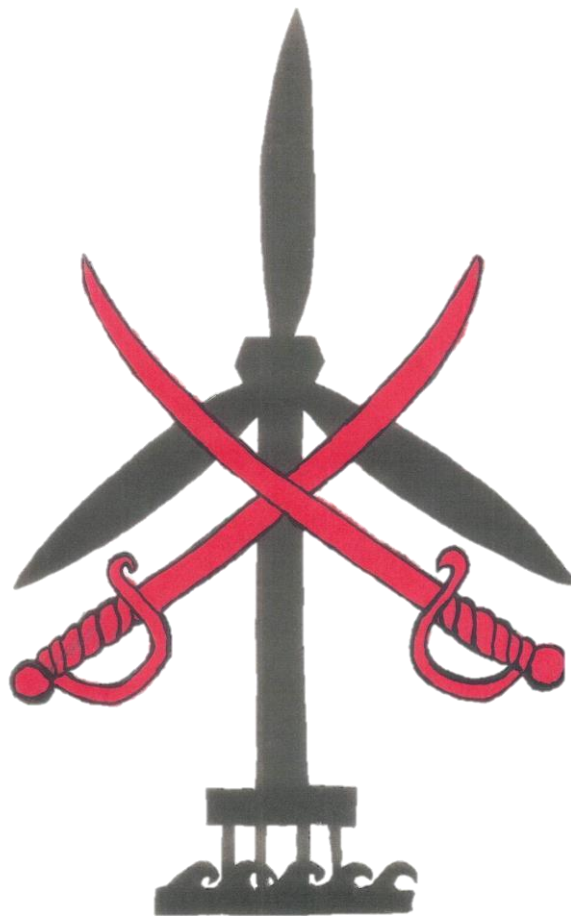


THE WALNEY ISLAND REPORT



To: DEFEND BRIGANTINE BEACH COMMITTEE MEMBERS

From: Michael Bauerle

E-mail: mikebauerle@hotmail.com

RE: Onsite day, and night, first person observations and community investigation of comparable operational offshore wind farms off Walney Island, England on 10-15-2023 and 10-16-2023.

Date: December 7, 2023

I. INTRODUCTION

There has been much speculation as to what the planned wind farms off the New Jersey coast will look like in actuality. Reasonable people, hearing about the projects, surmise they will be limited in scope and unobservable from their beaches.

This belief is understandable since it defies common sense to accept the notion that people in power, who hold stewardship over our wonderful land and sea, would purposefully ruin the pristine and beloved New Jersey shore. Are they not aware that installing hundreds of one hundred story wind turbines off the New Jersey coast may irreversibly destroy our beautiful and romantic seashore?

Moreover, mindful citizens would reasonably think that politicians and corporate leaders, prior to commencing such a massive and unprecedented construction project, would deem it wise to investigate an existing and comparable operational offshore wind farm before they chained their reputations to such a risky experiment.

Interestingly, instead of being presented with photographs of a real comparable offshore wind farm, concerned citizens have been offered only computer simulations and theoretical pictorial constructs of the anticipated appearance of these future offshore wind turbine farms. Citizens are asked to accept these “simulations” as being accurate representations of what may, in just a few years, become the new seashore reality.

However, people who possess a reasonable degree of life experience realize there is no substitute for witnessing the actual thing “in person”. With the foregoing in mind, I traveled to Walney Island, England on Sunday afternoon, October 15, 2023. I left Monday morning, October 16, 2023, at approximately 9:00 a.m. During this time, I visited the beaches and spoke at some length with five townspeople (Dave, Tracey, Emily, Carol and Lori) about their wind turbines.

They were all exceedingly kind, as they were willing to take a portion of their busy day to speak with an inquisitive stranger from “across the pond” about their wind turbine farms. I took many day and nighttime pictures of the wind turbine fields during this visit. (I also videotaped the wind turbines in actual operation- a thumb drive with the videos is attached hereto). I personally found the fields to be quite disturbing in size, shape and scope. (The locations where these pictures, and videos, were taken is documented in Appendix “A”).

To get the closest experience to being there, please view my videos of the wind turbines via the links in Appendix “E”.

II. FACTUAL BACKGROUND

Walney Island, England, was previously home to the world’s largest offshore wind turbine field in the world. This was before the Hornsea One project “took the crown” in the year 2020. There are five operational offshore wind farms located off the coast of Walney Island, England. They are set forth in the following chart:

Wind farm	Distance from shore	Turbine height(s)	# of Turbines	Date operational
*Ormonde	5.9 miles	535 feet	30	2012
*Barrow	4.0 miles	396 feet	30	2006
*Walney 1	9.0 miles	492 feet	51	2011
*Walney 2	9.0 miles	492 feet	51	2012
*Walney Extension	11.8 miles	639 feet 505 feet	87	2018

TOTAL249

*Information from Wikipedia 2023. (The specifications for these offshore wind turbines are documented in Appendix “B”).

At present, several large offshore wind projects are being proposed for the New Jersey coast. There are set forth below:

Wind farm	Distance from shore	Turbine height	# of Turbines	Date Operational
+Atlantic Shores North	8.9 miles	1, 046 feet	157	2030
+Atlantic Shores South	9.0 miles	1,046 feet	200	2027-29
Ocean Wind 1	15 miles	906 feet	98	2025 (project suspended)
^Ocean Wind 2	15 miles	906 feet	111	2027 (project suspended)

TOTAL 566

+See Appendix “C”- (*Power Technology Article-April 14, 2023: Wind Watch Site Map*).

^See Appendix “D”- (BOEM report). NOTE: There will be 4 additional NJ offshore wind projects in the New York Bight Area. Many of those turbines will be in the viewshed from our coastline.

Interestingly, BOEM studies (for Both Atlantic Shores and Ocean Wind 1) fail to show photographic/computer simulations, whatsoever, as to what an industrial offshore wind turbine field looks like at night. I find this omission troubling. Were the wind turbine companies never asked to provide such pictures? If not, why?

Is not the ocean’s natural horizon necessary to migrating turtles and other sea creatures who must return back to the sea from their yearly pilgrimages?

