

## Next generation offshore wind pricing

The chart below shows the requested increases for four previously approved NY projects, and NY BPU refused the increases.

Requested increased price guarantees in New York

	Original \$/MWh	Requested Increase \$/MWh	% Increase	\$/Year Added to Electric Bills	MW Capacity
Empire Wind 1	\$118.38	\$159.64	35%	\$124 Million	816
Empire Wind 2	\$107.50	\$177.84	66%	\$326 Million	1,260
Beacon Wind	\$118.00	\$190.82	62%	\$330 Million	1,230
Sunrise Wind	\$110.37	\$139.99	27%	\$102 Million	934
	Average	\$167.07	Total	\$882 Million	4,240

Then new projects were approved by NYSERDA with an average nominal cost/ MWh of \$145.07 which compares to \$167.07 in the table above. The table prices were requested in December 2023 while the new projects bids were probably made in early 2023 and may not reflect the true cost needed to obtain financing today. The projects in the table most likely would have started construction in 2025 while the new projects are slated to start in 2030. My guess is by 2030 the projects could not be built at these prices and the developers will come back for higher prices.

Here is what NYSERDA reported about the projects that include Attentive Energy One at 1,404 MW, Community Offshore Wind at 1,314 MW, and Excelsior Wind at 1,314 MW:

"The weighted average strike price of the awarded offshore wind projects over the (25 year) life of the contracts is \$96.72 per megawatt hour in 2023 (real) dollars, which equates to a nominal weighted average strike price of \$145.07 per megawatt hour. The strike prices comprising the weighted average cited above are subject to certain adjustments in accordance with the terms of the awarded contracts, including, in some cases, adjustments based on certain price indices, interconnection costs and/or receipt of qualifying federal support."

Link: <https://www.nyserd.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation#:~:text=The%20weighted%20average%20strike%20price%20of%20the%20awarded,average%20strike%20price%20of%20%24145.07%20per%20megawatt%20hour.>

Detailed contracts were not available. It looks to me the award allows prices to increase 3% a year. The strike price is the guaranteed price. The premium payment to the wind developer will be reduced by any revenue they receive from selling the wholesale power and any capacity value which might total about \$60/MWh over the life of the projects so the net premium price might be about \$85/MWh. In addition there may be other inflation adders based on NYSERDA's wording.

Two new projects have been approved in New Jersey. The 2,400 MW Invenergy project will average \$152.91/MWh, and the 1,342 MW Attentive Two will average \$187.83 over their twenty year life considering their 2.5% and 3% per year allowed price increases. In addition, each of the 2032 startups expect 30% federal Investment Tax Credits, and New Jersey is allowing up to 15% additional inflation adjusters that could bring average costs to \$175.84 and \$216.01/MWh. The New York projects may have a similar inflator.

Attentive Wind Two is projecting a ridiculously high 56% capacity factor. Most projects estimate capacity factors of 42% to 44%, similar to actual results from the five turbine Block Island and two turbine Coastal Virginia projects. Two factors suggest much lower capacity factors for larger projects. Below is the annual production curve for six years at Block Island. Notice the highest generation occurs in the spring and fall when electric demand is lowest. The Virginia turbines show a similar pattern. With many large projects all doing the same generation pattern the regional grids will not be able to take all the power produced so turbines will have to be shut down, or curtailed. PJM expects average capacity factors will be 37% because of this curtailment.

European studies of offshore wind show a second impact known as the “Wake Effect”. The first row of turbines absorb wind power leaving succeeding rows with less wind energy. The impact could be to drop electric generation another 5% to 10%. Lower generation means higher guaranteed prices will be needed. We will most likely see future nominal strike prices routinely above \$200/MWh. PJM average wholesale power cost averaged \$39/MWh last year.

