



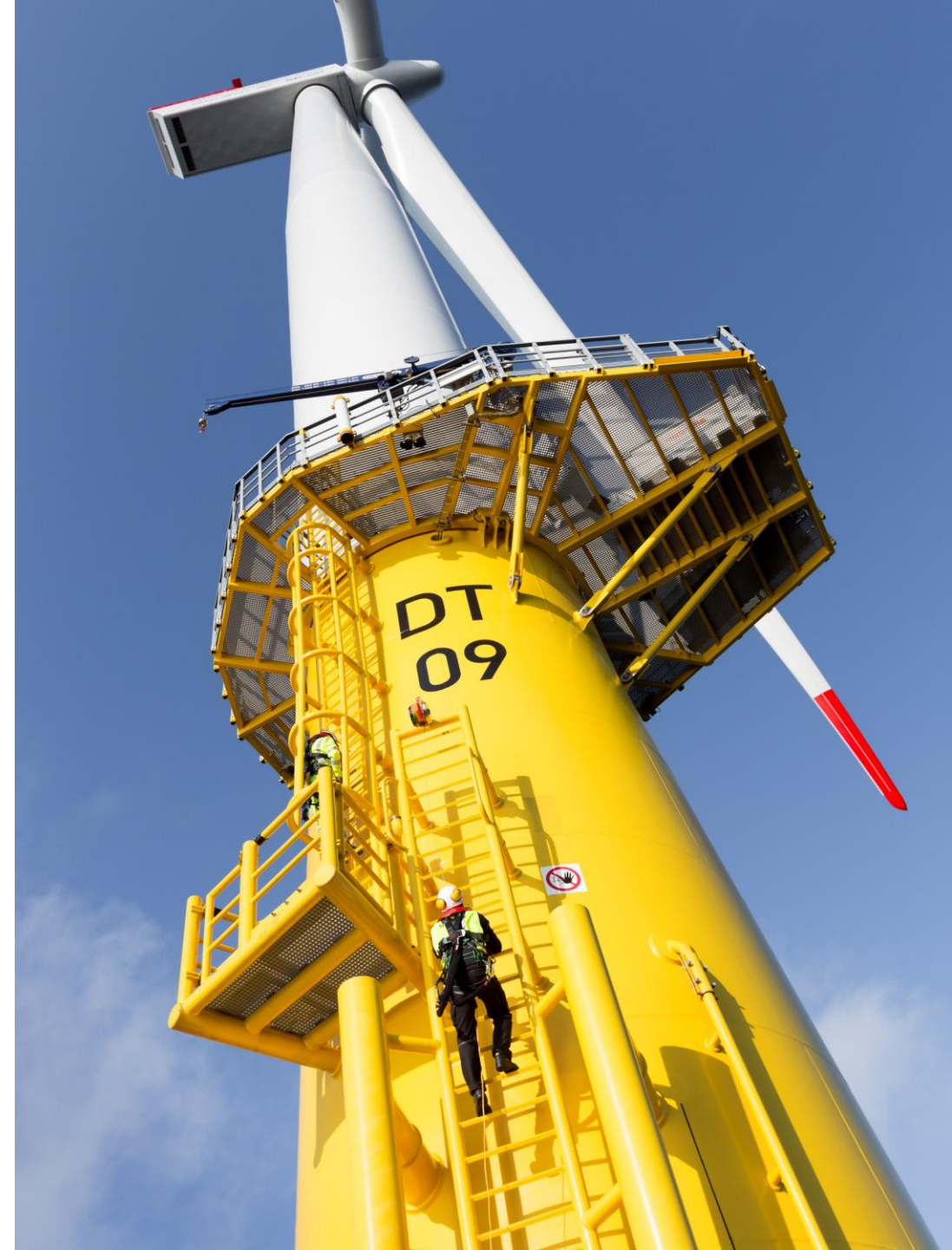
NYSERDA

New York Offshore Wind Public Webinar Program Updates

December 5, 2019

Agenda

- New York State's Nation-Leading Mandates
- Regional Updates
- New York State's Executed Contracts and Phase 1 Report
- Supporting Science, Data, Understanding and Collaboration
- Supply Chain and Workforce Development
- Stakeholder Engagement Activities
- 2020 Priorities



New York is committed to
100% clean
carbon-free electricity

by 2040

most aggressive in the nation

An illustration of several offshore wind turbines of varying heights and orientations, set against a light blue background with soft, circular shapes. The turbines are positioned along a dark blue horizon line representing the ocean.