How will this new horizon, populated and walled off with thousands of bright blinking red and white lights, affect creatures who have been following their watery journeys for untold eons?

The size and placement of the Walney Island offshore wind farms of Barrow and Ormonde provides the observer with a unique opportunity to personally visualize what will likely occur off of New Jersey if we do not stop this proposed offshore industrialization. Not unlike Mr. Scrooge in *A Christmas Carol*, by investigating Walney Island the visitor literally travels not to Christmas future, but to summer future. Unfortunately, you will not be surprised to learn that summer future was, at least for me, a depressing and gut-wrenching experience. In fact, I personally believe a visit to this beach will turn the stomach of anybody who genuinely loves the New Jersey shore.

None of the offshore wind turbines off Walney Island are as large as those that will be installed off of New Jersey. In fact, some of the wind turbines in these locations are approximately half the size, and half the distance to the beach.

However, pursuant to the laws of physics and optics, the offshore visual appearance of the Barrow and Ormonde wind farms will essentially be the same as the offshore visual appearance of the wind turbines situated in Atlantic Shores North, Atlantic Shores South and Ocean Wind One.

- **That is to say, to the observer on a beach a 1,000 foot wind turbine at 10 miles from the shore will look, for all practical intents and purposes, the same as a 500 foot wind turbine located 5 miles from the beach.**

I will now provide you with my personal observations of the Walney Island wind farms. I will start with pictures and video taken at the North end of the island on Sunday afternoon and will close with pictures and video taken more South, towards the center of the island, that same evening. (See Appendix "A").

Subsequent to presenting these pictures, I will provide you with summaries of facts and observations gleaned from my conversations with several friendly, kind, and informative long term island residents.

Finally, I will comment on what I think are very substantial environmental, economic and societal differences between Walney Island and the New Jersey shore that makes the application of offshore wind turbine fields more suitable to England's shores than those of our own.

PICTURES OF THE ORMONDE, WALNEY TWO AND WALNEY EXTENSION WIND TURBINE FIELDS - SUNDAY, OCTOBER 15, 2023 2:30 P.M. -NORTH END OF ISLAND.





MCB-Walney Island-10-15-2023



MCB-Walney Island-10-15-2023



The above pictures were taken on a relatively sunny afternoon. According to locals, this is a rare thing on Walney Island in October. The residents said it was cloudy most of the time, even in summer. Most of the turbines were spinning

slowly. In my opinion, they gave a very industrial, surreal, and unfriendly look to the ocean. (Imagine an oil field at sea). Interestingly, several of the residents offered (unsolicited) that they see the turbines working only about half the time. One resident said that some time ago a turbine blade broke off one of the towers and washed up on shore. One boater (Lisa) told me they can drive their boats through the wind turbine fields.

The beach is not sandy, but is quite rocky. Walney Island does not appear to be a large scale summer vacation spot similar to the New Jersey shore. However, it is a very nice middle class town of hard working and friendly blue collar workers. They mostly work at the local submarine/shipyard that employs thousands of people. The island, eleven miles long, is nearly five and one-half hours from London and it is not close to any other major population centers. It is quiet, subdued and peaceful. There are not many miles of massive multimillion dollar houses lining the Walney Island beaches. For a sunny warm afternoon in October, there were relatively few people on the beach.

**PICTURES OF BARROW, WALNEY ONE, WALNEY II AND WALNEY EXTENSION
WIND FARMS AT DUSK AND NIGHT.**





MCB-Walney Island-10-15-2023



MCB-Walney Island-10-15-2023





MCB-Walney Island-10-15-2023

NIGHT PICTURES FROM CENTER OF ISLAND -SUNDAY-OCTOBER 15, 2023.



MCB-Walney Island -10-15-2023



MCB-Walney Island -10-15-2023



MCB-Walney Island- 10-15-2023



MCB-Walney Island -10-15-2023



MCB-Walney Island- 10-15-2023

As you can see from review of the above pictures, the dusk and night views are truly eye-opening.

I found the ocean's horizon presented the appearance of an immense offshore oil refinery and the constantly blinking red and white lights utterly destroyed the peacefulness of the tranquil night sea. In my opinion, the endless row of red lights effectively walled of the horizon and the transformer stations appeared as annoying blobs of bright white light.

In the cold dark night, I thought about how many years in the future another lover of the sea, witnessing this scene, could not help but wonder how a prior generation had allowed the ancient, smooth, beautiful and uncorrupted horizon to be destroyed by this massive infestation of industrial wind turbines. In fact, the whole scene caused me to suffer an immediate and overwhelming sense of deep melancholy.

I found the viewing experience to be astonishingly shocking. Yes, four billion years of romantic beauty **can** be obliterated in an instant.

III. CONCLUSION

I believe, based on fundamental principles of logic and science, that the visual appearance of the Walney Island offshore wind turbine farms foreshadows that which will likely be visited upon New Jersey if these projects are not halted. Though, the similarity ends here.

Our beaches are white, sandy and smooth. However, the Walney Island beaches, while beautiful, are rocky. They are simply not suitable for hundreds of thousands of tourists to lay upon, play beach games and “get away from it all” on a sunny summer afternoon.

There are not many hotels and restaurants on Walney Island and there is no indication it is a popular tourist destination of any significance. It is difficult to reach by car and it takes many hours of travel from the big cities in England.

It appears Walney Island does not require thousands of yearly summer tourists to maintain its economy. Instead, the massive local submarine factory is its economic powerhouse. Unlike Brigantine, LBI and many other New Jersey beach towns, I expect it does not rely on many thousands of eager summer visitors to pay \$3,500.00 per week, or more, to rent houses at the beach.

Forty-one percent (41%), 102 of the 249 clearly observable wind turbines off Walney Island (Walney I and Walney II wind farms), are **half the height and the same distance** as those to be installed off of New Jersey. Thirty-five percent (35%), 87 (Walney Extension) of the total of 249 turbines off its shores are situated 11.8 miles from the beach. The two larger wind turbines of the 87 used in the Walney Extension are approximately **two thirds (2/3)** (one sixty one percent (61%) and the other sixty-nine percent (69%)) of the height of those planned for New Jersey. **None** of the wind turbines off Walney Island are as large as those planned for the New Jersey shore.

