

#OptimusOffshore

→ Efficient and affordable buildout

Roman Schliszio | Ørsted | 16.05.2025



DE Perspective | Demand outlook and cost efficiency debates put pressure on OFW expansion scenarios

External views



- **TSOs** wake-optimized scenarios have an installed capacity of OFW between **49GW** (Pathway 2.0) to **52GW** (Going like the wind) by 2045
- **GOV**-backed forecasts (*NEP; Ariadne*) see a power demand of **1000TWh** to **1400TWh**, with **57GW** to **70GW** of OFW by 2045
- With a grid-cost optimized approach, **researchers** (*Maurer, Hirth, Koenig*) argue for an installed capacity of **55GW**; some associations (*VKU*) positioned for **45-50GW** by 2045; BDI asks for **10 GW less OFW** by 2035
- **McKinsey** most recently published updated electricity consumption outlook of 635TWh by 2030 and **805 TWh** by **2035**, holding **30-35GW** OFW (vs. 40GW)
- EnBW proposed a limit of **45-55 GW OFW by 2045**; RWE and E.On stated that the expansion targets for OFW were **too high at 70 GW** and should be adjusted

"We will commission a monitoring exercise to examine the **expected electricity demand**, the status of security of supply, **grid expansion**, the **expansion of renewable energies**, digitalization, and the hydrogen ramp-up until the **summer break of 2025** as a basis for further work."



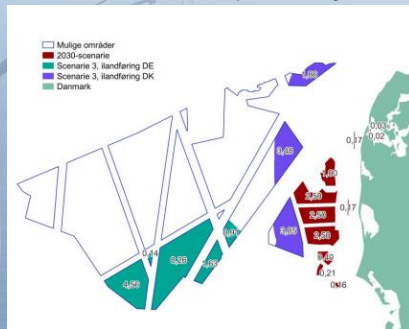
Jan 31, 2025
Cancellation of April
bidding round

Until Today

Discussions on Future DK Offshore Wind Buildout

Dec 20, 2024

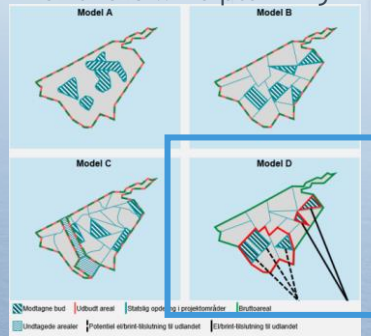
DEA Memo on long-term DK offshore wind planning



Mentioning of a scenario that optimizes buildout looking at the distance to the coast - to DK and DE

Apr 2025

DEA Analysis on long-term offshore wind planning



Radial connection of >20GW as one possible option for utilizing the long-term potential;
Reference to the need for an intergovernmental agreement

