

OFFSHORE WIND PROJECTS IN THE US

Market Outlook Discussion

Dan Shreve | November 2020



About Wood Mackenzie

We provide commercial insight and access to our experts leveraging our integrated proprietary metals, energy and renewables research platform.

Wood Mackenzie is ideally positioned to support consumers, producers and financiers of the new energy economy.

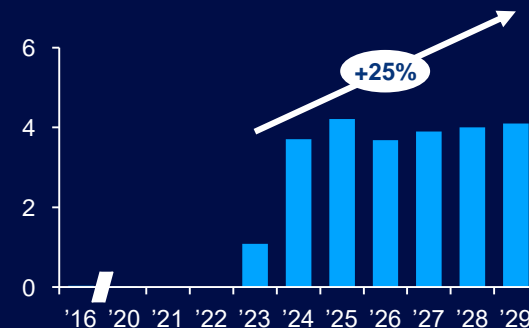
- Acquired Genscape, MAKE and Greentech Media (GTM)
- Leaders in the energy transition and cross-commodities
- Over 600 sector-dedicated analysts and consultants globally
- Located close to customers and industry contacts



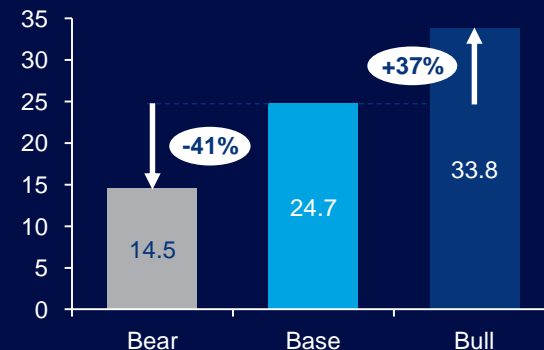
Executive summary

- US offshore wind industry will deliver 25 GW by 2029
- 9 GW already contracted or soon to be approved
- Up to 6 GW more will be solicited through 2022.
- State RPS carveouts and contracting call for 34 GW by 2035 with upside growth opportunity.
- Federal lease program currently supports approximately 20 to 30 GW depending on turbine density.
- Areas supporting as much as 45 GW are under consideration for future leasing.

US offshore wind forecast (GW)

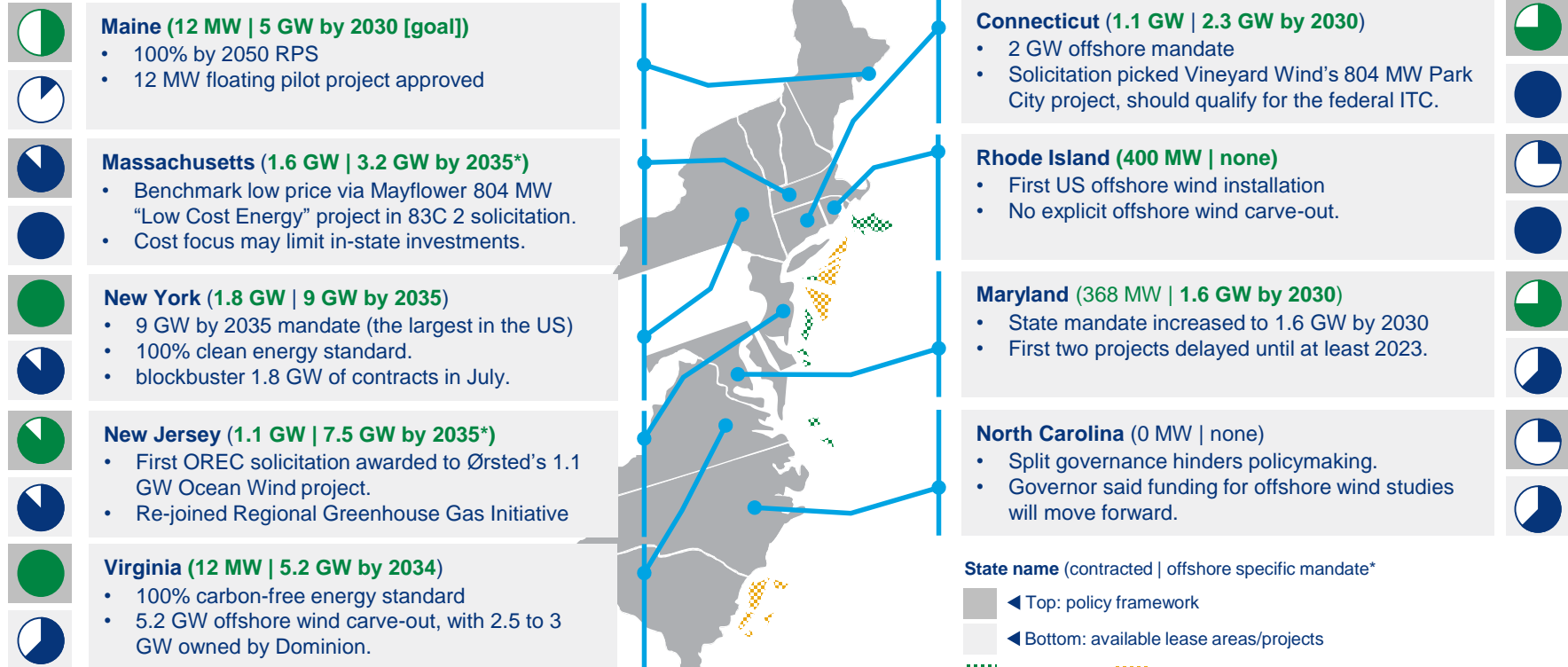


Forecast scenarios, 2020-2029 (GW)



East coast states pushed forward with solicitations and policy expansions in 2019

Key indicators and developments since YE/2018



*Note: Mandates are binding unless specified as [goal]. Mixed states: MA has a 1.6 GW by 2027 mandate plus a 1.6 GW by 2035 goal. NJ has a 3.5 GW by 2030 legislative mandate plus a 4 GW by 2035 goal by executive order. ITC = Investment Tax Credit.