Having personally observed the Walney Island offshore wind turbines up close, during day and evening hours, I find it nearly impossible to believe that **any** rational vacationing family would pay \$3,500.00 per week to sit on a beach and watch these things. I very strongly believe vacationers will travel elsewhere to obtain a better “beach experience”.

Moreover, I believe the harm caused by the wind turbines to the Walney Island seashore environment is not as impactful as that which will be inflicted on our coast. This is because, to my knowledge, there is no evidence migrating

endangered whales regularly travel this section of the Irish Sea. Also, large scale commercial fishing does not seem to be an impactful enterprise in this town.

Respectfully submitted:

A handwritten signature in blue ink that reads "Michael Bauerle". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Michael Bauerle

APPENDIX-"A"

GEOGRAPHIC LOCATIONS WHERE PICTURES AND VIDEO TAKEN ON WALNEY ISLAND



BARROW OFFSHORE WIND FARM

Barrow Offshore Wind Farm



Barrow Offshore Wind Farm, April 2009



Wikimedia | © OpenStreetMap

Location of Barrow Offshore Wind Farm off the coast of England

Country England, United Kingdom

Location East Irish Sea, south west of [Walney Island](#), [Barrow-in-Furness](#), Cumbria

Coordinates  [53°59'00"N 3°17'00"W](#)

Status Operational

Commission date 2006

Owner(s) Ørsted A/S

Wind farm

Type

- Offshore

Distance from shore 7 km (4 mi)

Hub height 75 m (246 ft)

Rotor diameter 90 m (300 ft)

Power generation

Units operational 30

Make and model Vestas Wind Systems: Vestas V90-3MW

Nameplate capacity 90MW

External links

Commons [Related media on Commons](#)

[\[edit on Wikidata\]](#)

Ormonde Wind Farm

2


[Coordinates:](#)  [54°06′N 3°24′W](#)

From Wikipedia, the free encyclopedia

Ormonde Wind Farm



[Wikimedia](#) | © [OpenStreetMap](#)

Country	<ul style="list-style-type: none">United Kingdom
Location	West of Barrow-in-Furness , Irish Sea
Coordinates	 54°06′N 3°24′W
Status	Operational
Construction began	May 2010

Commission date

- February 2012

Owner(s)

- [Vattenfall](#)

Operator(s)

- [Vattenfall](#)

Wind farm

Type

- [Offshore](#)

Max. water depth 17–21 m (56–69 ft)

Distance from shore 9.5 km (5.9 mi)

Hub height

100 m (328 ft)

Rotor diameter

- 126 m (413 ft)

Site area 8.7 km² (3.4 sq mi)

Power generation

Units operational

30 × 5 MW

Make and model

[Senvion](#) REpower 5M (30)

Nameplate capacity

- 150 MW

Capacity factor

38.5 %

Annual net output

500 GWh

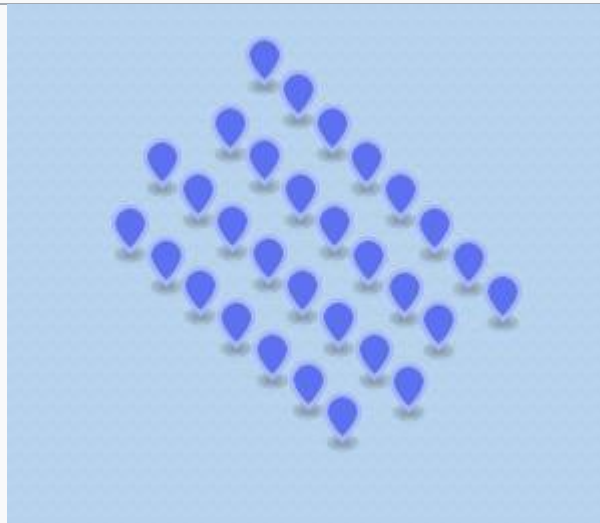
External links

Website

group.vattenfall.com/uk/what-we-do/our-projects/ormonde

Commons

[Related media on Commons](#)



[Wikimedia](#) | © [OpenStreetMap](#)

Wind farm layout

The **Ormonde Wind Farm** is a wind farm west of [Barrow-in-Furness](#) in the [Irish Sea](#). The wind farm covers an area of 8.7 square kilometres (3.4 sq mi). It has a total capacity of 150 MW and is expected to produce around 500 GWh of electricity per year.^[1]

Planning^[edit]

Originally the Ormonde project was planned as a hybrid wind and natural gas powered electricity generation plant supplied from the Ormonde South and Ormonde North gas fields. The project was developed by Eclipse Energy. In 2008, [Vattenfall](#) bought Eclipse Energy and the project was developed as wind energy only. The project management company throughout the project has been Offshore Design Engineering.^[2]

Construction^[edit]



The SeaJack installation vessel, Belfast Lough, 30 May 2011 en route from Harland and Wolff

Construction started in 2010 and was completed in August 2011.^{[3][4]} [Prysmian](#) provided submarine power cable connections including 27 km of 33 kV inter-array cables to connect the wind turbines and a 42 km of 132 kV export cable to connect the wind farm to the substation.^{[5][6][unreliable source?]} 30 turbines each with 5 MW nameplate capacity are provided by [REpower](#) and electrical works were to be carried out by [Areva](#).^[7] Steel

foundations for generators were developed and designed by OWEC Tower and produced by Burntisland Fabrications.^[8] Logistics and assembly services are provided by [Harland and Wolff](#). Generators were installed by [A2SEA](#).^[9] The first four steel foundations were delivered in July 2010,^[11] and were installed by a joint venture of Scaldis and Geosea BV.




