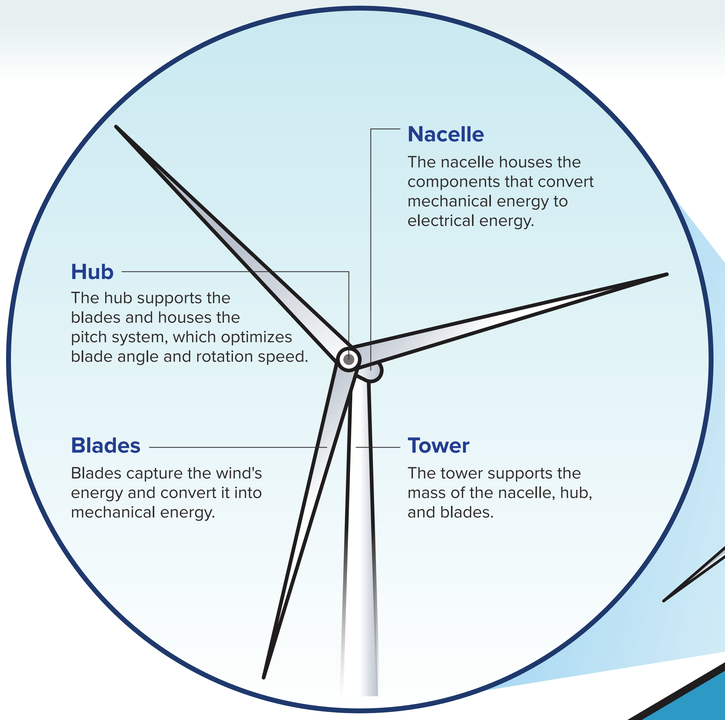
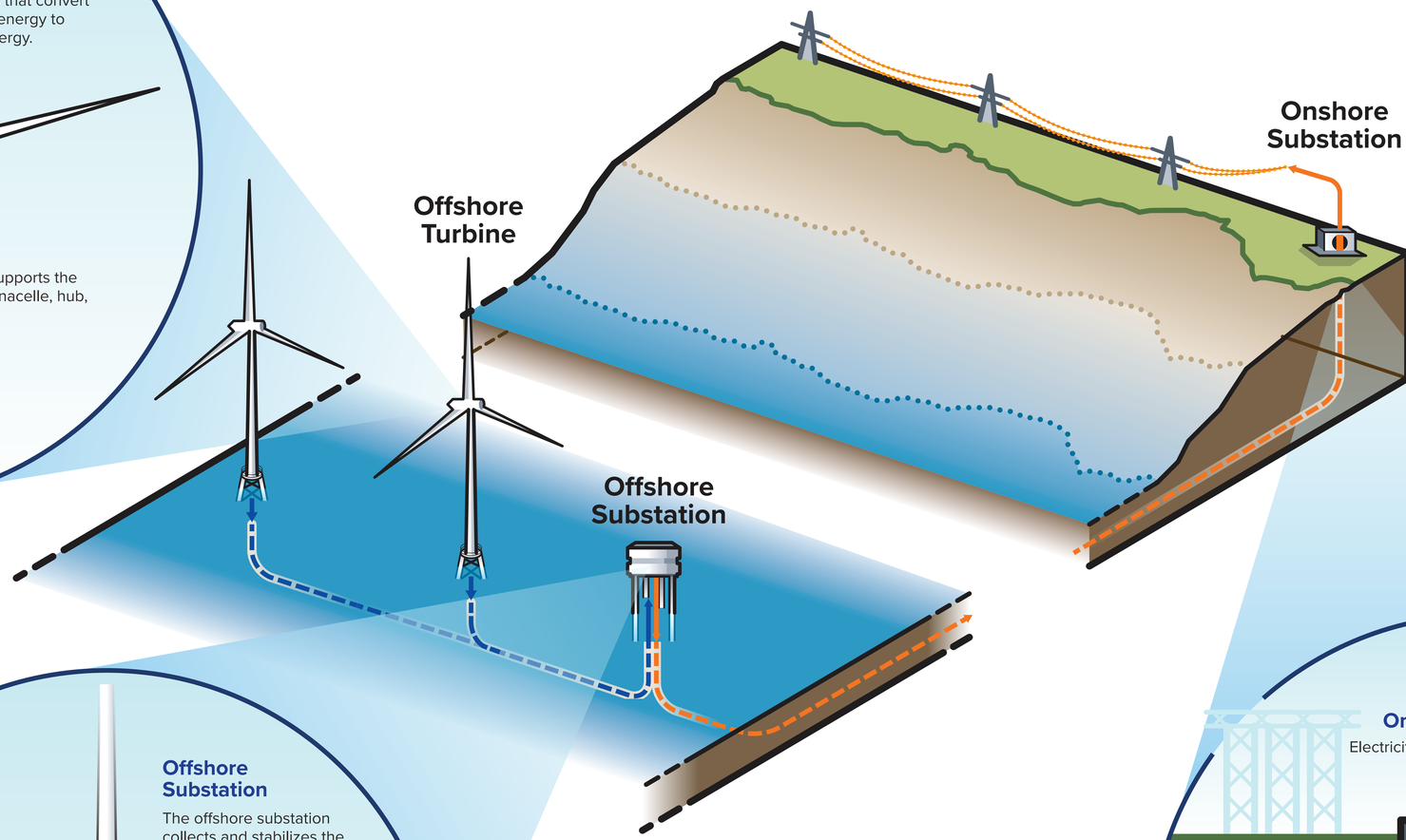