9,000 MW
of offshore wind
by 2035

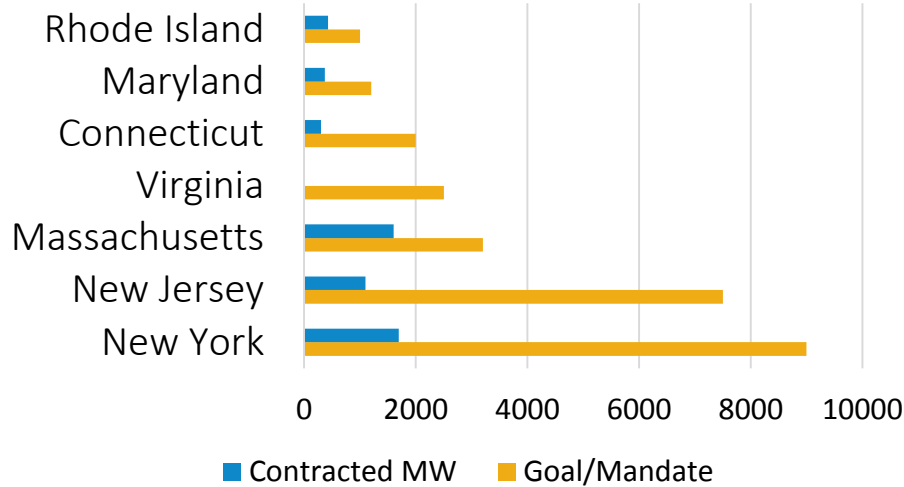
10,000 JOBS

**ENOUGH TO POWER
6 MILLION HOMES**

**BILLIONS IN
INFRASTRUCTURE**

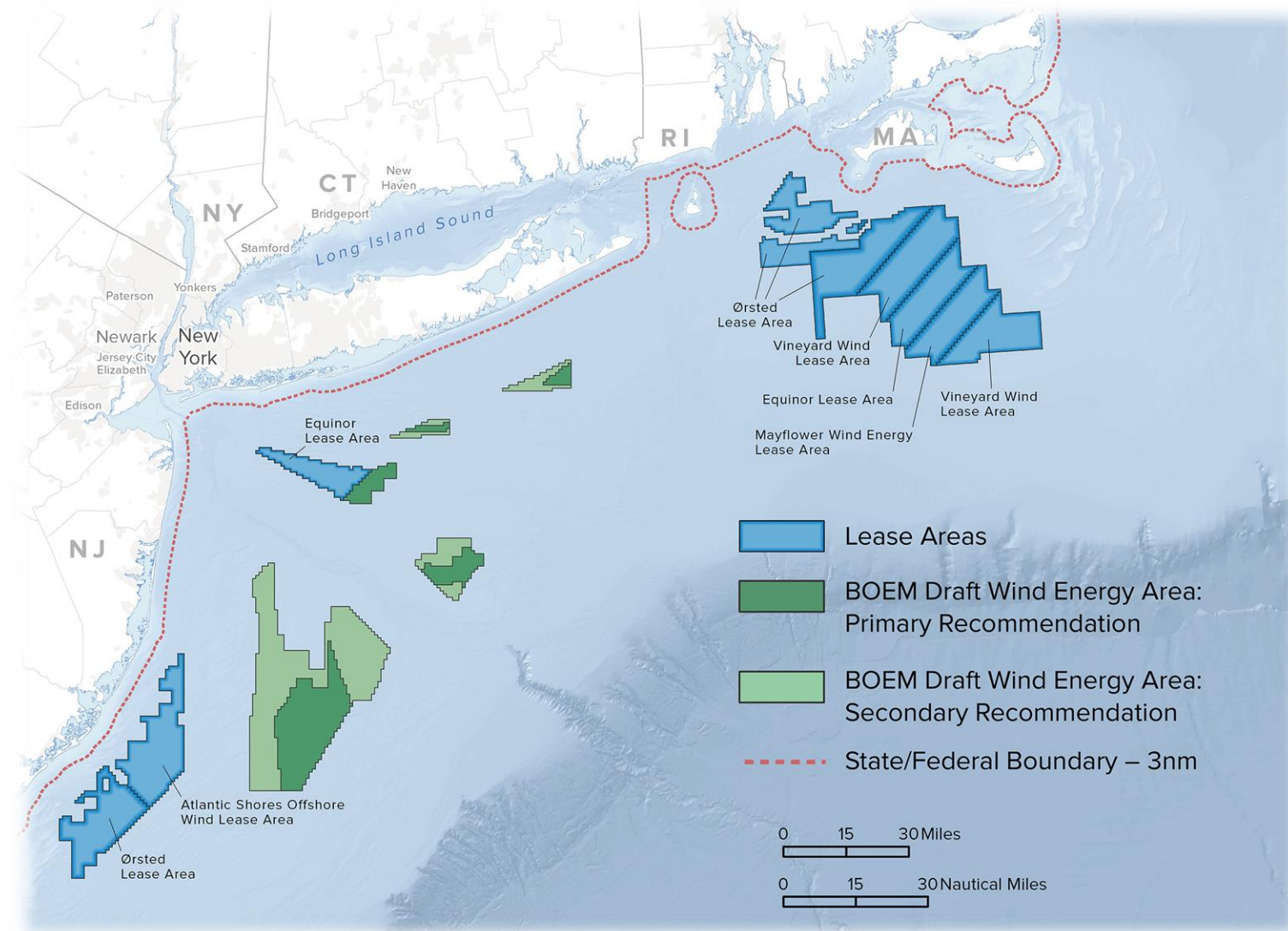
**30% OF NEW YORK'S
ELECTRICITY LOAD**

Regional Market Ambitions - 26 GW



RECENT NEWS

- MA awards 804 MW Mayflower Wind project
- NJ Executive Order increases OSW target to 7.5 GW
- CT receives 3 bids in first solicitation