The wind farm was commissioned on 22 February 2012 and is now fully operational.^[10]

Its [levelised cost](#) has been estimated at £149/MWh.^[11]

Incident^[edit]

In 2021, a rotor and blades from a wind turbine fell into the sea following a maintenance error. The components broke up and debris has been washed up on nearby beaches.^{[12][13]}

See also^[edit]


	England portal
	Weather portal
	Renewable energy portal

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Walney Wind Farm

Coordinates:  [54°02′38″N 3°31′19″W](#)

From Wikipedia, the free encyclopedia

Walney Wind Farm



Walney Wind Farm under construction in 2011



[Wikimedia](#) | © [OpenStreetMap](#)

- United Kingdom **Country**

Location

14km west of [Walney Island](#) off the coast of [Cumbria](#)

Coordinates

 [54°02'38"N 3°31'19"W](#)

Status

Operational

Construction began 2010

Commission date 2011 (phase 1)

March 2012 (phase 2)

September 2018 (extension)

Owner(s)

- PGGM
- [Greencoat UK Wind](#)
- [Ørsted](#)

Wind farm

Type

- [Offshore](#)

Rotor diameter 107 m; 120 m; 154 m; 164 m

Site area • 73 km² (28 sq mi)

Power generation

Units operational

102 × 3.6 MW

47 × 7 MW

40 × 8.25 MW

Make and model

MHI Vestas V164-8.25MW (40)

[Siemens Gamesa](#) SWT-3.6-107 (51)

[Siemens Gamesa](#) SWT-3.6-120 (51)

[Siemens Gamesa](#) SWT-7.0-154 (47)

Nameplate capacity

367 MW (phase 1 and 2)

659 MW (extension)

1,026 MW (total)

Capacity factor

- 40 %
- 43 %

Annual net output

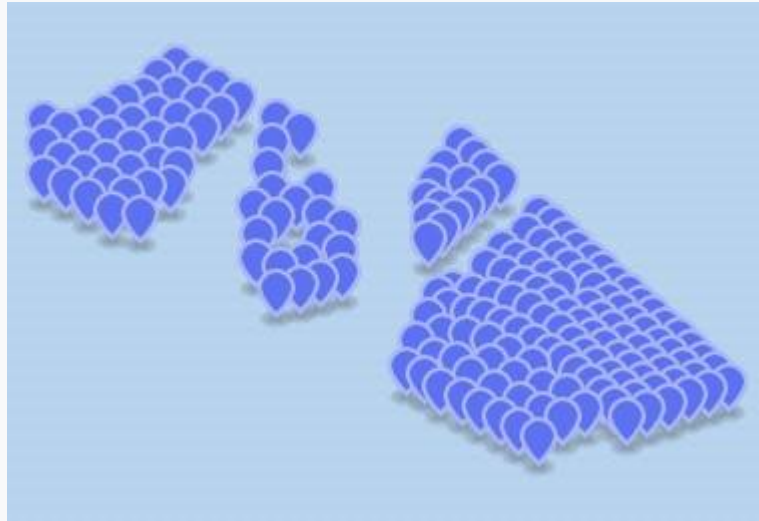
- 1,300 GWh

External links

Commons

[Related media on Commons](#)

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Wind farm layout

Walney Wind Farms are a group of offshore [wind farms](#)

9 miles
(14 km)
west

of [Walney Island](#) off the coast of [Cumbria](#), [England](#), in the [Irish Sea](#). The group, operated by [Ørsted](#)^[1] (formerly Dong Energy), consists of Walney Phase 1, Phase 2 and the Walney Extension. The extension has a capacity of 659 MW^[2] and it was the world's [second largest offshore wind farm](#) in 2018.^[2]

The wind farms were developed by Walney (UK) Offshore Windfarms Limited, a partnership between [DONG Energy](#) and [Scottish and Southern Energy](#).^[3] The farms, which are immediately northwest of the [West of Duddon Sands Wind Farm](#) and west of [Ormonde Wind Farm](#), are in water depths ranging from 19m to 23m and cover an area of approximately 73 km².

Both of the first phases have 51 [turbines](#) giving a [nameplate capacity](#) of 367 [MW](#).^[4] Until September 2012 it was the world's largest operational offshore wind farm, and regained this title when the expansion completed in September 2018.^{[5][2]} The first two phases were expected to generate about 1,300 GW·h/year of electricity, with a load factor of 43%.^{[6][7]} The Walney Extension opened in September 2018 with a further 87 [turbines](#) capable of generating 659 megawatts.^[8] And the area reaches 145 km².

Development phases^[edit]

Phase	Offshore construction start	Inaugurated	Turbines	Turbine model	Total capacity (MW)
Walney 1 ^[9]	2010	2011	51	Siemens SWT-3.6-107 (3.6 MW)	183.6
Walney 2 ^[10]	March 2011	March 2012	51	Siemens SWT-3.6-120 (3.6 MW)	183.6
Walney Extension ^[11]	February 2017	June 2018	87	40 × MHI-Vestas 8.25 MW & 47 × Siemens Gamesa (7 MW)	659
Total			189		1026.2

Construction^[edit]

In 2004 DONG Energy was awarded a 50-year lease from [The Crown Estate](#) to develop a wind farm off Walney Island, as part of the second UK offshore wind farm tendering process known as "[Round 2](#)".^[12] The farm was constructed sequentially in two phases with overlapping installation activities to reduce the overall construction timeframe.

The project involved constructing the wind turbines and their [foundations](#), building two offshore substations and installing two [undersea](#) power cables, one for each phase, and two short onshore cables to connect to two existing onshore [electrical substations](#) for connection into the UK [National Grid](#). A cable was laid by [Stemat Spirit](#). Phase 1 connects to a substation at [Heysham](#) and Phase 2 connects to substation at [Stanah](#), south of [Fleetwood](#). Both undersea cables pass close by [Barrow Wind Farm](#). All the construction work was expected to take less than 2 years, with both phases operational by the end of 2011.^[13] On 11 July 2011 Phase 1 became operational, comprising 51 turbines with an installed capacity of 183.6 MW.^[14] Its [levelised cost](#) has been estimated at £120/MWh.^[15]

Walney 2 began sending power to the grid on 1 November 2011. In February 2012, DONG Energy claimed to have installed the 51 turbines in Walney 2 in 5 months and 14 days, including monopiles and complete turbines; about 3.25 days per turbine. Walney