Source: Wood Mackenzie

West Coast states slowly dip their toes in the water

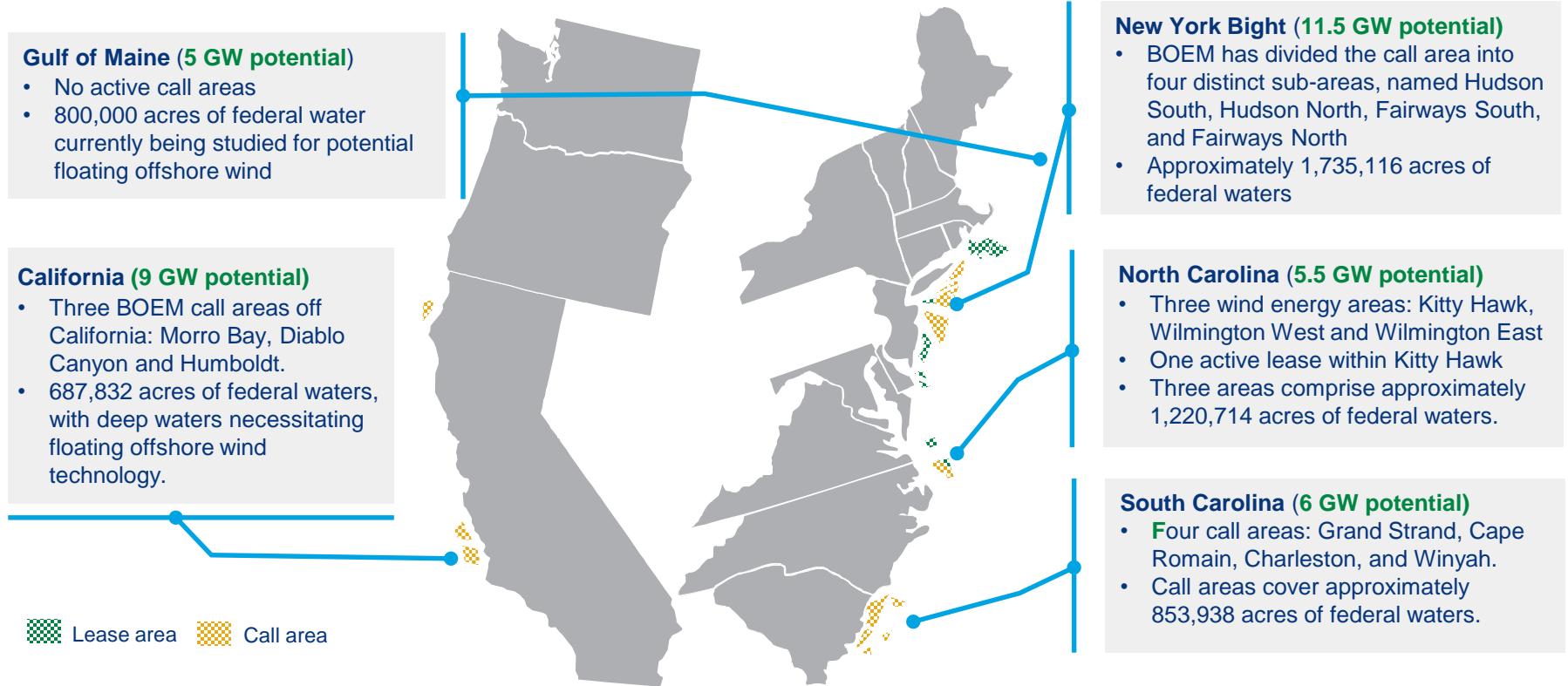
State offshore wind favorability indicators and key developments since YE/2018



Note: Hawaii map not to scale with the rest of the West Coast.
Source: Wood Mackenzie

Target lease areas and assumed 2020 to 2022 lease acreage

Two million acres of federal waters could be auctioned and support 37GW of offshore wind



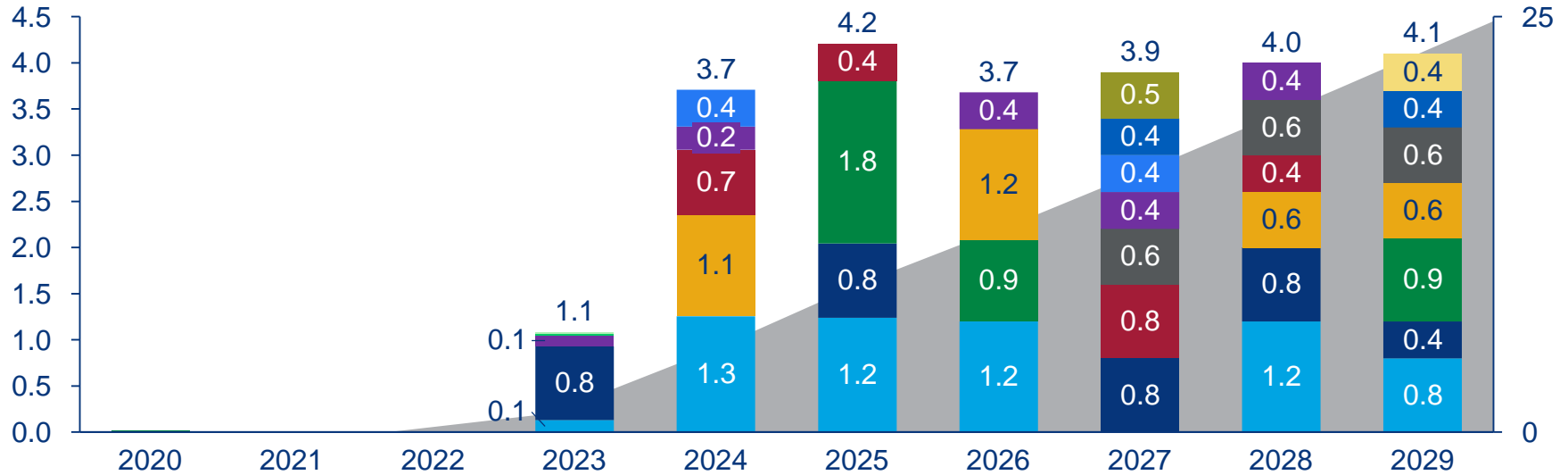
Nearly 25 GW of offshore wind capacity will be added in the US from 2020-2029

States have already selected 9 GW of capacity, accounting for over 70% of forecasted build through 2026

Annual and cumulative offshore wind outlook by state and status

(GW annual additions)

