

# COASTAL WIND *link*

*A PSEG and Ørsted project*



March 22, 2022

# PSEG and Ørsted are pioneers in the offshore wind (OSW) industry

Ørsted created the global OSW industry in 1991 with the commissioning of Vindeby, the world's first OSW project



*"When the 11 turbines of the world's first offshore wind farm, Vindeby in Denmark, were commissioned by Ørsted in 1991, not many believed that it was practical – or even possible – to operate wind turbines at sea."  
-Ørsted.com*

PSEG has supported NJ's OSW ambitions since 2008 when its Garden State Offshore Energy project won the first NJ OSW RFP

*Following the expansion of NJ's targets for wind energy in 2008, PSEG praised the state's leadership in a growing industry.*

*"It sends the signal that we intend to be in this for the long term." –Ralph Izzo, PSEG CEO (2008, NJ.com)*



**We will follow through to ensure New Jersey achieves its clean energy goals**

# PSEG and Ørsted: The most qualified team to deliver offshore wind generation to NJ



**PSEG is the largest utility constructor of transmission facilities within PJM and NJ over the last 10 years**

- 291 substations and switching stations throughout NJ
- 2,102 miles of transmission circuits, including 484 miles of 500kV transmission lines
- 350 miles of underground transmission
- PSEG has been recognized as the most reliable electric utility in the Mid-Atlantic region for 20 consecutive years
- PSEG constructs, owns, operates and maintains an extra high voltage transmission network in the most densely populated state in the country