1 took 7 months. The improvement is due to commonality of projects and resources.^[16] The wind farm was officially opened on 9 February 2012 by the new energy secretary, [Ed Davey](#), MP,^[5] although the last of the 51 turbines in Walney 2 were only activated in April 2012.^[17]




Walney Extension^[edit]

In November 2014 DONG Energy was given development consent for an extension to the Walney offshore wind farm.^[18] The development consent allowed a maximum of 207 turbines to be added to the existing 102 turbines.^[18] The maximum generating capacity of the extension was said to be 750 MW although DONG was reported to be proceeding with a project based around 660 MW.^[18] Offshore construction began in 2017, onshore support construction having started in 2015.^[11] In 2015 DONG chose the 8 MW [Vestas V164](#) for Phase 1,^[19] and the 7 MW Siemens gearless turbine for Phase 2.^[20] In April 2018, the final turbine of the 87 installed for Phase 1 was completed, with full operation commencing in September 2018.^[21]

Incidents^[edit]

In 2014 a dive vessel, owned by Danish firm Offshore Marine Services, was carrying out routine inspection work when an anchor cable broke and the ship hit one of 102 turbines installed at the Walney Offshore Wind Farm. The UK's Maritime and Coastguard Agency surveyed the crash site and reported that a surface sheen stretching 33 feet wide and 0.7 nautical miles long was trailing the vessel. The agency said that, unlike heavier crude oil, the marine engine oil should evaporate or disperse naturally.^[22]

See also^[edit]

-  [England portal](#)
 -  [Weather portal](#)
 -  [Renewable energy portal](#)
- [List of offshore wind farms in the United Kingdom](#)
 - [Wind power in the United Kingdom](#)

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External links

- Home
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Online access > Manufacturers and turbines > Siemens > SWT-3.6-107

[Sign up](#) [Log in](#) [Search](#)

 [Manufacturers file \(227 manufacturers\)](#)

 [Turbines file \(1,916 turbines\)](#)

 [Power curves file \(884 curves\)](#)

General data



- Manufacturer: [Siemens \(Allemagne\)](#)
- Model: SWT-3.6-107
- Rated power: 3,600 kW
- **Rotor diameter: 107 m**
- No more available
- Wind class: IEC Ia
- Offshore model: yes
- Swept area: 8,992 m²
- Specific area: 2.5 m²/kW
- Number of blades: 3
- Power control: Pitch
- Commissioning: 2005

Weights

- Nacelle: 125 tons
- Tower: 255 tons
- Rotor + hub: 100 tons
- Total: 475 tons

Rotor

- Minimum rotor speed: 5 rd/min
- Maximum rotor speed: 13 rd/min
- Cut-in wind speed: 3,5 m/s
- Rated wind speed: 16,5 m/s
- Cut-off wind speed: 25 m/s
- Manufacturer: Siemens

Gear box

- Gear box: yes
- Stages: 3
- Gear ratio: 119
- Manufacturer: Winergy

Generator

- Type: ASYNC
- Number: 1
- Maximum speed: 1300 rounds/minute
- Voltage: 750 - 690 V
- Manufacturer: ABB

Tower

- Minimum hub height: 80 m
- Maximum hub height: 96 m

Power curve



Home

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[Online access](#) > [Manufacturers and turbines](#) > [Siemens](#) > [SWT-3.6-120](#)

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-  [Manufacturers file \(227 manufacturers\)](#)
-  [Turbines file \(1,916 turbines\)](#)
-  [Power curves file \(884 curves\)](#)

General data

- Manufacturer: [Siemens \(Allemagne\)](#)
- Model: SWT-3.6-120
- Rated power: 3,600 kW
- Rotor diameter: 120 m
- No more available
- Wind class: IEC Ia
- Offshore model: yes
- Swept area: 11,310 m²
- Specific area: 3.15 m²/kW
- Number of blades: 3
- Power control: Pitch
- Commissioning: 2010

Weights

- Nacelle: 125 tons
- Tower: 210 tons
- Rotor + hub: 100 tons

- Total: 435 tons

Rotor

- Minimum rotor speed: 5 rd/min
- Maximum rotor speed: 13 rd/min
- Cut-in wind speed: 3,5 m/s
- Rated wind speed: 14 m/s
- Cut-off wind speed: 25 m/s
- Manufacturer: Siemens

Gear box

- Gear box: yes
- Stages: 3
- Gear ratio: 119
- Manufacturer: Winergy

Generator

- Type: ASYNC
- Number: 1
- Maximum speed: 1300 rounds/minute
- Voltage: 690 V
- Manufacturer: Siemens

Tower

- Hub height: 90 m

Vestas V164

From Wikipedia, the free encyclopedia



Prototype V164 turbine mounted onshore.

The **Vestas V164** is a three-bladed offshore [wind turbine](#), produced by [Vestas](#), with a [nameplate capacity](#) of up to 10 [megawatts](#), a [world record](#).^[1] Vestas revealed the V164's design in 2011 with the first prototype unit operated at [Østerild](#) in northern [Denmark](#) in January 2014.^[2] The first industrial units were installed in 2016 at [Burbo Bank](#), off the west coast of the [United Kingdom](#).^{[3][4]} By 2021, Vestas had produced 500 of the series.^[5]

Specifications^[edit]

Since 2014^[6] this offshore turbine has had the [largest power generation capacity](#),^[7] with diameter of rotor 164 metres (538 ft) and swept area 21,124 square metres (227,380 sq ft). Each blade weighs 33^[8]—35 tonnes.^{[9][10]} [Lead developer](#) was Torben Hvid Larsen.^{[11][12]}

Originally called the Vestas V164-7.0MW, at 7.0 MW, the output was increased to 8.0 MW,^[13] later to 9.0 MW.^[14] In 2017 the turbine capacity was upgraded to 9.5 MW.^[15] The next largest wind turbines and competitors to the V164 are the [Siemens Wind Power](#) SWT-8.0-154 and [Adwen AD 8-180](#) offshore turbines with a rated capacity of 8 MW,^[16] and the prototypes of the French 12—14 MW [GE Haliade](#) and the 16 MW MingYang.^[17] The [Enercon E-126](#) turbine is rated up to 7.58 MW, but only installed onshore.^{[18][7]}

