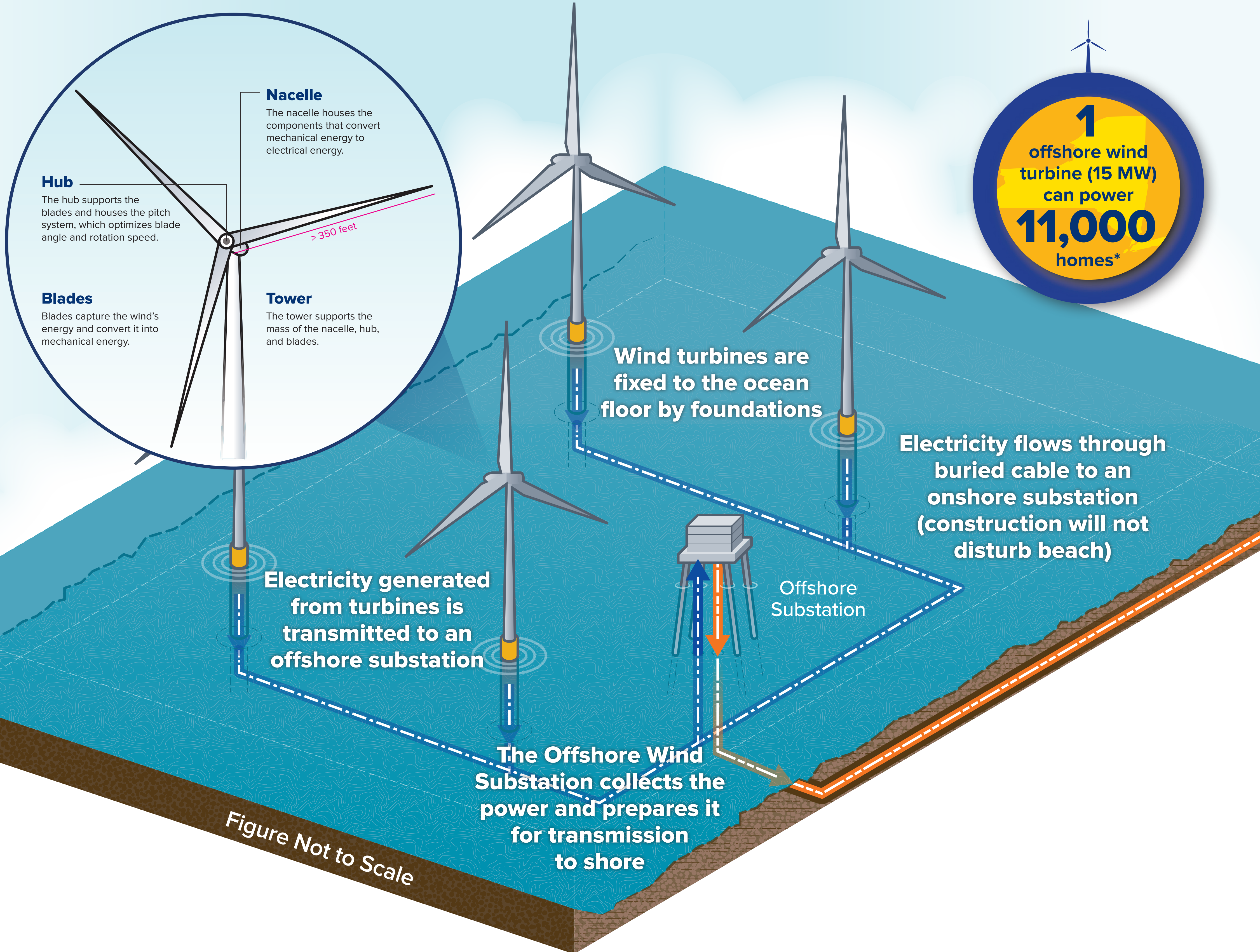
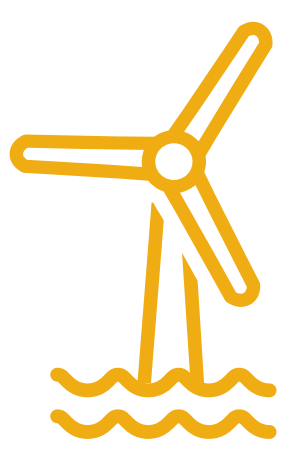


# How Offshore Wind Works



## Why Offshore Wind?



Enormous potential for renewable electricity produced close to New York's areas of highest demand



Significant investments in communities and infrastructure



Major new source for thousands of short- and long-term skilled jobs



More diverse, resilient electricity supply



Stabilizes electricity prices that are currently driven by volatile fossil fuel prices



Avoids pollution that harms public health and greenhouse gas emissions that contribute to climate change



To learn more about how offshore wind works, visit [OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



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\*Calculation is based on name plate capacity divided by energy consumption excluding losses using EIA New York 2021 data.