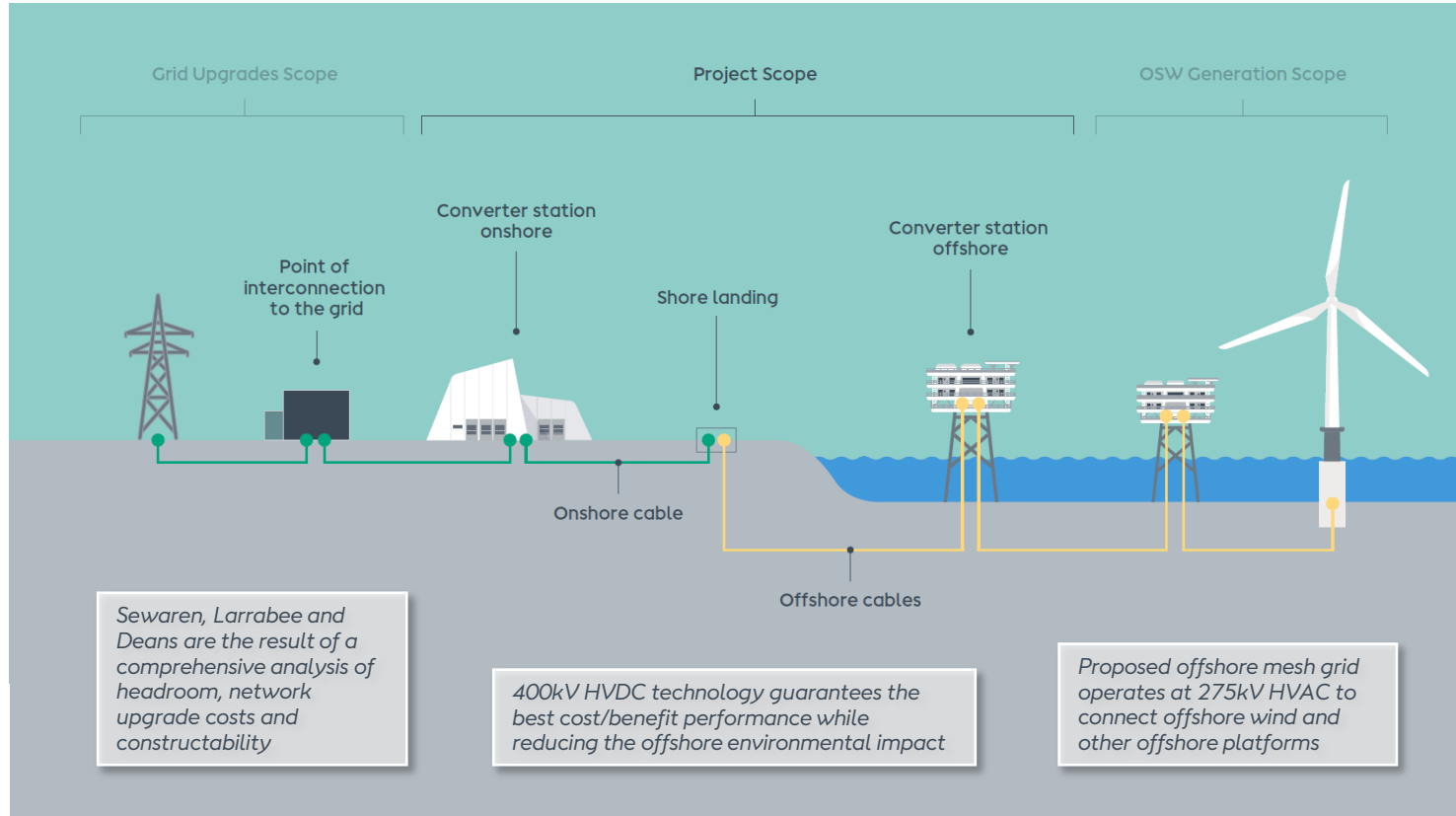


**Ørsted is the largest constructor of OSW in the world, with nearly three times the installed capacity of its closest competitors**

- 28 OSW farms developed to date
- 17 offshore transmission systems developed to date
- Ownership of the world's first OSW farm (Vindeby, 1991), America's first OSW farm (Block Island) and the world's largest OSW farm (Hornsea 1)
- Designed, permitted and constructed over 1,000 miles of subsea export cables and 1,700 miles of subsea array cables
- Ørsted's Sunrise Wind is the first US OSW project to utilize high voltage direct current (HVDC) technology

**No other bidder comes close to this level of relevant experience and performance**

# Coastal Wind Link is flexible, future-proofed, and reliable



# Coastal Wind Link: Designed & priced for reliability & constructability



Designed to connect up to **4.2GW of offshore wind** to the NJ grid using proven HVDC technology



POIs minimize upgrades, reduce environmental impacts and **target dense load pockets** in NJ



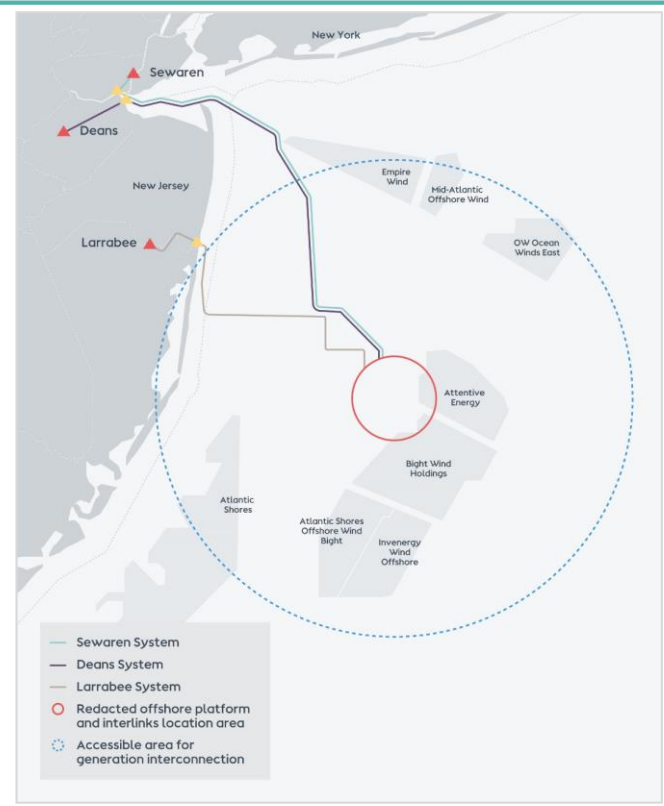
Offshore meshed grid provides **highest level of reliability and reduces curtailment risk** to offer maximum value



**Ratepayer protections encompassing realistic cost and schedule commitments** are at the heart of our proposals



Technology and platform locations **uniquely promote competition** for NJ OSW generation



## Coastal Wind Link will deliver for New Jersey

# Coastal Wind Link will deliver the best solution for NJ customers, with the highest reliability and long-term cost-effectiveness



## Combined Experience

- ✓ Track record of delivering thousands of miles of unique, highly complex projects on time, on scope and on budget
- ✓ Worldwide portfolio with unmatched access to the global supply chain
- ✓ Environmental stewards with extensive permitting experience at federal, state and local levels



## Accountability

- ✓ Ørsted has established a long-term presence in NJ, delivering 2.2+ GW of OSW through Ocean Wind 1 and 2
- ✓ PSEG has been a reliable corporate citizen in NJ for 100+ years. Over the past 10 years, PSEG's bulk transmission system has performed at 99.7% availability (i.e. the equivalent of 260 fully unavailable hours)
- ✗ In contrast, transmission lines built by certain bidders in this process have not performed nearly as reliably (i.e. have experienced almost 20,000 unavailable hours in the last 5 years)



## Benefits to NJ

- ✓ Leveraging best practices in design and execution to minimize risks to ratepayers
- ✓ Commitment to diverse suppliers, local high-skilled jobs and NJ communities
- ✓ Committed to meeting cost and schedule commitments without sacrificing reliability and performance