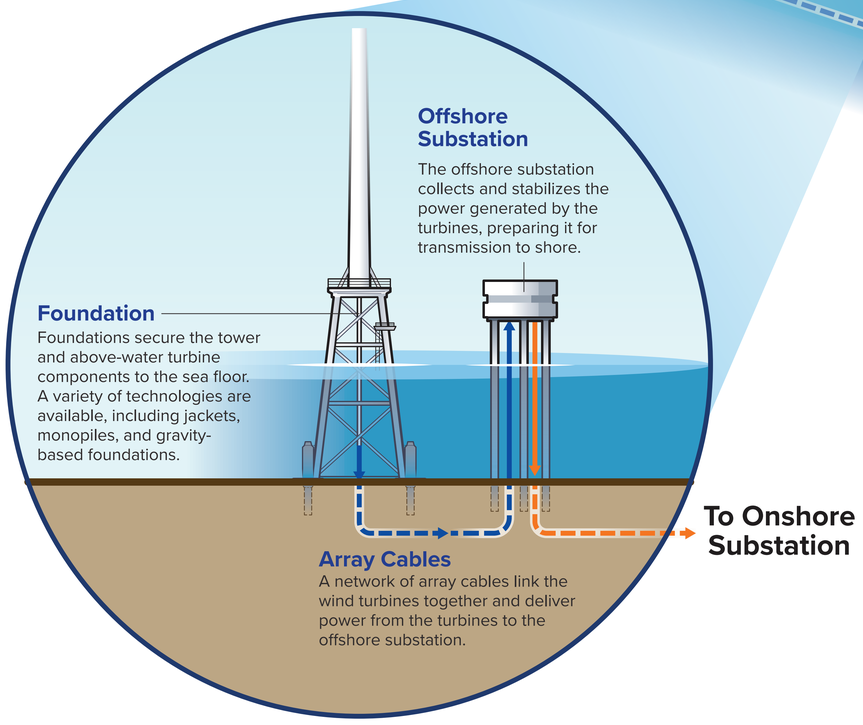
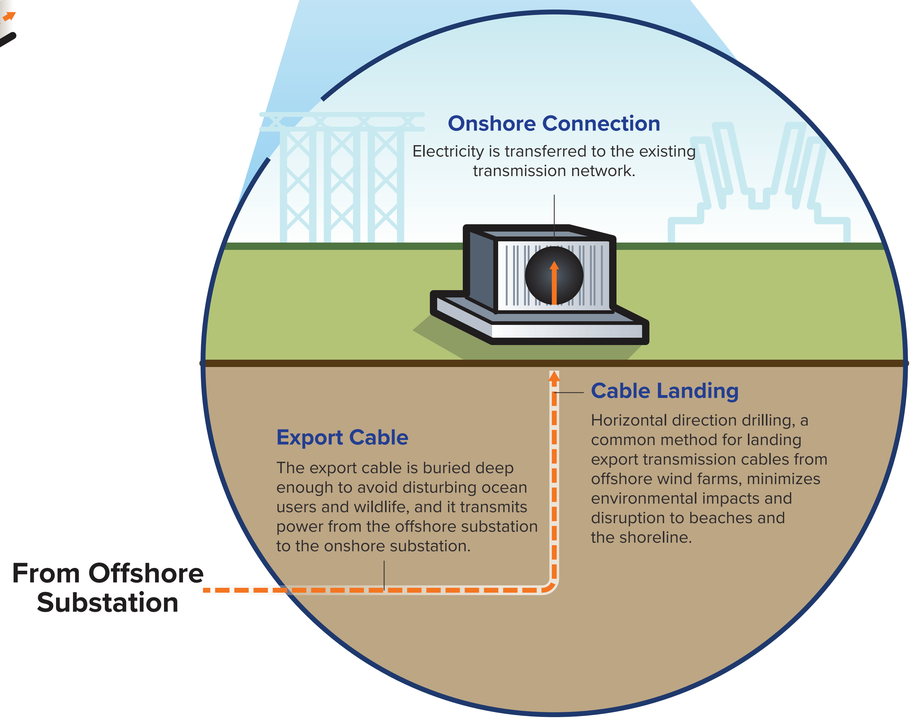
Offshore Wind 101