Starting November 2013, a prototype was installed at Østerild test station. The bottom tower sections weighs over 200 [tonnes](#) and is 24 meters long and 7 meters in diameter. The nacelle weighs 390 tonnes. The turbine weighs 1,300 tonnes and the foundation weighs 4,000 tonnes. **The total height is 220 m (720 ft).**^[19] It became operational in January 2014.^[20] Later that year favourable winds allowed it to sustain its rated 8 MW power for 24 hours for a record one-day production of 192 [MWh](#).^[21] In 2017 the 9 MW version did the same for a new one-day production record of 216 MWh.^[22]

At the September 2018 [Global Wind Summit](#), [MHI Vestas](#) announced the V164-10.0 MW. The increase in performance was achieved through "a small design change to enhance airflow and increase cooling in the converter".^[1] The first 10 MW was installed at [Seagreen](#) in Scotland in December 2021.^[23]

A later version nicknamed BlueMarlin, the 15 MW V236 with side-mounted converters, is scheduled for 2024.^{[11][24]}

World's biggest offshore wind farm unveiled in UK's Irish Sea

Walney Extension off the coast of north-west England has a generating capacity of 659 megawatts and is capable of powering 590,000 homes



Walney Extension off the coast of Blackpool, Britain, is the world's biggest offshore wind farm . Reuters

The National

Sep 06, 2018

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Powered by automated translation

Orsted unveiled the world's largest offshore wind farm, an 87-turbine complex in the Irish Sea covering an area more than double the size of Manhattan.

The Walney Extension off the coast of north-west England has a generating capacity of 659 megawatts and is capable of powering 590,000 homes, according to Danish company Orsted, the world's biggest developer of offshore wind farms.

MHI Vestas Offshore Wind and Siemens Gamesa Renewable Energy provided the turbines for the project that began construction in August 2015. The Vestas 8-megawatt turbines stand 195 metres tall while the 7MW version by Siemens is 154 metres from sea level to blade tip, according to Bloomberg.

At 145 square kilometres, Walney overtakes another UK offshore wind farm, London Array, as the world's largest.

APPENDIX “C”

POWER TECHNOLOGY-INTERNET ARTICLE

April 14 2023

Atlantic Shores Offshore Wind Project 1, USA

Atlantic Shores offshore wind project 1, being developed in New Jersey, will have an installed capacity of 1.5GW.

Project Type

Offshore wind farm

Location

New Jersey, US

Capacity

1.5GW

Owner

Atlantic Shores Offshore Wind 1

Start of Construction



Construction of the wind farm will begin in 2024. Credit: Vestas Wind Systems A/S.



Atlantic Shores offshore wind project 1 is being developed offshore New Jersey, US.
Credit: Vestas Wind Systems A/S.



The wind farm will have a capacity equivalent of powering more than 700,000 homes. Credit: Vestas Wind Systems A/S.



Construction of the wind farm will begin in 2024. Credit: Vestas Wind Systems A/S.



Atlantic Shores offshore wind project 1 is being developed offshore New Jersey, US.
Credit: Vestas Wind Systems A/S.

The 1.5GW Atlantic Shores offshore wind project 1 is being developed in New Jersey, US. It is one of the two wind projects being developed offshore New Jersey, with Atlantic Shores offshore wind project 2 being the second wind farm. The two wind farms will have a combined capacity of more than 2.5GW and together will be the third largest wind project in the country.

Atlantic Shores Offshore Wind (ASOW) a 50-50 joint venture between Shell New Energies, a subsidiary of energy company Shell and EDF Renewables, a renewable energy company, is developing the projects.

Atlantic Shores Offshore Wind 1 (ASOW 1), a subsidiary of ASOW, is developing the Atlantic Shores offshore wind project 1. The New Jersey Board of Public Utilities (NJ BPU) granted an Offshore Renewable Energy Credits (ORECs) allowance to build the wind farm to ASOW 1 in June 2021.

Construction will begin in 2024 and the wind farm is expected to be ready for commissioning in 2027. According to the developer, It will produce enough electricity to power more than 700,000 homes.

Location of Atlantic Shores offshore wind project 1

Atlantic Shores offshore wind project 1 is being developed 10-20 miles (16km-32km) off the New Jersey coastline between Atlantic City and Barnegat Bay. The area includes the New York Bight acreage awarded by the Bureau of Ocean Energy Management in February 2022.

The project site is spread over 102,124 acres (413.3km²) wind turbine area (WTA). At its closest point, the WTA is about 14km off the coast of New Jersey.

Atlantic Shores South, offshore wind project 1 – details

Atlantic Shores offshore wind farm will be installed with Vestas V23615.0 MW [wind turbines](#), which are designed for efficiency in offshore environments across the world. Up to 200 wind turbines will be installed at the two wind farms, with 105 to 136 wind turbine generators (WTGs) being installed at the project 1 site.

The wind farm also includes five offshore substations and three temporary meteorological and oceanographic buoys. The WTGs and offshore substations will have monopile-type foundations.

A new operations and maintenance facility will be built to ensure the safe and efficient functioning of the project. This will be in Atlantic City in New Jersey.

A permanent metrological tower will also be installed at the site.

Turbine details

The Vestas V236-15.0 MW wind turbine has a rated power of 15MW, cut-in wind speed of 3m/s and cut-out wind speed of 31m/s. It has a rotor length of 115.5m, a rotor diameter of 236m and a swept area of 43,742m².

Designed to last for up to 30 years, the turbine operates with an electrical frequency of 50/60Hz and is fitted with a medium-speed gearbox. It has an operating temperature range between -15°C and 23°C and a maximum noise level of 115.3dB(A).

Grid connection

The electricity generated by the turbines will be transmitted to offshore substations by 66kV-150kV high-voltage alternating current inter-array cables.

