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With offshore wind, New Jersey could be launching its biggest job creator ‘since the casinos’



New Jersey is on the cusp of creating a new industry within the state: offshore wind power.

by [Frank Kummer](#)

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New Jersey is betting big on offshore wind — not just to reduce carbon emissions, but with high hopes of transforming into a dominant player in renewable energy along the East Coast and wresting away manufacturing dominated by Europe.

The state’s powerful Democrats, unions, and business leaders say their ambition means jobs, lots of them, over the next two decades or longer.

“We’re talking about a whole new workforce of construction and maintenance jobs, work for architects and engineers of all types, mapping and surveying, computer and telecommunications, transportation and maintenance jobs,” said Jane Asselta, vice president of the Southern New Jersey Development Council, a nonprofit.

“Painting and skilled metal manufacturing jobs, legal, accounting, banking, and financial services. The list of services and materials needed goes on and on,” Asselta said. “Not since the casino industry came to South Jersey have we seen a workforce of this size being created.”



New Jersey State Senate President Steve Sweeney (left) and Assemblyman John J. Burzichelli at the Paulsboro Marine Terminal in Paulsboro. The port, built on the site of a former oil terminal, will soon be home to a manufacturing facility for the German company EEW to build monopiles for offshore wind turbines.

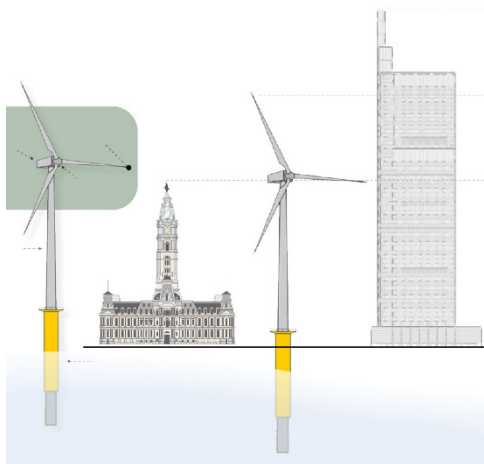
TIM TAI / Staff Photographer

Not everyone agrees that offshore wind, which has the potential to provide double the amount of electricity consumed in the United States in 2019, according to an analysis by the environmentally focused think tank the Frontier Group, would benefit New Jersey.

Critics include a local group that has said wind farms will block prime beach views, those in the fishing industry, others concerned about turbines injuring birds, those who have said the number of jobs is inflated and wondered about the cost to ratepayers.

Proponents say the claims are being addressed, or are wrong or overstated, and it's clear New Jersey is forging ahead.

A sense of scale



The sheer size of one turbine assembly gives a hint at what's to come for New Jersey:

- A five-inch-thick, 400-foot-long, 2,500-ton steel monopile gets driven into the ocean floor as the foundation.
- A tower, a rotating nacelle that contains a drive train, and three 305-foot-long blades are attached atop each monopile.
- When complete, the GE Haliade-X turbine will rise 853 feet above the Atlantic Ocean — roughly as tall as the Two Liberty Place skyscraper in Philadelphia.
- With one rotation, the turbine can power a home for a day.

There could be up to 99 turbines in just the first project, Ocean Wind, by the Danish multinational Ørsted, in partnership with PSEG, which is the parent company of PSE&G, the state's largest publicly owned utility. When complete in 2024 the wind farm, located in federal waters, will generate 1,100 megawatts, enough to annually power 500,000 homes as one of the largest facilities of its kind in the United States.

But that's just the start of the state's plan under Gov. Phil Murphy. New Jersey expects five more projects, or "solicitations," meaning many more turbines will be needed to achieve the goal of 7,500 megawatts through 2035, enough to power 3.2 million homes. The next solicitation to be awarded this year could be twice the size of Ocean Wind.

Miles of cable are needed to connect to the onshore grid. New operations and maintenance facilities will open to service the turbines. Multiple ports, vessels, and dozens of other logistics are required in what amounts to a \$100 billion investment over the next 15 years, according to the New Jersey Economic Development Authority.

Officials have said thousands of additional jobs could also be created if the state achieves its goal of becoming a wind-manufacturing epicenter. Most jobs will stem from a few key locations within the

state: The Paulsboro Marine Terminal in Gloucester County, a yet-to-be built Wind Port in Salem County, onshore operations and maintenance facilities in Atlantic City, and a yet-to-be located Wind Institute.

