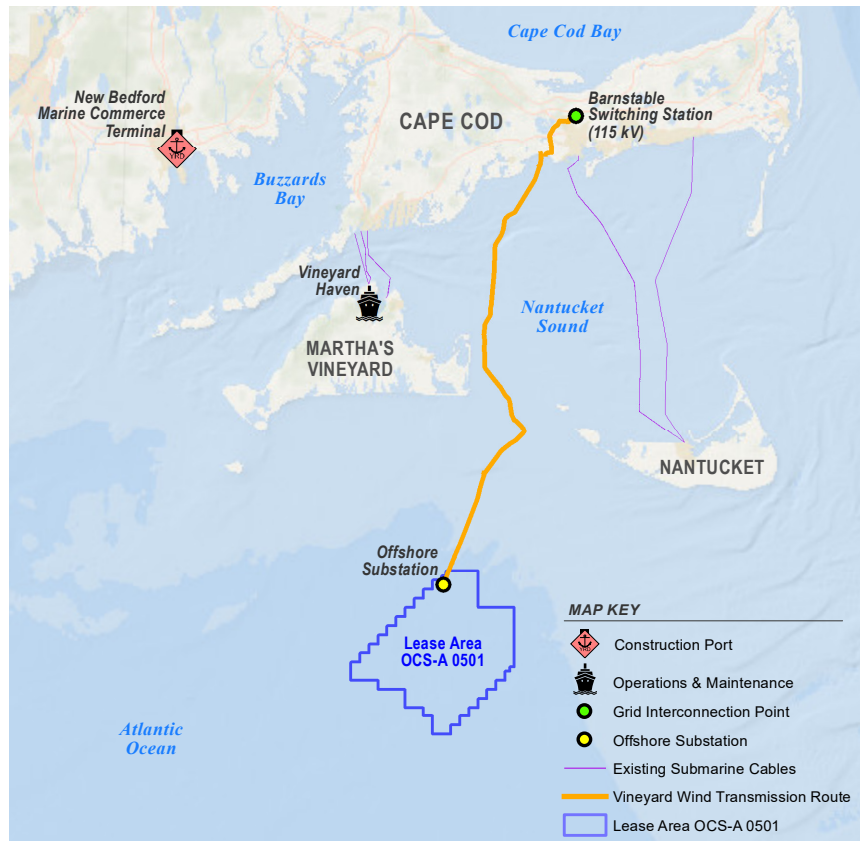
Chapter 91

401 Water Quality Certification

Cape Cod Commission

Martha's Vineyard Commission

Local Wetlands Permitting



The Vineyard Wind 1 energy generation facility, a Joint Venture between Avangrid Renewables and Copenhagen Infrastructure Partners (CIP), is located on the outer continental shelf in federal waters designated as a wind energy area approximately 15 miles south of Martha's Vineyard and 35 miles south of mainland Massachusetts (see map above). Vineyard Wind 1 will deliver 800 MW of clean energy to the northeast beginning in 2025, enough electricity to power approximately 400,000 Massachusetts homes, reducing carbon emissions by over 1.6 million tons per year.

Epsilon led the federal, state, regional, and local permitting for the project, which will be the first utility-scale offshore wind project in the United States. The project was the first of the current generation of U.S. commercial-scale offshore wind projects to file its Construction and Operations Plan (COP) with the Bureau of Ocean Energy Management (BOEM). Epsilon managed the preparation of the COP, which included a comprehensive assessment of impacts to air and water quality, geology, fisheries and benthic habitat, birds and other wildlife, marine mammals and sea turtles, coastal habitats, local economies and populations, visual resources, marine and air navigation, and historic and archaeological resources. In May 2021, Vineyard Wind 1 received the Record of Decision (ROD) from the U.S. Department of the Interior BOEM, the final major step in the federal review process.