NYSERDA Offshore Wind Development

2016-2018: **Market Development, Studies and Planning, Stakeholder Engagement**

Nov 2018: **First Solicitation Launched**

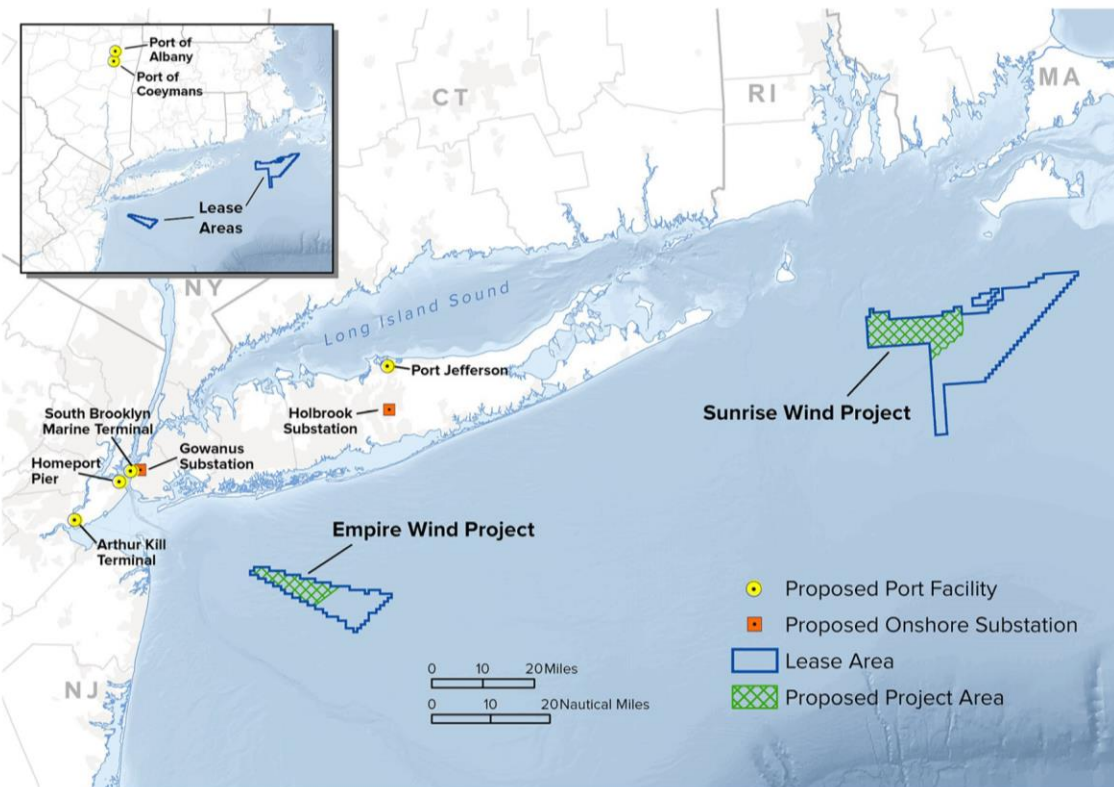
Feb 2019: **18 Bids Received**

July 2019: **1,700 MW Award Group Announced**

Oct 2019: **Contracts Executed and Phase 1 Report Published**



Contracts Executed, October 2019



Empire Wind
816 MW

Sunrise Wind
880 MW

> Enough to power 1 million New York homes

> 1,600 jobs; \$3.2 billion in private sector investments

Launching New York's Offshore Wind Industry

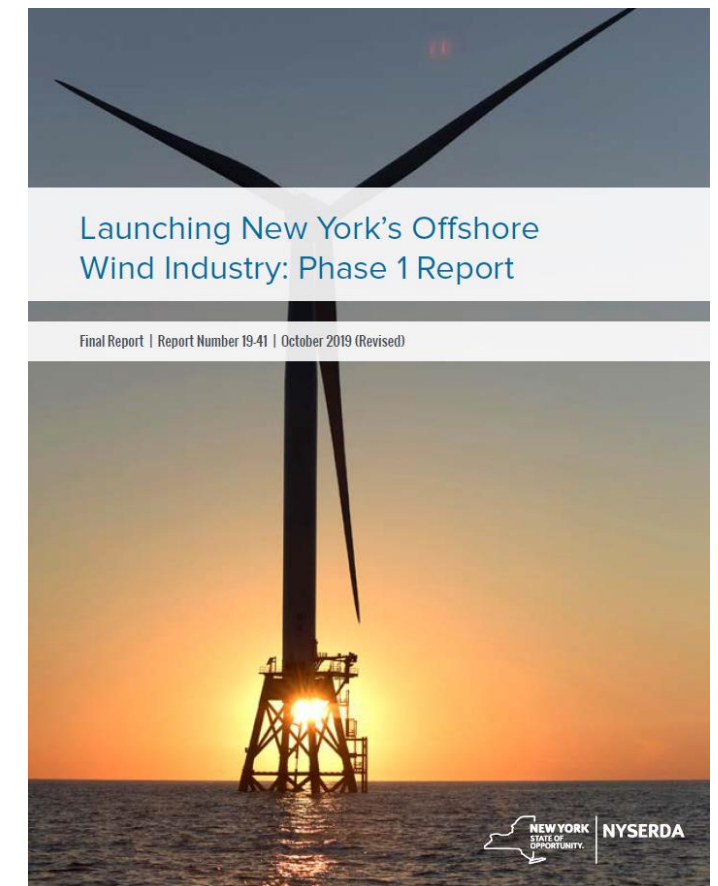
Phase 1 Report filed with Department of Public Service

Unprecedented competition:

- Most competitive market response to date among all U.S. state offshore wind solicitations
- Demonstrates New York's unparalleled reach to existing lease areas spanning New England to New Jersey

Innovation Contracting Structure:

- Index OREC contracting structure where payments rise and fall inversely to a composite average of New York's energy and capacity market prices
- Provides protection for ratepayers and projects against volatility in utility bills and project revenue

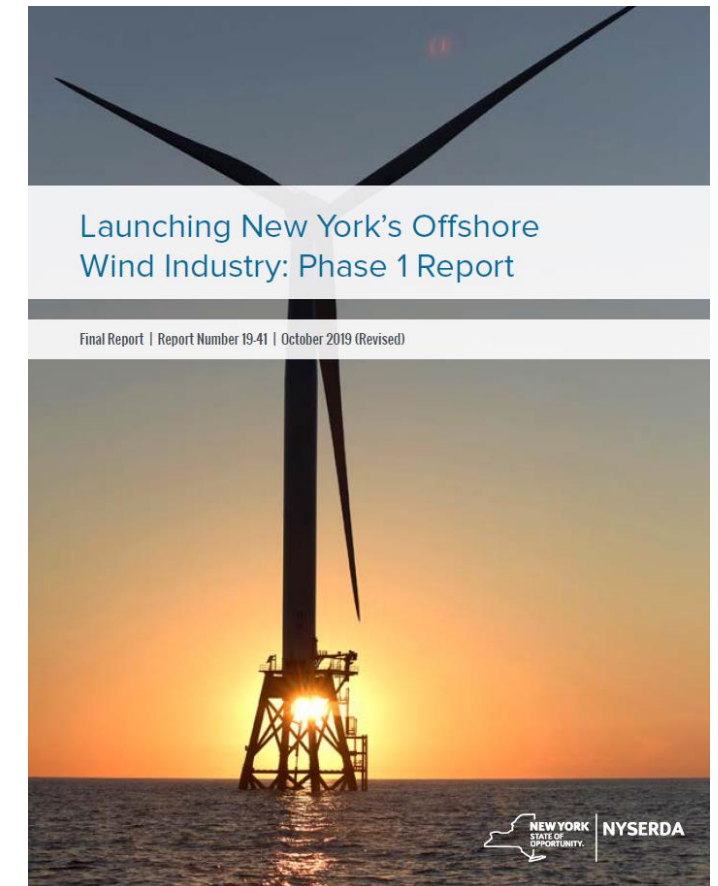
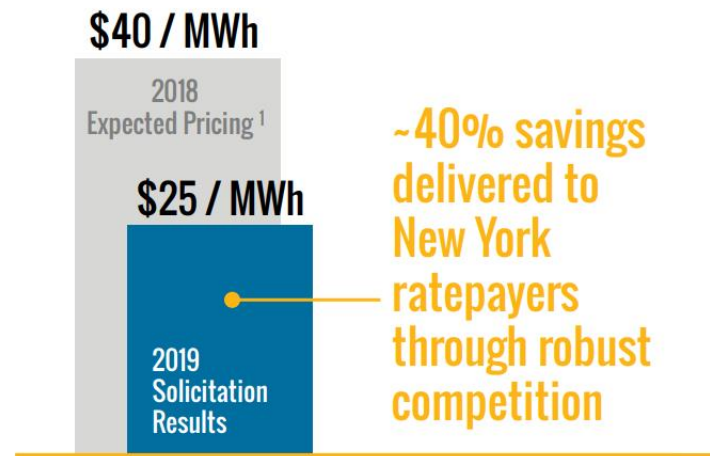