Officials say associated jobs along the supply chain, diverse as rock drilling and blasting, harbor dredging, and software development, could be supplied by businesses based anywhere in the state. Hundreds of companies have registered [with the state's supply-chain registry](#). And firms throughout the area are recruiting employees with wind experience. The goal of state officials is that workers trained in New Jersey will be able to take advantage of opportunities in other states as well.

Andrew Gohn, of the American Clean Power Association, which represents renewable-energy companies, said states from Rhode Island to Virginia have committed to 31 gigawatts of offshore power by 2035, which would be the equivalent of adding thousands of wind turbines along the Eastern Seaboard.

So workers trained in New Jersey, he said, will develop in-demand skills.

"We're talking about a massive, massive industry," Gohn said. "There are going to be manufacturing facilities for components, all up and down the East Coast. ... The momentum behind this is just unstoppable at this point."

Monopile construction

On a recent day, New Jersey State Senate President Steve Sweeney walked along a wind-whipped edge of the Paulsboro Marine Terminal where a steel and concrete pier juts out over the Delaware River just across Philadelphia International Airport.

EEW, a German manufacturer, this year will start building the Ørsted monopiles at an 80-acre parcel at the port. The adjacent pier is being built to withstand the crushing weight of the monopiles, which will be rolled and loaded onto waiting ships, carried down the Delaware Bay, and driven into the ocean floor.

"The whole purpose of offshore wind was for offshore energy," said Sweeney, an influential Democrat and a union vice president. "But another goal was to capture the manufacturing piece of this. We're thrilled to have clean energy, but we're also focused on the jobs."

Sweeney, a former ironworker, was joined by Assemblyman John Burzichelli, a fellow Democrat and former Paulsboro mayor. Both have been pushing for offshore wind since 2010 and say the monopiles are just the opening gambit of the push to capture manufacturing now dominated by Europe. Consider that EEW is based in Germany, Ørsted in Denmark, and GE's Haliade-X turbine blades are built in France.

Though other states already have offshore wind projects, the monopiles and blades are all built in Europe. The race is on to start manufacturing in the United States. The New Jersey lawmakers sponsored a successful bill as far back in 2010 to establish a wind program that, combined with an executive order from Gov. Murphy, would include a manufacturing sector. Currently, no U.S. facility produces parts needed for offshore wind projects. EEW's monopiles, to be constructed for Ørsted in Paulsboro, will be the first built in the United States.

As the two lawmakers toured the pier site, ironworkers clambered along steel beams just above the running river. Sweeney estimated the positions, which don't require a college degree, pay an average of \$70,000 a year. Already, more than \$30 million has been spent on construction salaries just to build the terminal pier, which is owned by the South Jersey Port Corp. The \$350 million terminal opened in 2017 and was long eyed by Sweeney and Burzichelli for wind.

EEW expects 500 jobs at the terminal and has already posted positions, including a business development manager post with a salary range of \$100,000 to \$150,000 a year and a quality manager job with a range of \$80,000 to \$100,000.



Workers construct a wharf at the Paulsboro Marine Terminal. The port, built on the site of a former oil terminal, will soon be home to a manufacturing facility for the German company EEW to build monopiles for offshore wind turbines. TIM TAI / Staff Photographer

Some of those jobs could land at the Philly Shipyard, just across the river from the port because goods transported between domestic ports must be carried on U.S. ships. In a recent quarterly report, the Philly Shipyard said it "is exploring interest from owners in building vessels to support the expanding offshore wind industry" but did not specify New Jersey.

