

**Empire  
Wind**

Let's power New York's  
future together







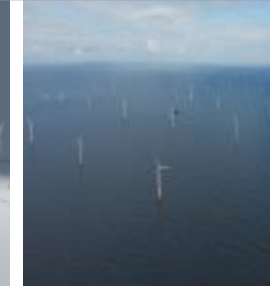



**equinor**

*Julia Bovey*

*Director, External Affairs | Equinor Wind US*

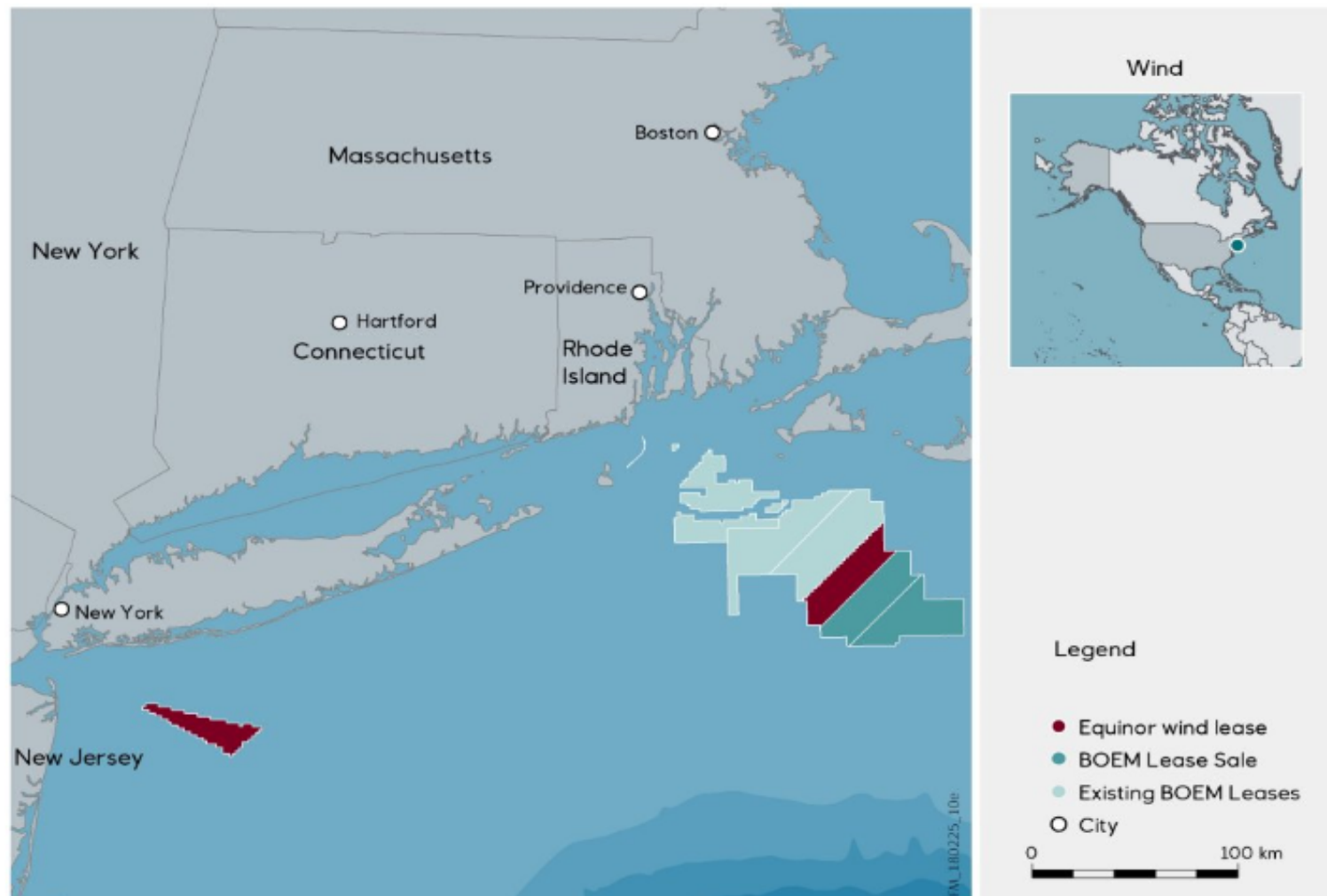


# Equinor introduction: Bringing European experience to the US

					North West Europe	United States East Coast	Japan
							US West Coast
Hywind demo	Sheringham Shoal	Dudgeon	Hywind Scotland	Arkona	Dogger Bank	Empire Wind	Floating large scale
							
In operation	In operation	In operation	In operation	In operation	Consented	Provisional Award	
<b>2.3 MW</b>	<b>317 MW</b>	<b>402 MW</b>	<b>30 MW</b>	<b>385 MW</b>	<b>3 x 1.2 GW</b>	<b>816MW</b>	
2009-	2012-	2017	2017	2019	2020-	2024-	