1 offshore wind turbine (8 MW) can power 4,000+ homes









Figures Not to Scale

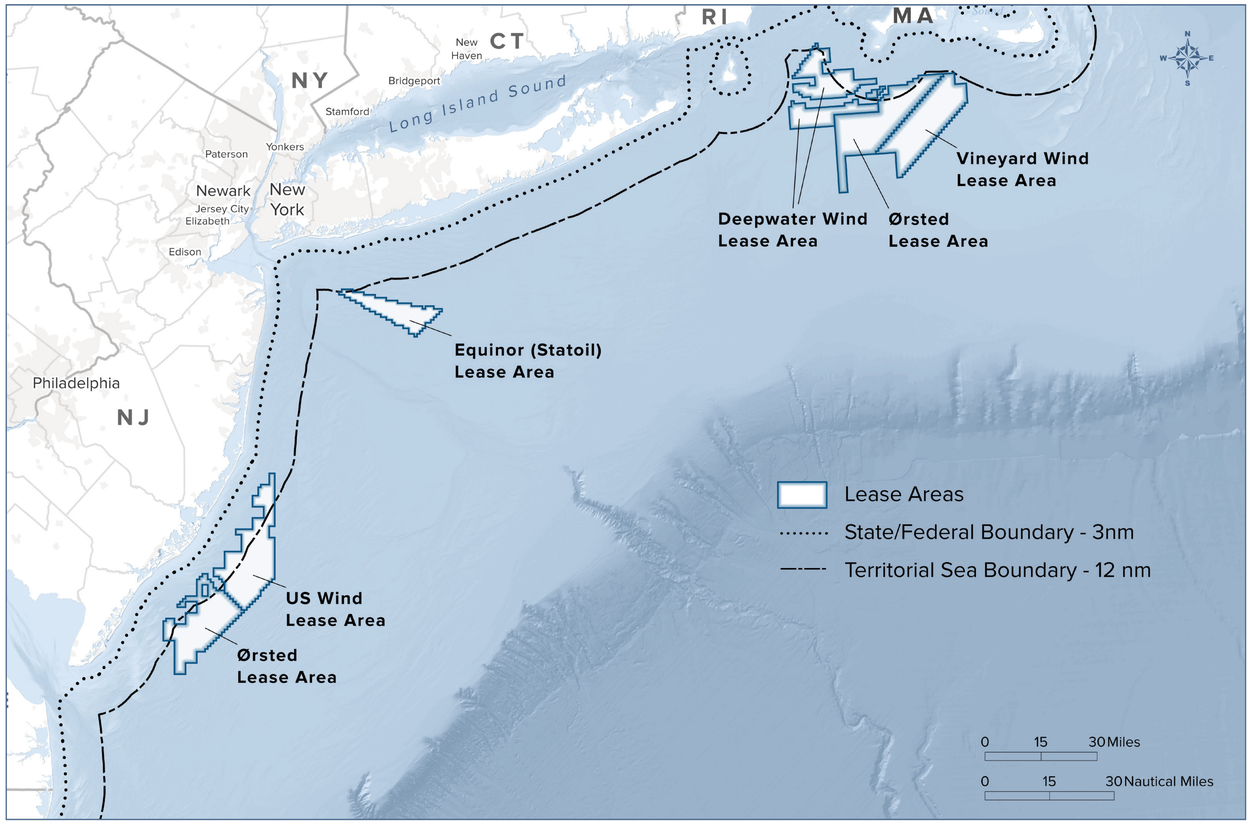
NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Offshore Wind in New York State