The transformers of the offshore substations will increase the electricity voltage to 230kV-525kV, which will be transported by export cables to the Monmouth landfall site in Sea Girt and the Atlantic landfall site in Atlantic City.

Onshore underground interconnection cables from the landfall sites will connect to new onshore substations. The onshore cables will continue further to existing onshore substations connecting to the electrical grid at the Cardiff substation and Larrabee substation in New Jersey.

Contractors involved

Atlantic Shores South, Wind Developments Project 1 and Project 2 as well as Atlantic Shores North Project are joint ventures between the Danish Oil Company, Shell Oil and French Company EDF Renewables.

Vestas, a wind turbine manufacturer based in Denmark, was chosen as the [preferred offshore wind turbine supplier](#) for the project in October 2022. A nacelle assembly facility will be built by the company at the New Jersey Wind Port in Salem County to assemble and test the hub, heli-hoist modules and cooler top.

Denmark-based engineering and consultancy services provider Ramboll was selected to design the wind turbine foundations.

EEW American Offshore Structures, a manufacturer of foundations for the offshore wind power industry, was contracted to manufacture monopiles for the project under a pre-commitment and capacity reservation agreement.

Fugro, a geo-data specialist based in the Netherlands, is engaged in providing real-time wind and metocean measurements to optimise turbine design, installation and maintenance, under a two-year renewed contract signed in May 2021. The company previously performed site characterisation work for the project.

EDR, an environmental consulting and site design firm based in the US, was chosen as the lead environmental permitting consultant for the two wind farms.

Epsilon Associates, an environmental engineering and consulting company, is supporting ASOW with the state and federal permitting process for the two wind farms.

Sea Risk Solutions, a provider of information and risk mitigation to maritime interests, was contracted to assess the fishing activities taking place within the lease area.

Atlantic Shores South offshore wind project 2 – details

Atlantic Shores offshore wind project 2 will be developed by Atlantic Shores Offshore Wind 2 (ASOW 2), a subsidiary of ASOW, based on ORECs granted by the NJ BPU.

Project 2 is expected to include 64 to 95 WTGs. It will be located 31,847 acres (128.9km²) east of the WTA. An overlap area of 16,102 acres (65.2km²) will be utilised by the projects.

According to the wind developers, the two projects are expected to create more than 22,200 direct and 11,800 indirect full-time job years (i.e., 1 job in one year is 1 job year, 1 job over 10 years is 10 job years) in construction, warehousing, professional services, manufacturing and transport over its 20+ year life which is an average of 1100 direct and 590 indirect average jobs per year. It is unclear how many of those jobs will employ NJ residents and/or US citizens.

Atlantic Shores North

Atlantic Shores North offshore Wind Project will be located from the North End of Brigantine to the End of Long Beach Island. It will include 157 wind turbines and up to 8 offshore substations on 81,129 acres. The closest point is 8.4 miles from the NJ coast.

Share this article

Survey says: visible offshore wind turbines would impact LBI economy

[New Jersey](#) | *filed* April 28, 2022

Credit: Survey Says: Visible Offshore Wind Turbines Would Impact LBI Economy | By Gina G. Scala | The SandPaper | April 27, 2022 | www.thesandpaper.net ~~

Share:



Translate: [FROM English](#) | [TO English](#)

Only 50% of previous Long Beach Island renters said they would plan another vacation to the barrier island if offshore wind turbines were visible from the shoreline, according to a recent online survey.

The survey, which polled 10,000 individuals who vacationed on the Island in the past, was based on a March 2018 University of Delaware survey, titled Atlantic Offshore Wind and Development, sponsored by the federal Bureau of Ocean Energy Management. It was conducted by Save Long Beach Island Inc., a nonprofit, nonpartisan corporation that represents more than 1,000 property owners, businesses and visitors.

“That is consistent with a previous survey done by North Carolina State University that showed for beach town goers there, 46% would return to the same town and rent again if turbine were present,” Bob Stern, president of Save LBI, said in a statement accompanying the result findings.

The survey found 10% of those polled said they would plan a different vacation rather than visit any New Jersey beach town. That’s consistent with the 8.5% result in the BOEM-sponsored study, according to Save Long Beach Island survey.

“And it’s important because it represents a statewide loss in coastal tourism and rental revenue,” he said.

When the BOEM study’s beach town and statewide loss predictions were applied to shore tourism job numbers for the LBI wind project’s construction and operations plan, it resulted in 1,100 job losses for the barrier island and 500 additional jobs elsewhere in the state, according to Stern.

“These results do not bode well for shore rentals, tourism and jobs, not only for LBI, but for the state as a whole,” Stern said.

Atlantic Shores plans to start onshore construction of substations in 2024 and offshore construction by 2025. The project is a 50-50 partnership between Shell New Energies US LLC and EDF Renewables North America. It was formed in December 2018 to co-develop nearly 183,353 acres of leased sea area on the Outer Continental Shelf, located within the New Jersey Wind Energy Area.

The proposed project off LBI would, to date, place up to 200 Vesta-236 gearbox turbines, standing 853 to 1,046 feet above sea level, 9 to 20 miles offshore.

“Only 3% (of those surveyed) said the turbines could be placed closer to shore,” according to the results of Save LBI’s survey. “Seventy-one percent said they favored having the turbines sited farther out where they cannot be seen.”

Part of the grassroots organization’s mission is to relocate turbines to areas where environmental and economic problems can be avoided while still allowing for offshore wind energy.

“That change requires public support, persistence, work efforts and money to support legal intervention as needed,” according to the organization’s mission statement.

In January, Save Long Beach Island, formerly known as LBI Coalition for Wind Without Impact, made good on its intention to sue the federal government for what it says is the failure to comply with the National Environmental Policy Act and the U.S. Endangered Species Act during its selection process for turbine placement.

The lawsuit was filed in U.S. District Court, District of Columbia. BOEM, which falls under the Department of the Interior, is the defendant.

“Our lawsuit is directed to BOEM’s most recent adoption of wind energy areas in the New York Bight, which includes the farther out Hudson South area,” Stern, a Beach Haven resident and former director of environmental compliance for the U.S.