Launching New York's Offshore Wind Industry

Cost Effectiveness:

- The projects have an average all-in development cost of \$83.36 per megawatt hour (2018 dollars) with an expected average OREC cost of \$25.14 per megawatt hour

The average bill impact for residential customers will be less than a dollar per month per customer – approximately \$0.73.



Important Contract Provisions

New York Supplier Opportunity

- For all contracts greater than \$5 million, the opportunity must be made available to New York businesses

Project Labor Agreements and Prevailing Wage

- Encouraging opportunities for New York's workforce

Environmental and Fisheries Mitigation Plans

- Developers will work with the Environmental and Commercial Fishing Technical Working Groups to create and evolve mitigation plans



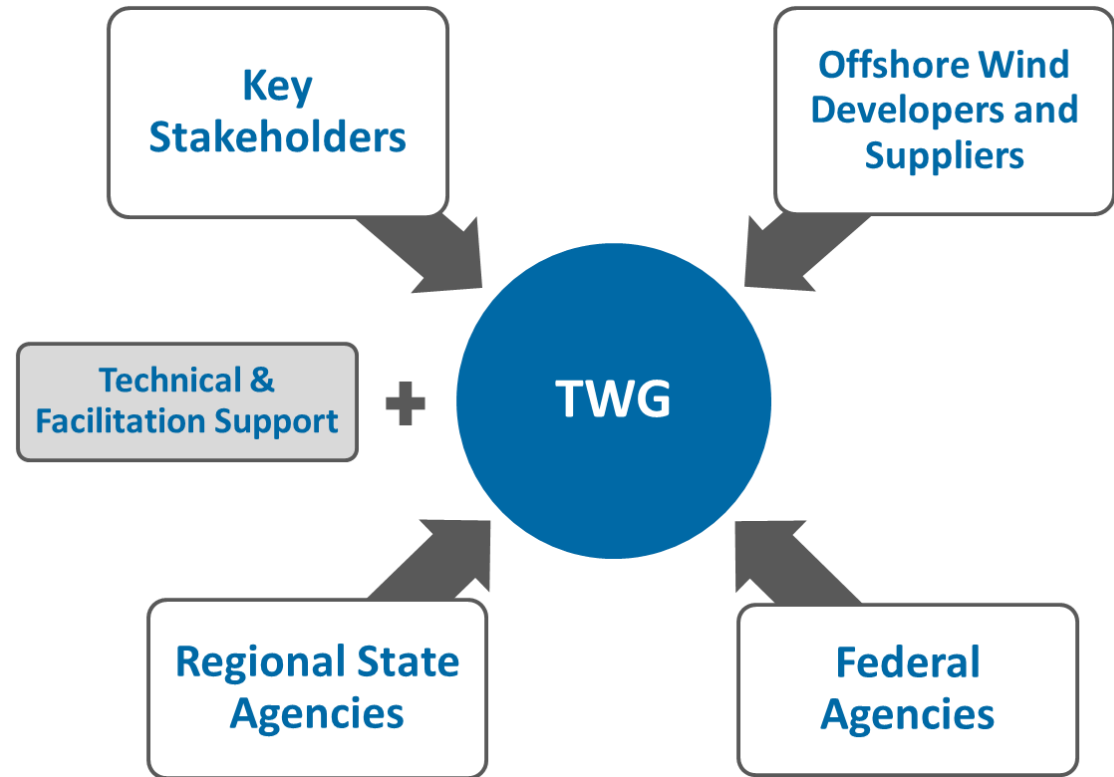
Supporting Science, Data, Understanding, and Collaboration