IT'S GETTING WAKED IN HERE | German offshore wind delivers onshore style

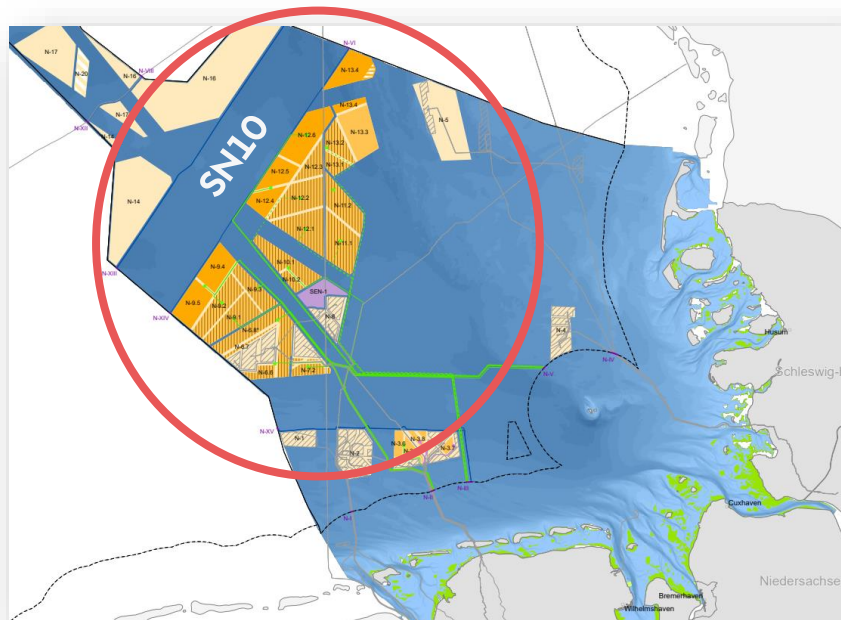
Current MSP 2025

- 43 GW capacity east of the SN10, most of it already awarded or to be tendered until 2029 & yield of ~129 TWh/a
- Average of **3000 full load hours**
- ~2400 Full load hours on three 2 GW sites (N-9.1, N-9.2, N-9.3)
- Per 2 GW site, we need >2bn investment into a grid connection system by the TSO

Take Aways

- Sites are in development with full load hours of an above average onshore wind park!
- It's too late for significant adjustments of site efficiency east of the SN10!
- Future offshore wind sites need higher full load hours!

DE MSP North Sea sites



GREAT NEIGHBOURS



Sites in DK provide potential of **25-35% lower Wind Offshore LCOE** (incl. grid connection to Lower Saxony) compared to sites east of SN10

Potential for more than **15 GW** with 5MW/km²

No buildout due to rescue requirements despite high FLH

Orsted: **5MW/km²** instead of 8-9MW/km² to enable **4000 Full Load Hours** – 10GW instead of 22 GW

Potential for up to 19 GW – Wake effects on DK & DE sites depend on NL OWP development

Limited Optimization Potential – Sites already determined by the MSP 2025. Due to the dense planning and wake effects from NL sites, only 3000 full load hours are achieved here on average.

Heat Map Comparison is **Half-Scope** – Loss of 2,5€/MWh LCOE /100km can be compensated by LCOE advantage

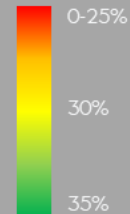
Potential Use

DK Use

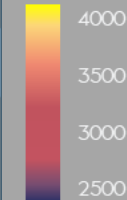
DK Potential

Available for DE

LCOE Advantage



Full Load Hours



Site Categories

In Operation, construction, or advanced planning

Search Area for NL Potential

EFFICIENT & AFFORDABLE | German offshore wind energy cannot fix itself with a band-aid, it needs a general overhaul

Key measures

Site efficiency

- 1 **Reduce site density in DE** | High full load hours are key to use grid infrastructure efficiently. Lower capacity density per km² is required. In consequence, this leads to an OFW capacity of 55GW in DE EEZ
- 2 **Implement joint MSP & grid planning** | National optimizations completely disregard cross-border wake effects and limit the scope. Efficient development of the North and Baltic Seas can be achieved through joint planning.
- 3 **Tap into higher FLH & lower LCOE** | Act European and connect up to 15 GW from Denmark with >4,000 full-load hours and up to 35% lower LCOE than in DE seabed.

Cost efficiency

- 4 **Introduce two-sided CfD** | To ensure better refinancing conditions, thus lower investment costs, and resulting lower electricity prices for businesses and industry, a financial Contract for Difference (CfD) should be introduced for DE EEZ and for cross-border projects.
- 5 **Enable lifetime extension** | Continued operation (25y + <10y) leads to significant socioeconomic benefits as grid costs are timely distributed, supply chain bottlenecks are reduced, and environmental balance is improved

Key messages

- Let's problem-solve, not plaster
- Take LCOEs and power prices in the focus
- Back to 4000 Full Load Hours
- One-seabed-approach