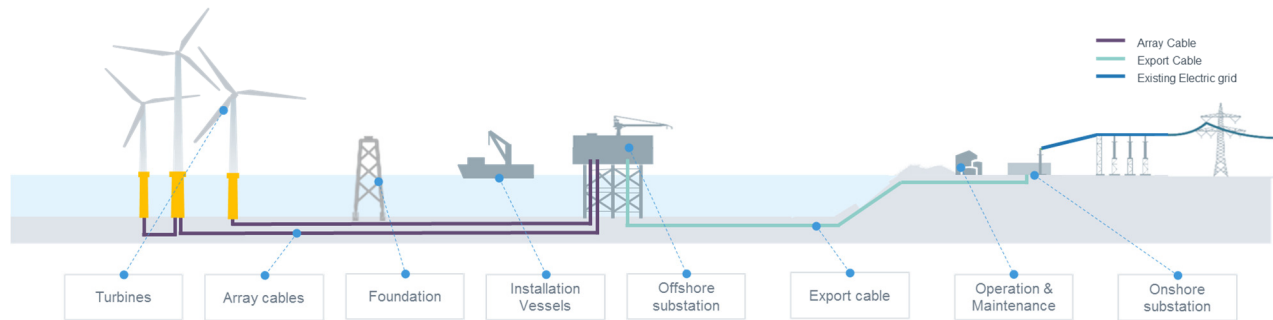
Yank Marine and Dorchester Shipyard, both New Jersey-based shipbuilders, are also ready to work with offshore wind developers, according [to the state's Offshore Wind Strategic Plan](#).

The wind farms

In an email, Ørsted said its typical wind farm creates about 1,000 jobs for each year of construction. Ørsted expects to take three years to build its Ocean Wind project. It plans 69 full-time jobs at the operations and maintenance facility in Atlantic City, which technicians will use as a service base for the turbines over the estimated 25-year life span of the farm. Jobs will then be generated to decommission the wind farm.

Ørsted said it will need manufacturing, skilled tradespeople such as construction workers, and welders as it gets closer to construction this year. Last year, it signed an agreement with the North America's Building Trades Unions to cover all current and future projects the company may develop.

Building an offshore wind farm



“Ørsted is growing rapidly in the U.S., and our hiring needs are continually evolving,” the company said in a statement. “We foresee hiring individuals with engineering experience, permitting experience, at the state and federal level, procurement, accounting, and communications among many others.”

It cited an estimate by the American Clean Power Association that offshore wind in the United States could generate 83,000 jobs by 2030. “We firmly believe that New Jersey can be the hub of the American offshore wind industry,” an Ørsted representative wrote.

New Jersey envisions six separate wind projects to launch every two years, so various projects will be in different stages at any one time, supporting jobs for years to come. The state Board of Public Utilities expects to award the next wind solicitation in June for up to 2,400 MW of wind power.

Atlantic Shores, a venture between EDF Renewables North America and Shell New Energies US LLC, is one of the bidders, along with Ørsted.

Joris Veldhoven, Atlantic Shores’ commercial director, says the next offshore wind project also has enormous potential to create “hundreds and hundreds” of jobs. Atlantic Shores would also base its operations out of Atlantic City.

“There will be a whole different set of jobs that will be created by this industry,” Veldhoven said, adding Atlantic Shores wants to be a “front-runner” in helping localize manufacturing of turbines in New Jersey.

Critics, such as Jonathan Lesser, an economist and fellow at the conservative think tank the Manhattan Institute, who has written about New Jersey’s plan, have said most of the jobs will be in construction and set to disappear after build-out.

“It’s an illusion,” Lesser said of the number of permanent jobs. He also is critical of the cost, which he said will lead to higher bills for New Jersey ratepayers. He said the price of the Ocean Wind project is expensive per megawatt hour, compared to \$20 a megawatt hour now on the wholesale market.

Those costs will be subsidized and handed down at least in part to ratepayers, he said.

Lesser said the fossil-fuel industry is more jobs-intensive. So losing them to renewables is a net loss.

The state's Board of Public Utilities, however, concluded that the Ocean Wind project would result in a cost of about \$46 a megawatt hour, and an increase of \$1.46 on the average residential bill.

Doug O'Malley, director of the nonprofit Environment New Jersey, stressed the cost of inaction on climate change.

"We would argue the cost is immense if climate change isn't addressed," O'Malley said, citing [increased flooding and sea level rise](#) among the cost.

And Veldhover, with EDF Renewables, said the claim that offshore wind will steal jobs from the fossil-fuel industry is overblown.

"These are overlapping industries in the first place," said Veldhoven, who comes from the Shell side of operations. "The types of jobs we're talking about with offshore wind, for example, are the same contractors we come across in oil and gas. It's not a zero sum."

Burzichelli, the assemblyman, said offshore wind opponents who claim few jobs will remain after the initial build-out are misguided.

"Critics who think all this is transient are kidding themselves," Burzichelli said, adding that the build-out phase will last at least 20 years, and produce thousands of jobs.