OSW Technical Working Groups

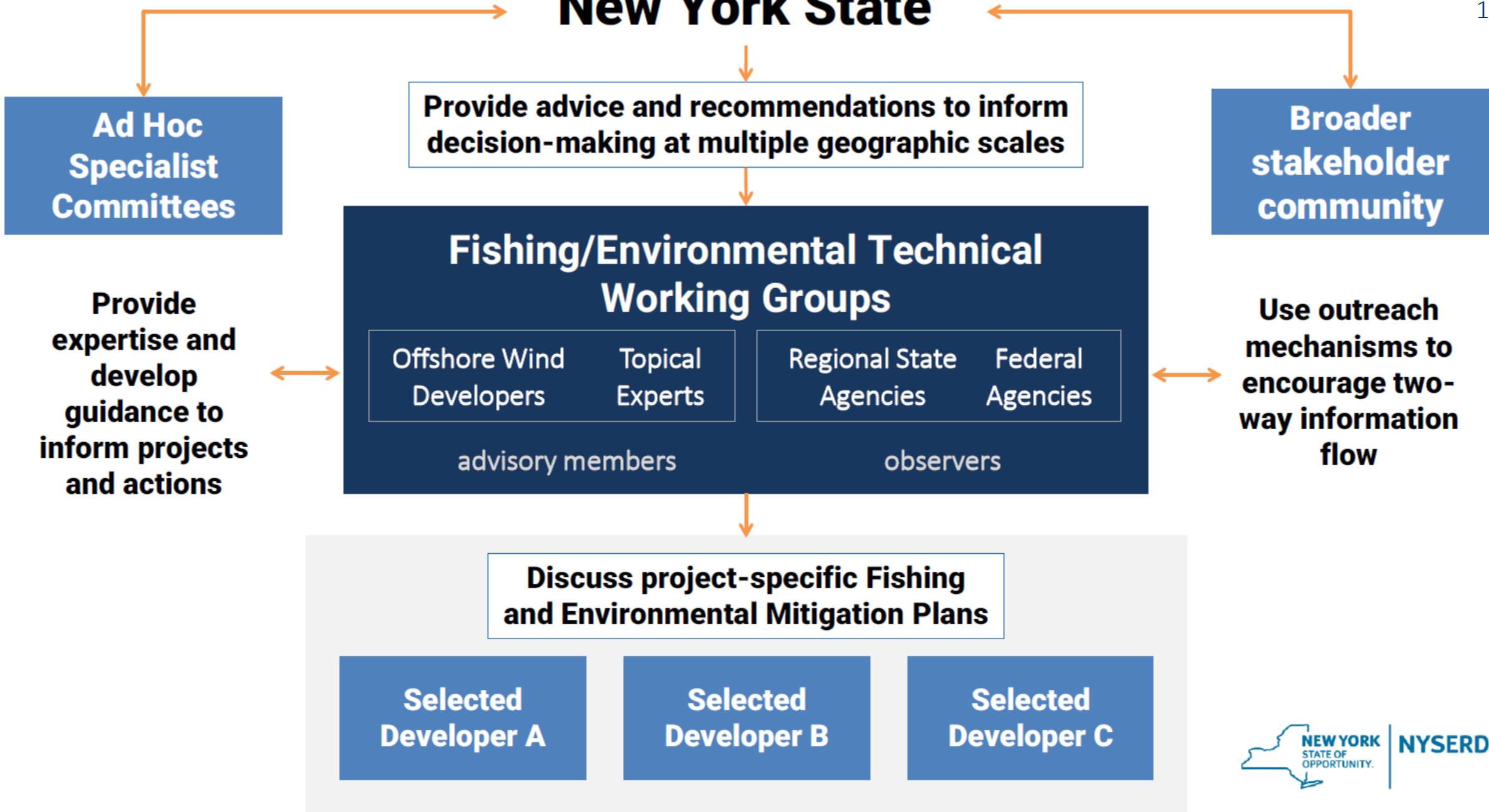
Collaborative Engagement with Key Stakeholders

- Unique points of view and targeted interests
- Cross-borders and geographies
- Powerful representative voices
- Active problem-solving roles in NYS policy and program development

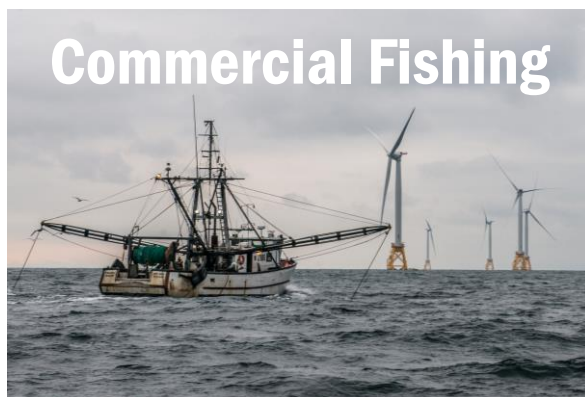


**Environmental
Commercial Fishing
Maritime
Jobs and Supply Chain**

New York State



Mitigation Plan Collaboration



These working groups are critical stewards of New York State's projects and provide valuable representation, technical insight, and constructive solutions.

- Empire Wind and Sunrise Wind have developed Mitigation Plans, which are appended to the executed contracts and published with the Phase 1 Report.
- Developers met with the Environmental and Commercial Fishing Technical Working Groups to present Mitigation Plans.
- Productive dialogues and written feedback will inform next round of edits, to be published on the TWG websites.
- Mitigation plans will continue to evolve as part of an iterative process.

Ongoing Supporting Activities



Environmental (E-TWG)

- New E-TWG Website! www.nyetwg.com
- Synthesis of monitoring and mitigation practices (MMPs)
- Specialist Committees working towards BMPs for marine mammals and sea turtles and birds and bats for inclusion in future procurements
- Development of a Regional Science Entity
- Coming next Spring – 2nd State of the Science Workshop: Cumulative Impacts



Commercial Fishing (F-TWG)

- Refinement of Transit Lane Workshop Data
- Identification of information-sharing and research needs, leading to NYSERDA funded research initiatives
- Hiring a fisheries liaison

NYSERDA-funded Research

Digital Aerial Surveys

- Recently completed a 3-year, quarterly digital aerial survey of birds, marine mammals, sharks and fish shoals across the New York Bight
- Full reporting in early 2020
- More than 3.5 million images collected

Metocean Buoys in the New York Bight

- Two floating LiDAR (light detection and ranging) buoys deployed in August 2019 for a 2-year period
- Remote sensing will provide continuous data on wind, ocean currents, and wildlife
 - Acoustic monitoring for birds, bats, and marine mammals
 - Nanotag antennas and fish tag receivers

Issuing an RFP to conduct Geophysical and Geotechnical Surveys



NYSERDA-funded Research

5 New Contracted Studies

- **Strategies and Tools to Address Commercial Fishing Access in Offshore Wind Farms;** National Renewable Energy Laboratory (NREL)
- **Creation of a Fishermen's Data Trust for effective inclusion of fishermen's knowledge in OSW decision making;** Responsible Offshore Development Alliance (RODA)
- **Multi-Scale Relationships Between Marine Predators and Forage Fish;** Biodiversity Research Institute
- **Wildlife Distribution Modeling in the New York Bight;** Ecology and Environment
- **Development of Monitoring Protocols for Nanotag Studies at Offshore Wind Farms;** US Fish and Wildlife Service