Epsilon also managed preparation of all state, regional, and local environmental review and permitting documents for Vineyard Wind Connector 1, the state-jurisdictional components of Vineyard Wind 1. This included a detailed routing analysis and alternatives assessment for Energy Facilities Siting Board (EFSB) and Massachusetts Environmental Policy Act (MEPA) reviews. Epsilon completed all state, regional, and local permitting on an aggressive schedule over a period of approximately 18 months.

Vineyard Wind 1 will consist of an array of 62 wind turbines, each spaced one nautical mile apart on an east-west and north south orientation. Each turbine is capable of generating 13 megawatts of electricity. Electricity generated by the turbines is collected by an offshore substation prior to being transmitted to shore.

## A Clean Energy Future: Just the Beginning

The Vineyard Wind 1 cable landing at Covell's Beach is an important start for the US offshore wind industry. But many more projects like it will be needed to significantly reduce our reliance on fossil-fuel powered facilities. Despite the daunting tasks ahead, with 3,200 MW of offshore wind expected to be in operation off the Massachusetts coast by 2030, there is light at the end of this clean energy, decarbonization tunnel. Across the US, 15 offshore wind projects have reached the permitting phase. Eight states have set offshore wind energy procurement goals totaling 39,298 MW by 2040. Reaching those goals would afford clean power to 20 million homes while reducing carbon emissions by 80 million tons every year.

The many Barnstable residents who were fortunate enough to be enjoying the oasis of Covell's Beach on that hot August day likely experienced feelings of inner peace and happiness so savored by Cape Cod residents and vacationers alike. Our conversion to offshore wind and other clean energy sources will help preserve that experience for future generations, and although the next phase of construction may temporarily impact some area residents during the off-season ahead, that imposition is surely a small price to pay for the collective benefits returned.

## Offshore Wind Permitting: Complex, Painstaking, Essential

### FEDERAL

Bureau of Ocean Energy Management (BOEM)  
 Environmental Protection Agency  
 Army Corps of Engineers  
 United States Coast Guard  
 Federal Aviation Administration  
 National Marine Fisheries Service

### STATE & LOCAL

MA Department of Environmental Protection  
 Energy Facilities Siting Board  
 US Environmental Protection Agency  
 MA Division of Marine Fisheries  
 MA Department of Fish and Wildlife  
 Cape Cod Commission.  
 Barnstable Conservation Commission

Jack Vaccaro, a Senior Consultant at Epsilon Associates, Inc., and life-long resident of Cape Cod, served as the on-site environmental monitor for the duration of the Vineyard Wind HDD operations at Covell's Beach and was responsible for ensuring permit compliance for both onshore and offshore operations. In this capacity, Jack was granted full access to this unique construction spread which enabled Epsilon to provide valuable compliance guidance and regulatory liaison services to Vineyard Wind on a day-to-day basis.

**Postscript - Epsilon continues to work closely with the developers and the Bureau of Energy Ocean Management (BOEM) to permit other offshore wind projects along the U.S. east coast.**

- (1) Bethany Card (Secretary of Energy and Environmental Affairs, Commonwealth of Massachusetts), Massachusetts Clean Energy and Climate Plan for 2025 and 2030, June 30, 2022, p. 79.
- (2) Business Wire, AVANGRID Reaches Agreement to Operate First-in-the-Nation Vineyard Wind 1, August 3, 2022.
- (3) AVANGRID, Inc., a sustainable energy company and part of the IBERDROLA Group, recently finalized an agreement to assume responsibility as the operations and management services provider for Vineyard Wind 1, the first commercial-scale offshore wind project in the United States. Vineyard Wind 1, an 800-megawatt offshore wind project owned in a 50-50 Joint Venture between AVANGRID and Copenhagen Infrastructure Partners (CIP) funds CI II and CI III., is currently under construction off the coast of Massachusetts.
- (4) op. cit., Massachusetts Clean Energy and Climate Plan for 2025 and 2030, p. 79
- (5) H.R.5376 Inflation Reduction Act of 2022, August 16, 2022.
- (6) Deloitte, Advancing energy security: Sustainability-related tax provisions in the Inflation Reduction Act. August 18, 2022.

