

# ESIG Fall Technical Workshop

October 28-30, 2019  
#Beyondengineering



SNC • LAVALIN



# SNC-Lavalin: Introduction

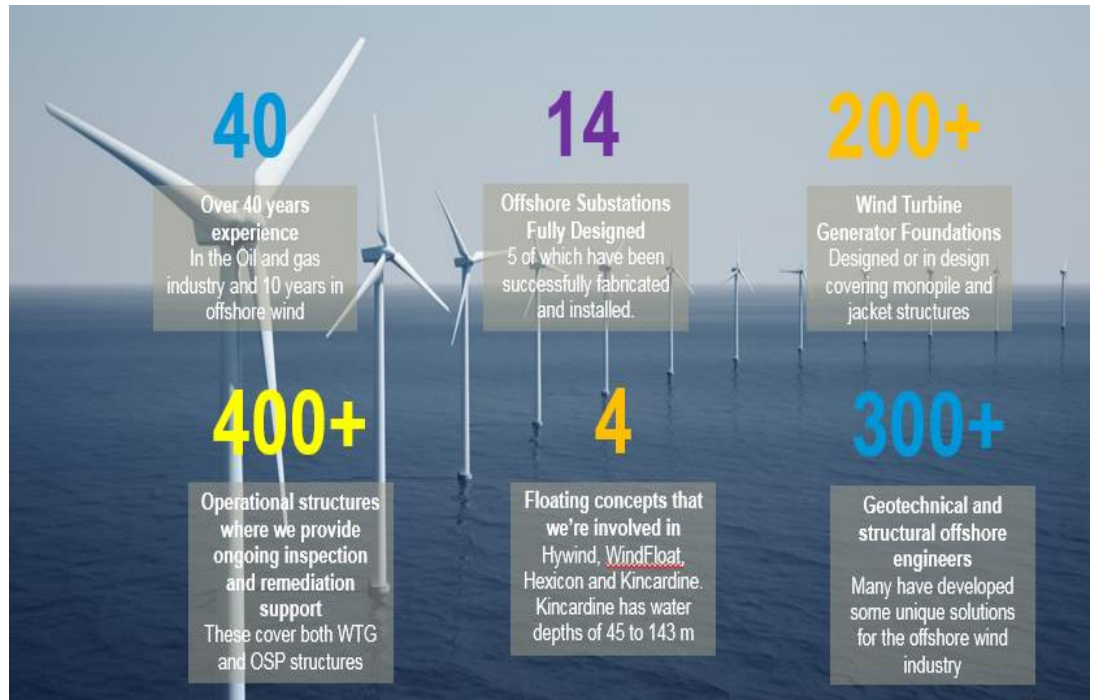
- › A leading engineering and construction group in the world offering services in oil and gas, mining and metallurgy, infrastructure and power sectors

APPROXIMATELY  
**50,000**  
EMPLOYEES

SPEAKS  
**70**  
LANGUAGES

WORK FROM  
OFFICES IN OVER  
**50**  
COUNTRIES

REPRESENTS  
SOME  
**130**  
NATIONALITIES



# US Offshore Potential

U.S. has **4,200 GW (NREL)** of developable offshore wind potential – 4 times the capacity of the current U.S. electric grid.

Offshore wind to provide **2% of national demand in 2030** and **7% in 2050**.

**Over 23 GW of proposed offshore capacity in 12 different states on Eastern seaboard to date**

Close proximity of offshore wind to population centers.