Ongoing Supporting Activities



Maritime (M-TWG)

- Tailored briefings from Empire Wind and Sunrise Wind
- Ongoing collaboration between key government regulators as projects advance
- Engaging technical consultant to address research scope approach and discrete topics
- Obtaining input on offshore wind development best management practices to address maritime issues



Jobs and Supply Chain TWG

- Ongoing collaboration to support New York's supply chain and workforce
- Development of the NYS Offshore Wind Training Institute (OWTI) and the Community and Workforce Benefits (CWB) Fund
- Providing input to influence the Port Infrastructure RFQL and OSW Technical and Training Workshop (November 15, Farmingdale State College)

National R&D Consortium

Goal: Facilitate a nationally-focused, not-for-profit organization collaborating with industry on prioritized R&D activities to reduce the levelized cost of energy (LCOE) of offshore wind in the U.S. and maximize other economic and social benefits

Project Value: \$41 M (\$20.5 M DOE funds, matched by NYSERDA) – plus member contributions



CARRIE CULLEN HITT

named first Executive Director

10 Developer members

3 Public Sponsor states in addition to New York

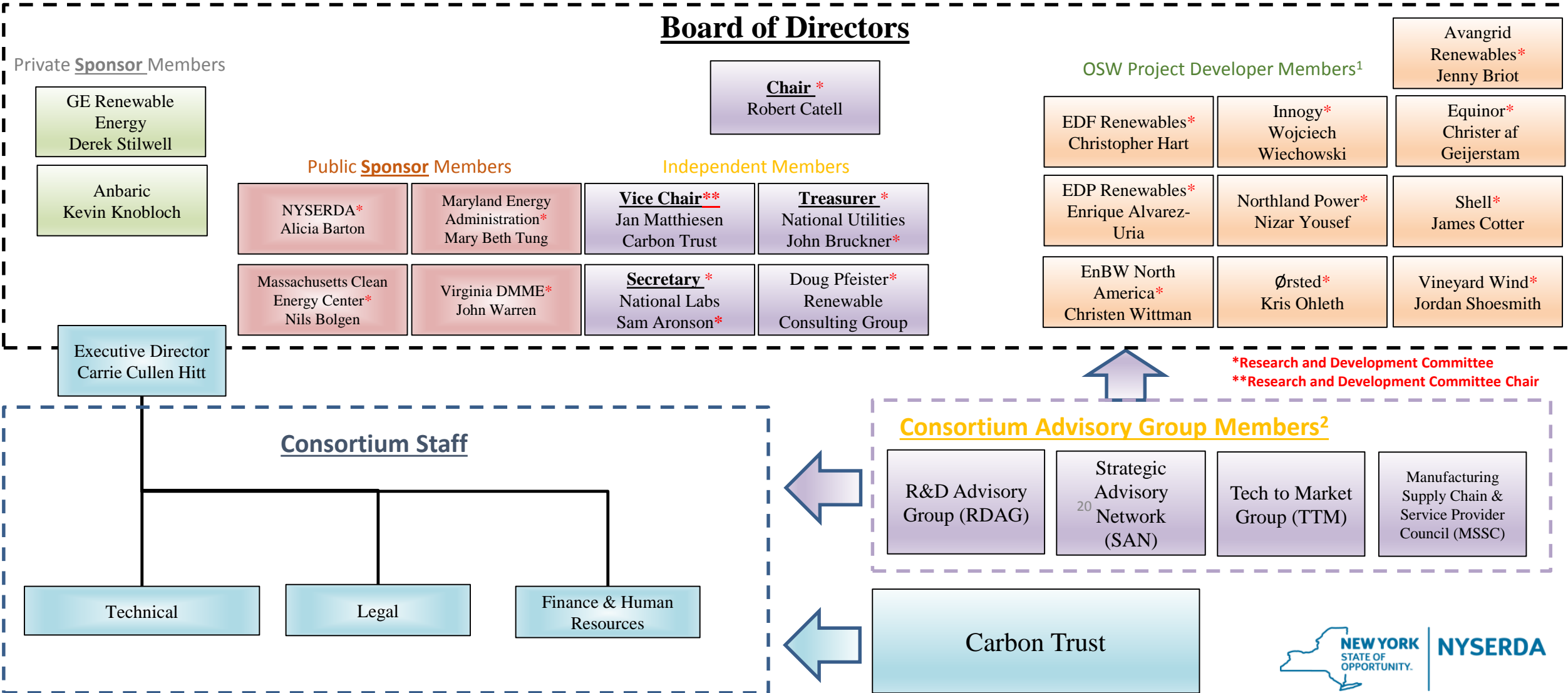
2 Private Sponsor members



Accepting R&D Proposals

to be reviewed on a continuing basis (NYSERDA PON 4124) for three research pillars:

1. Offshore Wind Plant Technology Advancement
2. Offshore Wind Power Resource and Physical Site Characterization
3. Installation, O&M and Supply Chain Solutions



Pillar 1

Offshore Wind Plant Technology Advancement

- Array Performance and Control Optimization
- Cost-Reducing Turbine Support Structures for the U.S. Market
- Floating Structure Mooring Concepts for Shallow and Deep Waters
- Power System Design and Innovation

Pillar 2

Offshore Wind Power Resource and Physical Site Characterization

- Comprehensive Wind Resource Assessment
- Development of a Metocean Reference Site