# Equinor Wind in the US: leading position in US offshore wind



*New York*

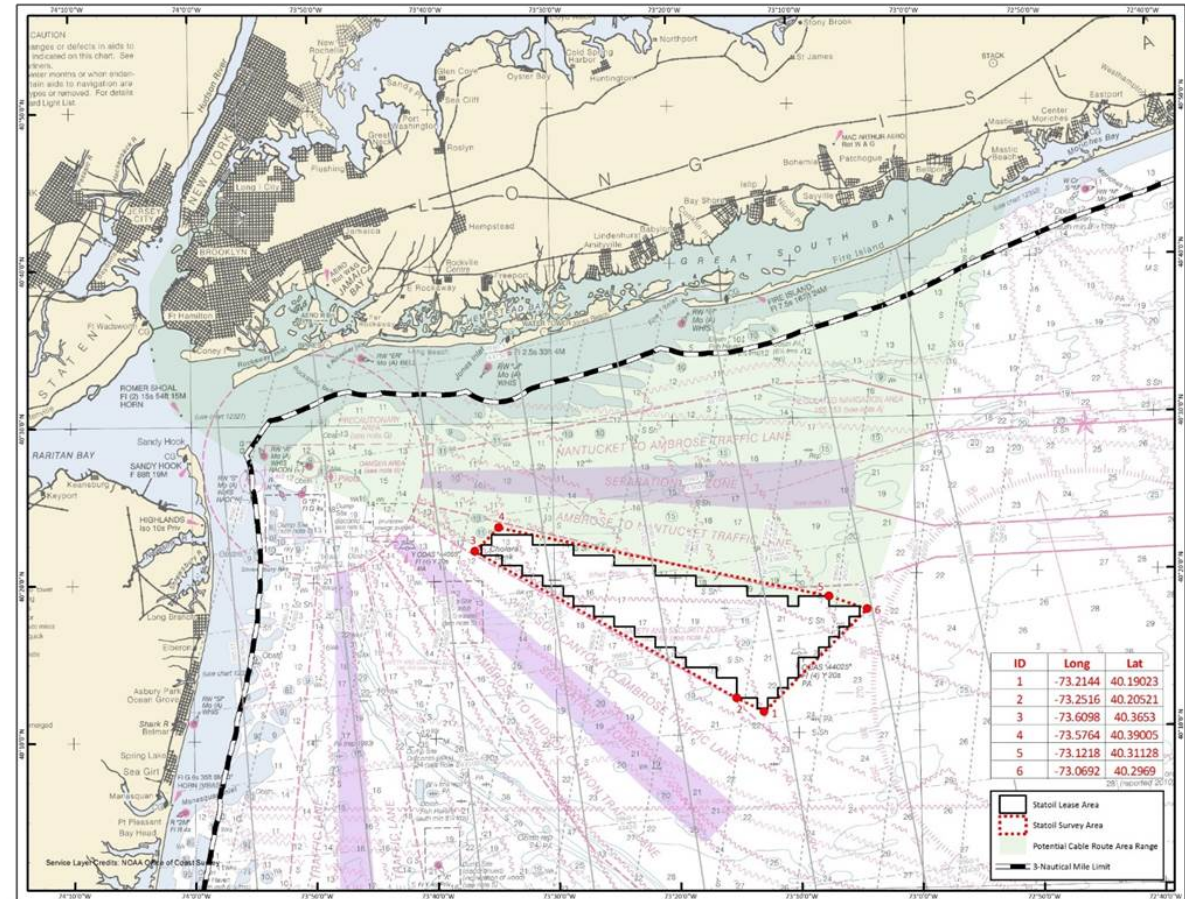
*New Jersey*

*New England*



# Empire Wind: Key facts

- Provisional award capacity: 816 MW
- Foundations: Gravity-Based (Concrete) manufactured in the Capital Region