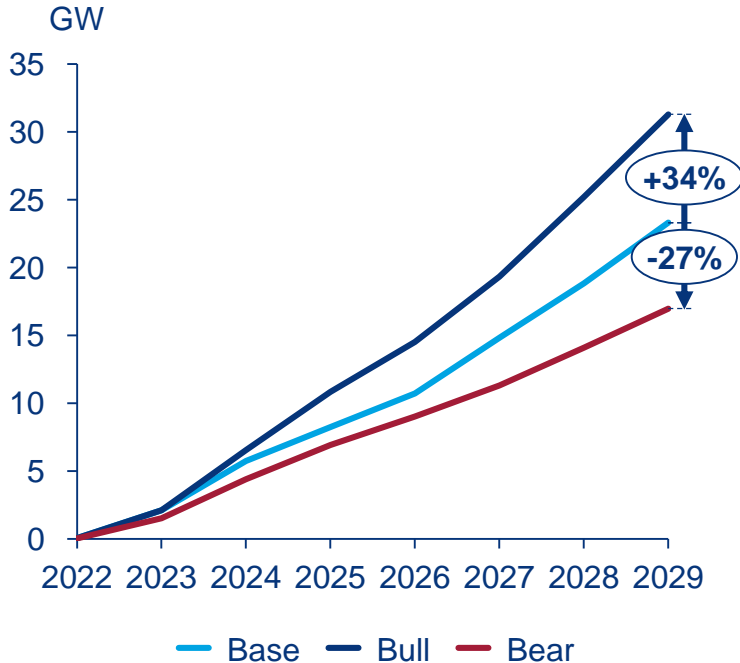
(GW cumulative)



Federal tax credits and permitting schedule define near-term build across scenarios

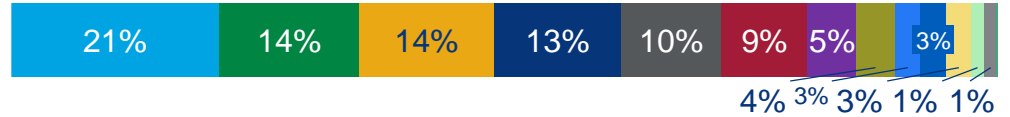
Commercialization of floating technology is critical to expanding offshore wind's regional reach to key 100% RPS markets such as California and Hawaii

Cumulative offshore wind

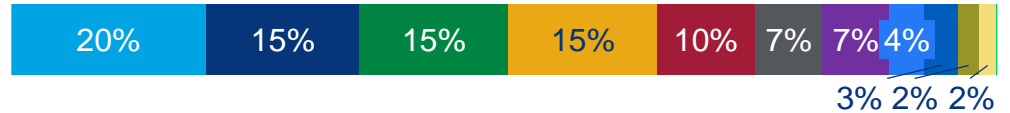


State split by scenario, North America, 2020-2029

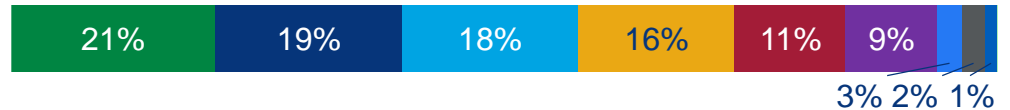
Bull case: 31.3 GW



Base case: 23.3 GW



Bear case: 17.0 GW



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Wind Logistics

Blue Water Shipping

Presented by: Brent Patterson





Facts

- Global transport, shipping & freight forwarding company
- 60+ offices worldwide
- More than 1,750 employees
- Turnover 2019: 858 mio. EUR
- Founded in Denmark in 1972 by shipbroker Kurt Skov

Business areas:



Wind
Logistics



Port
Service



Oil, Gas &
Ind. Projects



General
Cargo



Marine
Logistics

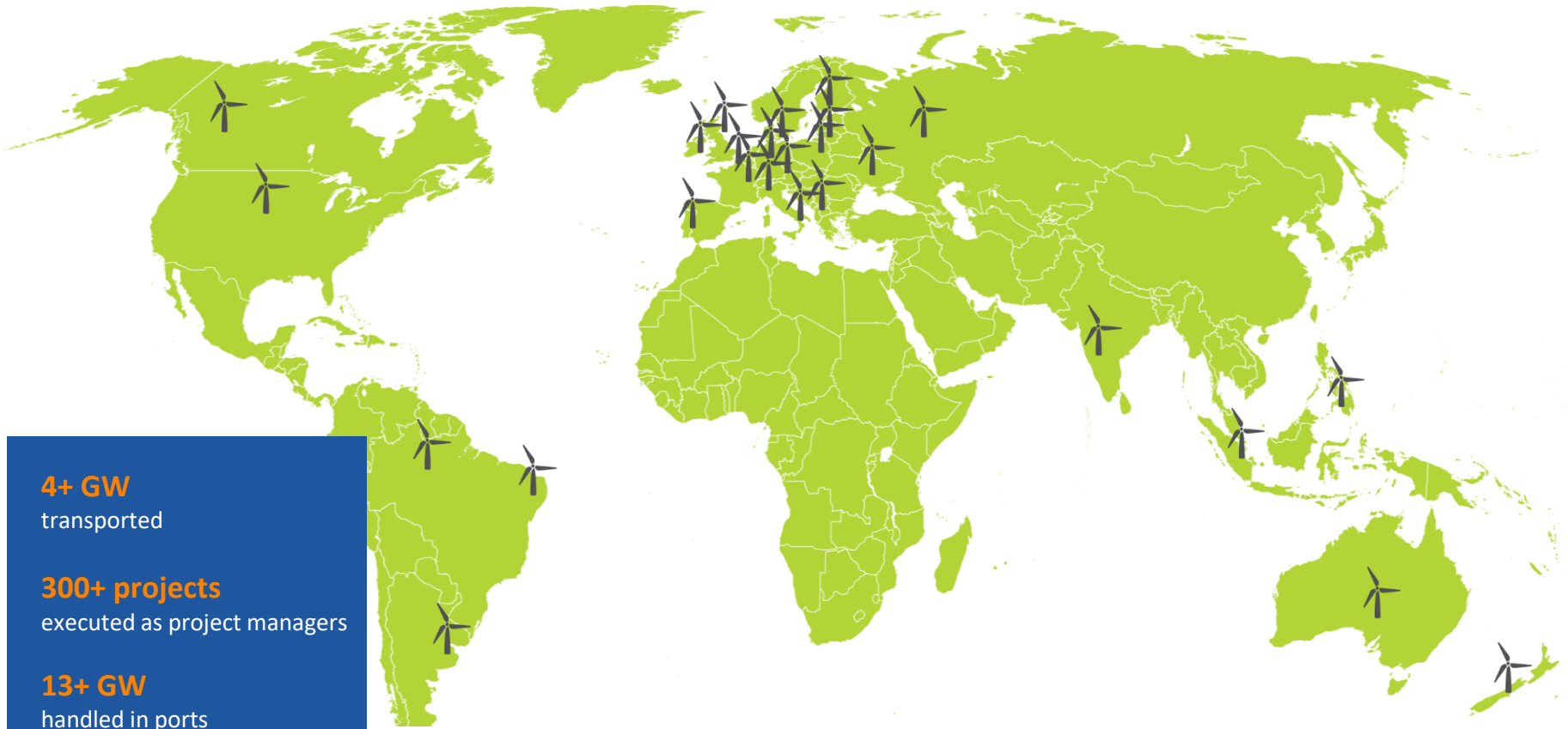


Reefer
Logistics



Your local logistics and terminal partner

- Special expertise in wind turbine transports
- High safety working practices
- Supervision at all interfaces
- IT solutions including damage control
- Track & Trace
- Transport Engineering
- Pre-survey of ports, roads and sites
- Careful planning of transports
- Skilled and experienced staff
- Professional communication