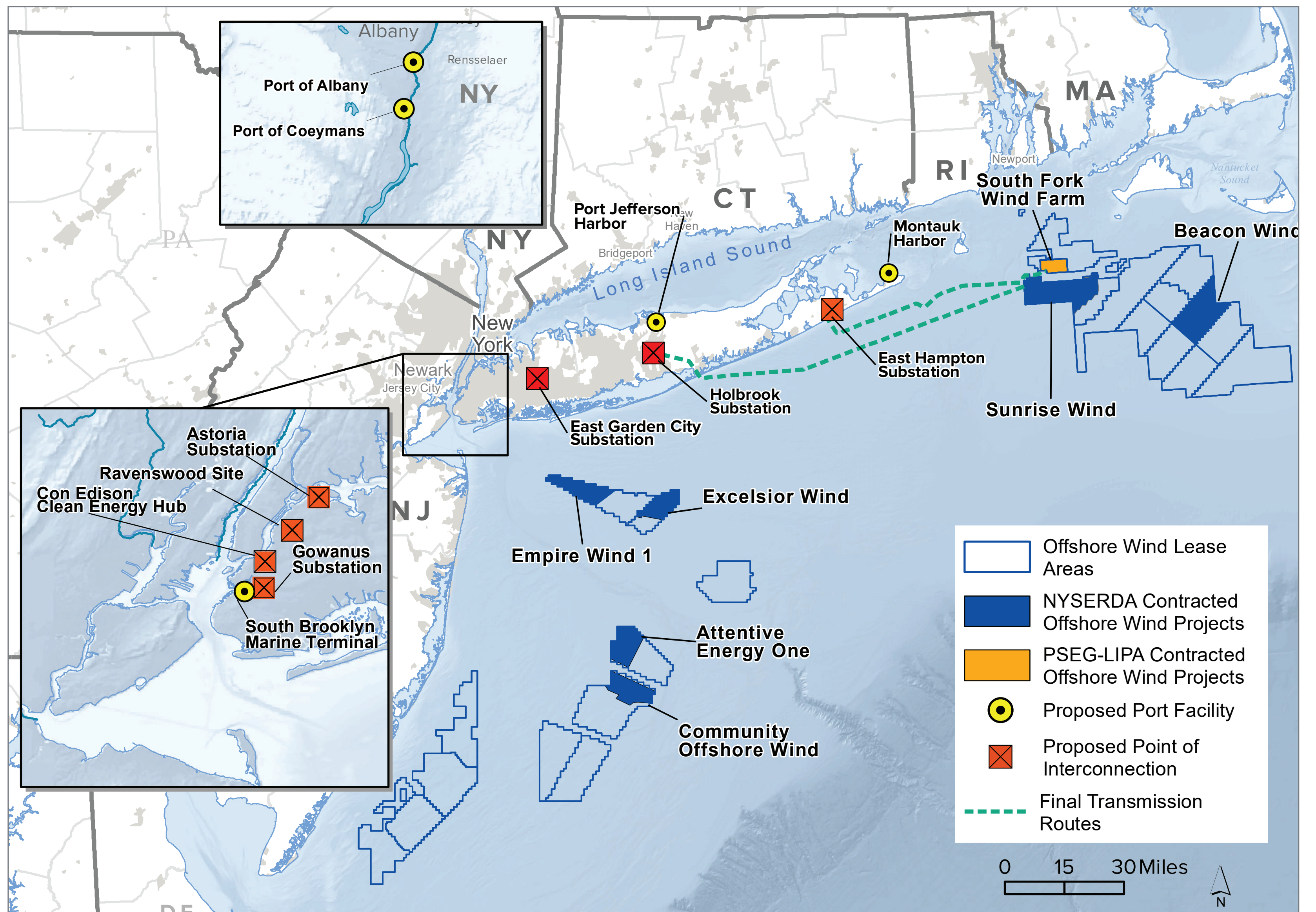


# Offshore Wind in NY

NYSERDA is working to advance the responsible and cost-effective development of at least

**9,000** megawatts (MW) of offshore wind energy by 2035.

This goal is a key part of the State's ambitious clean energy transition.



The strong wind resource off the U.S. Atlantic coast has tremendous renewable energy generation potential. Offshore wind is poised to become a major asset in achieving New York State's climate action goals as required by the Climate Leadership and Community Protection Act (Climate Act).

**70% renewable electricity** by 2030

**100% zero-emission electricity** by 2040

**85% reduction in emissions** by 2050

NYSERDA issues competitive solicitations for offshore wind energy and contracts with offshore wind developers to purchase offshore renewable energy certificates (ORECs). ORECs represent the positive environmental attributes associated with one megawatt-hour of electricity generated from offshore wind resources and consumed by retail customers in New York State. Offshore wind developers must obtain a lease area in the ocean from the federal government before they can compete in a NYSERDA solicitation to deliver clean energy to New York's electricity grid.

New York's offshore wind procurements have resulted in the competitive selection of eight projects, including the South Fork Wind Farm – the State's first commercial scale offshore wind project slated to deliver clean energy by 2024 – procured by the Long Island Power Authority (LIPA).

In alignment with New York State's 10-Point Action Plan to Expand a Thriving Large-Scale Renewable Industry, NYSERDA has launched accelerated competitive procurements for both offshore wind and onshore renewable projects.



To learn more about New York's offshore wind projects visit [OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



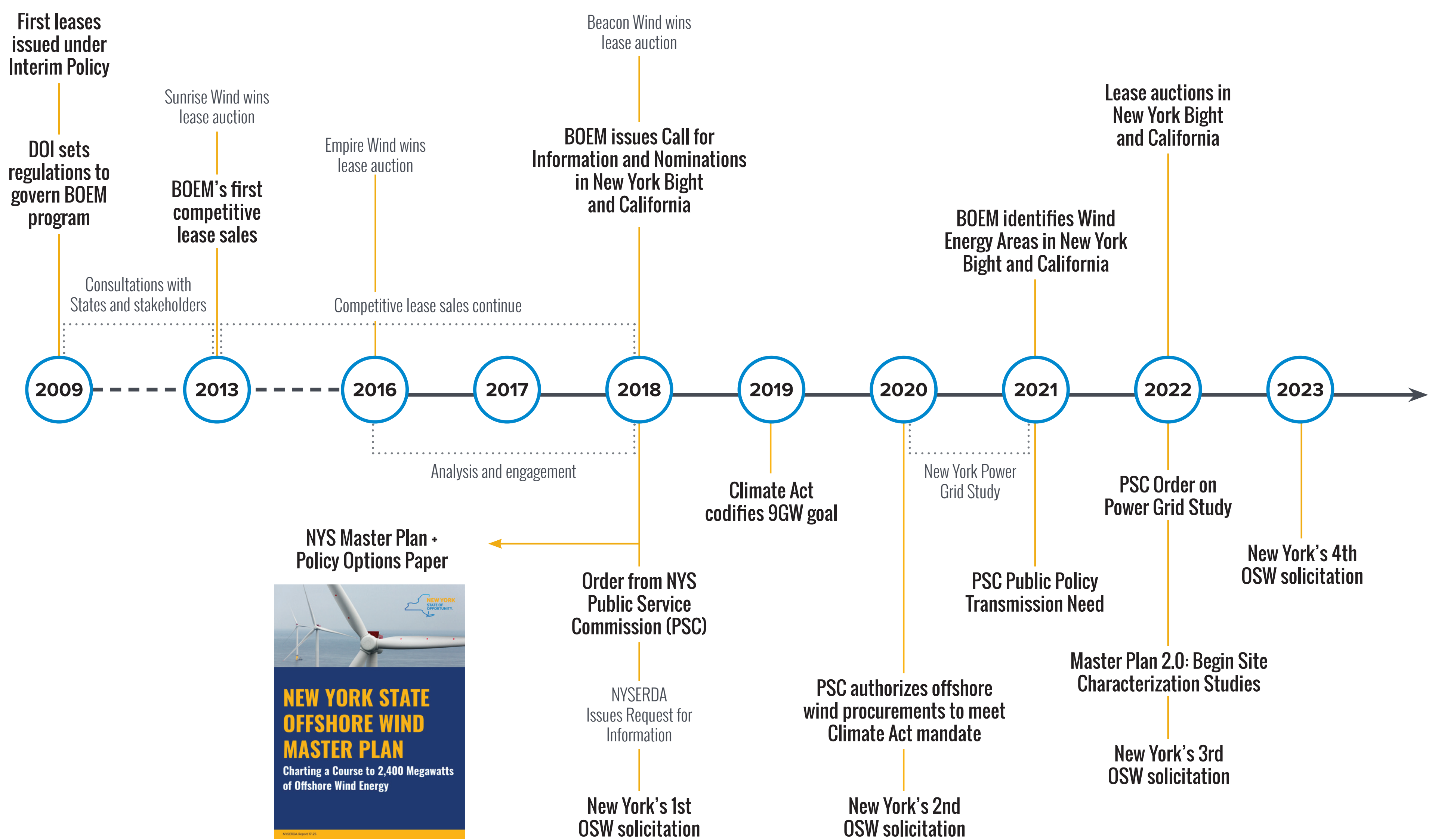
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# Responsible Development of an Offshore Wind Program

New York has been strongly committed to establishing and meeting its offshore wind development goals responsibly and cost effectively. **Built on years of careful study, planning, and robust stakeholder engagement,** New York State is propelling the offshore wind industry forward through its portfolio of policies and programs.

Bureau of Ocean Energy Management (BOEM),  
U.S. Department of Interior (DOI)



New York State Energy Research and  
Development Authority (NYSERDA)

In 2017 an Executive Order was issued for NYSERDA to develop 2,400 megawatts (MW) of offshore wind by 2030. NYSERDA led the creation of a comprehensive Offshore Wind Master Plan, the first of its kind in the United States, focusing on cost-effective and responsible development opportunities to meet that initial goal.