- Operations and Maintenance (O&M) base in New York City
- Proposed onshore substation: Gowanus
- Next generation turbines
- Water depth: 65 – 100 ft
- Construction period: 2022-23
- Electricity Delivered to New York: 2024+



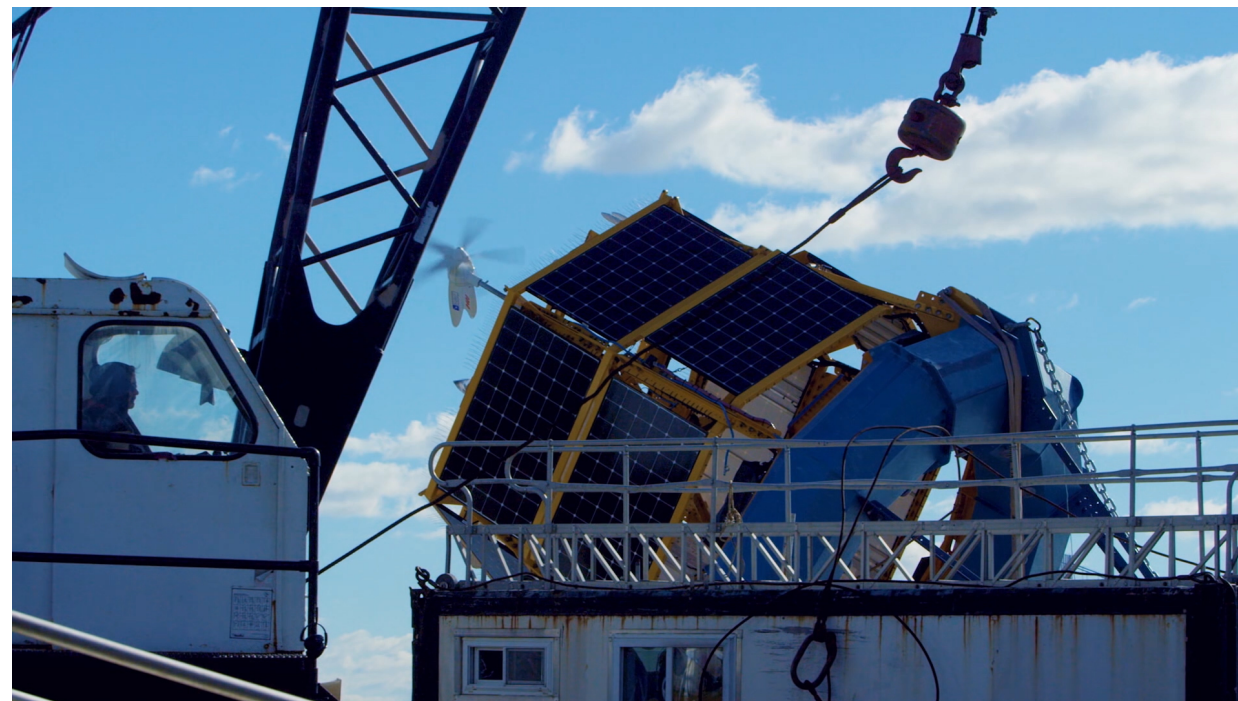
## Empire Wind: Providing great benefits to New York