4+ GW
transported

300+ projects
executed as project managers

13+ GW
handled in ports



Offshore Track Record

1. Butendiek (288 MW) - 2. Meervind (400 MW) - 3. Humber Gateway (219 MW) - 4. Robin Rigg (180 MW) - 5. Walney H1 (367 MW) - 6. West of Duddon S. (389 MW) - 7. Gwynt y Môr (576 MW) - 8. Lincs (270 MW) - 9. London Array (630 MW) - 10. Thanet (300 MW) - 11. Northwind (216 MW) - 12. Greater Gabbard (504 MW) - 13. Sheringham Shoal (315 MW) - 14. Riffgat (108 MW) - 15. Q7 / Princess Amalia (120 MW) - 16. DanTysk (288 MW) - 17. Horns Rev HII (369 MW) - 18. Anholt (400 MW) - 19. Baltic II (288 MW) - 20. Kaarehamn (48 MW) - 21. Sandbank (288 MW) - 22. Amrumbank (288 MW) - 23. Westermost Rough (210 MW) - 24. Borkum Riffgrund HII (762 MW) - 25. Global Tech I (400 MW) - 26. Wester Meerwind (288 MW) - 27. Eneco Luchterduinen (128 MW) - 28. Gemini (600 MW) - 29. Wiking (350 MW) - 30. Block Island (USA) (30 MW) - 31. Walney Ext. (659 MW) - 32. Tahkoluoto (42 MW)

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Compass Wind

We develop tailor-made IT-systems which can be integrated with client systems.

Our Compass Wind is a single platform knowledge sharing and management system.

The platform can be used by the entire supply chain.



Engineering



Planning



Trucking



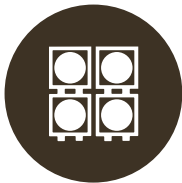
Lifting



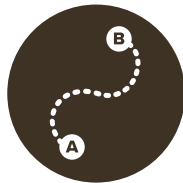
Unloading



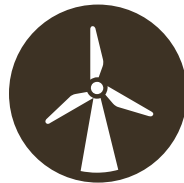
Service



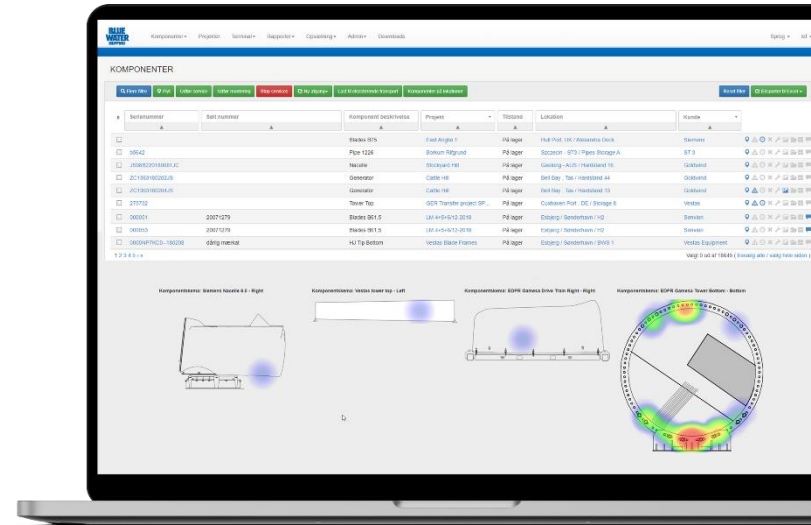
Storage



Shifting



Installation





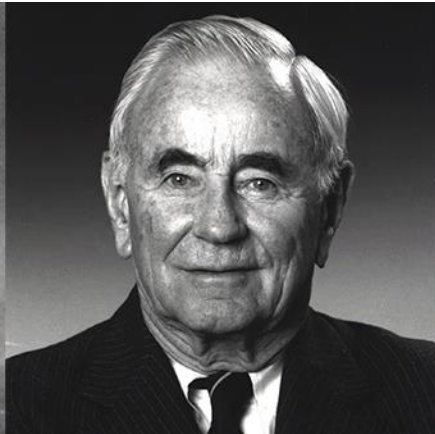
BREKBUK AMERICAS 2020

U.S. OFFSHORE WIND PROJECTS

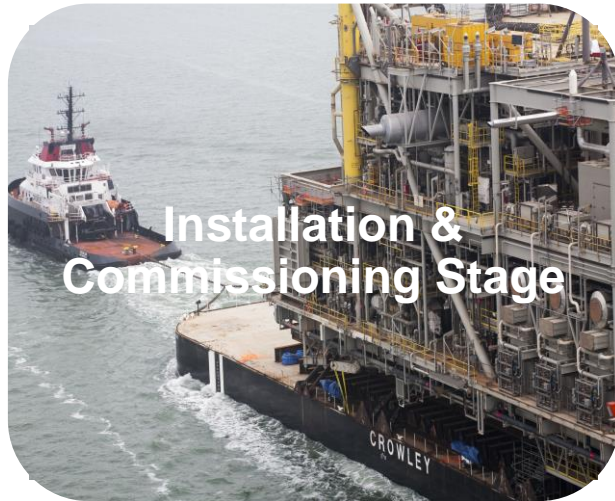
CROWLEY[®]
People Who Know[®]