In 2019, New York's State's Climate Leadership and Community Protection Act (Climate Act) codified and expanded the State's offshore wind goal to 9,000 MW by 2035.

NYSERDA, with guidance and support from other State agencies, subject-matter experts, and related stakeholders, is developing a "Master Plan 2.0" to inform and support the State in fulfilling the longer-term clean energy and decarbonization goals included in the Climate Act.



To learn more about New York's  
offshore wind projects, visit  
[OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



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# Timeline for an Offshore Wind Project



**While offshore wind is quickly emerging as an important clean energy solution in the U.S., individual projects take many years to design and build and must go through rigorous review and permitting processes at the federal, state, and local levels.**

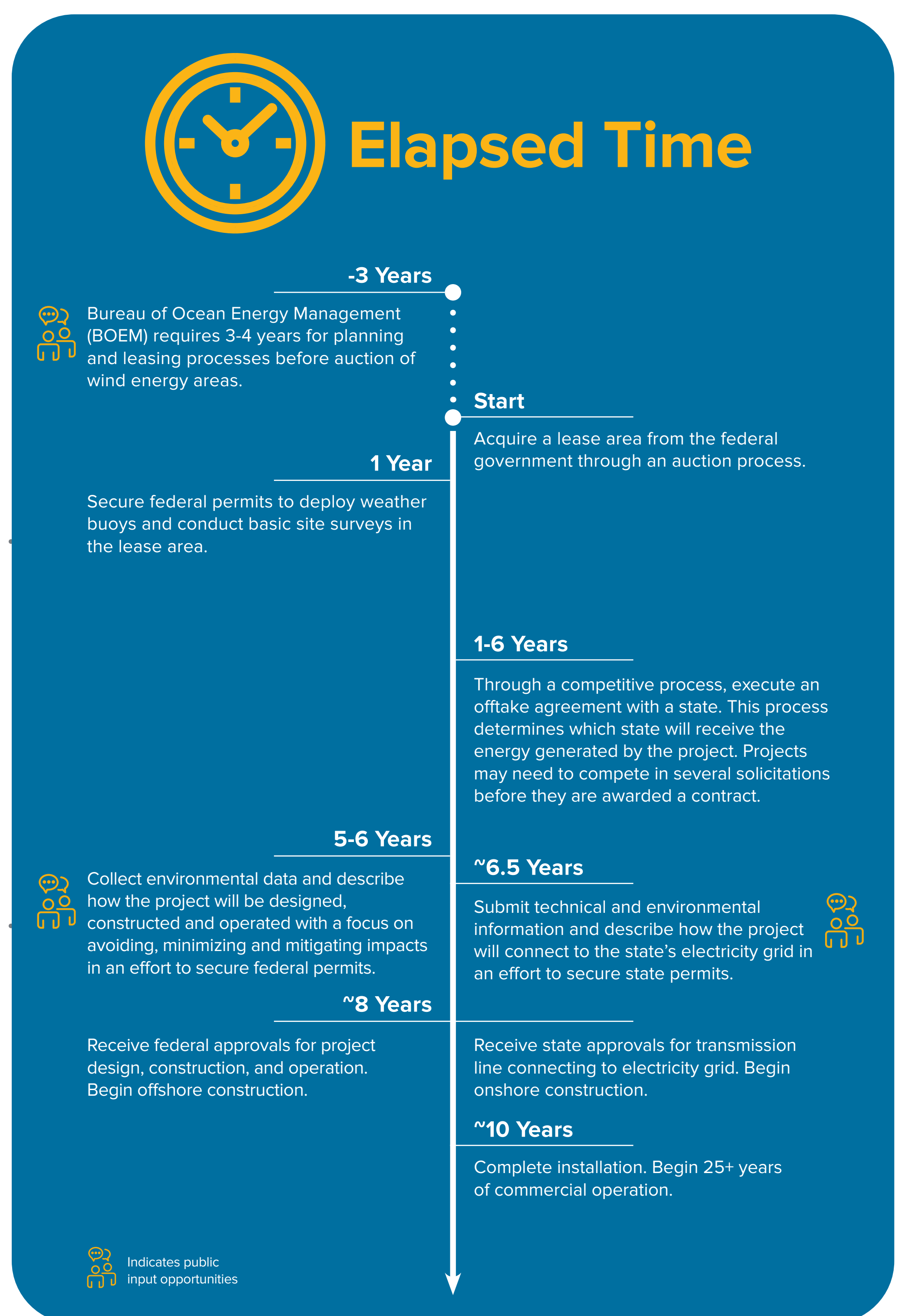
This timeline illustrates the major steps developers must take to bring their projects to life, starting with acquiring a lease area in the ocean from the federal government, and ending with delivering clean energy to New York State's electricity grid.

## **Federal Safeguards**

The Bureau of Ocean Energy Management within the U.S. Department of Interior oversees the review of major offshore wind permitting documents, like the Construction and Operations Plan. However, many other federal agencies have roles in reviewing offshore wind project plans to ensure compliance with our nation's environmental, cultural, and safety laws, such as the Marine Mammal Protection Act, Clean Water Act, National Historic Preservation Act, Ports and Waterways Safety Act, and many more.

## **New York State Permits**

New York's Public Service Commission oversees the permitting process, known as Article VII, for the transmission line that will deliver clean energy from the offshore wind project to a point of interconnection in New York's electricity grid. New York's Department of Environmental Conservation, Department of State, Department of Transportation, and Office of General Services also play a role in authorizing offshore wind projects.



To learn more about Offshore Wind Permitting, visit [nyserdera.ny.gov/osw-permitting](https://nyserdera.ny.gov/osw-permitting)