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# Vineyard Wind 1 Comes Ashore at Covell's Beach, Barnstable



## A day at the beach, offshore wind, and our energy future

**AUTHOR:** Jack Vaccaro, Senior Consultant at Epsilon Associates

It was a hot August afternoon at Covell's Beach in Barnstable, Massachusetts, one of Cape Cod's lovely communities and the county seat. Residents seeking relief from yet another seemingly endless summer heatwave had flocked to the popular beach in droves. Its parking lot full, those lucky enough to have already claimed their spot on the beach could gaze out at the boats gliding across Nantucket Sound while keeping a vigilant watch for seals. All in all, it was a typical – albeit exceedingly hot – summer day at a pleasant Cape Cod beach.

That relaxed scene was quite different from how the immediate area had appeared just a few months earlier. Over the winter, while residents hunkered down in their homes or strolled outside bravely, donning woolen sweaters and windbreakers to fight off the effects of cold winter winds, onshore construction for Vineyard Wind 1, the first utility-scale offshore wind farm to be built in the United States, was at full throttle. For a time, the Covell's Beach parking lot was the center of some very important construction activity.

### KEY TAKEAWAYS

Greenhouse Gas emissions from the Massachusetts electricity sector must decrease by **> 53% by 2025 and 70% by 2030** from 1990 baseline to meet mandated state goals.(1)

Vineyard Wind 1 will deliver **800 megawatts (MW)** of clean energy beginning in 2025, enough electricity to power 400,000 Massachusetts homes, reducing greenhouse gas emissions by 1.6 million tons per year and **creating 3,600 jobs.**(2)

3,200 MW of offshore wind is expected to be in operation off Massachusetts' coast by 2030, enough electricity to **power 1.6 million homes.**

Laborers work to detach one of the two 42-inch conduits from the drill string following its successful installation beneath Covell's Beach and the Nantucket Sound seabed.



## Vineyard Wind 1: Offshore and Onshore

The Vineyard Wind 1 offshore wind farm, a Joint Venture between AVANGRID and Copenhagen Infrastructure Partners (CIP)(3) is located on the outer continental shelf in federal waters designated as wind energy areas approximately 15 miles south of Martha's Vineyard and 35 miles east of mainland Massachusetts. (View map.) Vineyard Wind 1 will deliver 800 MW of clean energy to the northeast beginning in 2025, enough electricity to power approximately 400,000 Massachusetts homes, reducing carbon emissions in the atmosphere by over 1.6 million tons per year.

The first phase of Vineyard Wind 1's onshore construction has included work at its future substation site (located in nearby Hyannis) and the installation of several miles of buried duct bank that will house the power cables beneath municipal roads between Covell's Beach and the substation. Work also included the installation of two 42-inch conduits beneath Covell's Beach and a nearshore segment of the Nantucket Sound seabed by means of below-surface horizontal directional drilling (HDD) – a specialized construction method used to minimize environmental impact – in preparation for submarine cable-pulling scheduled to commence later this year.

AVANGRID, Inc., a sustainable energy company and part of the IBERDROLA Group, recently finalized an agreement to assume responsibility as the operations and management services provider for Vineyard Wind 1, the first commercial-scale offshore wind project in the United States. Vineyard Wind 1, an 800-megawatt offshore wind project owned in a 50-50 Joint Venture between AVANGRID and Copenhagen Infrastructure Partners (CIP) funds CI II and CI III., is currently under construction off the coast of Massachusetts.

## Offshore Wind: Big Impact, Big Business

Vineyard Wind 1 and other offshore wind projects like it will enable utilities to re-apportion their energy consumption portfolios to reduce reliance on natural gas-fired powered plants in Massachusetts and elsewhere. The emergence of offshore wind as a significant source of energy comes at an auspicious moment in the history of our planet. As we experience more and more the negative impacts of climate change from carbon emissions that warm our atmosphere and our oceans – including the resulting, unrelenting, and potentially catastrophic rise of sea levels – the science clearly shows that we must move with determination and haste to clean, renewable energy sources to save both save our way of life and the natural world as we know it.