Company Profile

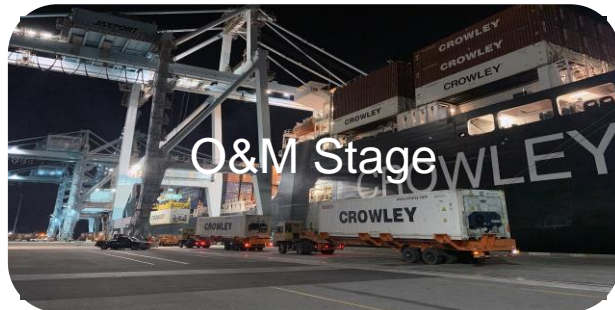
- Founded in San Francisco in 1892
- Headquarters in Jacksonville FL
- Third generation of family ownership/leadership
- Over \$2 billion in annual revenues
- Over 6,000 employees worldwide
- ~200 vessels owned and/or operated
- Other assets include: terminals, warehouses, tank farms, office buildings, trucks, trailers, containers, chassis, cranes and other specialized vehicles



Crowley Offering Summary



- Tugs & Barges – Feeder transport for Foundations Secondary Steel & WTG components
- Modified Assets with DP capability (ATB) – Feeder transport for Foundations Secondary Steel & WTG components
- Flat deck barges with DP capability - Nearshore cable laying
- Accommodation & Support Barges
- Port management services
- Logistics and customs clearance
- Engineering services and marine PM



- Design, build, operate crew transfer vessels (CTVs)
- Design, build, operate maintenance vessels (SOVs)
- Design, build, operate housing vessels to support offshore workforce
- Accommodation & Support Barges
- Logistics and Warehousing for O&M support

Terminal Management



TOTAL OFFSHORE WIND TERMINAL SOLUTIONS CROWLEY

- ① Foundation and Wind Turbine Component Marshaling
- ② Operations and Maintenance
- ③ Feeder Transportation
- ④ Assist Vessels
- ⑤ Scour Protection
- ⑥ Heavy Lift Port Logistics
- ⑦ Warehousing
- ⑧ Rail Logistics
- ⑨ Trucking Logistics
- ⑩ Onsite Marine and Terminal Management

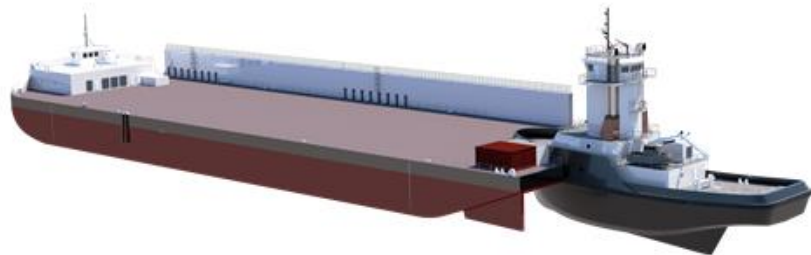
Offshore Offerings



Conventional Barge Feeder



ATB WTG Feeder



Ørsted U.S. Offshore Wind

John O’Keeffe

Head of Marine Affairs Ørsted Offshore North America



October 2020

Ørsted overview and business units

Ørsted develops energy systems that are green, independent and economically viable



- Revenue (2019): DKK 67.8 bn (USD 10 bn)
- EBITDA (2019): DKK 17.5 bn (USD 2.6 bn)
- Credit Rating: Moody's Baa1 (stable), S&P BBB+ (stable)
- 6,526 employees
- Active in USA, Scandinavia, United Kingdom, Germany, The Netherlands, Poland, Taiwan, Japan

Major Shareholders (voting share %)

- Danish State 50%
- Seas NVE 7.8%
- Capital Group 5-10%

Offshore



- Global market leader in offshore wind
- Develops, constructs, owns and operates offshore wind farms
- Provides 100% wind backed Corporate PPA's & merchant products to large business customers
- Renewable storage and hydrogen projects in electrolysis and Power2X technologies
- 6.8 GW operational capacity
- 3.1 GW build-out plan towards 2022
- Ambition of 15 GW installed offshore wind capacity by 2025

Onshore



- Develops, constructs, owns and operate onshore wind, solar and energy storage projects
- 1.6 GW onshore operational capacity
- 0.8 GW under construction and pipeline to reach 5GW by 2025
- Permian Energy Center which consists of 420 MW Solar PV and 40 MW storage facility

Markets & Bioenergy



- Heat and power plants converted from coal and gas to biomass and waste-to-energy
- #1 in Danish heat and power generation with 25% of market
- Energy supply solutions for B2B customers
- Provides route-to-market for own and customers' generation portfolio
- Market trading operations to optimize hedging contracts

Ørsted Offshore: Global overview

25+ years of experience and unparalleled track record

The global leader in offshore wind

- › **6.8 GW** installed capacity
- › **3.1 GW** under construction
- › **1,500+** turbines spinning
- › **26** offshore wind farms in operation