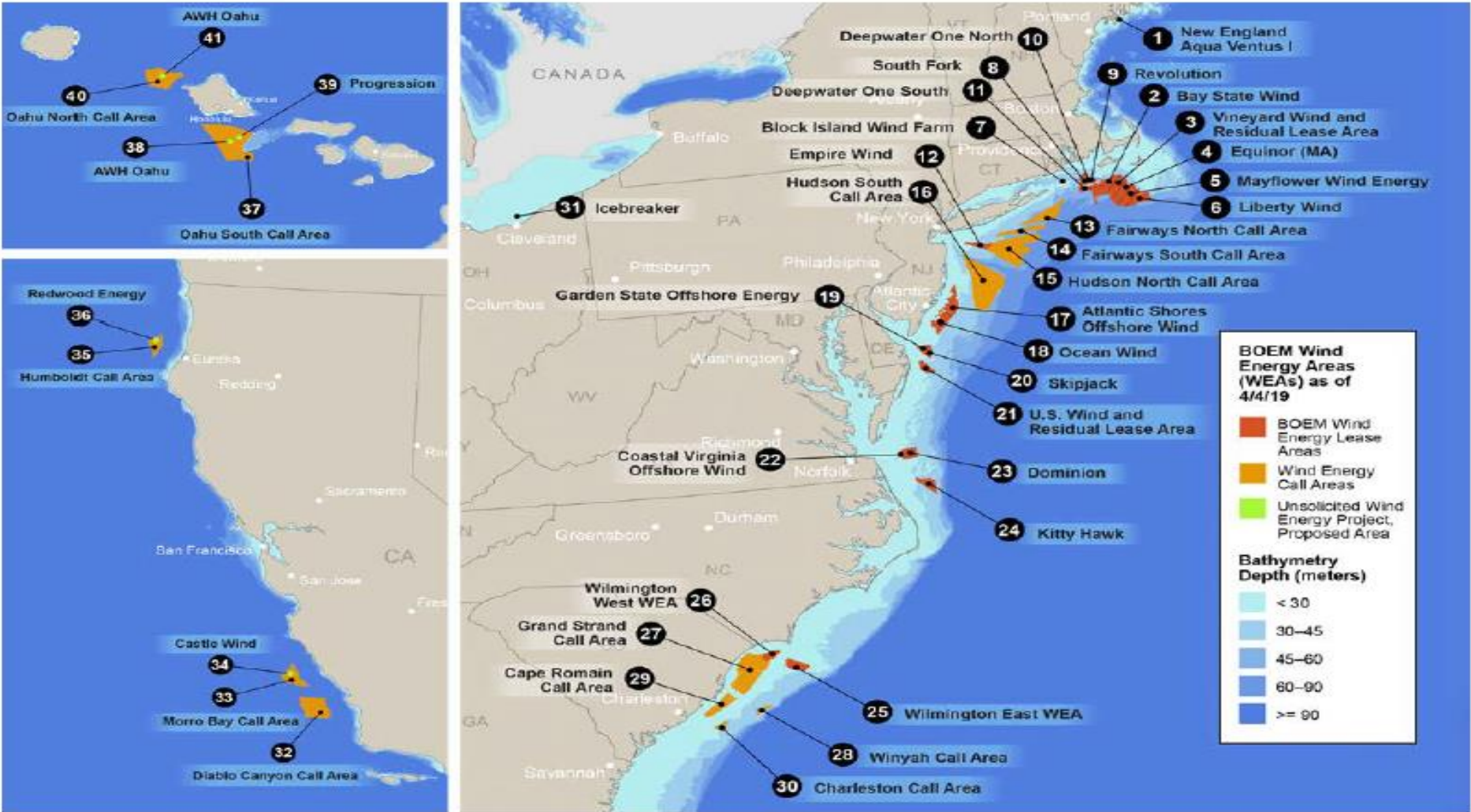
**Atlantic Coast:** Lower Wind speeds but shallow waters and mainly **more suited to fixed bottom solutions**