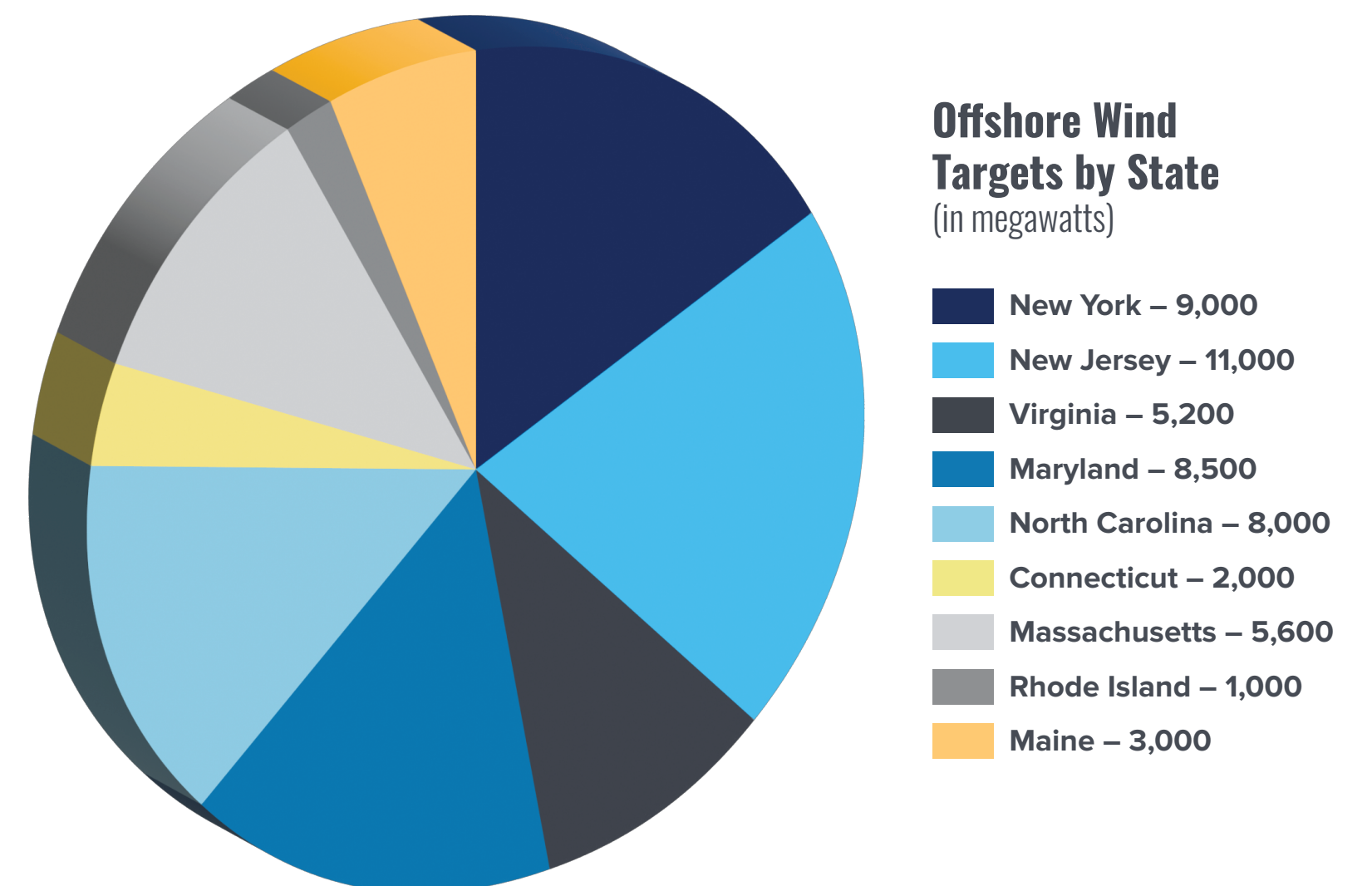


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# Regional Collaboration

Nine East Coast states, including New York, have implemented offshore wind policy targets, competitive solicitation processes and schedules, and investment incentives. These efforts complement national offshore wind goals and provide a solid foundation for the growing offshore wind industry. **State-based offshore wind goals in the Atlantic region exceed 50,000 MW collectively.**



Examples of regional partnerships include:

### A Shared Vision for Supply Chain:

The federal Bureau of Ocean Energy Management (BOEM) and the states of New York and New Jersey collaborate on transitioning to a clean energy future to create well-paying, family-supporting jobs, and establish a durable domestic supply chain.

### Equitable Fisheries Compensatory Mitigation:

New York State is helping to lead an 11-state working group to develop and process and establish a regional administrator to hold, manage and distribute mitigation funds to compensate the fishing industry for economic losses arising from offshore wind energy development.

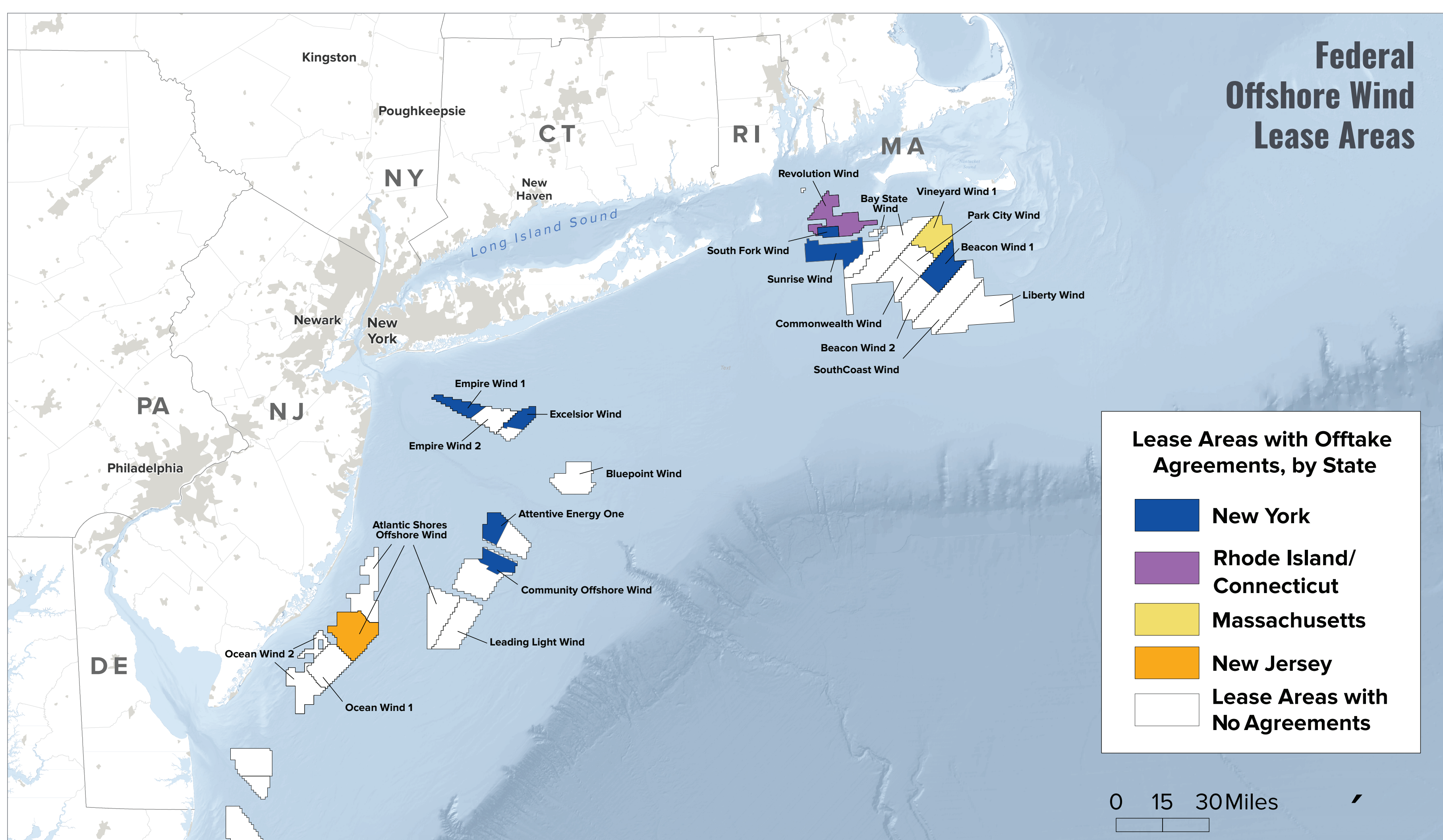
### Regional Wildlife Science Collaborative for Offshore Wind (RWSC):

In 2021, New York State was a founding member and has participated on the Steering Committee and State Caucus ever since. Funded by states, federal agencies, offshore wind companies, and environmental non-governmental organizations, the RWSC coordinates regional monitoring and research of wildlife and marine ecosystems to advance responsible offshore wind energy development.