The world's first

Vindeby, 1991
5 MW



America's first

Block Island Wind Farm, 2016
30 MW



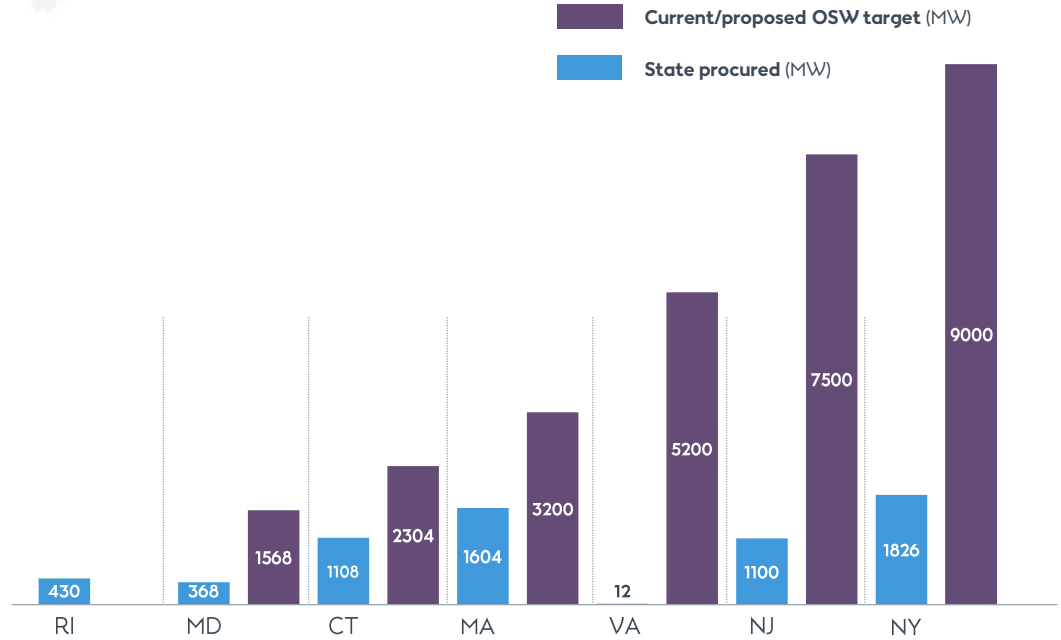
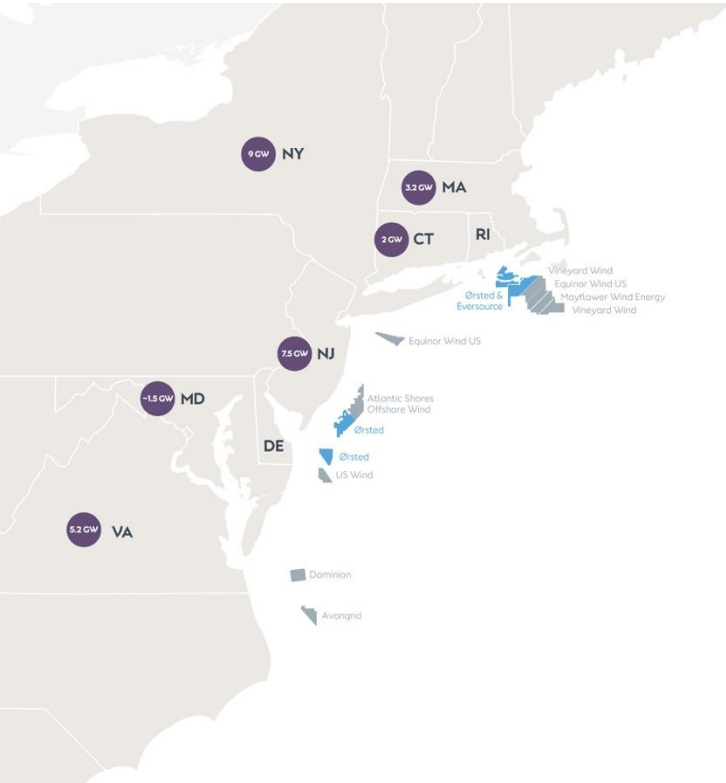
The world's largest

Hornsea 1, 2020
1.2 GW



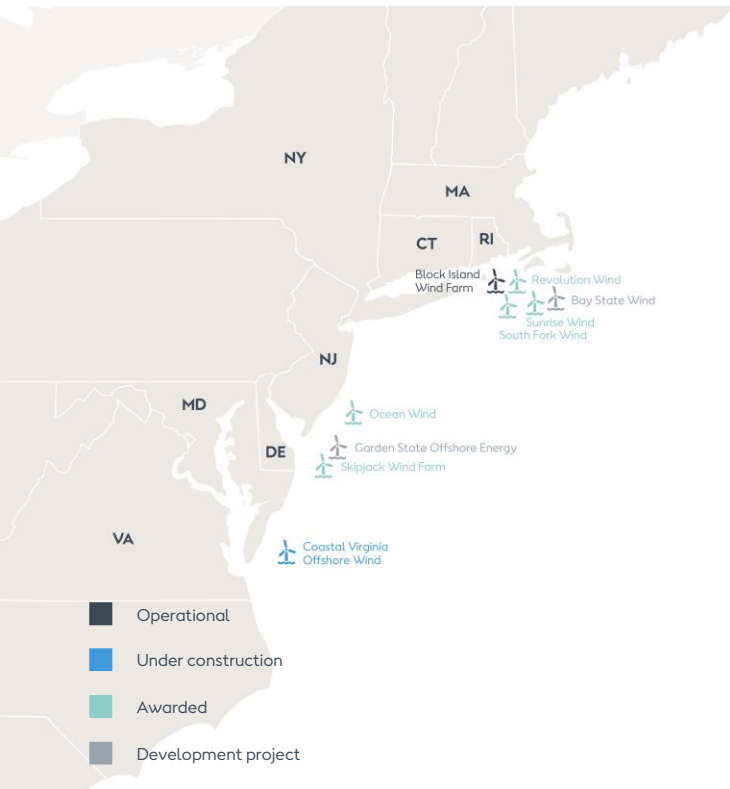
Offshore wind market on the East Coast

Potential for 25+ GW



Ørsted U.S. Offshore Wind portfolio

Attractive and geographically diverse portfolio with potential for 8-10GW



In Operation

Block Island Wind Farm: 30MW

Awarded

Revolution Wind: 50/50 JV w/ Eversource, 704MW (400MW to RI, 304MW to CT)

South Fork Wind: 50/50 JV w/ Eversource, 132MW

Sunrise Wind: 50/50 JV w/ Eversource, 880MW

Ocean Wind: with the support of PSEG, 1,100MW

Skipjack Wind Farm: 120MW

Under Construction

Coastal Virginia Offshore Wind: EPC contract, 12MW demo project

Under Development

Bay State Wind: 50-50 JV w/ Eversource

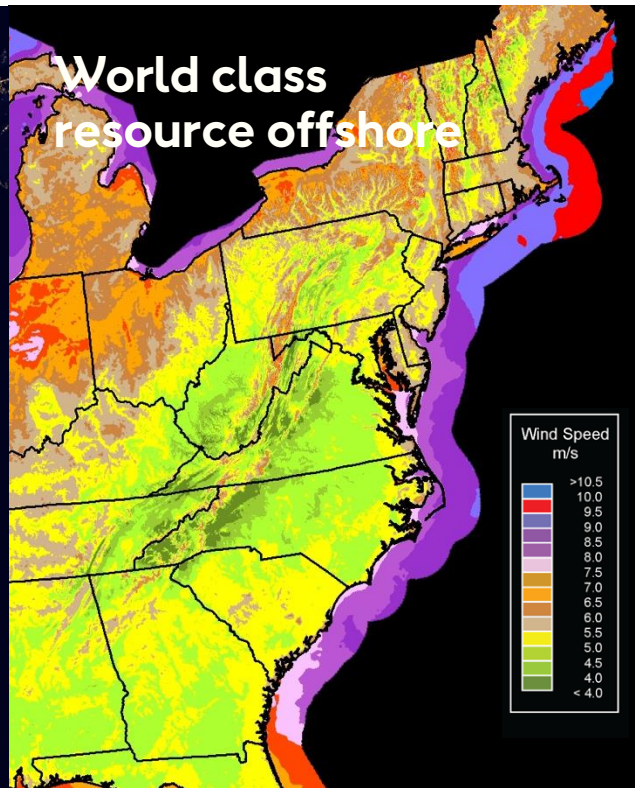
Garden State Offshore Energy: 50/50 JV with PSEG