**West Coast:** Significantly deeper waters and more suited to **floating wind structures**.



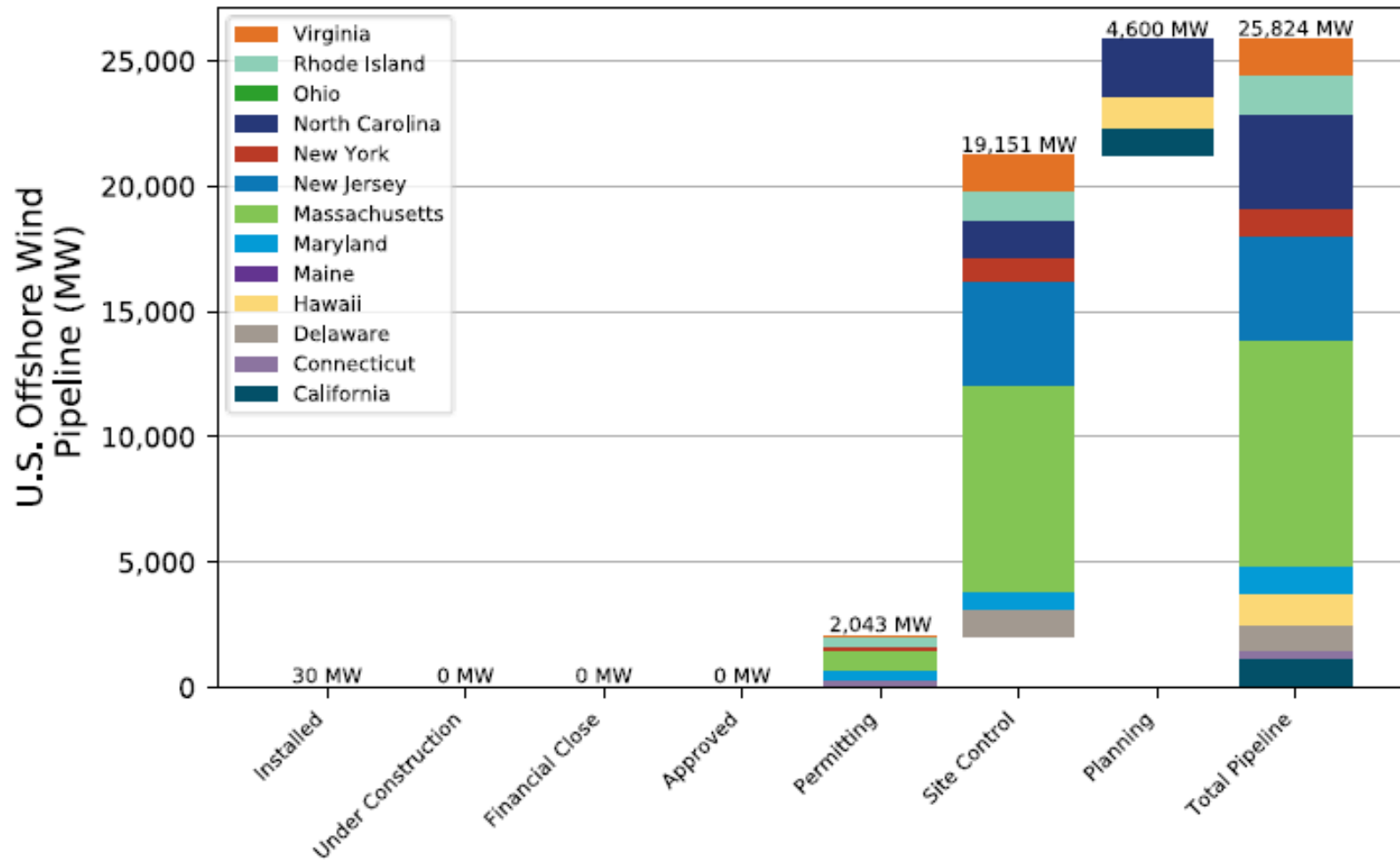
Block Island, Rhode Island, USA  
Source: Offshore Wind Biz