### Expert Technical Working Groups (TWGs):

Offshore Wind TWGs on Environment, Fishing, Maritime, Supply Chain, and Environmental Justice issues promote collaboration among subject matter experts and those with practical experience and professional interest in the responsible advancement of offshore wind. TWGs provide forums for discussing regional perspectives that cross state and federal boundaries, fostering greater cross-sector understanding of perspectives and limitations.

**NYSERDA made a first-of-its-kind determination for U.S. iron and steel minimums in offshore wind procurements, after a detailed study and interviews with the industry. The determination requires offshore wind developers to make a minimum purchase of U.S. iron and steel (\$114,000 per MW) to support the domestic steel industry. This policy supports investment and development of a robust domestic iron and steel supply chain by ensuring the purchase of these products, while not overburdening the supply chain which could drive up offshore wind development costs.**



Learn more at [OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



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# Environmentally Responsible Development

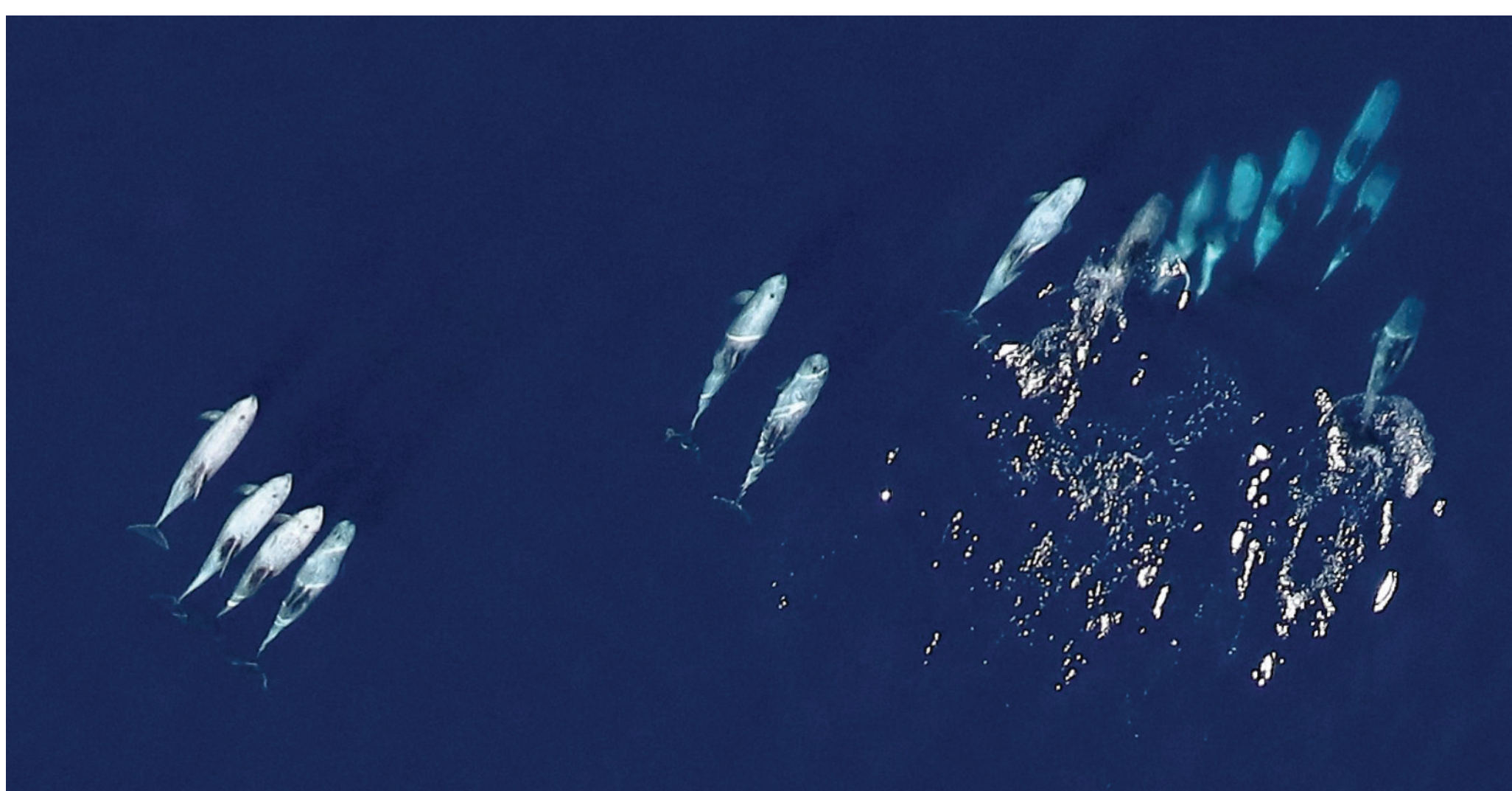
The waters off New York's coast are home to more than 300 fish species, a variety of marine mammals, sea turtles, and sea birds, among a wealth of other ocean and coastal wildlife. In partnership with environmental scientists and nonprofit organizations, New York State is working to understand and **minimize risks and potential impacts to species and habitats from offshore wind development and operations.**

New York State's Environmental Technical Working Group (E-TWG) provides guidance to implement environmentally responsible development of offshore wind energy. This work includes:

- Engaging a broad group of scientists and environmental stakeholders to identify and prioritize research needs and mechanisms for filling gaps
- Developing best management practices to minimize the risks to wildlife during the siting, construction, and operation of future offshore wind farms
- Adapting and implementing project-specific Environmental Mitigation Plans

New York State was the first in the nation to require contracted offshore wind developers to contribute \$10,000 per megawatt to support regional environmental and fisheries research unrelated to their projects. This requirement has generated nearly \$25 million for research, to date.

NYSERDA's efforts to collect and analyze offshore environmental data began in 2017, with digital aerial surveys of birds, marine mammals, sea turtles, sharks, and fish shoals. This three-year survey collected more than 3.5 million images across the New York Bight to better understand spatial and seasonal distributions of wildlife to inform project siting. NYSERDA also deployed two LiDAR (light detection and ranging) buoys for more than two years to collect continuous data on wind speeds and ocean currents, as well as to detect marine mammals, birds, bats, and fish.



**NYSERDA continues to invest in research and further study important environmental topics that inform environmentally responsible development of offshore wind.**

- Studies to measure potential ecosystems changes and understand opportunities for ecological enhancement
- Deployment of autonomous gliders to detect marine mammals and measure oceanographic characteristics
- Deployment of bottom mounted passive acoustic monitors to better understand marine mammal presence
- Study of the relationships between forage fish and seabirds and implications for offshore wind development
- Modeling of ocean environments to better understand the drivers of wildlife movements
- Development of monitoring protocols for birds using nanotag transmitters



For more information about wildlife and offshore wind, visit [nyetwg.com](https://nyetwg.com), [nyscrda.ny.gov](https://nyscrda.ny.gov), or email [environmentandoffshorewind@nyscrda.ny.gov](mailto:environmentandoffshorewind@nyscrda.ny.gov)



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# Commercial & Recreational Fishing Engagement

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

NYSERDA engages directly with commercial fishermen through a New York State Fisheries Technical Working Group (F-TWG) and with recreational fishermen through a Recreational Fisheries Liaison. NYSERDA collaborates regionally with scientists, developers, and state agencies as part of the Advisory Council for the Responsible Offshore Science Alliance (ROSA). Working alongside 10 east coast states, NYSERDA has advocated for compensatory mitigation for the fishing industry and is working to advance an effort to standardize and provide equity for fisheries compensation programs through the establishment of a regional fisheries fund to address potential increased costs and/or losses resulting from the development of offshore wind.