Why offshore wind

Huge coastal
electricity demand



World class
resource offshore



Large buildable
continental shelf



Rapid advances in offshore turbine technology



Boeing 747

Length: 250 ft



Vindeby

Year: 1991
Diameter: 115 ft
Tower Height: 115 ft
Capacity: 0.45 MW



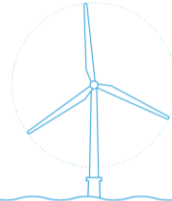
Middelgrunden

Year: 2001
Diameter: 250 ft
Tower Height: 210 ft
Capacity: 2.00 MW



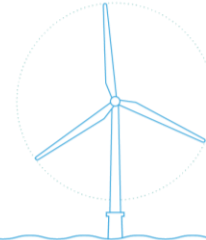
Anholt

Year: 2013
Diameter: 394 ft
Tower Height: 270 ft
Capacity: 3.60 MW



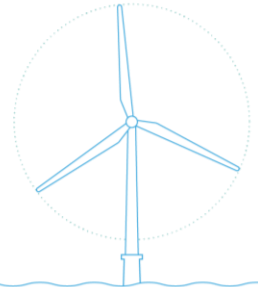
Block Island Wind Farm

Year: 2016
Diameter: 505 ft
Tower Height: 335 ft
Capacity: 6.00 MW



Burbo Bank Extension

Year: 2017
Diameter: 538 ft
Tower Height: 370 ft
Capacity: 8.00 MW

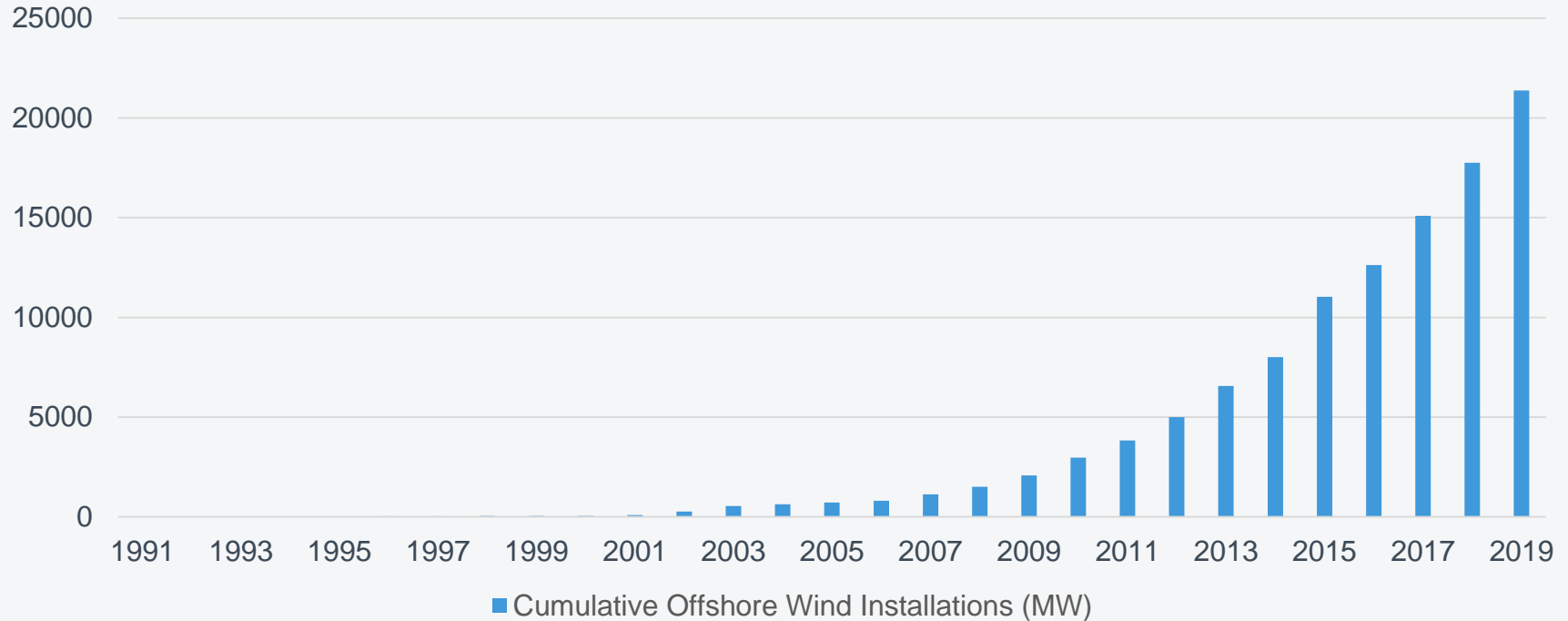


Skipjack Wind Farm

Year: 2023
Diameter: 722 ft
Tower Height: 502 ft
Capacity: 12.00 MW*

Growth of offshore wind globally

21.3 GW in operation – 5,047 turbines spinning – 3.6 GW added in 2019



Investing in American Port Infrastructure



Rhode Island

- Two ports: ProvPort and Quonset
- Investing \$40 million in upgrades with JV partner Eversource
- Construction, fabrication, and operations for multiple projects



New London

- \$77.5 million of a \$157 public-private partnership with JV partner Eversource and the State of Connecticut and Connecticut Port Authority to re-develop New London State Pier into a heavy-lift cargo and deep-water port
- Supporting construction for regional projects



Baltimore

- Former Bethlehem Steel site is an excellent heavy construction facility
- Investing \$38 million in fabrication and port upgrades
 - \$13.2 million invested at Tradepoint Atlantic
- Serving the Skipjack Wind Farm project



Long Island

- Constructing a new Operations and Maintenance (O&M) hub in the greater Port Jefferson area with JV partner Eversource
- Creating up to 100 permanent full-time jobs and economic investment for Long Island

Block Island Wind Farm

America's first offshore wind farm



30MW project



17,000 homes



First in the nation



Ørsted's three sustainability priorities

A world that runs entirely on green energy

Our priority

By pursuing a world that runs entirely on green energy, we address societal challenges for which Ørsted can provide market-scale solutions in a manner that creates value for society and our business at the same time.