# BOEM Lease Areas



Source: NREL

# US Offshore Wind Pipeline

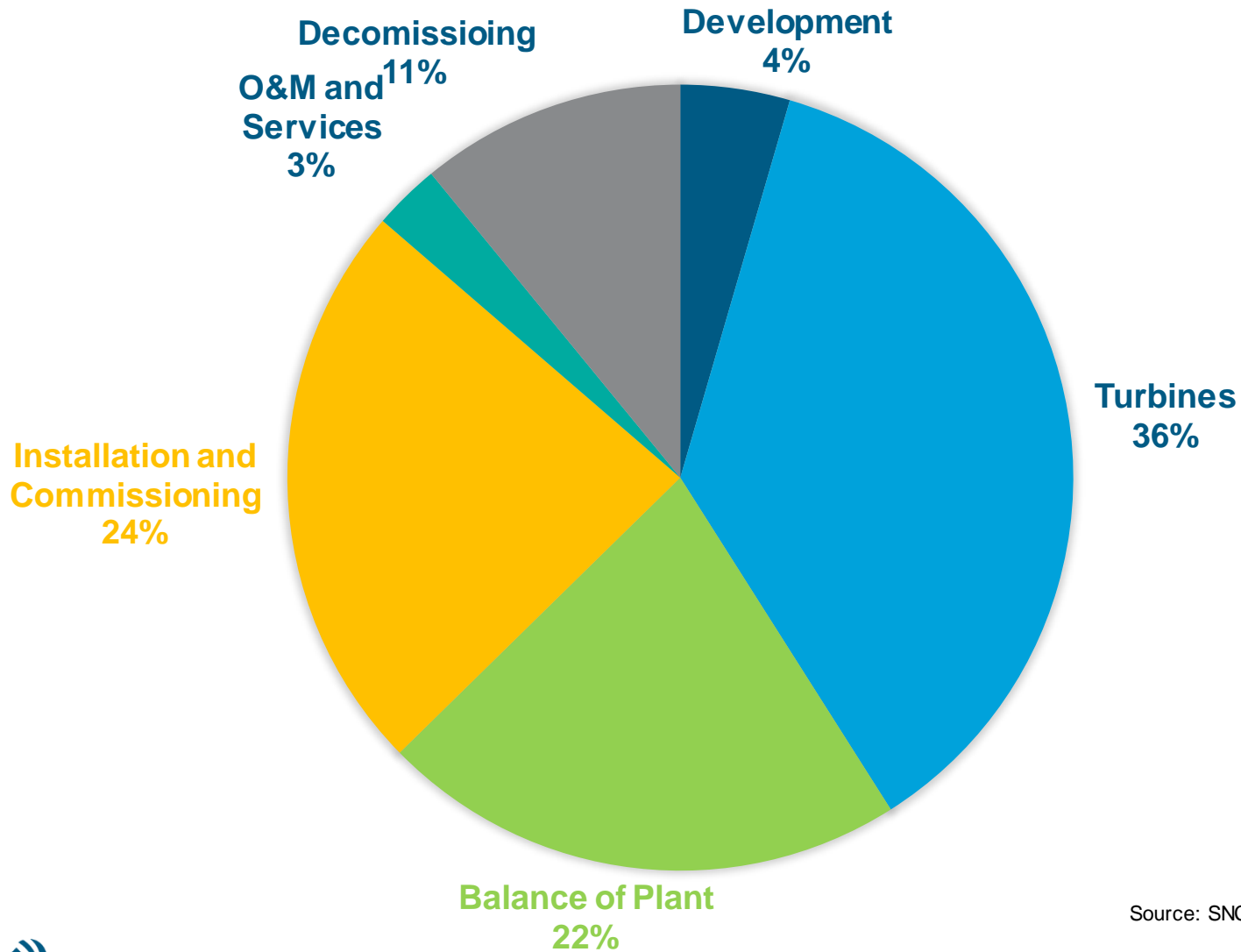


Source: NREL

# Components of Offshore Wind Project

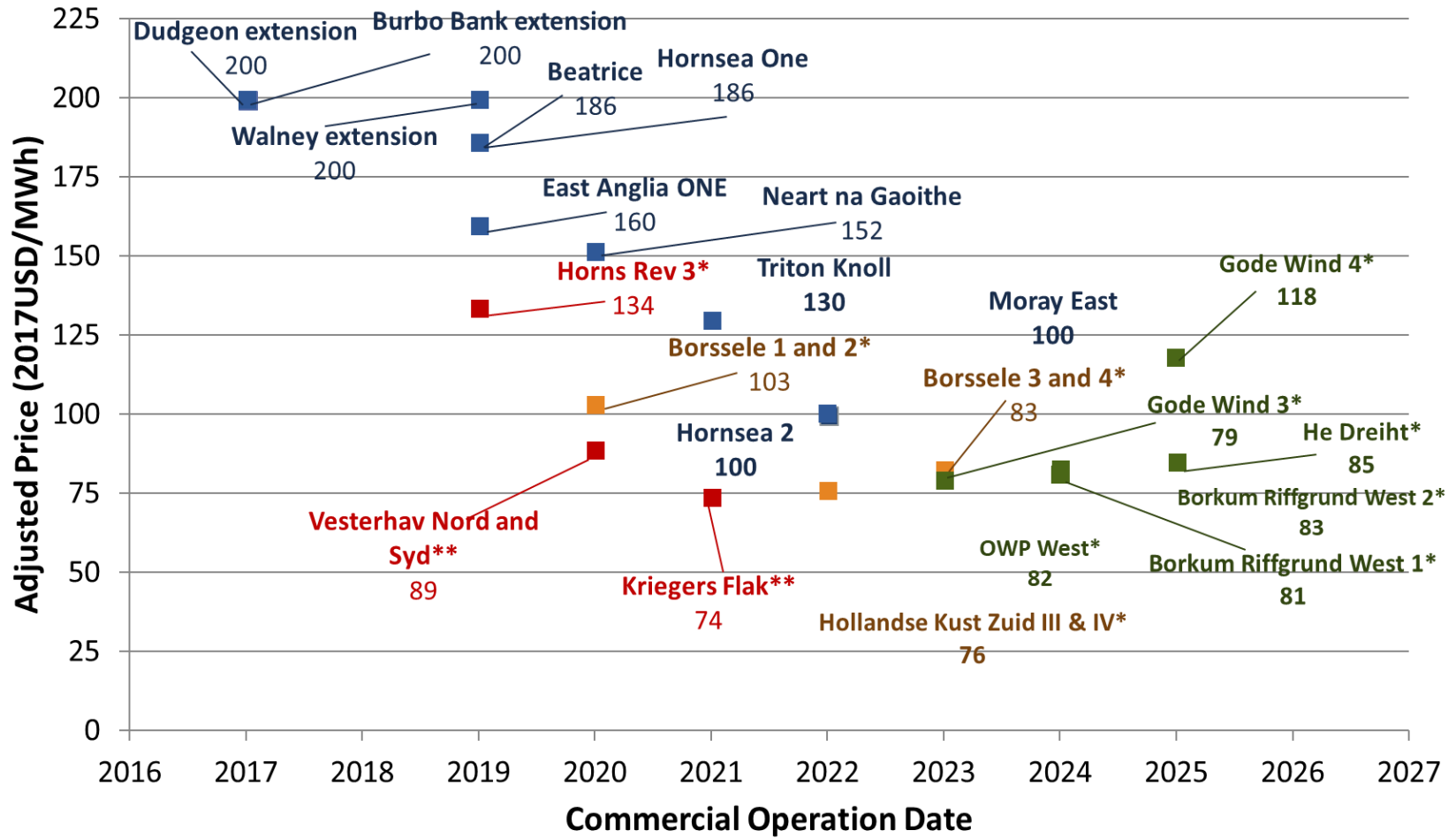


# Major Cost Components of OSW



Source: SNC-Lavalin/Atkins

# Cost of Offshore Wind – Global Context



Source: Beiter et al 2019



# Cost of Offshore Wind - Global

- ❖ Triton Knoll II - \$97/MWH
- ❖ Hornsea 2/Morrays - \$78/MWH
- ❖ Dogger Bank - \$50.05/MWH (2026 Completion)

## Cost of Offshore Wind - US

- ❖ Block Island PPA - \$240/MWH
- ❖ SouthFork Offshore Wind Farm PPA - \$160/MWH
- ❖ Vineyard Wind 1/Vineyard Wind 2 – Adjusted PPA of \$98/MWH
- ❖ Ocean Wind Project - \$98.10/MWH
- ❖ Sunrise/Empire - \$83.36/MWH




# Factors Contributing to Future Lower Cost

- ❖ Competition Enabling Regulations
- ❖ Larger Turbines
- ❖ Supply Chain Maturity
- ❖ Technical Advancements
  - ❖ Larger Turbines (??)
  - ❖ Higher voltage collector systems
  - ❖ LFAC

# Key Takeaways

- Industrialization
- Technology Improvements
- Bigger may not be better
- Regional Electric Grid Expansion Plan

# Beyond Engineering

   [snclavalin.com](http://snclavalin.com)