Pillar 3

Installation, O&M and Supply Chain Solutions

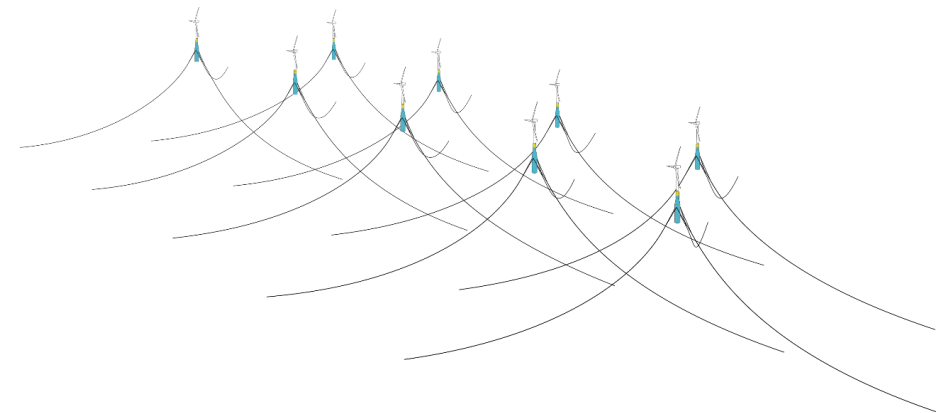
- Heavy Lift Vessel Alternatives
- Offshore Wind Digitization through Advanced Analytics
- Technology Solutions to Accelerate U.S. Supply Chain

First Project Selected for Contract Negotiation

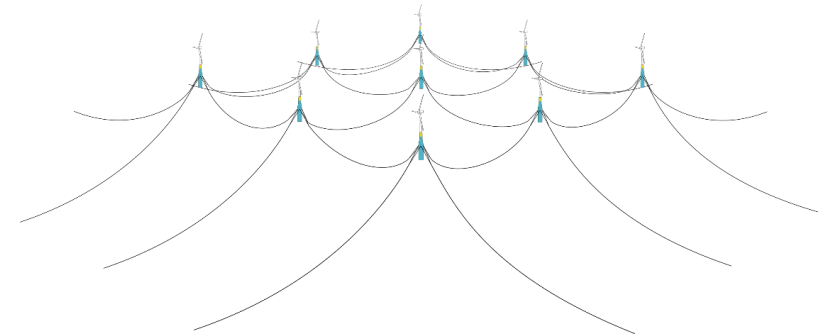


“Shared Mooring Systems for Deep Floating Wind Farms”

- Project will assess the potential of shared mooring lines to reduce floating wind farm costs by connecting adjacent turbine platforms and distributing load throughout the wind farm.
- Reducing the number of anchors and mooring lines has potential to lower costs for deep water floating systems.
- NREL will design and update their modeling tools to support floating wind farms with shared mooring systems.
- Feasibility study will help inform future work of Consortium partners and developers as they consider best practices for advancing offshore wind energy in an environmentally and economically responsible way.



Conventional individual catenary mooring system for a nine-turbine farm in deep water



A nine-turbine farm using a shared mooring system

Supporting a New York OSW Supply Chain and Workforce



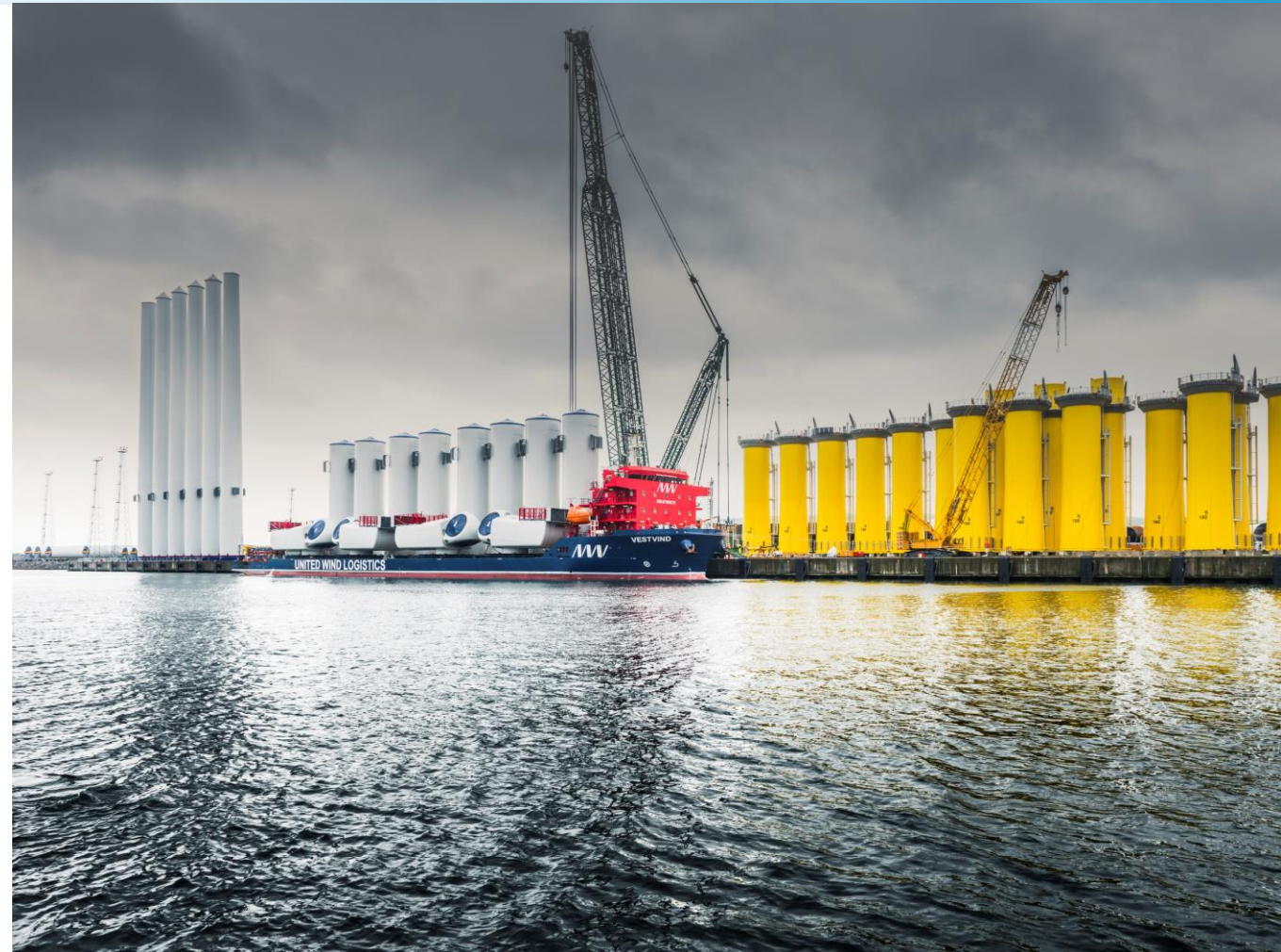
Port Infrastructure Investments

\$87 Million Committed by Project Developers

- Long-term investments in port infrastructure and cutting-edge technologies

\$200 million committed by NYS

- Port Infrastructure RFQL submissions received on November 15
- Two-phase process to select proposal(s) for public/private investment in port infrastructure that will drive economic development and job creation in New York State