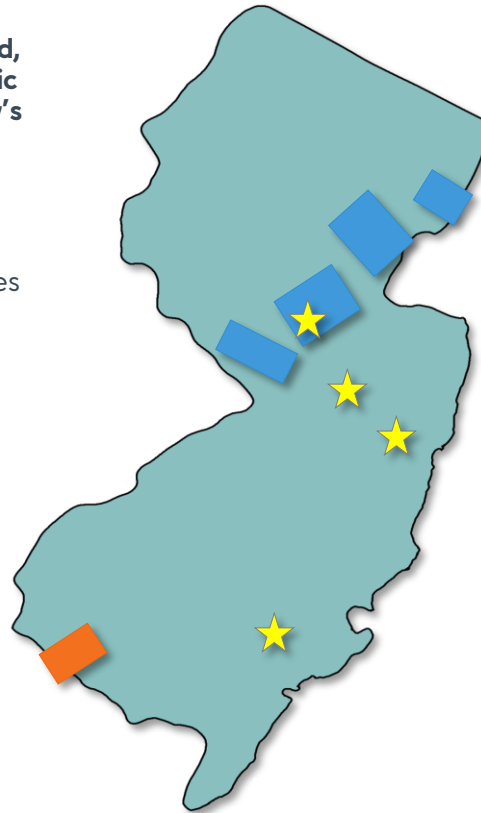
**No other bid can match the combination of experience, accountability and benefits to NJ customers**

# Appendix

# PSE&G grid upgrade proposals

In addition to the Coastal Wind Link proposals submitted jointly with Ørsted, PSEG's subsidiary, Public Service Electric and Gas Company (PSE&G), New Jersey's largest electric and gas utility, submitted two grid upgrade proposals

- PSE&G's proposals, called South Jersey Grid Upgrades and Central Jersey Grid Upgrades, target upgrades to the onshore grid that will be necessary to accommodate the new generation being built offshore



## Legend:

- ★ Default POIs identified in SAA window
- South Jersey Grid Upgrades Project
- Central Jersey Grid Upgrades Projects



# PSEG and Ørsted project execution experience

## Bergen-Linden Corridor Upgrade Project

- Replaced 138kV circuit with a double circuit 345kV from Ridgefield to Linden
- Included an HDD under the Newark Bay to accommodate two underground circuits
- Major upgrades to 9 existing stations, and the construction of a new switching station at Newark Liberty International Airport

## Susquehanna-Roseland project

- 500kV transmission line project spanning from the Berwick area in Pennsylvania to Roseland, New Jersey
- PSE&G built the New Jersey portion of the line, which includes temporary re-routing of Appalachian Trail to minimize trail length through the ROW

## Northeast Corridor

- Upgrade from 138kV to 230kV on a 50-mile route of overhead transmission through 14 municipalities
- 3.5-mile underground transmission circuit installed in Jersey City
- 15-mile underground circuit was installed through 10 municipalities
- Project also included the reconfiguration of 5 switching stations

## 69kV Program

- Replace and strengthen 50+ year old 26kV system to bring 69kV across NJ
- Over 400 miles of circuits have been replaced in over 93 municipalities. By 2023, 570 miles will have been upgraded

## Vindeby

- First offshore wind farm in the world installed in Denmark in 1991

## Hornsea I & II

- Hornsea I is the largest wind farm in operation
- Will be the largest wind farm in the world when Hornsea II is completed (2900 MW)

## Offshore Transmission Systems

- Designed and planned high-voltage transmission solutions capable of delivering power from OSW farms to POIs
- Walney Extension (45 miles offshore)
- Race Bank (42 miles offshore)
- Hornsea I (88 miles offshore)

## US-Awarded Projects

- Ocean Wind 1 (1100 MW) & Ocean Wind 2 (1148 MW)
- Revolution Wind (704 MW)
- South Fork Wind (132 MW)
- Sunrise Wind (924 MW)
- Skipjack 1 (120 MW) & Skipjack Wind 2 (846 MW)

# Overview of Coastal Wind Link proposals

Solution	Project	Sewaren		Deans	Larrabee		Total
		320kV	400kV	400kV	320kV	400kV	
1 HVDC System	Sewaren 320kV Collector	✓					1200 MW
	Sewaren 400kV Collector		✓				1400 MW
	Larrabee 320kV Collector				✓		1200 MW
	Larrabee 400kV Collector					✓	1400 MW
2 HVDC Systems	Sewaren/Deans Twin Collector		✓	✓			2800 MW
	Sewaren/Larrabee Twin Collector		✓			✓	2800 MW
3 HVDC Systems	Sewaren/Deans/Larrabee Tri-Collector		✓	✓		✓	4200 MW