.....

**New York State's F-TWG, established in 2018, is widely recognized as a regional leader in supporting open dialog and maintaining a balanced approach to coordinating multiple stakeholders – fishermen, developers, state and federal agencies, and others – working together to minimize risks to fisheries during the siting, construction, and operation of offshore wind projects.**

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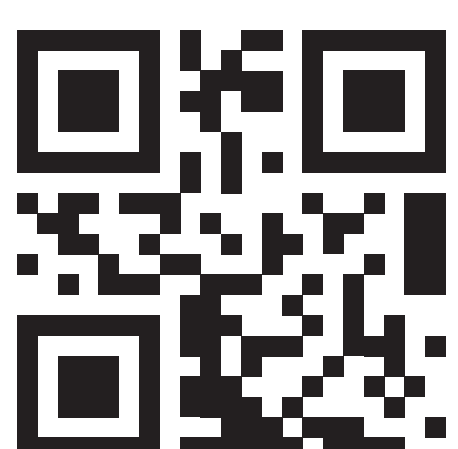
#### The F-TWG's accomplishments include:

- **Requiring** developers to consult with the fishing industry and state agencies early in the process and during all phases of development
- **Providing** up-to-date information and producing new tools and resources for fishermen
- **Supporting** setbacks between new lease areas in the New York Bight to support efficient transit to fishing grounds and landing catch
- **Creating** specific requirements for offshore wind developers as part of agreements with NYSERDA, building upon federal and state laws and regulations
  - Provide and evolve a Fisheries Mitigation Plan
  - Provide \$10,000 per megawatt for research and monitoring of wildlife and commercial fish stocks
  - Provide a gear loss reimbursement program



**Since 2019, NYSERDA has sponsored several third-party, multi-year projects to further study important commercial fishing topics to support the responsible development of offshore wind. Commercial fishing research projects include:**

- *Development of strategies and tools to address commercial fishing access*
- *Creation of a "data trust" for effective inclusion of fishermen's knowledge in offshore wind energy decision making*
- *Evaluating offshore wind impacts on fisheries stock assessments*
- *Supporting stock enhancement through the evaluation of surfclam survival and growth studies*
- *Analyzing different gear technologies to promote fisheries resiliency and co-existence with offshore wind development*



For more information about fisheries and offshore wind, visit [nyftwg.com](http://nyftwg.com) or email [fisheriesandoffshorewind@nyserda.ny.gov](mailto:fisheriesandoffshorewind@nyserda.ny.gov)



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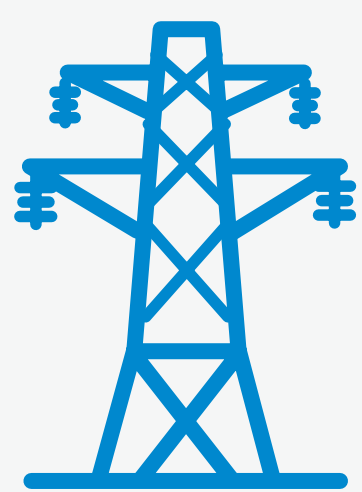
# Transmission Planning to Support Offshore Wind



**New York's transition to a clean energy future will require 70% of the State's electricity to come from renewable sources by 2030 and the development of 9,000 megawatts of offshore wind energy by 2035.**

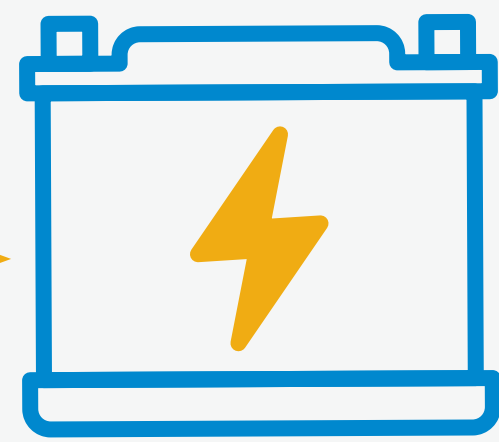
To support the rapid growth of renewable energy generation and update aging infrastructure, New York has undertaken studies and policy actions to upgrade the electricity grid. Upgrading or building new transmission capacity will ensure reliability and pave the way for new clean, renewable energy to be delivered to areas of the state with the greatest need.

## ***Transmission developments in New York State:***



### ***New York Power Grid Study***

*was undertaken to understand transmission system investments that will be necessary to achieve the clean energy goals of the Climate Leadership and Community Protection Act (Climate Act). The study provided a series of recommendations to strengthen the State's transmission grid and prepare for the integration of offshore wind energy.*



### ***Offshore Wind Cable Corridor Constraints Assessment***

*was developed to better understand the limitations on siting cables in State waters, at landfall, and along overland routes to potential points of interconnection. It was created by NYSERDA in consultation with a Cable Working Group consisting of representatives from the New York State Department of Environmental Conservation, Department of State, Department of Transportation, Office of General Services, and Department of Public Service.*



### ***Public Policy Transmission Needs (PPTNs)***

*Acting on these studies and recommendations, the New York Public Service Commission declared PPTNs to address key transmission challenges on Long Island and in New York City.*

**The New York Independent System Operator (NYISO)** is responsible for the State's bulk electricity grid and competitively selects transmission projects to address these needs, such as the Propel NY Energy project awarded for the Long Island PPTN. To learn more, visit [nyiso.com/faq](https://nyiso.com/faq).



To learn more, visit  
[OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



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# Stakeholder Engagement and Public Outreach

New York State creates opportunities for dialogue with the public including resources and forums to field questions and understand concerns. Additionally, New York State's five technical Working Groups **ensure continued collaboration** among those with the technical knowledge, practical experience, and professional interest to responsibly advance offshore wind in the State and the region.



## GENERAL PUBLIC

- Host and participate in public information sessions, webinars, workshops, and conferences
- Provide transparency about the State's offshore wind activities on the NYSERDA website
- Host "Learning from the Experts" webinars to connect the public with independent experts in a wide range of topics in offshore wind development



## MARITIME

- Build and strengthen relationships among those who care about and work on commercial navigation matters
- Provide a forum for collaborative, respectful deliberation and information exchange on maritime topics
- Support the State's efforts to meet its offshore wind goals



## ENVIRONMENTAL

- Develop wildlife best management practices
- Facilitate stakeholder discussions to identify and fund research needs and support opportunities for collaboration
- Identify research needs and opportunities for collaboration



## 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
- Assess port infrastructure assets and opportunities



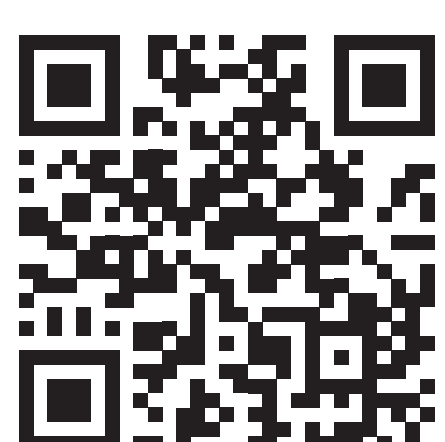
## COMMERCIAL FISHING

- Develop a framework for understanding commercial fishing impacts
- Evolve and implement Fishing Compensatory Mitigation Plans
- Identify research needs and fund fisheries research
- Build consensus on pathways for co-existence



## ENVIRONMENTAL JUSTICE

- Efficiently coordinate offshore wind environmental justice efforts and engagements
- Share information to facilitate engagement and collaboration
- Support research, innovation, and informational resources to address impacts on environmental justice communities



Visit [nyserdera.ny.gov/osw-webinar-series](https://nyserdera.ny.gov/osw-webinar-series) to explore educational webinars about various topics in offshore wind.