Workforce Development Workshop

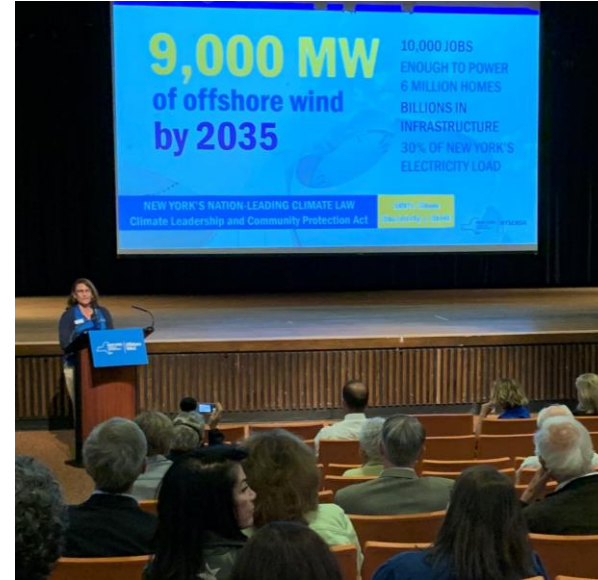
November 15, 2019

Farmingdale State College

- Connecting industry, academia, labor, businesses, and government to identify workforce training needs and address gaps
- 215 attendees from Long Island, all 5 New York City boroughs, The Capital Region, The Hudson Valley, Syracuse, and beyond New York (MA, PA, NJ, CT, and more!)
- 9 industry presentations and 3 workforce development panelists



Engaging with Stakeholders Early and Often

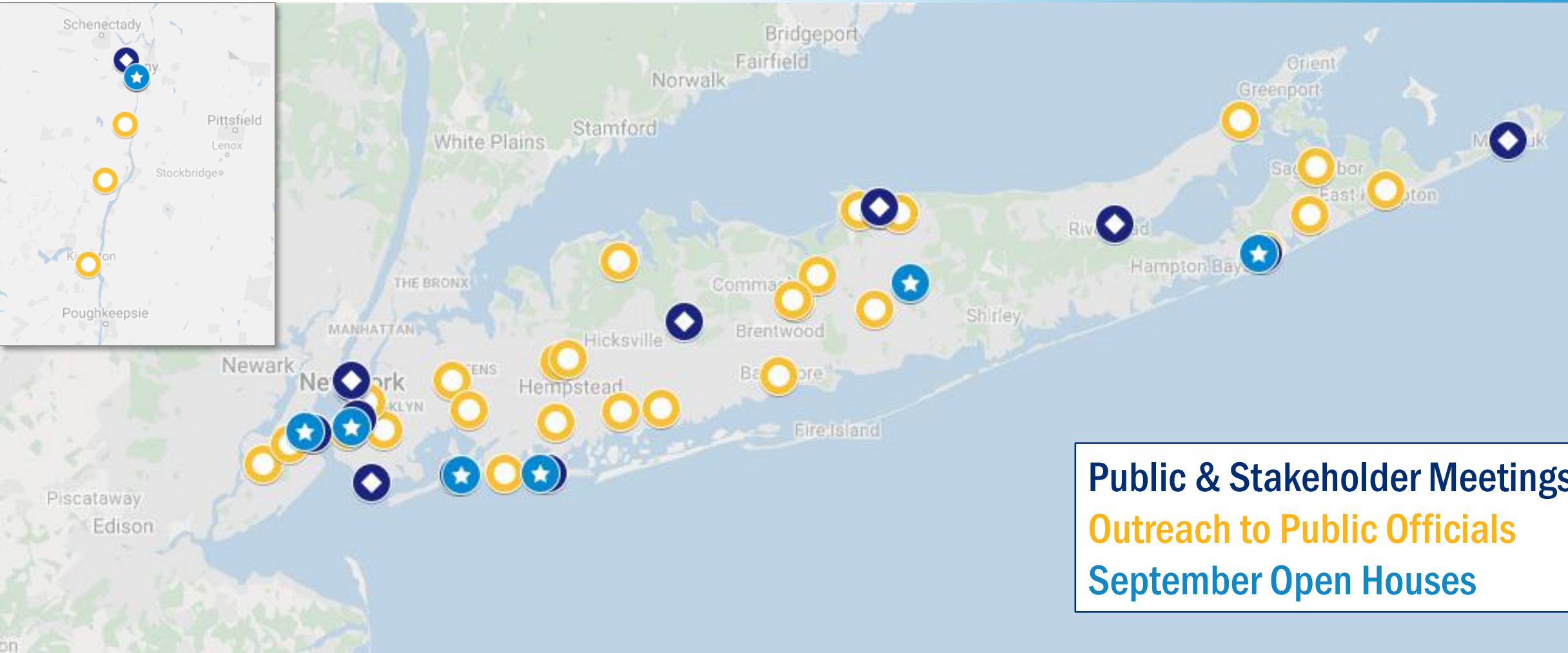


Thanks for Joining Us!

- 7 Open Houses across New York City, Long Island, and Albany
- NYSERDA's Offshore Wind Team with the two project developers, Empire Wind and Sunrise Wind
- Presentation of the two contracted projects and an hour-long poster session for informal conversations
- Average of 65 attendees per event



Public Engagement



Public & Stakeholder Meetings
Outreach to Public Officials
September Open Houses

2020 Priorities

Upcoming Events will be posted on
the Offshore Wind Events Page:

wind.ny.gov

Questions?

www.nyserda.ny.gov/offshorewind
Offshorewind@nyserda.ny.gov