New York State's Clean Energy Standard requires that 50 percent of New York's electricity come from renewable sources by 2030.

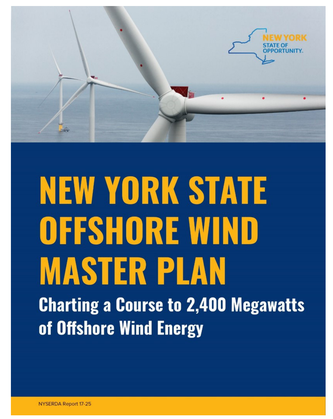
To meet this end, New York State is pursuing the development of 2,400 megawatts of offshore wind energy by 2030 — enough to power up to 1.2 million homes.

Taking a major step toward the achievement of these goals, NYSERDA will be issuing two solicitations in 2018 and 2019 to procure a first phase of approximately 800 MW of offshore wind energy. The map below depicts existing lease areas that are eligible to participate in NYSERDA's near-term solicitations. The Bureau of Ocean Energy Management will be issuing leases for new wind energy areas for subsequent phases of offshore wind development.



Published in January 2018, the New York State Offshore Wind Master Plan serves as the State's comprehensive roadmap for advancing the responsible and cost-effective development of offshore wind.

The New York State Offshore Wind Master Plan:



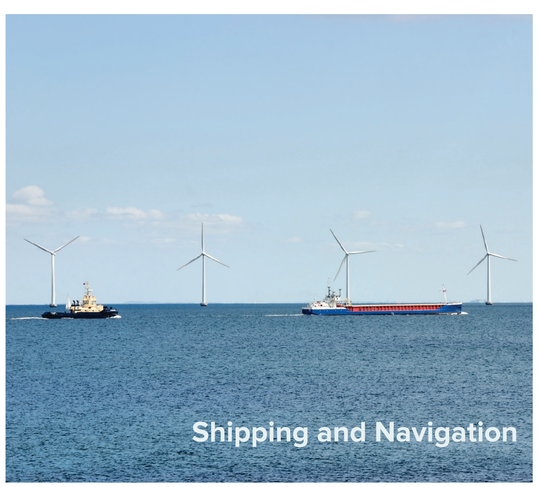
- Identifies the most favorable areas for potential offshore wind energy development
- Describes the economic and environmental benefits of offshore wind energy development
- Addresses mechanisms to procure offshore wind energy at the lowest cost to ratepayers
- Analyzes costs and cost-reduction pathways
- Recommends measures to mitigate potential impacts of offshore wind energy development
- Identifies infrastructure requirements and assesses existing facilities
- Identifies workforce opportunities
- Initiates the convening of four Technical Working Groups: Maritime; Jobs and Supply Chain; Commercial and Recreational Fishing; and Environmental