With conditions off our coasts optimal for wind energy generation, and further accelerated by generous government incentives, the offshore wind industry is booming in Massachusetts and across the Northeast. Vineyard Wind 1 is one of several utility-scale offshore wind projects located in federal lease areas south of Martha's Vineyard and Nantucket in various stages of development. These projects are already creating jobs and other economic benefits throughout southeastern Massachusetts and will continue to do so in other parts of the state and across the Northeast for years to come.

Vineyard Wind 1 will generate 800 megawatts of electricity annually and power over 400,000 homes, also the equivalent of removing 325,000 vehicles from roadways.



## State and Federal Mandates and Incentives

The Commonwealth of Massachusetts has set a goal of developing enough renewable energy projects to heat homes and power vehicles with minimal use of fossil fuels by 2050 (Massachusetts Clean Energy and Climate Plan for 2025 and 2030). To achieve a statewide 50% GHG emissions reduction economy-wide below the 1990 baseline in 2030, GHG emissions from the electricity sector must decrease by more than 53% by 2025 and 70% by 2030(4). Offshore wind plays a pivotal role in this near-miraculous conversion.

The recently passed federal Inflation Reduction Act of 2022(5) includes significant financial incentives to spur on the development of renewable energy projects, including funding for interregional and offshore wind electricity transmission planning, modeling, and analysis, and generous tax credit incentives. Almost 300 pages of the legislation addresses clean energy credits and incentives estimated at \$258 billion over a 10-year period, according to the Congressional Research Service(6).

With such laws and mandates now in place, it has become abundantly clear that coastal states will rely heavily on privately developed offshore wind to help close the gap between current and future carbon emission reduction targets.

Vineyard Wind 1 will consist of an array of 62 wind turbines, each spaced one nautical mile apart on an east-west and north south orientation. Each turbine is capable of generating 13 megawatts of electricity. Electricity generated by the turbines is collected by an offshore substation prior to being transmitted to shore.

## Construction Ramps Up Under Epsilon's Watchful Eye

As onshore work progressed during the winter of 2021-2022, each of the Vineyard Wind 1 onshore construction areas was closely monitored by Epsilon Associates for compliance with a comprehensive list of environmental permits that had been secured from federal, state, and regulatory authorities (See below Table, "Offshore Wind Permitting: Complex, Painstaking, Essential"). The monitoring of construction at the beach, which required environmental oversight of both onshore and offshore work crews in all kinds of weather, was particularly challenging.

The permitted workspace at Covell's Beach was strictly limited to the paved surface of the parking lot to protect sensitive environmental habitat nearby. The work was also restricted with respect to time. As stipulated in the Host Community Agreement between Vineyard Wind and the town of Barnstable, it was critical that the site be vacated and fully restored by early May to not interfere with the public's use of the area during the summer.

At the height of construction, the parking lot at Covell's Beach was almost entirely occupied by the specialized equipment and supplies required for the HDD operations. The work required substantial excavations within the paved parking area, which was ultimately restored following the completion of the work. In the end, the work at Covell's Beach was completed on schedule and when the beach crowds returned on Memorial Day weekend, there was little evidence that ground-breaking construction of the nation's first offshore wind farm had occurred over the prior winter. A recently paved parking lot and some newly installed manhole covers were the only visible signs of the recently completed installation.

PROJECT NAME	FEDERAL LEASE AREA	ESTIMATED MAXIMUM CAPACITY (MW)	IN-SERVICE DATE
South Fork Wind	OCS-A 0517	130	2023
Sunrise Wind	OCS-A 0487 & OCS-A 0500	1,122	2025
Vineyard Wind 1	OCS-A 0501	800	2025
Park City Wind	OCS-A 0534	804	2026
Commonwealth Wind	OCS-A 0534	1,232	2027-2028
Mayflower Wind	OCS-A 0521	2,400	2030
Revolution Wind	OCS-A 0486	880	?
Beacon Wind	OCS-A 0520	2,400	?
Vineyard Northeast	OCS-A 0522	3,000	?