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# A New York Workforce for Offshore Wind

Offshore wind will drive demand for clean energy workers in the State. With more than 165,000 New Yorkers already working in the clean energy industry, the State expects to **create thousands of additional jobs** through the development of **9,000 MW of offshore wind energy**.

Collaboration is key to establishing a local workforce for a new industry. NYSERDA works with partners in labor, academia, nonprofits, energy developers and state government to coordinate investments and inform the growth of local offshore wind training facilities that connect job seekers to well-paying careers in the offshore wind industry.

- Investments informed by community input are addressing barriers and promoting access to training and well-paying careers, especially within underserved communities.
- Experts in workforce development, global suppliers, developers, and New York labor union and small businesses meet quarterly to prepare and inform the growth of the offshore wind workforce during the NYSERDA-led Jobs and Supply Chain Technical Working Group meetings.
- Through the \$20 million New York Offshore Wind Training Institute, the State is investing in the strategic build out of an offshore wind workforce with over \$6.8 million in funds already awarded to SUNY schools, labor training facilities, community colleges, and vocational schools.
- Contract requirements for offshore wind developers — like Project Labor Agreements and prevailing wage — ensure high-quality employment opportunities.



**Across the State, institutions are building new facilities to train the workforce of New York State’s clean energy future. For example:**

**Capital Region BOCES** – Preparing 90 workers from priority populations for high-growth jobs in electrical, welding, and building trades to address gaps in the offshore wind workforce.

**New York City Union Iron Workers Locals 40 and 361 in Queens, NY** – Establishing a Global Wind Organisation (GWO) certification program to train 115 iron workers.

**SUNY University at Buffalo** – Providing information and opportunities to learn about offshore wind careers in Western New York.

**CUNY Bridges to Offshore Wind** – Building on existing capacity at a consortium of CUNY colleges, including Kingsborough Community College, LaGuardia Community College, and New York City College of Technology, to train workers in maritime, electrical, construction and manufacturing, assembly, and supply chain subsectors.

**National Offshore Wind Training Center on Long Island** – Constructing purpose-built facilities for GWO trainings and offering curriculum and support services for entering the offshore wind workforce.

EXAMPLE JOB FUNCTIONS BY PROJECT DEVELOPMENT STAGE	Planning and Development	Manufacturing and Assembly	Construction and Installation	Operations and Maintenance
	Attorneys Engineers Financial analysts Permitting specialists Scientists	Assemblers Control systems specialists Engineers Port operators Technicians Welders Administrative staff	Crane operators Dock workers Electricians Iron workers Line workers Painters Pile drivers Plumbers Welders	Administrative staff Engineers Plant managers Support vessel crew Wind turbine technicians



Visit [OffshoreWindTraining.ny.gov](https://OffshoreWindTraining.ny.gov) to map your career pathway and find more training facilities across the State.

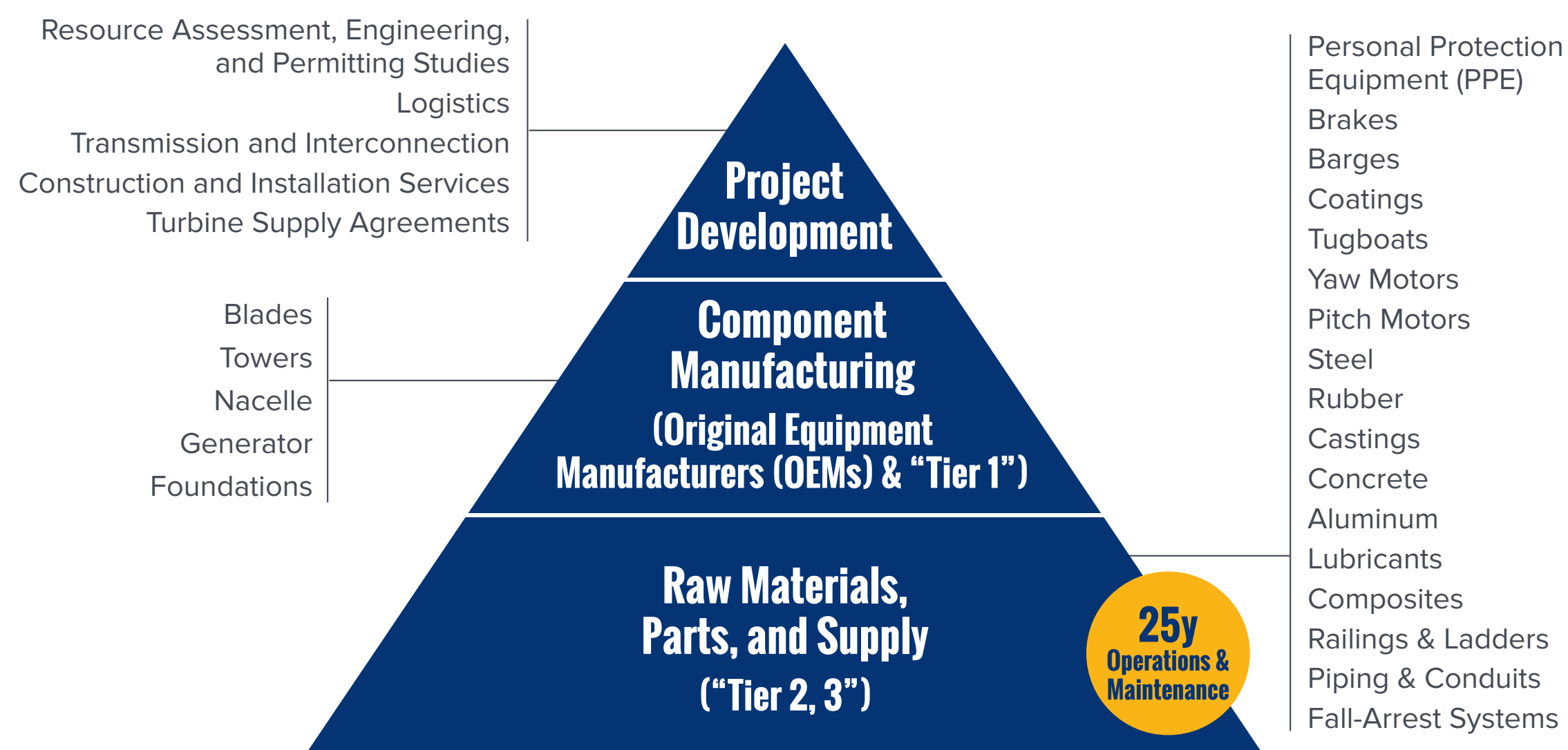


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# Opportunities for New York Businesses

As a key element in the State's transition to renewable sources of electricity, offshore wind is a high-tech industry that will bring billions of dollars of investment and **create over 10,000 jobs for New Yorkers** in a range of sectors: manufacturing, installation, operations and maintenance, and project development.