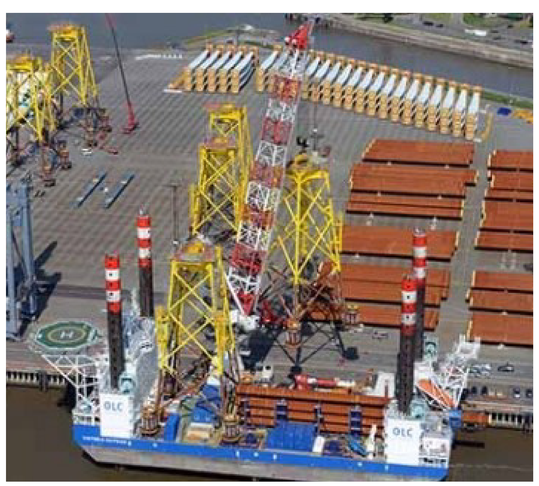
NEW YORK STATE OF OPPORTUNITY. | NYSERDA

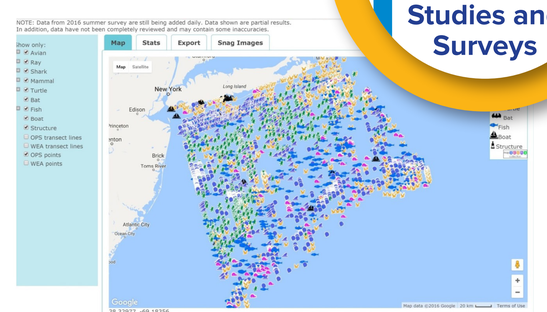
Studies and Surveys

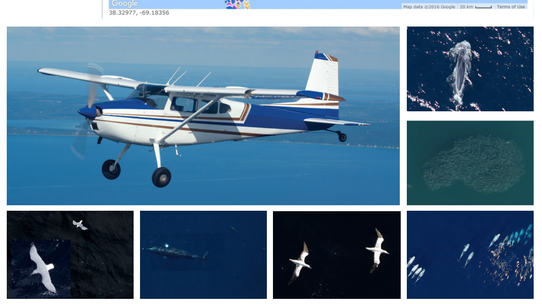
As part of the New York Offshore Wind Master Plan process, NYSERDA conducted more than 20 studies and surveys. These include:


Piping Plover
Photo courtesy of Gene Nieminen, USFWS


Shipping and Navigation







20+ Studies and Surveys

Environmental Studies

- Analysis of Multibeam Echo Sounder and Benthic Survey
- Birds and Bats
- Consideration of Potential Cumulative Effects
- Environmental Sensitivity Analysis
- Fish and Fisheries
- Marine Mammals and Sea Turtles
- Preliminary Offshore Wind Resource Assessment
- Sand and Gravel Resources

Social and Regulatory Studies

- Aviation and Radar Assets
- Cable Landfall Permitting
- Cultural Resources
- Health and Safety
- Marine Recreational Uses
- Shipping and Navigation
- Visibility Threshold

Infrastructure and Economic Studies

- Assessment of Ports and Infrastructure
- Cables, Pipelines, and Other Infrastructure
- Offshore Wind Injection Assessment
- U.S. Jones Act Compliant Offshore Wind Turbine Installation Vessel
- Workforce Opportunity of Offshore Wind in New York

Ongoing Studies

- Aerial Baseline Survey of Marine Wildlife
- Metocean Measurements in Support of Offshore Wind Energy
- Air Quality Assessment
- Supply Chain Considerations

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Offshore Wind Jobs and Infrastructure

New York has several important attributes that will support its ability to become a national hub for offshore wind energy:

- An industry-leading procurement commitment of 2,400 MW of offshore wind energy
- Central location between Northeastern and mid-Atlantic states
- Existing port facilities ideally positioned to service wind farms across the region
- Core manufacturing competencies that are well-suited to the offshore wind industry
- A workforce equipped to support the offshore wind industry

New York's economy and its communities could benefit from more than $6 billion of investments and approximately 5,000 new jobs in installation, operations and maintenance, and manufacturing. NYSERDA is investing $15 million in clean energy workforce development and infrastructure advancement by:

- Training workers for jobs in offshore wind manufacturing, installation, and operation and maintenance
- Working with industry to attract private investment in port infrastructure and manufacturing

New York State is working to ensure that this economic development takes the form of high-quality employment opportunities:

- NYSERDA is authorized to include commitments to project labor agreements and prevailing wages as contract requirements for awarded projects

Photo courtesy of GE Renewable Energy

Photo courtesy of National Geographic

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Stakeholder Outreach and Public Engagement

NYSERDA continues to create opportunities for facilitating dialogue with the public and provide timely, transparent responses to questions and concerns. New York's four Technical Working Groups ensure the continued collaboration among those with the technical knowledge, practical experience, and professional interest to responsibly advance offshore wind in the State.

General Public

- Attend and participate in public information sessions, webinars, workshops, and conferences

Maritime

- Develop Maritime Best Management Practices
- Define strategies that could help members engage effectively with offshore wind development

Environmental

- Develop Wildlife Best Management Practices
- Coordinate for adaptive management
- Identify research needs

Jobs and Supply Chain

- Facilitate the connection of local manufacturers with global offshore wind developers and equipment manufacturers
- Ensure certification and training requirements are clear and readily available

Commercial and Recreational Fishing

- Develop Fisheries Best Management Practices
- Identify research needs
- Develop a framework for understanding commercial fishing impacts

National Offshore Wind Research and Development Consortium

On June 15, 2018, the U.S. Department of Energy awarded NYSERDA a $18.5 million grant to lead the National Offshore Wind Research and Development Consortium. The goal of the Consortium is to prioritize, support, and promote research and development activities that reduce cost and risk of offshore wind development projects throughout the U.S. while supporting U.S.-based manufacturing and the offshore wind supply chain.

Supported through a public-private partnership, the Consortium is a cooperative effort dedicated to:

- Advancing offshore wind technology and supporting innovations in wind plant design
- Developing innovative methods for wind power resource and site characterization to reduce siting and installation costs
- Exploring advanced technological solutions for operations, maintenance and supply chain development

Initial major sponsors and participants include:

U.S. DEPARTMENT OF ENERGY

NEW YORK STATE OF OPPORTUNITY. NYSERDA

CARBON TRUST

ADVANCED ENERGY™ Research and Technology Center

rcg Renewables Consulting Group

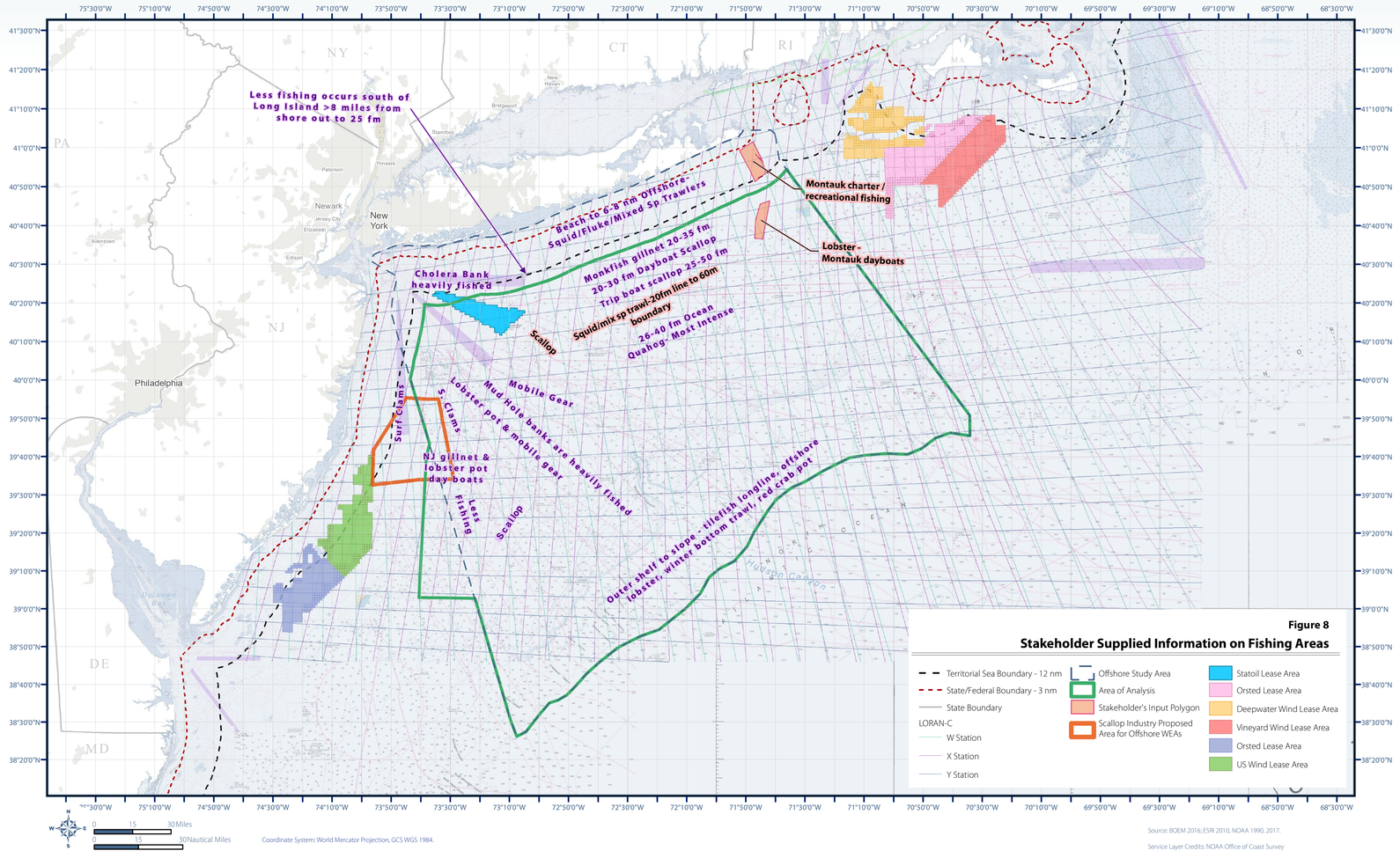
Photo courtesy of Siemens


Photo courtesy of Deepwater Wind


Photo courtesy of GE Renewable Energy

Commercial and Recreational Fishing

Fishing takes place throughout the region using a variety of methods and gear types. The fishing community is a key stakeholder group whose views are actively being solicited and considered as New York State's plans for offshore wind energy development move forward.



New York State's Commercial and Recreational Fisheries Technical Working Group is developing best management practices to minimize risks to fisheries during the siting, construction, and operation of future offshore wind farms. The practices being explored include:

- Requiring developers to provide and abide by a Fisheries Mitigation Plan
- Support and encourage effective stakeholder engagement and communication techniques and practices
- Facilitating the development of industry and fishing collaborative monitoring models to develop trusted baseline data
- Developing and implementing safety procedures
- Requiring developers to consult with the fishing industry and State agencies early in the process and during all phases of development, including decommissioning to support site design and operations
- Hiring a New York State Fishing Liaison to support effective communications
- Supporting scientific research to better understand potential risks to fish and wildlife

For more information about fisheries and offshore wind, visit **https://nyfisheriestwg.ene.com** or email **fisheriesandoffshorewind@nyserda.ny.gov**

NEW YORK STATE OF OPPORTUNITY. | NYSERDA