- *Creating **thousands of jobs** during construction and operations*
- *Creating a **manufacturing hub for concrete foundations***
- *More than **\$60 million** in port upgrades*
- ***Operations and maintenance** base in New York*
- *Establishing a **community benefits fund** of \$4.5 million*
- *Supplying renewable power from the **New York Bight to the heart of New York City***
- *Supporting New York State in **cost-effectively delivering its long-term decarbonization goals***
- ***Reduced CO<sub>2</sub> emissions** of 1.6 million tons per year*



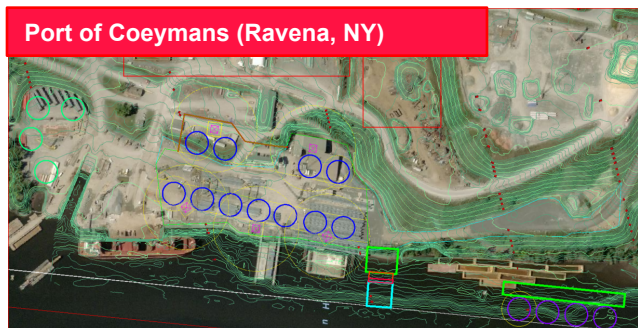
## Empire Wind: Options for ON-shore work and activities

1. *Port for manufacturing foundations:*
  - *Port of Coeymans, 150 miles north of NYC*
2. *Port for assembling wind turbines*
  - *Sunset Park, Brooklyn preferred*
3. *Interconnection to the power grid*
  - *Brooklyn near Sunset Park preferred*
4. *Long-term operations and maintenance port facility*

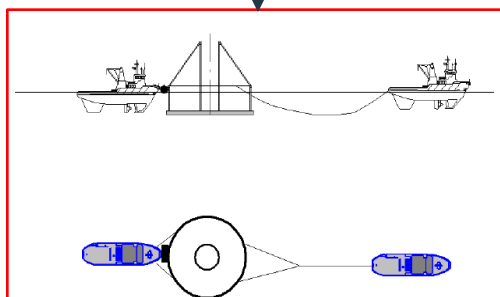
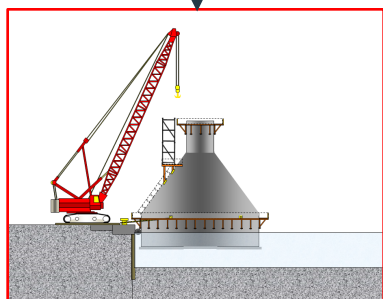