Department of Energy, has said previously. “However, our suit also links the EIS (environmental impact study) to be conducted for those outer areas to the N.J. wind energy area (which includes both projects off LBI and Atlantic City) because development there is ‘connected’ to those outer areas in terms of meeting state

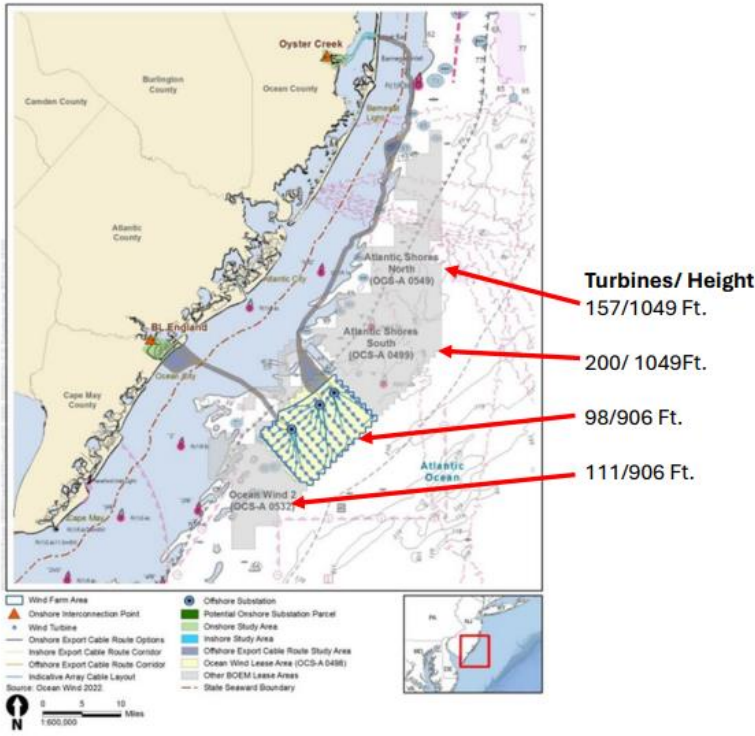
energy goals, having common impact areas, electric markets and timeframes, and to address cumulative impacts.”

Source: Survey Says: Visible Offshore Wind Turbines Would Impact LBI Economy | By Gina G. Scala | The SandPaper | April 27, 2022 | www.thesandpaper.net

This article is the work of the [source](#) indicated. Any opinions expressed in it are not necessarily those of National Wind Watch.

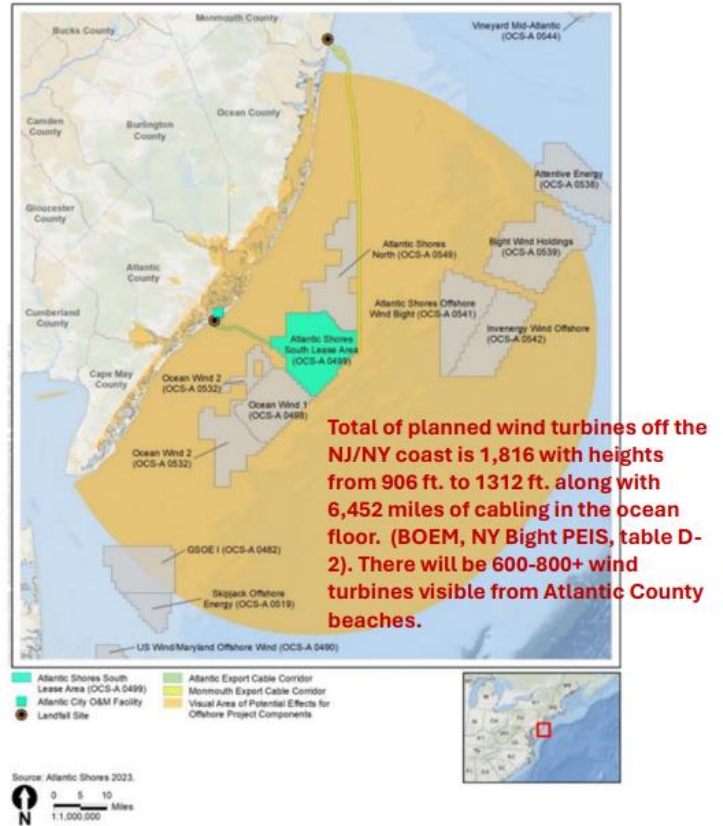
APPENDIX "D"

Wind Turbine Power Plants Off the New Jersey Coastline



Ocean Wind and Atlantic Shores projects plan for 566 wind turbines, sized up to 1049 feet high starting 9 miles off the coast. Closely spaced .6-1 mile apart. In Nov. 2023, Orsted Wind Developer cancelled its energy contracts for Ocean Wind 1 and Ocean Wind 2, but still owns the Lease Areas for the Projects.

Cumulative Historic Resources Visual Effects Analysis – Atlantic Shores Offshore Wind South Project



All the wind turbines in the projects located in the yellow shaded area will be visible from the coastline! It is identified as the "Visual Area of Potential Effects for Offshore Project Components" in the map legend.

APPENDIX “E”

Videos of Wind Turbine Power Plants from Walney Island Beaches

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-1-Walney-North-Afternoon-panning-shot-of-entire-horzon-cell-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-2-Walney-North-Afternoon-panning-shot-Isle-of-Mann-in-background-cell-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-3-Walney-South-Dusk-Michael-Bauerle-identifying-shot-Round-House-dusk-cell-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-4-Walney-South-Evening-Panning-shot-of-wall-of-lighted-and-blinking-wind-turbines-cell-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-5-Walney-South-Night-Panning-shot-of-wall-of-lighted-and-blinking-wind-turbines-cell-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-6-Walney-South-from-round-house-Dusk-Panning-shot-of-wall-of-197-wind-turbines-cel-video-10-15-23.mp4>

<https://defendbrigantinebeach.org/wp-content/uploads/2024/04/Video-7-Walney-North-360-degree-panning-shot-from-waters-edge-afternoon-cell-video-10-15-23.mp4>