

UNDERSTANDING THE PROJECT DESIGN ENVELOPE FOR U.S. OFFSHORE WIND PERMITTING

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Offshore wind area lessees can submit a project design envelope (PDE) to the regulator, the Bureau of Ocean Energy Management (BOEM), as part of a Construction and Operations Plan (COP). A project design envelope allows them to outline a range of design parameters for key components. Though the PDE approach is optional, the advantages make it well worth a developer's time, effort, and investment.

What is the Project Design Envelope?

The PDE is an approach in which developers specify a range of design parameters, rather than a final, fixed design. For offshore wind, this could include elements such as turbine type, number, foundation type, locations for export cable routes, onshore substation and/or grid connection, construction methods, and timing. Once the COP is approved (with or without modifications), developers must also submit supporting evidence regarding the selection and justification for the final design elements.

Using a PDE approach for offshore wind permit applications has proved successful in Europe, where it is commonly used. The PDE places a strong emphasis on allowing both the developer and BOEM to assess maximum potential impact for each element of the design. Impacts assessed include the effects on various biological, physical, and socioeconomic resources.

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Why is the Project Design Envelope a useful approach for offshore wind?

Prior to 2017, the U.S. approvals process required developers to submit detailed, specific design proposals for their projects at an early stage. This approach has several disadvantages:

- Although careful assessment of impacts is possible, it prevents adjustments to those plans – a difficulty when technologies are developing rapidly. Being locked into turbine locations, foundation types, sizes, etc. as specified in an early design plan means that projects could miss out on the flexibility to adapt and improve. Wind farm projects can take several years to develop – time enough for considerable technological change to take place.
- Baseline studies won't have been carried out at this early stage. It would be difficult to have confidence in a full design without information about site conditions, etc. in hand.

Post 2017, BOEM introduced the PDE as a voluntary element. By contrast with a non-PDE approach, this allows developers some flexibility, which helps to future-proof their projects.

The evolution of the PDE in U.S. offshore wind permitting

From 2016 to 2017, RPS helped to assess whether phased approaches and PDE were the right processes for BOEM and the U.S. offshore wind industry, conducting a one-year study to investigate differences and lessons from the more established European offshore wind sector. [The study report \(available on the BOEM website\)](#) was used to inform a Department of Interior (DOI) action to evaluate a Design Envelope Approach under the National Offshore Wind Strategy. As part of the study, we also ran workshops for BOEM and a selection of key stakeholders in the U.S. offshore wind industry, incorporating a hypothetical wind farm PDE scenario looking at maximum potential impacts on resources such as mammals and birds. This enabled BOEM to explore how the PDE would work when put into practice.

Read more: [Investigating the project design envelope and phased approaches to offshore wind developments](#)

It's worth remembering that the approvals process for offshore wind in the U.S. is still in its relative infancy, likely to continue to mature. Processes may evolve still further [under the Biden administration](#), which has so clearly expressed its [commitment to renewable energy generation](#).

Also, while PDE is still optional in the U.S., it is prevalent in Europe. Adopting this method has the advantage of bringing the development approach in line with other regions, where it has been tried and tested. The use of a PDE may also be more likely if you are working with a European-based partner, as is more commonly the case than in the earliest days of U.S. offshore wind energy development.

It is likely that the first two offshore wind farm projects to be constructed in the U.S. will be Vineyard Wind I and South Fork. PDEs have been used in both of these projects.

Challenges of the PDE approach – and some solutions

Due to the inclusion of multiple parameters, a PDE requires developers to carry out environmental assessments in a certain way and, importantly, to communicate these assessments carefully within your documentation, i.e. ensuring you have assessed the maximum scenario that could occur for every impact-causing factor. This ensures the outcomes are robust and that every scenario has been considered. When you come to build your wind farm project, it will have an equal or lesser impact than what is defined in your COP and/or 3rd Party Environmental Impact Statement (EIS).

To support the successful adoption of the PDE approach in your project, here are four tips to consider:

1) Communications must keep the faith of your stakeholders

Your assessments are more complex because different parameters will apply to different impacts, capturing the maximum design scenario of each. Therefore, it's vital to explain your PDE in a way stakeholders can understand, otherwise they could lose confidence in the robustness of your assessment.

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2) A PDE helps avoid rounds of revisions

When you consider how much site information isn't available in the early stages, you will realize how much developers can't know at the outset in terms of project design. Without the PDE, you would need to update the COP or provide variations as this data came in and the project design was refined to reflect the increased understanding of the site. The PDE's maximum design scenario saves on rounds of updates, which create time-consuming, potentially expensive headaches for the regulator as well as the developer.

3) Make sure you beat the clock

In the U.S., the window is open for a 3rd-party EIS from the Announcement of the Notice of Intent (NOI) by BOEM onwards. From that point you have two years to complete it. Rounds of variations – i.e. without a PDE – might cause you to miss this deadline, incurring financial risk. However, if you are using a PDE, it's still a good idea to plan it early on, with an awareness that the clock is ticking.

4) Choose your parameters well

Getting it wrong can slow down your project and add to your costs, so you have to judge the width of your envelope carefully. Your parameters should be realistic and not excessive. Underestimating parameters may lead to a need for later variations to your permits. However, overestimating can lead to an over-prediction of impacts relative to what will be built out and can lead to frustrations from stakeholders.

Developers want to retain flexibility in project design, while regulators need to assess a project's potential impact. There is a balance to be found. Many of those involved in the U.S. offshore wind sector are watching proceedings carefully to understand how much detail the COP must include to satisfy the regulator, and how much flexibility will be offered. The best advice is to create a PDE that is realistic, justifiable and allows for foreseeable technological advances.

If you would like more information on the regulatory processes associated with the U.S. offshore wind market, please contact **Jill Rowe**, Director – Ocean Science, jill.rowe@rpsgroup.com or **Rick Zeroka**, Director of Permitting – U.S. Offshore Renewables, richard.zeroka@rpsgroup.com