# Empire Wind: Gravity-Based Structure (GBS) Foundation Fabrication

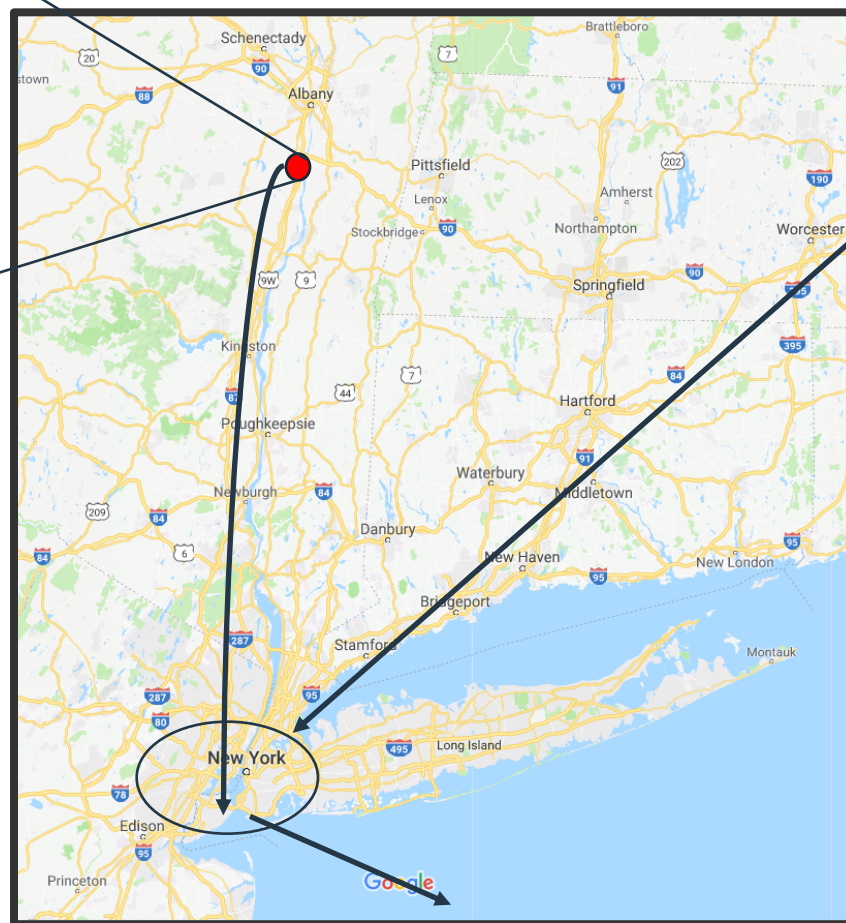
## 1. Fabrication at Port of Coeymans



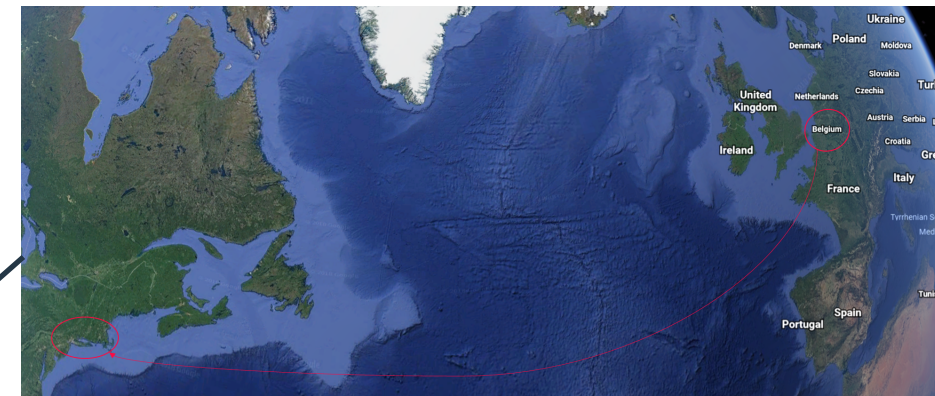
Port of Coeymans (Ravena, NY)



Tow out ~120nm, 30hr, @4knots



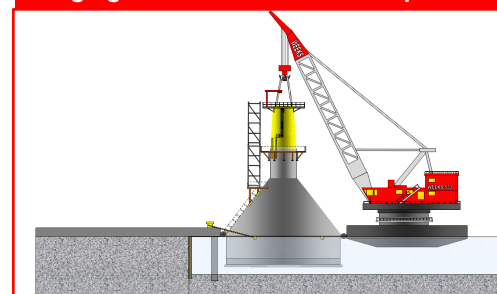
## 2. Assembly with Transition Piece



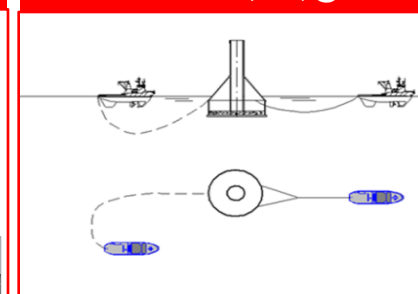
EU TP Manufacturing and transport to US, 2wks transport @10knots