Enabling sustainable growth

Our priority

Through 'Enabling sustainable growth' we address the social and environmental impacts of our operations and business relations to enable growth of our business in a sustainable manner.

Business integrity

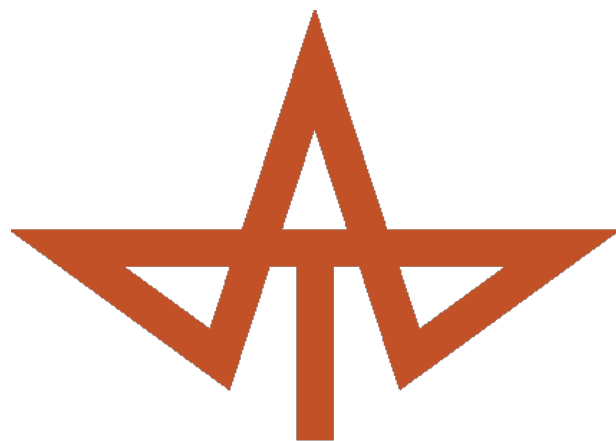
Our priority

Through 'Business integrity' we seek to conduct our business with transparency and accountability, respecting labor and human rights.



Ranked most sustainable company in the world





**TRADEPOINT
ATLANTIC**

INDUSTRY IN MOTION



A MODERN INDUSTRIAL REVIVAL

REPOSITIONING FOR THE FUTURE

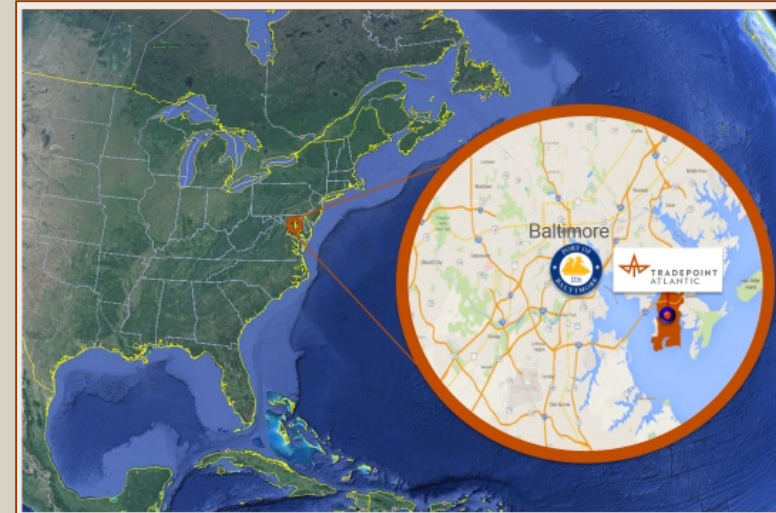
- Former Bethlehem Steel Mill at Sparrows Point
- Demolished 17 million square feet of old industrial complex
- Environmental clean up continues and is on track
- Built 8 million sf. of distribution, warehousing & industrial facilities
- Plans for an additional 7 million sf. of future development
- Port modernization underway
 - High bearing capacity quayside
 - Barge berth for roll-on/roll-off wind components
- Over \$1.5 billion of private investment to date
- 8,000 new jobs and counting
- Emerging 21st century global logistics and supply chain platform



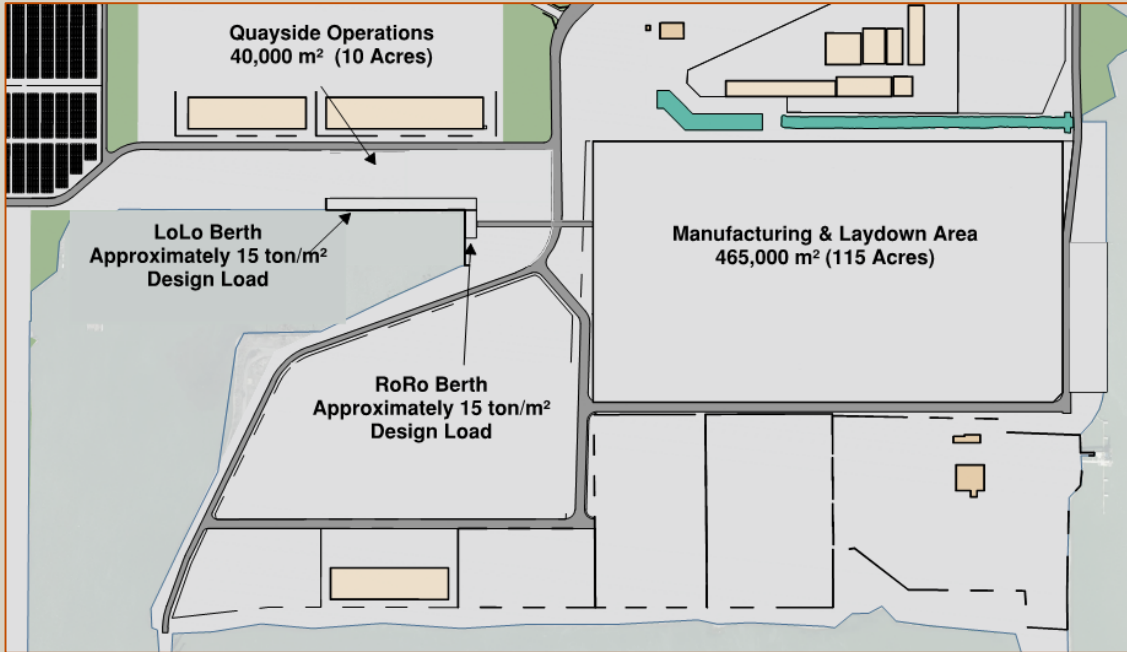
STRATEGIC LOCATION ON THE USEC

Mid-Atlantic Connectivity

- Ability to access northern and southern projects
 - Northern and southern routes to the Atlantic ocean
- Sheltered port in the Chesapeake Bay
- Minimal tidal fluctuation



OFFSHORE WIND MASTER PLAN



Multi-Commodity Marine Terminal to include Offshore Wind

- Over 115 acres reserved for offshore wind activities
 - Significant acreage for offshore wind component laydown, staging, fabrication, or manufacturing
- Additional space available as needed
 - 900 acres reserved for marine related activities

Terminal Improvements

- Uniform heavy lift capability for component staging & crane operations
- Installation of a roll-on/roll-off berth for HTV or barge operations
- Efficient access to adjacent laydown areas
- Equipment improvements including lighting, bollards, cleats