Working together with local economic development partners and global industry leaders, NYSERDA is conducting research, directing investments, engaging potential New York supply chain companies, and facilitating connections. This work makes New York State an attractive growth market for the offshore wind industry.

- To catalyze development of New York's supply chain infrastructure, the State has committed \$700 million for investments in ports, manufacturing, and other supply chain facilities. These investments will unlock private capital and establish a domestic supply chain for offshore wind components. NYSERDA research supports the strategic build out of New York's port infrastructure and manufacturing facilities to support today's offshore wind industry and prepare for the innovations of tomorrow.
- NYSERDA hosts offshore wind Supplier Forums and maintains a Supplier Database. These activities connect New York State businesses with offshore wind developers and international partners, ensuring that the impacts of this growing industry are realized at the local level.

**Across the State, New York businesses are already seeing the benefits of offshore wind.**



**Manufacturing in Western New York – LJUNGSTRÖM**, a company manufacturing out of Wellsville, NY since the early 1920s, is the first U.S.-based supplier of secondary structural steel components for wind turbine foundations to New York State and other regional projects. *"We are thrilled to be expanding our workforce and manufacturing capabilities in Western New York with over 150 newly created manufacturing positions."* – Gus Shearer, Director of Products & Strategy



**Assembly in the Capital Region – Riggs Distler**, a Tier 1 offshore wind contractor working out of the Port of Coeymans will directly employ more than 125 skilled tradespeople from local labor unions in New York State to provide construction, assembly, inspection, and onshore installation of advanced foundation components for offshore wind. *"This work makes us proud – we are training our local workforce for the next generation, building towards a cleaner energy future."* – Brienne (Brie) Kennedy, Sr. Director of Marketing & Communications



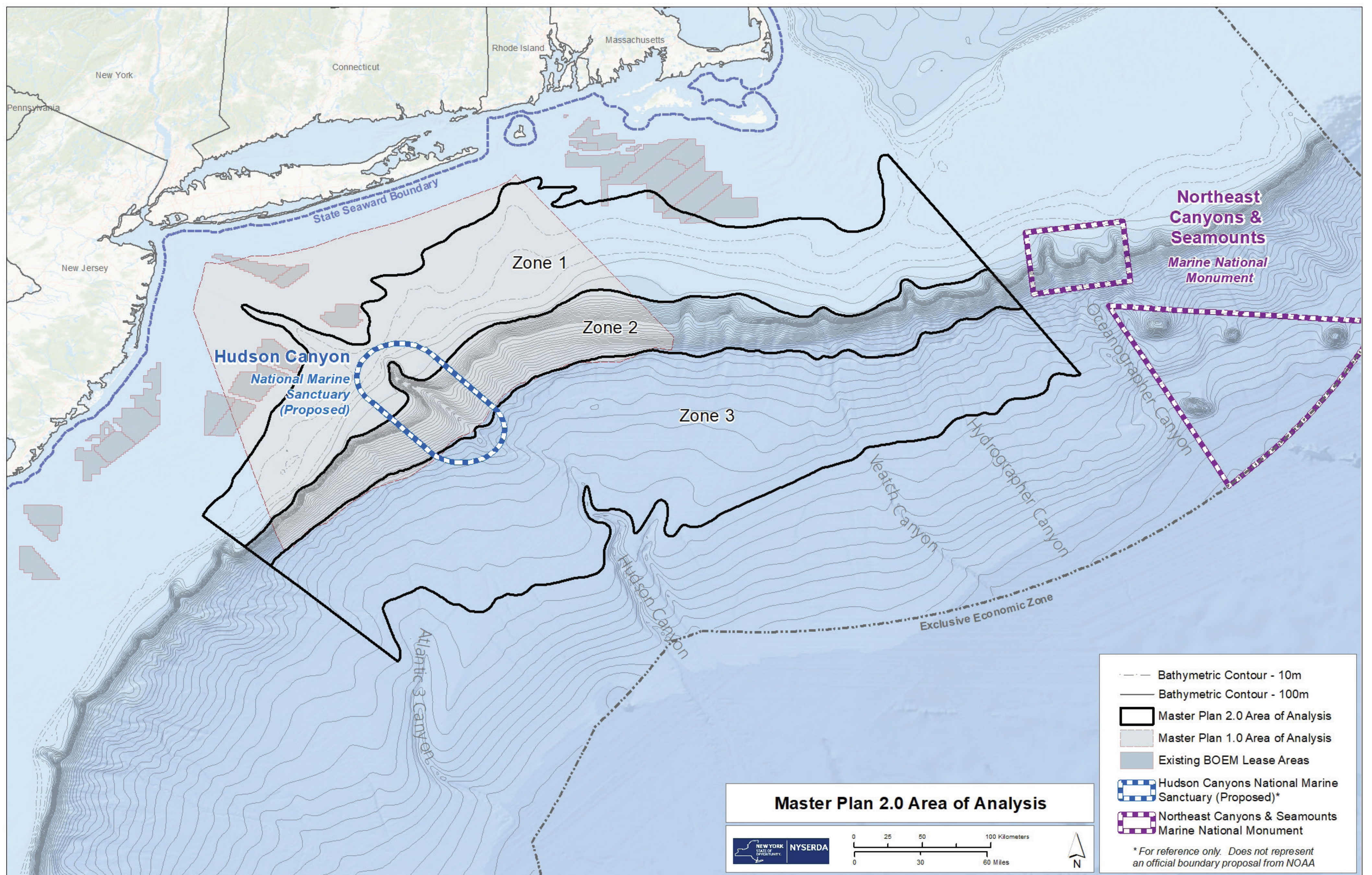
Learn more about New York's Offshore Wind supply chain.  
[OffshoreWind.ny.gov](http://OffshoreWind.ny.gov)



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# Planning for the Future of Offshore Wind



The U.S. Department of the Interior’s Bureau of Ocean Energy Management (BOEM) is responsible for issuing leases for activities on the Outer Continental Shelf that support production and transmission of energy resources, including offshore wind. To help jumpstart this multi-year process, NYSERDA has been analyzing available data and engaging with stakeholders to help inform BOEM of areas of least risk and greatest opportunity to support offshore wind energy development.

**Master Plan 2.0: Deep Water** is evaluating areas on the outer continental shelf for potential locations suitable for offshore wind energy development. Approximately 35,670 square miles is being reviewed by New York State through this process. This area includes three zones that start at 60 meters deep (between 15 and 50 nautical miles from shore) and reach to 3,000 meters deep (between 140 to 160 nautical miles from shore). While offshore wind infrastructure will not be built across the entire area, Master Plan 2.0 will analyze this broad expanse to provide a regional context for these resources and ocean uses.

NYSERDA is leading studies to evaluate the potential for offshore wind development, looking at factors such as distance to onshore grid interconnection, conflicts with maritime operations, commercial and recreational fishing and other ocean users, wildlife and natural resources, development costs, and energy generation potential. NYSERDA’s evaluation does not displace BOEM’s responsibility in planning and analysis, but adds information, recommendations, and stakeholder perspectives to support BOEM’s work.



To learn more about NYSERDA’s planning efforts, visit [OffshoreWind.ny.gov](https://OffshoreWind.ny.gov)



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