## 3. Staging and Delivery to Site

Staging & Final Mechanical Completion

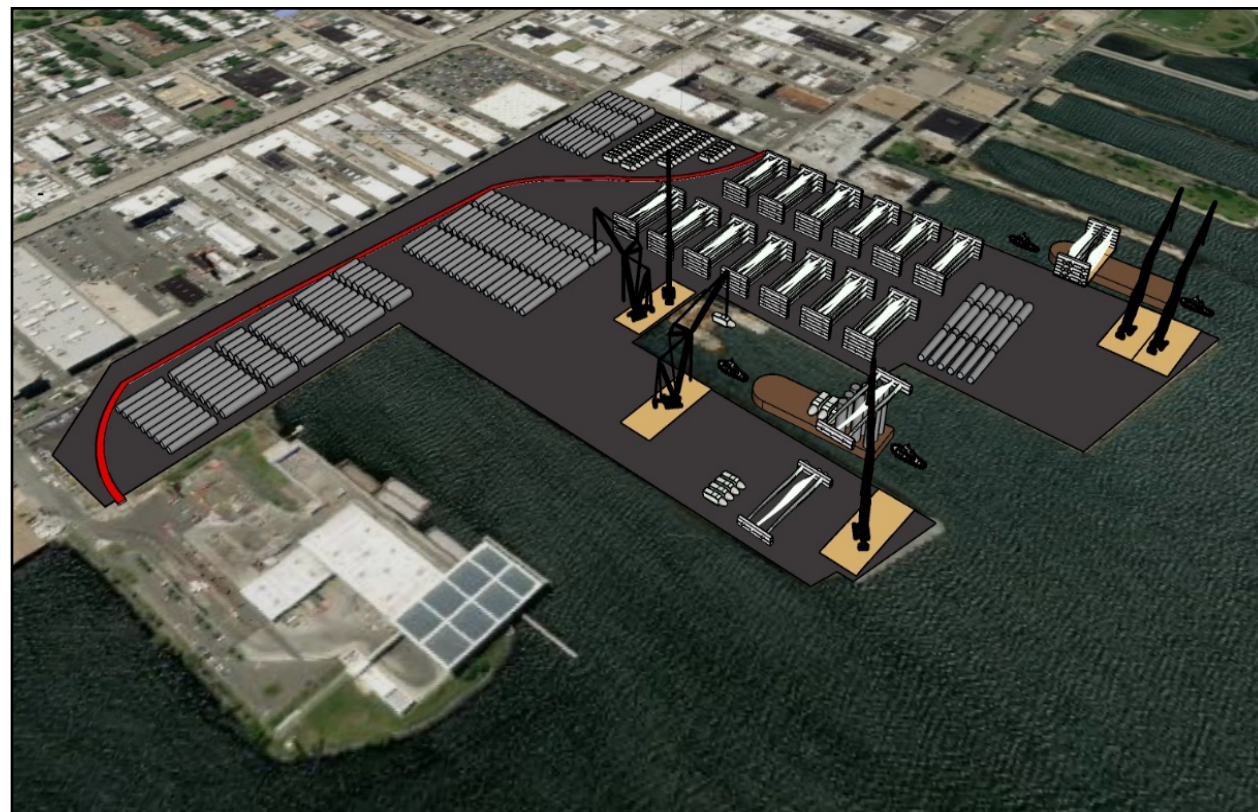


Tow to Site ~20nm, 6hr, @5knots



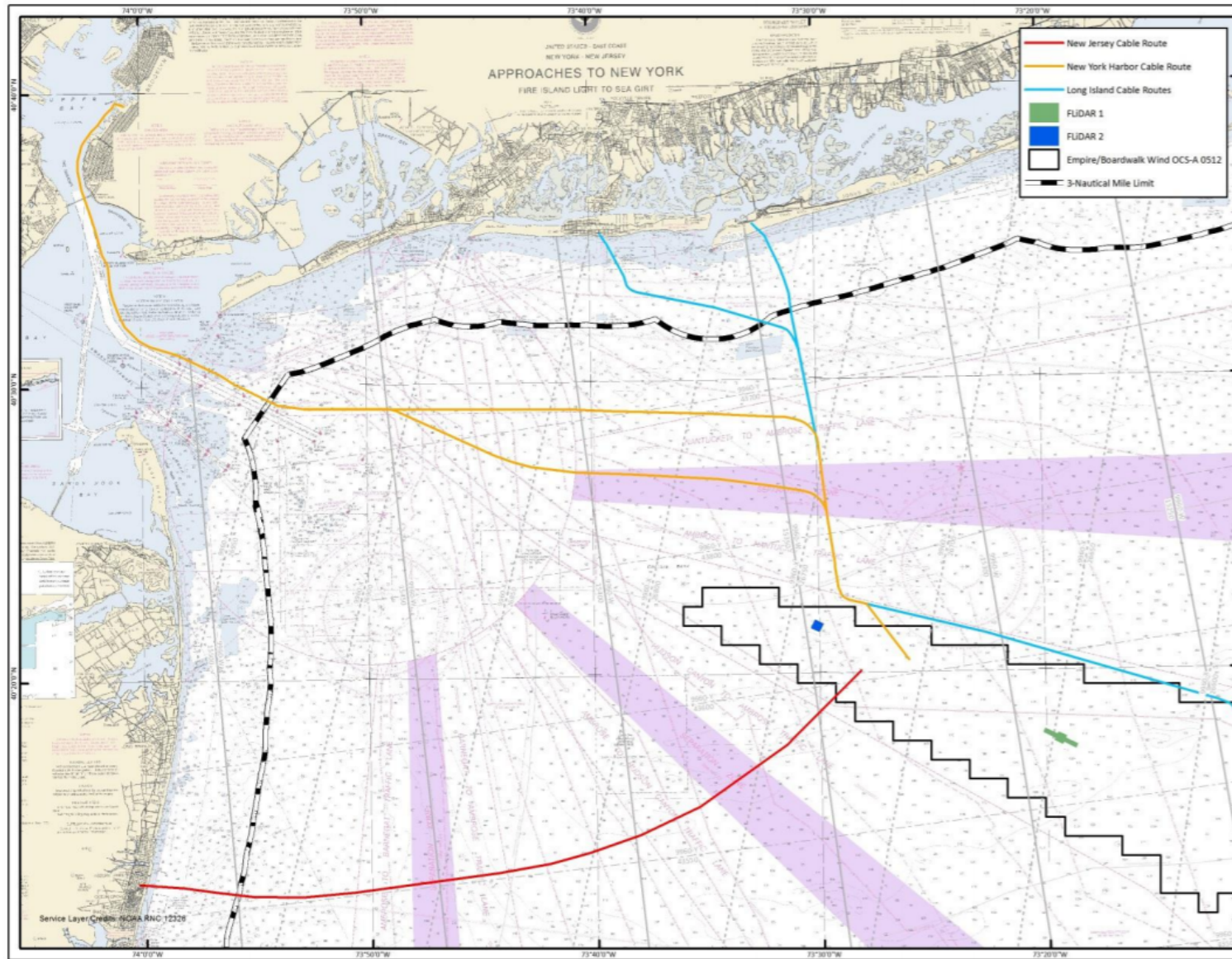
## Empire Wind: Assembly Port concept for Phase 1 (816MW)

- 65 acres for first project (40 square city blocks)
- Verrazano clearance must be managed
- Long-term solution needed outside bridges
- Apx 220 full-time workers for 3 years for phase 1
- Additional jobs supporting assembly include vessel operators