The New Jersey wind port

Key to New Jersey's efforts to gain wind manufacturing jobs will be a planned 200-acre, \$200 million state-funded Wind Port in Lower Alloways Creek in Salem County.

The port, next to PSEG's Hope Creek nuclear power plant, would be used for marshaling and manufacturing, eventually, officials hope, building turbine parts. It is centrally located on the East Coast and would have heavy-lift wharfs, open ocean access through the Delaware Bay without obstructions, and access to tradespeople.

The first phase of build-out is set to begin this year and to produce 200 construction jobs over three years. Officials believe the port has potential to create 1,500 jobs in cargo handling, storage, warehousing parts, and manufacturing. Officials plan to pick a developer soon.

Tim Sullivan, director of the New Jersey Economic Development Authority, envisions jobs not only making the turbines but the components that go with them.



Rendering of the New Jersey Wind Port, a 200-acre planned project to facilitate the offshore wind industry that would be located on the Delaware River in Salem County. New Jersey Gov. Phil Murphy's office

“We think there could be thousands plus manufacturing jobs related to the components,” Sullivan said. “So if a wind turbine is a big pole sitting on a big foundation with some very advanced technology on top of it and in the middle of it, there are jobs sort of at every point along the way. ... The number of components and pieces that go into it is enormous.”

He adds to that the professional services that would follow, such as in advertising and marketing, lawyers, consultants, and human resources professionals.

“There are lots of growth opportunities in New Jersey we’re excited about, but there’s nothing that compares to a brand-new sector like this.”

The state also hopes to bring turbine manufacturing to the port. As of now, GE, which is building its state-of-the-art, 13-megawatt, Haliade-X turbines for Ocean Wind in France, said it would “weigh a number of factors in determining where to locate” manufacturing in the future.

A Wind Institute

The state also has ambitions to create an independent, nonprofit [Wind Innovation and New Development Institute \(WIND\)](#). The Wind Institute would centralize and coordinate education, research, innovation, and workforce training related to offshore wind. The state’s goal is to include diversity as part of training and hiring.

Though there is no physical location yet, or time frame for one, it’s expected colleges and universities, such as Rowan, Rutgers, and Stockton, will play a role to train both skilled trades workers and white-collar workers.

The Department of Education is developing a technical education program to launch this year. The Economic Development Authority plans a program to educate businesses and workers in the offshore wind industry.

The institute would help establish wind turbine technician as an occupation in New Jersey, expand the number of trade workers with offshore wind skills, and establish a Global Wind Organization (GWO) Safety Certification.

Rowan University's provost, Anthony Lowman, said the school has already started taking steps to align curriculum with wind and use its associated colleges in Burlington, Gloucester, and Cumberland Counties for other training. The school is helping develop the safety certification.

"Wind is something that we've been watching for quite some time," Lowman said.

He said Rowan is working to partner with trade schools so that a student leaving the high school can become certified in one of the trades that support wind. That means working with technical and vocational high schools and the colleges' associate degree programs that could also continue to become bachelor degrees.

The university's already thriving engineering program is a big plus, Lowman notes. "Wind is going to need advanced manufacturing techniques," Lowman said.



Rowan University's Engineering Hall.

Rowan sees potential in wind partnerships and education.

JOSE F. MORENO / Staff Photographer

Diane D'Amico, a spokesperson for Stockton University in Galloway Township, said the school near Atlantic City is also gearing up. Ørsted has funded development of a program to observe protected species during construction. And Atlantic Offshores Wind has funded, along with Ørsted, a program to train students in hydrography, a science that includes mapping seafloor and measuring depth and shape of coastline.

Stockton has also proposed a Coastal Resiliency Institute and Marine Science Center in Atlantic City that would serve as an educational research and training hub for offshore wind and other energy innovation.

Students are also looking to wind.

Nick Kabala, 21, a Rowan senior majoring in electrical and computer engineering, wrote a paper last semester with a focus on wind and micro-grids. He'll soon be looking for a job.

"Ever since I came to Rowan freshman year, I started getting involved in different fields of electrical energy," Kabala said. "Renewable energy really stood out to me. ... The growing need for renewables such as wind is filling a vital role. It's something that definitely shows a lot of promise."

This story has been corrected to state that the New Jersey Board of Public Utilities expects to award the next wind solicitation in June for up to 2,400 megawatts wind power, not 2,300 as originally written.