# Empire Wind: Cable landfall and interconnection to grid – options



## Empire Wind: Operations and Maintenance (O&M) base in Brooklyn

- *7 acres minimum*
- *Direct labor: approx. 50-70 full-time jobs*
- *Indirect labor: additional suppliers and vessels working from base*
- *Additional management and administrative positions potentially co-located at base*
- *Warehouse for spare parts*
- *Must be dock-side for loading vessels*
- *Preferred options in Brooklyn*



Dudgeon O&M – East coast UK

## Empire Wind: Sites studied for o&m base, not currently feasible



# Empire Wind: Responsible siting and permitting

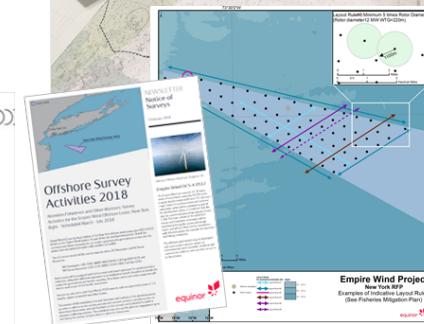
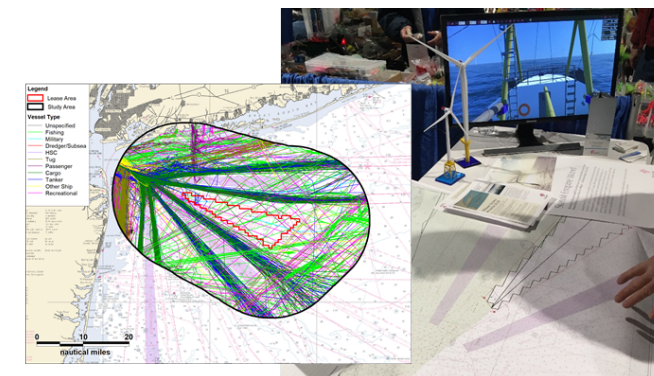
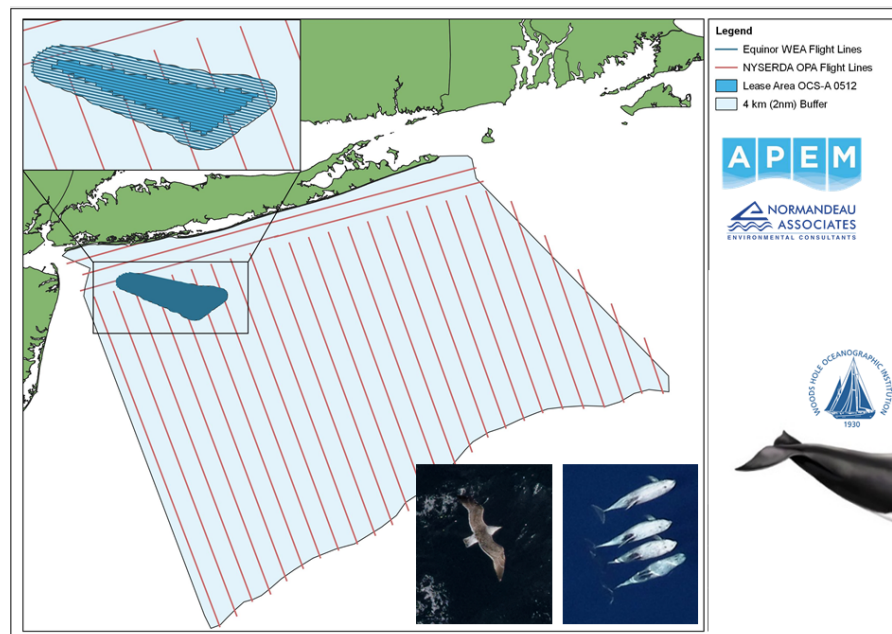
## New York State

- *Environmental and Fishing Mitigation Plans*
- *Article VII Process*



## BOEM

- *Site Assessment Plans (SAP)*
- *Construction and Operation Plan (COP)*
- *Environmental and Technical Review*





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